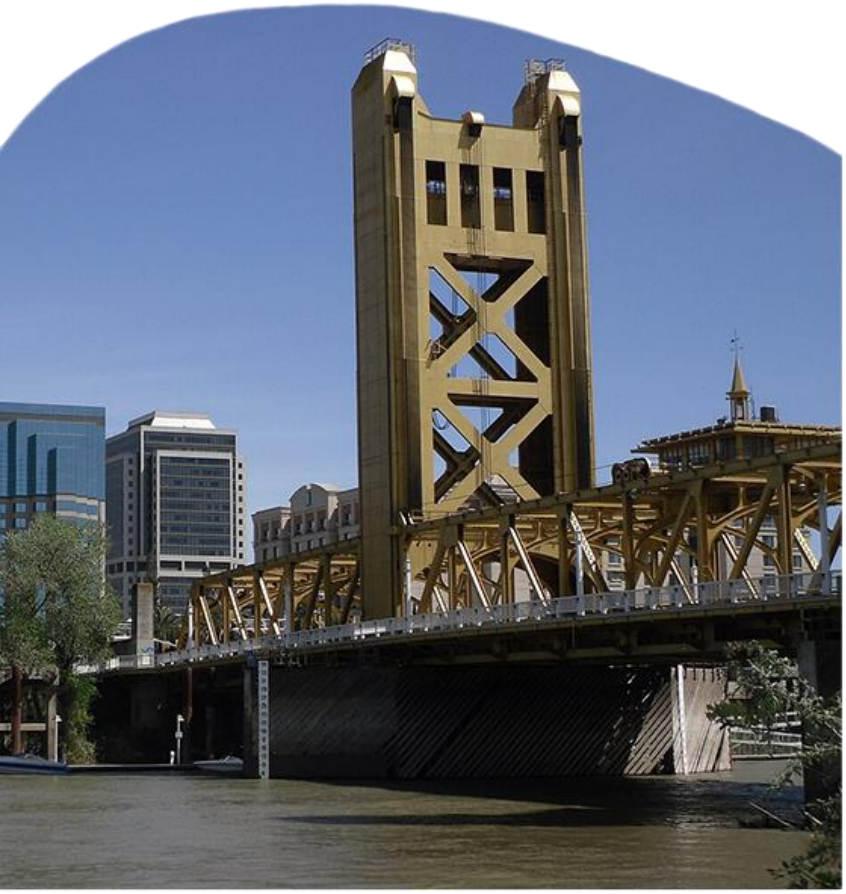
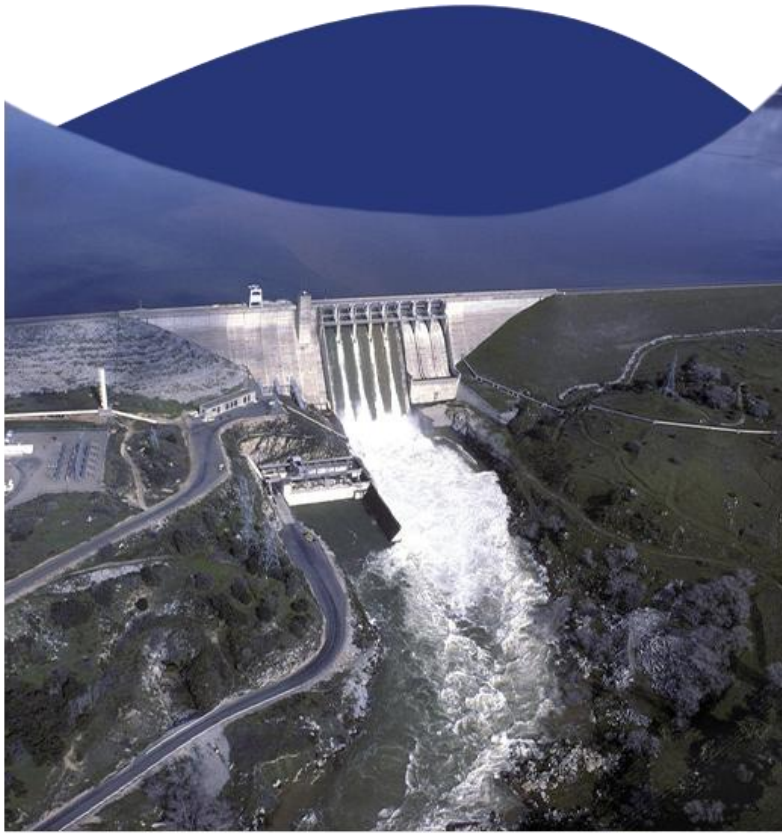
Sacramento County
Multi-Jurisdictional Local Hazard Mitigation Plan Update

Public Review Draft –October 14, 2026









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Executive Summary

Sacramento County, 7 incorporated communities, and 24 special districts prepared this 2026 Sacramento County Multi-Jurisdictional Local Hazard Mitigation Plan Update (hereinafter referred to as LHMP or LHMP Update) to the Federal Emergency Management Agency (FEMA) approved 2021 Sacramento County LHMP. This 2026 Sacramento County LHMP Update is a multi-jurisdictional plan that geographically covers the entire area within Sacramento County's jurisdictional boundaries (hereinafter referred to as the Planning Area). The following jurisdictions participated in the planning process and are seeking FEMA approval of the LHMP Update:

- Sacramento County*
- City of Citrus Heights*
- City of Elk Grove*
- City of Folsom*
- City of Galt*
- City of Isleton*
- City of Rancho Cordova*
- City of Sacramento*
- American River Flood Control District*
- Brannan Andrus Levee Maintenance District (Reclamation Districts 317, 407, 2067)*
- Citrus Heights Water District*
- Cosumnes Community Services District/Fire*
- Delta Region Geologic Hazard Abatement District
- Los Rios Community College*
- Reclamation District 3*
- Reclamation District 341*
- Reclamation District 349
- Reclamation District 369*
- Reclamation District 551*
- Reclamation District 554*
- Reclamation District 556*
- Reclamation District 563*
- Reclamation District 800*
- Reclamation District 1000*
- Reclamation District 1002*
- Reclamation District 1601*
- Reclamation District 2111*
- Sacramento County Water Agency*
- Sacramento Metro Fire District*
- Sacramento Area Sewer District* (note that Sacramento Area Sewer District merged with Regional Sanitation District. Regional Sanitation District participated in the 2021 LHMP as well)
- Southgate Recreation and Park District*
- Twin Rivers Unified School District*

* Participated in 2021 Sacramento County LHMP

The purpose of this 2026 Sacramento County LHMP Update and the hazard mitigation planning process is to reduce or eliminate long-term risk to people and property, critical facilities and infrastructure, natural and historic and cultural resources, and other community assets from future hazard events and natural

disasters. This LHMP Update demonstrates the participating jurisdictions' commitment to reducing risks from hazards and serves as a tool to help decision makers direct mitigation activities and resources. This 2026 LHMP Update was also developed in order for the participating jurisdictions to be eligible for certain federal disaster assistance, specifically, the Federal Emergency Management Agency's (FEMA) Hazard Mitigation Grant Program (HMGP), Pre-Disaster Mitigation (PDM) program, Building Resilient Infrastructure and Communities (BRIC) program, and the Flood Mitigation Assistance (FMA) program.

Each year in the United States, natural disasters take the lives of hundreds of people and injure thousands more. Nationwide, taxpayers pay billions of dollars annually to help communities, organizations, businesses, and individuals recover from disasters. These monies only partially reflect the true cost of disasters, because additional expenses to insurance companies and non-governmental organizations are not reimbursed by tax dollars. Many natural disasters are predictable, and much of the damage caused by these events can be alleviated or even eliminated through natural hazard mitigation.

2026 LHMP Update Plan Development Process

Hazard mitigation planning is the process through which hazards that threaten communities are identified, likely impacts determined, mitigation goals set, and appropriate mitigation strategies determined, prioritized, and implemented. This LHMP Update documents the 2026 hazard mitigation planning process and identifies relevant hazards, community risk and vulnerabilities, and mitigation strategies Sacramento County and the participating jurisdictions will utilize to decrease vulnerability and increase resiliency and sustainability in the Sacramento County Planning Area.

This LHMP Update was prepared pursuant to the requirements of the Disaster Mitigation Act of 2000 (Public Law 106-390), the implementing regulations published at 44 CFR 201.6, and current FEMA guidance to include, LHMP Policy Guide FP 206-21-0002 effective April 11, 2025, and the CRS 2025 Coordinator's Manual. California initiatives, specifically SB 379 (Climate Change) and SB 1000 (Environmental Justice) were also integrated into the Plan development process. Sacramento County jurisdictions followed a planning process prescribed by FEMA as detailed in Table ES-1.

Table ES-1 Local Hazard Mitigation Planning Process

DMA Process	Modified CRS Process
1) Organize Resources	
201.6(c)(1)	1) Organize the Planning Effort
201.6(b)(1)	2) Involve the Public
201.6(b)(2) and (3)	3) Coordinate with Other Departments and Agencies
2) Assess Risks	
201.6(c)(2)(i)	4) Identify the Hazards
201.6(c)(2)(ii)	5) Assess the Risks
3) Develop the Mitigation Plan	
201.6(c)(3)(i)	6) Set Goals
201.6(c)(3)(ii)	7) Review Possible Activities

DMA Process	Modified CRS Process
201.6(c)(3)(iii)	8) Draft an Action Plan
4) Implement the Plan and Monitor Progress	
201.6(c)(5)	9) Adopt the Plan
201.6(c)(4)	10) Implement, Evaluate, and Revise the Plan

The planning process began with the organizational phase to establish the Hazard Mitigation Planning Committee (HMPC), comprised of key Sacramento County jurisdictional representatives, and other local and regional stakeholders; to involve the public; and to coordinate with other departments and agencies. A detailed risk assessment was then conducted followed by the development of a focused mitigation strategy for the Sacramento County Planning Area and specific to each participating jurisdiction. Once approved by Cal OES and FEMA, this 2026 LHMP Update will be adopted and implemented by the participating jurisdictions over the next five years.

Risk Assessment

A natural hazard risk assessment was conducted that identified and profiled hazards that pose a risk to the Sacramento County Planning Area and to each participating jurisdiction, assessed the risk and vulnerability of the Sacramento County Planning Area and jurisdictions to these hazards, and examined the existing jurisdictional capabilities to mitigate identified hazards. The Sacramento County Planning Area is vulnerable to numerous hazards that are identified, profiled, and analyzed in this 2026 LHMP Update. Floods, earthquakes, drought, dam failure, wildfires, and other severe weather events are among the hazards that can have a significant impact on the Planning Area.

Table ES-2 details the hazards identified for this 2026 LHMP Update.

Table ES-2 Sacramento County Planning Area 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	Limited	Medium	–
Dam Failure	Significant	Occasional	Catastrophic	High	Medium
Drought & Water Shortage (w/tree mortality)	Extensive	Likely	Critical	High	High
Earthquake (w/subhazards)	Extensive	Occasional	Catastrophic	Medium	Low
Flood: 1%/0.5%/0.2% annual chance	Significant	Occasional/ Unlikely	Critical	High	Medium
Flood: Localized Stormwater	Significant	Highly Likely	Limited	Medium	Medium
Landslides, Mudslides, and Debris Flow	Limited	Occasional	Negligible	Medium?	Medium
Levee Failure	Significant	Occasional	Catastrophic	High	Medium
Sea Level Rise	Limited	Likely	Negligible	Medium	High
Severe Weather: Extreme Cold and Freeze	Extensive	Highly Likely	Limited	Medium	Medium
Severe Weather: Extreme Heat	Extensive	Highly Likely	Critical	High	High
Severe Weather: Heavy Rains and Storms (Hail, Lightning, Wind)	Extensive	Highly Likely	Limited to Critical	Medium	Medium
Severe Weather: High Winds and Tornadoes	Extensive	Highly Likely	Limited to Critical	Medium	Low
Subsidence	Limited	Likely	Limited	Medium	Medium
Wildfire (w/ smoke and air quality)	Extensive	Highly Likely	Catastrophic	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

Mitigation Strategy

Based on the results of the risk assessment, a mitigation action strategy was developed to reduce the Sacramento County Planning Area's risk and vulnerability to identified natural hazards. The resulting mitigation strategy is comprised of seven goals and a mitigation action plan which includes a series of mitigation actions, projects, and implementation mechanisms. The 2026 LHMP Update Goals are detailed below followed by a summary table of the 2026 mitigation actions and projects.

- GOAL 1: Minimize risk and vulnerability of the Sacramento County community to natural hazards; protect lives; and reduce damages and losses to property, public health and safety, the economy, and the environment, by planning and implementing whole community risk reduction and resilience strategies.
- GOAL 2: Improve the region's social, economic, and operational resilience to climate related hazard impacts for both the existing built environment and future development to promote a more sustainable community.
- GOAL 3: Protect critical facilities, infrastructure, utilities, and services from hazard impacts, to include: hardening and other efforts to establish redundancy, reliability, and operational continuity; to prevent or minimize losses; and to facilitate community recovery.
- GOAL 4: Increase public education, awareness, and preparedness for natural hazards to minimize hazard related losses and to promote self-reliance, utilizing effective outreach and communication strategies to reach all populations before, during, and after a hazard event or disaster.
- GOAL 5: Increase community capabilities and leverage interagency and public-private collaboration and resources to mitigate losses and to be prepared for, respond to, and recover from a hazard event or disaster.
- GOAL 6: Apply the best available science and authoritative data and make better use of technology and shared resources to design, implement, and prioritize risk reduction measures that enhance resilience to natural hazards and climate change impacts.
- GOAL 7: Assure conformance to federal and state hazard mitigation initiatives to maximize opportunities for mitigation implementation and to maintain FEMA program(s) eligibility.

Based on the risk assessment review and goal setting process, the HMPC identified mitigation actions (Table ES-3), which provide direction for reducing future hazard-related losses within the Sacramento County Planning Area and specific to each participating jurisdiction.

Table ES-3 Sacramento County Planning Area Mitigation Actions

Action Title	New Action/ Previous Action	Address Current Development	Address Future Development	Continued NFIP Compliance	Mitigation Type
Sacramento County					
Multi-Hazard Actions					
Action 1. Enhance Public Education and Awareness of Natural Hazards and Public Understanding of Disaster Preparedness	Previous Action	X	X	X	Prevention Public Information
Action 2. Integrate Local Hazard Mitigation Plan into Safety Element of General Plan	Previous Action	X	X		Prevention
Action 3. Evacuation Planning Countywide	Previous Action	X	X	X	Emergency Services
Action 4. Expand Broadband/Wifi Access	Previous Action	X	X		Emergency Services
Action 5. Rancho Murieta Resilience Plan	New Action	X	X		Prevention
Action 6. LU-1: Climate-Resilient Development Standards — Land Use Policy	New Action	X	X	X	Prevention Property Protection Natural Resource Protection
Action 7. EJ-1: Vulnerable Community Integration -- Equity Protocol (PER Lead)	New Action	X	X		Prevention Public Information
Action 8. Critical Facility Inventory and GIS Mapping Updates and Maintenance	New Action	X	X	X	Prevention Public Information Property Protection
Action 9. Establish Local Resilience Hubs with Backup Power	New Action	X	X		Emergency Services Public Information
Climate Change Actions					
Action 10. Implement and improve telecommuting and remote work access for County operations	Previous Action	X	X		Prevention
Action 11. Implement the actions contained within the Sacramento County Climate Action Plan	Previous Action	X	X	X	Prevention Property Protection Structural Projects Natural Resource Protection Public Information
Drought and Water Shortage Actions					
Action 12. AG-1: Unincorporated Agricultural Lands Climate Resilience -- General Plan Amendment	New Action	X	X		Prevention Property Protection Natural Resource Protection Public Information

Action Title	New Action/ Previous Action	Address Current Development	Address Future Development	Continued NFIP Compliance	Mitigation Type
Action 13. DR-1 Drought Resilience and Water Supply Planning Coordination	New Action	X	X		Prevention Property Protection Natural Resource Protection
Action 14. Implement the Actions Included in the 2025 Sacramento County Drought Resilience Plan	New Action	X	X		Prevention Property Protection Natural Resource Protection
Earthquake Actions					
Action 15. EQ-1: Seismic Vulnerability Assessment & Building Retrofit Program	New Action	X	X		Property Protection Structural Projects
Flood: 1%/0.5%/0.2% Annual Chance; Flood; Localized Stormwater; Dam Failure; Levee Failure; Severe Weather: Heavy Rains and Storms Actions					
Action 16. Acquire Floodprone Properties	Previous Action	X	X	X	Property Protection
Action 17. Maintain/ Improve Railroad Embankment Levee (from south of Freeport to south of Hood, a reach owned by California Parks and Recreation Department)	Previous Action	X	X	X	Property Protection Structural Projects
Action 18. Flood Risk Mitigation for Mobilehomes and Recreational Vehicles	Previous Action	X	X	X	Property Protection
Action 19. Plan for Public Information	Previous Action	X	X	X	Public Information
Action 20. Mitigation of Repetitive Loss Flood Areas and Properties	Previous Action	X	X	X	Property Protection Structural Projects Natural Resource Protection
Action 21. Flood Risk Mapping/ Watershed Modeling	Previous Action	X	X	X	Prevention Property Protection
Action 22. Storm Ready	Previous Action	X	X	X	Prevention Property Protection
Action 23. Alder Creek Flood Hazard Mitigation	Previous Action	X	X	X	Property Protection Structural Projects Natural Resource Protection
Action 24. Beach Stone Lakes Area Flood Risk Reduction Program	Previous Action	X	X	X	Property Protection Structural Projects Natural Resource Protection
Action 25. Protect Critical Facilities From Flooding	Previous Action	X	X	X	Property Protection Structural Projects Natural Resource Protection Emergency Services

Action Title	New Action/ Previous Action	Address Current Development	Address Future Development	Continued NFIP Compliance	Mitigation Type
Action 26. Dam Safety	Previous Action	X	X	X	Prevention Property Protection Structural Projects
Action 27. Implement Delta Small Communities Projects	Previous Action	X	X	X	Prevention Property Protection Structural Projects Natural Resource Protection
Action 28. Elevate Homes to Reduce Flood Risk	Previous Action	X	X	X	Property Protection
Action 29. Flood Emergency Management Exercises	Previous Action	X	X	X	Emergency Services
Action 30. Flood Evacuation Mapping	Previous Action	X	X	X	Prevention Emergency Services Public Information
Action 31. Floodproofing Non-Residential Structures	Previous Action	X	X	X	Property Protection
Action 32. Update Hydrology Standards	Previous Action	X	X	X	Prevention Property Protection
Action 33. Maintain/ Improve Sacramento River East Levee (from south of Freeport to south of Hood, a reach owned and operated by California Department of Water Resources Maintenance Area 9)	Previous Action	X	X	X	Property Protection Structural Projects
Action 34. Implement Storm Drain Capital Improvement Plan	Previous Action	X	X	X	Prevention Property Protection Structural Projects Natural Resource Protection
Action 35. Cosumnes River Watershed Multi-benefit Projects	Previous Action	X	X	X	Property Protection Structural Projects Natural Resource Protection
Action 36. Urban Levee Monitoring	Previous Action	X	X	X	Prevention Property Protection
Action 37. Movable Bridge Maintenance	Previous Action	X	X	X	Structural Projects Emergency Services
Action 38. Scour Countermeasures	Previous Action	X	X	X	Prevention Property Protection
Action 39. Wilton Area Roadway Resiliency Project	Previous Action	X	X	X	Structural Projects Emergency Services
Action 40. FL-1: Floodplain Open Space Preservation and Green Infrastructure, Development Approvals	New Action	X	X	X	Property Protection Natural Resource Protection

Action Title	New Action/ Previous Action	Address Current Development	Address Future Development	Continued NFIP Compliance	Mitigation Type
Action 41. Support Sea-Level Rise Data Analysis to Protect Critical Infrastructure and Guide Future Development	New Action	X	X		Property Protection Natural Resource Protection
Severe Weather: Extreme Heat Actions					
Action 42. Cool Surfaces Measure / Cool City Strategy	New Action	X	X		Prevention Property Protection
Action 43. EH-2: Urban Heat Island (UHI) Mapping and General Plan / Land Use Integration	New Action	X	X		Prevention Property Protection
Wildfire Actions					
Action 44. Home Hardening, Defensible Space and Vegetation Management; Development of Areas of Refuge	New Action	X	X		Prevention Property Protection Natural Resource Protection Emergency Services
Action 45. Wildfire Fighting - Support	New Action	X	X		Emergency Services
Action 46. Wildfire Suppression	New Action	X	X		Emergency Services
Action 47. Rural Southern Sacramento County System Mapping/Vulnerability Assessments and Stream/Swale Channel Maintenance	New Action	X	X		Prevention Property Protection Natural Resource Protection
Action 48. Community Chipper Days	New Action	X	X		Prevention Property Protection Natural Resource Protection
Action 49. Community Wildfire Preparedness and Education Program	New Action	X	X		Prevention Property Protection Natural Resource Protection
Action 50. State Route 16 Evacuation and Transportation Resilience Study	New Action	X	X		Prevention Property Protection Natural Resource Protection
Action 51. Implementation of Evacuation Study Mitigation Recommendations	New Action	X	X		Prevention Property Protection Natural Resource Protection
Action 52. Ongoing Fuels Reduction and Vegetation Maintenance	New Action	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 53. Community Evacuation Brochure and Route Education	New Action	X	X		Prevention Property Protection Natural Resource Protection
Action 54. Home Hardening and Defensible Space Education	New Action	X	X		Prevention Property Protection Natural Resource Protection
Action 55. Annual Public Preparedness and Mitigation Events	New Action	X	X		Prevention Property Protection Natural Resource Protection
City of Citrus Heights Actions					
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. Critical Facility (City Hall) Generator Project	Previous Action	X	X		Property Protection Emergency Services
Action 4. Neighborhood Storm Drain Master Plans – Phase IV: Neighborhood Areas 1, 2, and 3 (planned for a future year); Phase III: Neighborhood Areas 5, 6, and 11 (planned for a future year)	Previous Action	X	X	X	Prevention Property Protection Structural Projects Natural Resource Protection
Action 5. Implement Storm Drain Master Plan Projects	Previous Action	X	X	X	Prevention Property Protection Structural Projects Natural Resource Protection
Action 6. Develop Climate Adaptation Plan (CAP)	New Action	X	X	X	Prevention Property Protection Natural Resource Protection
Action 7. Corrugated Metal Pipes (CMP) Storm Drain Replacement Project	Previous Action	X	X	X	Property Protection Structural Projects Natural Resource Protection
Action 8. Creek Maintenance and Restoration Project	Previous Action	X	X	X	Property Protection Natural Resource Protection

Action Title	New Action/ Previous Action	Address Current Development	Address Future Development	Continued NFIP Compliance	Mitigation Type
Action 9. Off System Evacuation Routes. Increase pedestrian and bicycle evacuation routes by constructing regional bike/pedestrian trail infrastructure and expanding connection to neighborhoods (particularly in vulnerable areas).	Previous Action	X	X	X	Emergency Services
Action 10. Tree Planting/Canopy Preservation and Enhancement Project	Previous Action	X	X		Property Protection Natural Resource Protection
Action 11. Interconnected Transportation System Project	Previous Action	X	X		Emergency Services
Action 12. Green Streets and Low Impact Development (LID) Project	New Action	X	X		Prevention Property Protection
Action 13. Trash Racks and Debris Cages Project	Previous Action	X	X	X	Prevention Property Protection
Action 14. Reduce the Urban Heat Island Effect (UHIE)	New Action	X	X		Prevention Property Protection Natural Resource Protection
Action 15. Purchase Personal Protection Equipment for Field Staff	New Action	X	X		Prevention Emergency Services
Action 16. Wildfire Fuel Reduction Project	New Action	X	X		Property Protection Natural Resource Protection
Action 17. Disaster Preparedness Exercise to Test Operational & Emergency Plans	New Action	X	X		Emergency Services
Action 18. Develop Plan for Folsom Dam Failure Specific to Citrus Heights	New Action	X	X	X	Prevention Property Protection Emergency Services
Action 19. Bridge and Roadway Retrofit Projects	Previous Action	X	X	X	Structural Projects Emergency Services
Action 20. Landscape and Irrigation Modifications	New Action	X	X		Prevention Property Protection Natural Resource Protection
Action 21. Develop a Firewise USA Community Plan	New Action	X	X		Prevention Property Protection Natural Resource Protection
Action 22. Acquire Floodplain and Floodprone Parcels and Designate as Open Space	New Action	X	X	X	Prevention Property Protection Natural Resource Protection
Action 23. Cable Trellis w/ Vines Shading Project	Previous Action	X	X		Prevention Property Protection

Action Title	New Action/ Previous Action	Address Current Development	Address Future Development	Continued NFIP Compliance	Mitigation Type
City of Elk Grove Actions					
Action 1. Integrate Local Hazard Mitigation Plan into Safety Element of General Plan	Previous Action	X	X		Prevention
Action 2. Develop and implement a public education campaign focused on hazard awareness, household preparedness, emergency supply kits, family communication plans, etc.	New Action	X	X	X	Prevention Public Information
Action 3. Improve public understanding of evacuation procedures, evacuation zones, routes, transportation assistance options, potential shelter locations, and re-entry procedures	New Action	X	X	X	Prevention Emergency Services Public Information
Action 4. Mutual Aid Agreements	Previous Action	X	X	X	Prevention Emergency Services
Action 5. Update and Implement City of Elk Grove Storm Drainage Master Plan (SDMP)	Previous Action	X	X	X	Prevention Property Protection Structural Projects Natural Resource Protection
Action 6. Create a Climate-Smart Stormwater Management System	Previous Action	X	X	X	Prevention Property Protection Structural Projects Natural Resource Protection
Action 7. Implement a Comprehensive and Climate-Smart Green Infrastructure Strategy	Previous Action	X	X	X	Prevention Property Protection Natural Resource Protection
Action 8. Upgrade the City's Laguna West Levee System to Mitigate Climate-Related Flood Impacts	Previous Action	X	X	X	Property Protection Structural Projects
Action 9. Establish a Resilient Pedestrian and Bicycle Infrastructure Network	Previous Action	X	X		Structural Projects Emergency Services
Action 10. Adopt an Ordinance for Post-Disaster Recovery and Reconstruction	New Action	X	X	X	Prevention
Action 11. Identify Locations for and Implement Large-Scale, Low-Maintenance Rain or Pollinator Gardens	New Action	X	X		Prevention Property Protection Natural Resource Protection
Action 12. Reduce Exposure to Extreme Heat and Mitigate the Urban Heat Island Effect	New Action	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 13. Expand the Urban Tree Canopy	New Action	X	X		Prevention Property Protection Natural Resource Protection
Action 14. Annual Storm Drain System Repair and Upgrade	New Action	X	X	X	Prevention Property Protection Structural Projects Natural Resource Protection
Action 15. Whitelock Parkway/State Route 99 Interchange Project (WTR009)	New Action	X	X		Structural Projects Emergency Services
Action 16. Lotz and Promenade Parkway Project (WTR096)	New Action	X	X		Structural Projects Emergency Services
Action 17. Laguna Creek Erosion Repairs Project	New Action	X	X	X	Prevention Property Protection Natural Resource Protection
Action 18. Fish Hatchery Site Restoration	New Action	X	X	X	Natural Resource Protection
Action 19. Updating Drainage Improvement Standards and Adopt the updated County Hydrology	New Action	X	X	X	Prevention Property Protection
Action 20. Laguna Creek Erosion Repairs Project	New Action	X	X	X	Prevention Property Protection Natural Resource Protection
Action 21. Install staff gages at detention basins	New Action	X	X	X	Prevention Property Protection
Action 22. Old Town Area Streetscape Phase 2	New Action	X	X	X	Prevention Property Protection Natural Resource Protection
Action 23. Drone for Storm Monitoring	New Action	X	X	X	Prevention Emergency Services
Action 24. Develop an extreme weather outreach strategy	New Action	X	X	X	Prevention Emergency Services
Action 25. Update the City Emergency Operations Plan and provide training to city personnel	New Action	X	X		Prevention Emergency Services
City of Folsom Actions					
Action 1. Integrate Local Hazard Mitigation Plan into Safety Element of General Plan	Previous Action	X	X		Prevention

Action Title	New Action/ Previous Action	Address Current Development	Address Future Development	Continued NFIP Compliance	Mitigation Type
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. Aquatic Nuisance Management Program	New Action	X	X		Prevention Property Protection Natural Resource Protection
Action 4. Phase 1 Water Vision Implementation	New Action	X	X		Prevention Property Protection
Action 5. Redevelopment Area Drainage Improvements	Previous Action	X	X	X	Prevention Property Protection Structural Projects Natural Resource Protection
Action 6. Stormwater Basin Maintenance and Operation Project	Previous Action	X	X	X	Prevention Property Protection Natural Resource Protection
Action 7. Stormwater Utility Fee	Previous Action	X	X	X	Prevention Property Protection
Action 8. Fuel Reduction and Modification	Previous Action	X	X		Prevention Property Protection Natural Resource Protection
Action 9. Weed Abatement Program	Previous Action	X	X		Prevention Property Protection Natural Resource Protection
City of Isleton Actions					
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. Support climate change mitigation laws	Previous Action	X	X		Prevention Property Protection
Action 4. Levee Reinforcement Projects	Previous Action	X	X	X	Property Protection Structural Projects Natural Resource Protection

Action Title	New Action/ Previous Action	Address Current Development	Address Future Development	Continued NFIP Compliance	Mitigation Type
Action 5. Implement IFIP (Isleton Flood Improvement Plan)	Previous Action	X	X	X	Prevention Property Protection Structural Projects Natural Resource Protection
Action 6. Create and activate IFMA (Isleton Flood Management Agency)	Previous Action	X	X	X	Prevention
Action 7. Storm Water Runoff Rehabilitation Project	Previous Action	X	X	X	Prevention Property Protection Natural Resource Protection
Action 8. Wastewater Treatment Plant Pond Levee Elevation Raise to 200-year Flood Standard	Previous Action	X	X	X	Property Protection Structural Projects
City of Galt Actions					
Action 1. NEED ACTIONS					
City of Rancho Cordova Actions					
Action 1. Integrate Local Hazard Mitigation Plan into Safety Element of General Plan	Previous Action	X	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. Sunrise Blvd Widening Kiefer to Jackson	Previous Action	X	X		Emergency Services
Action 4. Roundabout Implementation	Previous Action	X	X		Emergency Services
Action 5. Disaster Training for Staff	Previous Action	X	X		Emergency Services
Action 6. Update/Maintain Emergency Operations Plans (EOPs)	Previous Action	X	X	X	Emergency Services
Action 7. Developing and maintaining a database to track community vulnerability	Previous Action	X	X	X	Prevention Emergency Services
Action 8. Landscape Ordinance and Model Water Efficient Landscape Ordinance Implementation	Previous Action	X	X		Prevention Property Protection Natural Resource Protection
Action 9. Porous Pavement and Vegetative Buffers	Previous Action	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 10. Channel Vegetation Management, Debris Removal, Erosion Control Projects	Previous Action	X	X	X	Prevention Property Protection Natural Resource Protection
Action 11. Implement Projects in the Stormwater Capital Improvement Program Master Plan	Previous Action	X	X	X	Prevention Property Protection Structural Projects Natural Resource Protection
Action 12. Sunrise Blvd & Monier Circle Drainage Improvements	Previous Action	X	X	X	Prevention Property Protection Structural Projects Natural Resource Protection
Action 13. Preparedness for Evacuations for Various Acute Hazards	Previous Action	X	X	X	Emergency Services
Action 14. Wildfire Weed Reduction and Resiliency	Previous Action	X	X		Prevention Property Protection Natural Resource Protection
Action 15. Implement Climate Action and Adaptation Plan Strategy Adaptation-1: Improve resilience to increased temperature and extreme heat	New Action	X	X		Prevention Property Protection Natural Resource Protection
Action 16. Inspect, Replace, or Concrete-Line Corrugated Metal Pipe Culverts	New Action	X	X	X	Prevention Property Protection Structural Projects Natural Resource Protection
Action 17. Levee sensitivity analysis	New Action	X	X	X	Prevention Property Protection
Action 18. Implement projects in the Rancho Cordova Active Transportation Plan (2026)	New Action	X	X	X	Prevention Structural Projects Emergency Services
Action 19. Replace Undersized Drainage Laterals to Meet Current Drainage Standards	New Action	X	X	X	Prevention Property Protection Structural Projects Natural Resource Protection
Action 20. Add Stream and Flow Gauges at Critical Creek Locations Citywide	New Action	X	X	X	Prevention Property Protection
Action 21. White Rock Underground Detention Project	New Action	X	X	X	Property Protection Structural Projects
Action 22. Coordination with Dam Owners/ Operators	New Action	X	X	X	Emergency Services

Action Title	New Action/ Previous Action	Address Current Development	Address Future Development	Continued NFIP Compliance	Mitigation Type
City of Sacramento Actions					
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 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 Title	New Action/ Previous Action	Address Current Development	Address Future Development	Continued NFIP Compliance	Mitigation Type
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 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 Title	New Action/ Previous Action	Address Current Development	Address Future Development	Continued NFIP Compliance	Mitigation Type
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
American River Flood Control District					
Action 31. Hazardous Vegetation Removal	New Action	X	X	X	Prevention Property Protection Natural Resource Protection
Action 32. Emergency Rock Revetment Stockpile	Previous Action	X	X	X	Prevention Property Protection Natural Resource Protection
Action 33. Back-up Power Supply	New Action	X	X	X	Prevention Property Protection Natural Resource Protection
Citrus Heights Water District					
Action 34. Construct Additional Wells with Aquifer Storage and Recovery (ASR) Technology	Previous Action	X	X		Prevention
Action 35. Construction of a New Storage Tank	Previous Action	X	X		Structural Projects
Cosumnes Community Services District/Fire					
Action 1. Critical Facilities Resilience and Continuity of Operations Enhancement Program	New Action	X	X		Prevention Property Protection Structural Projects Emergency Services
Action 2. Wildfire, Drought, and Extreme Heat Resilience Program	New Action	X	X		Prevention Property Protection Structural Projects Natural Resource Protection
Action 3. Flood and Levee Failure Emergency Preparedness and Critical Facility Protection Program	New Action	X	X	X	Prevention Property Protection Structural Projects Emergency Services
Los Rios Community College District					
Action 4. Continually monitor trees for removal of overgrown and dead branches	Previous Action	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 5. New building design criteria for HVAC	New Action	X	X		Prevention Property Protection
Action 6. Preventative Maintenance for all roof drains	Previous Action	X	X		Prevention Property Protection
Action 7. Preventative Maintenance and inspections for storm water drainage systems	Previous Action	X	X	X	Prevention Property Protection
Reclamation District 800					
Action 1. Reclamation District No. 800 Flood Safety Plan	New Action	X	X	X	Prevention Property Protection Emergency Services
Action 2. Rancho Murieta Erosion Repair Project	New Action	X	X	X	Prevention Property Protection Natural Resource Protection
Action 3. Flood Fight Supplies	New Action	X	X	X	Prevention Property Protection Emergency Services
Reclamation District 1000					
Action 1. Asset Management Plan Update	Previous Action	X	X	X	Prevention Property Protection Structural Projects Emergency Services
Action 2. Corporation Yard Improvements	Previous Action	X	X	X	Prevention Property Protection
Action 3. Waterside Levee Inspection Capability	Previous Action	X	X	X	Prevention Property Protection Natural Resource Protection
Action 4. Emergency Generators for Plants 2, 3, 4, 5, 6 and 8	Previous Action	X	X	X	Prevention Emergency Services
Action 5. Plant 8 Improvements	Previous Action	X	X	X	Prevention Structural Projects
Action 6. Expanded SCADA System	Previous Action	X	X	X	Prevention Property Protection
Action 7. Update Emergency Operations Plan and Staffing	Previous Action	X	X	X	Prevention Emergency Services
Action 8. Expanded Pumping Plant Security Systems	New Action	X	X	X	Prevention Property Protection Emergency Services
Action 9. Enhanced Protection of District Infrastructure from Unauthorized Encampments	New Action	X	X	X	Prevention Property Protection

Action Title	New Action/ Previous Action	Address Current Development	Address Future Development	Continued NFIP Compliance	Mitigation Type
Action 10. Culvert Replacement Program	New Action	X	X	X	Prevention Property Protection Structural Projects Natural Resource Protection
Sacramento County Water Agency					
Action 1. Flood Hazard Mitigation	Previous Action	X	X	X	Prevention Property Protection Structural Projects Natural Resource Protection
Action 2. Improve Water Supply Portfolio	Previous Action	X	X		Prevention Property Protection Structural Projects Natural Resource Protection
Action 3. Seismic Upgrades and Inspections	Previous Action	X	X		Prevention Property Protection Structural Projects
Action 4. Backup Power Generation	New Action	X	X	X	Prevention Emergency Services
Action 5. Invasive Mussel Mitigation	New Action	X	X	X	Prevention Property Protection Natural Resource Protection
Sac Metro Fire District					
Action 6. Station Hardening and Facility Resilience	Previous Action	X	X		Prevention Property Protection Structural Projects
Action 7. Backup Power and Utility Redundancy	New Action	X	X		Prevention Property Protection Structural Projects
Action 8. Wildfire and WUI Mitigation	New Action	X	X		Property Protection Natural Resource Protection
Action 9. Flood and Levee Preparedness	New Action	X	X	X	Property Protection Natural Resource Protection
Action 10. Community Outreach and Education	New Action	X	X	X	Property Protection Natural Resource Protection
Action 11. Operational Continuity and Logistics	New Action	X	X		Property Protection Natural Resource Protection
Action 12. Hazard-Specific Training and Exercises	New Action	X	X	X	Property Protection Natural Resource Protection

Action Title	New Action/ Previous Action	Address Current Development	Address Future Development	Continued NFIP Compliance	Mitigation Type
Action 13. Grant and Funding Strategy	New Action	X	X		Property Protection Natural Resource Protection
SacSewer					
Action 1. Complete and Implement I&I Policy	Previous Action	X	X	X	Prevention Property Protection
Action 2. EchoWater BioGeneration Facility	Previous Action	X	X		Prevention Property Protection Structural Projects
Action 3. Reduction of Fire Hazard of the Bufferlands	Previous Action	X	X		Prevention Property Protection Natural Resource Protection
Action 4. Update GHG Emissions Inventory	Previous Action	X	X		Prevention Property Protection
Action 5. Energy Management Plan	New Action	X	X		Prevention Property Protection
Action 6. Evaluate the Adaptation Strategies Suggested within the Climate Adaptation and Resiliency Plan	New Action	X	X	X	Prevention Property Protection Natural Resource Protection
Action 7. Installation of Backup Generators for Collection System Pump Stations (where applicable and feasible)	New Action	X	X	X	Prevention Property Protection Structural Projects
Action 8. Decommissioned Pipeline Abandonment Removal	New Action	X	X		Prevention Property Protection Structural Projects
Southgate Regional Park District					
Action 1. Drought Mitigation Action/Drought Contingency Plan	Previous Action	X	X		Prevention Property Protection Natural Resource Protection
Action 2. Flood Mitigation/Land Acquisition & Multi-jurisdictional Cooperation	Previous Action	X	X	X	Prevention Property Protection
Action 3. Conservation Easements	Previous Action	X	X		Prevention Property Protection
Action 4. Storm Water Management Practices – Implement Storm Water Management Practices as identified in the Stormwater Quality Design Manual	Previous Action	X	X	X	Prevention Property Protection Structural Projects Natural Resource Protection
Action 5. Tree Management	Previous Action	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 6. Integrate Local Hazard Mitigation Plan into District Master Plan	Previous Action	X	X		Prevention
Action 7. South Sacramento-Florin Cool Parks, Healthy Community Project	New Action	X	X		Prevention Property Protection Natural Resource Protection
Action 8. Green Initiatives	New Action	X	X		Prevention Property Protection Natural Resource Protection
Twin Rivers Unified School District					
Action 1. Districtwide Flood, Stormwater, and Drainage Resilience Program	Previous Action	X	X	X	Prevention Property Protection Structural Projects Natural Resource Protection
Action 2. Districtwide Drought, Water, and Extreme Temperature Resilience Improvements	Previous Action	X	X		Prevention Property Protection Structural Projects Natural Resource Protection
Action 3. Districtwide Wildfire, Smoke, Tree Mortality, and Vegetation Risk Reduction Program	Previous Action	X	X		Prevention Property Protection Natural Resource Protection
Brannan Andrus Levee Maintenance District and Reclamation Districts 317, 407, and 2067					
Action 4. NEED ACTIONS					
Reclamation District 3					
Action 1. Pumpstation Retrofit Project along Unit 1 Steamboat Slough Levee Old and New Pumpstations	Previous Action	X	X	X	Prevention Property Protection Structural Projects Natural Resource Protection
Action 2. Seepage Rehabilitation Project along Unit 1 Steamboat Slough Levee at multiple locations	Previous Action	X	X	X	Prevention Property Protection Natural Resource Protection
Action 3. Pumpstation Retrofit Project along Unit 2 Sacramento River Levee at Ryde Pumpstations	Previous Action	X	X	X	Prevention Property Protection Structural Projects Natural Resource Protection

Action Title	New Action/ Previous Action	Address Current Development	Address Future Development	Continued NFIP Compliance	Mitigation Type
Reclamation District 341					
Action 4. San Joaquin River Setback Levee (previously referred to as San Joaquin River Multi-Benefit Project)	Previous Action	X	X	X	Prevention Property Protection
Action 5. San Joaquin River Multi-Benefit Project	Previous Action	X	X	X	Prevention Property Protection
Reclamation District 349					
ction 1. Pumpstation Retrofit Project along Unit 3 Sutter Slough Levee Pumpstations	Previous Action	X	X	X	Prevention Property Protection Structural Projects Natural Resource Protection
Reclamation District 369					
Action 1. Levee Improvement Projects	Previous Action	X	X	X	Prevention Property Protection Structural Projects Natural Resource Protection
Action 2. Rock Slope Protection	Previous Action	X	X	X	Prevention Property Protection Structural Projects Natural Resource Protection
Action 3. Backup Power Project	Previous Action	X	X	X	Prevention Property Protection Structural Projects Natural Resource Protection
Action 4. Repairs to Existing Pumping Station	New Action	X	X	X	Prevention Property Protection Structural Projects Natural Resource Protection
Action 5. Address Unsafe Encroachments	Previous Action	X	X	X	Prevention Property Protection Structural Projects Natural Resource Protection
Reclamation District 551					
Action 1. Pumpstation Retrofit Project along RD 551 Back Levee	Previous Action	X	X	X	Prevention Property Protection Structural Projects Natural Resource Protection

Action Title	New Action/ Previous Action	Address Current Development	Address Future Development	Continued NFIP Compliance	Mitigation Type
Action 2. Pumpstation Retrofit Project: RD 551 Lake Lift Pumpstation	Previous Action	X	X	X	Prevention Property Protection Structural Projects Natural Resource Protection
Action 3. Pumpstation Retrofit Project along Unit 1 Sacramento River Levee Pumpstations	Previous Action	X	X	X	Prevention Property Protection Structural Projects Natural Resource Protection
Action 4. Seepage Rehabilitation Project along Unit 1 Sacramento River Levee: LM 0.1 – 0.9	Previous Action	X	X	X	Prevention Property Protection Natural Resource Protection
RD 554					
Action 1. Levee Improvement Projects	Previous Action	Y	Y	N	Prevention Property Protection Structural Projects Natural Resource Protection
Action 2. Rock Slope Protection	Previous Action	Y	Y	N	Prevention Property Protection Structural Projects Natural Resource Protection
Action 3. Backup Power Project	New Action	Y	Y	N	Prevention Property Protection Natural Resource Protection
Action 4. Repairs to Existing Pumping Station	New Action	Y	Y	N	Prevention Property Protection Structural Projects Natural Resource Protection
Action 5. Address Unsafe Encroachments	Previous Action	Y	Y	N	Prevention Property Protection Natural Resource Protection
Action 6. Interior Drainage Improvements	Previous Action	Y	Y	N	Prevention Property Protection Structural Projects Natural Resource Protection
Action 7. Cross Levee Protection	New Action	Y	Y	N	Prevention Property Protection Natural Resource Protection

Action Title	New Action/ Previous Action	Address Current Development	Address Future Development	Continued NFIP Compliance	Mitigation Type
RD 556					
Action 1. Levee Improvement Projects	Previous Action	X	X	X	Prevention Property Protection Natural Resource Protection
Action 2. Rock Slope Protection	Previous Action	X	X	X	Prevention Property Protection Natural Resource Protection
Action 3. Backup Power Project	New Action	X	X	X	Prevention Property Protection Natural Resource Protection
Action 4. Repairs to Existing Pumping Station	New Action	X	X	X	Prevention Property Protection Natural Resource Protection
Action 5. Address Unsafe Encroachments	Previous Action	X	X	X	Prevention Property Protection Natural Resource Protection
Action 6. Interior Drainage Improvements	Previous Action	X	X	X	Prevention Property Protection Natural Resource Protection
Action 7. Relief Cut Plan	New Action	X	X	X	Prevention Property Protection Natural Resource Protection
Action 8. Cross Levee Protection	New Action	X	X	X	Prevention Property Protection Natural Resource Protection
Reclamation District 563					
Action 1. Rock Slope Protection Project	Previous Action	X	X	X	Prevention Property Protection Natural Resource Protection
Action 2. Levee Geometry Levee Improvement Project	Previous Action	X	X	X	Prevention Property Protection Structural Projects Natural Resource Protection
Action 3. Levee Seepage Repair Project	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 4. Backup Power Generator Project	Previous Action	X	X	X	Prevention Property Protection Emergency Services
Reclamation District 1002					
Action 1. Levee Improvement Projects	Previous Action	X	X	X	Prevention Property Protection Natural Resource Protection
Action 2. Rock Slope Protection	Previous Action	X	X	X	Prevention Property Protection Natural Resource Protection
Action 3. Backup Power Project	New Action	X	X	X	Prevention Property Protection Natural Resource Protection
Action 4. Repairs to Existing Pumping Station	New Action	X	X	X	Prevention Property Protection Natural Resource Protection
Action 5. Address Unsafe Encroachments	Previous Action	X	X	X	Prevention Property Protection Natural Resource Protection
Action 6. Interior Drainage Improvements	Previous Action	X	X	X	Prevention Property Protection Natural Resource Protection
Action 7. Relief Cut Plan	New Action	X	X	X	Prevention Property Protection Natural Resource Protection
Action 8. Railroad Berm Protection	New Action	X	X	X	Prevention Property Protection Natural Resource Protection
Reclamation District 1601					
Action 1. Levee Improvement Project	Previous Action	X	X	X	Prevention Property Protection Structural Projects Natural Resource Protection
Action 2. Rock Slope Protection Project	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 3. San Joaquin River Setback Levee	Previous Action	X	X	X	Prevention Property Protection Structural Projects Natural Resource Protection
Action 4. Backup Power Project	Previous Action	X	X	X	Prevention Property Protection Emergency Services
Reclamation District 2111					
Action 1. Rock Slope Protection Project	Previous Action	X	X	X	Prevention Property Protection Natural Resource Protection
Action 2. Levee Improvement Projects	Previous Action	X	X	X	Prevention Property Protection Structural Projects Natural Resource Protection
Action 3. Siphon Project	Previous Action	X	X	X	Prevention Property Protection
Action 4. Backup Power Project	Previous Action	X	X	X	Prevention Property Protection Emergency Services
Action 5. Flood Safety Plan Updates, Training, and Exercises	Previous Action	X	X	X	Prevention Emergency Services
Delta Region Geologic Hazard Abatement District					
Action 1. Expand efforts to provide community based flood insurance.	New Action	X	X	X	Prevention Property Protection Natural Resource Protection
Action 2. Obtain funding to support the long-term management of the DR-GHAD.	New Action	X	X		Prevention Property Protection Natural Resource Protection
Action 3. Conduct education and outreach to the community on new options for flood insurance.	New Action	X	X	X	Prevention Property Protection Natural Resource Protection
Action 4. Provide support to the City of Isleton and BALMD in efforts to obtain funding for levee maintenance.	New Action	X	X	X	Prevention Property Protection Natural Resource Protection
Action 5. Continue efforts to expand the community based insurance program to the entire Delta	New Action	X	X	X	Prevention Property Protection Natural Resource Protection

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Abbreviations and Acronyms TO BE COMPLETED FOR FINAL DOCUMENT

Acronym	Definition

Chapter 1 Introduction

1.1 Purpose

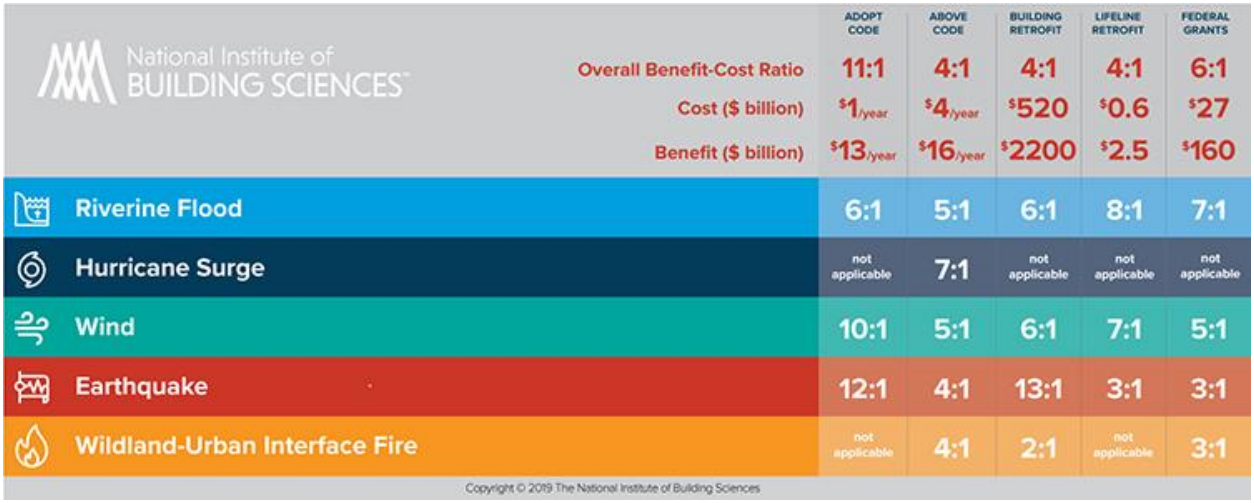
Sacramento County, 7 incorporated communities, and 24 special districts prepared this 2026 Sacramento County Multi-Jurisdictional Local Hazard Mitigation Plan Update (hereinafter referred to as LHMP or LHMP Update) to the Federal Emergency Management Agency (FEMA) approved 2021 Sacramento County LHMP. The purpose of this LHMP Update is to guide hazard mitigation planning to better protect the people and property of the County from the effects of hazard events and natural disasters. This LHMP Update demonstrates the communities' commitment to reducing risks from hazards and serves as a tool to help decision makers direct mitigation activities and resources. This LHMP Update was also developed, among other things, to ensure Sacramento County and participating jurisdictions' continued eligibility for certain federal disaster assistance: specifically, the Federal Emergency Management Agency's (FEMA) Hazard Mitigation Grant Program (HMGP), Pre-Disaster Mitigation (PDM) program, Building Resilient Infrastructure and Communities (BRIC) program, and the Flood Mitigation Assistance (FMA) program.

1.2 Background and Scope

Each year in the United States, natural disasters take the lives of hundreds of people and injure thousands more. Nationwide, taxpayers pay billions of dollars annually to help communities, organizations, businesses, and individuals recover from disasters. These monies only partially reflect the true cost of disasters, because most expenses to insurance companies and non-governmental organizations are not reimbursed by tax dollars. Although the timing of natural disasters is unpredictable, their occurrence is largely predictable over time, and much of the damage caused by these events can be significantly reduced through hazard mitigation.

Hazard mitigation is defined by FEMA as "any sustained action taken to reduce or eliminate long-term risk to human life and property from a hazard event." The results of a three-year, congressionally mandated independent study to assess future savings from mitigation activities provide evidence that, overall, mitigation activities are highly cost-effective investments. On average, each dollar spent on mitigation saves society an average of $6 in avoided future losses in addition to saving lives and preventing injuries (National Institute of Building Science Multi-Hazard Mitigation Council 2019 Interim Report) (see Figure 1-1).

Figure 1-1 Natural Hazard Mitigation Savings by Hazard Type and Mitigation Type



Source: National Institute of Building Science Multi-Hazard Mitigation Council 2019 Interim Report

Hazard mitigation planning is the process through which hazards are identified, likely impacts determined, mitigation goals set, and appropriate mitigation strategies determined, prioritized, and implemented. This Plan documents Sacramento County's hazard mitigation planning process and identifies relevant hazards and vulnerabilities and strategies the County and participating jurisdictions will use to decrease vulnerability and increase resiliency and sustainability in the community.

This Sacramento County 2026 LHMP is a multi-jurisdictional plan that geographically covers the entire area within Sacramento County's jurisdictional boundaries (hereinafter referred to as the Planning Area). The following jurisdictions participated in the planning process and are seeking FEMA approval of the LHMP Update:

- Sacramento County*
- City of Citrus Heights*
- City of Elk Grove*
- City of Folsom*
- City of Galt*
- City of Isleton*
- City of Rancho Cordova*
- City of Sacramento*
- American River Flood Control District
- Brannan Andrus Levee Maintenance District (Reclamation Districts 317, 407, 2067)*
- Citrus Heights Water District*
- Cosumnes Community Services District/Fire*
- Delta Region Geologic Hazard Abatement District
- Los Rios Community College*
- Reclamation District 3*
- Reclamation District 341*
- Reclamation District 349
- Reclamation District 369*
- Reclamation District 551*
- Reclamation District 554*

- Reclamation District 556*
- Reclamation District 563*
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- Reclamation District 1000*
- Reclamation District 1002*
- Reclamation District 1601*
- Reclamation District 2111*
- Sacramento County Water Agency*
- Sacramento Metro Fire District*
- Sacramento Area Sewer District*
- Southgate Recreation and Park District*
- Twin Rivers Unified School District*

* Participated in 2021 Sacramento County LHMP

This LHMP Update was prepared pursuant to the requirements of the Disaster Mitigation Act of 2000 (Public Law 106-390) and the implementing regulations set forth by the Interim Final Rule published in the Federal Register on February 26, 2002, (44 CFR §201.6) and finalized on October 31, 2007. (Hereafter, these requirements and regulations will be referred to collectively as the Disaster Mitigation Act (DMA) or DMA 2000.) This planning effort also follows FEMA's most current effective LHMP Preparation and Review Guidance, LHMP Policy Guide FP 206-21-0002 effective April 11, 2025 and applicable State of California laws and guidance. While DMA 2000 emphasized the need for mitigation plans and more coordinated mitigation planning and implementation efforts, the regulations establish the requirements that local hazard mitigation plans must meet in order for a local jurisdiction to be eligible for certain federal disaster assistance and hazard mitigation funding under the Robert T. Stafford Disaster Relief and Emergency Act (Public Law 93-288). Because the Sacramento County Planning Area is subject to many kinds of hazards, access to these programs is vital.

Information in this LHMP Update will be used to help guide and coordinate mitigation activities and decisions for local land use policy in the future. Proactive mitigation planning will help reduce the cost of disaster response and recovery to communities and their residents by protecting public health and safety and critical community facilities; reducing liability exposure; and minimizing overall community impacts and disruptions. In the past, the Sacramento County Planning Area has been affected by numerous hazards on multiple occasions. The participating jurisdictions are thus committed to reducing future impacts from hazard events and maintaining eligibility for mitigation-related federal funding.

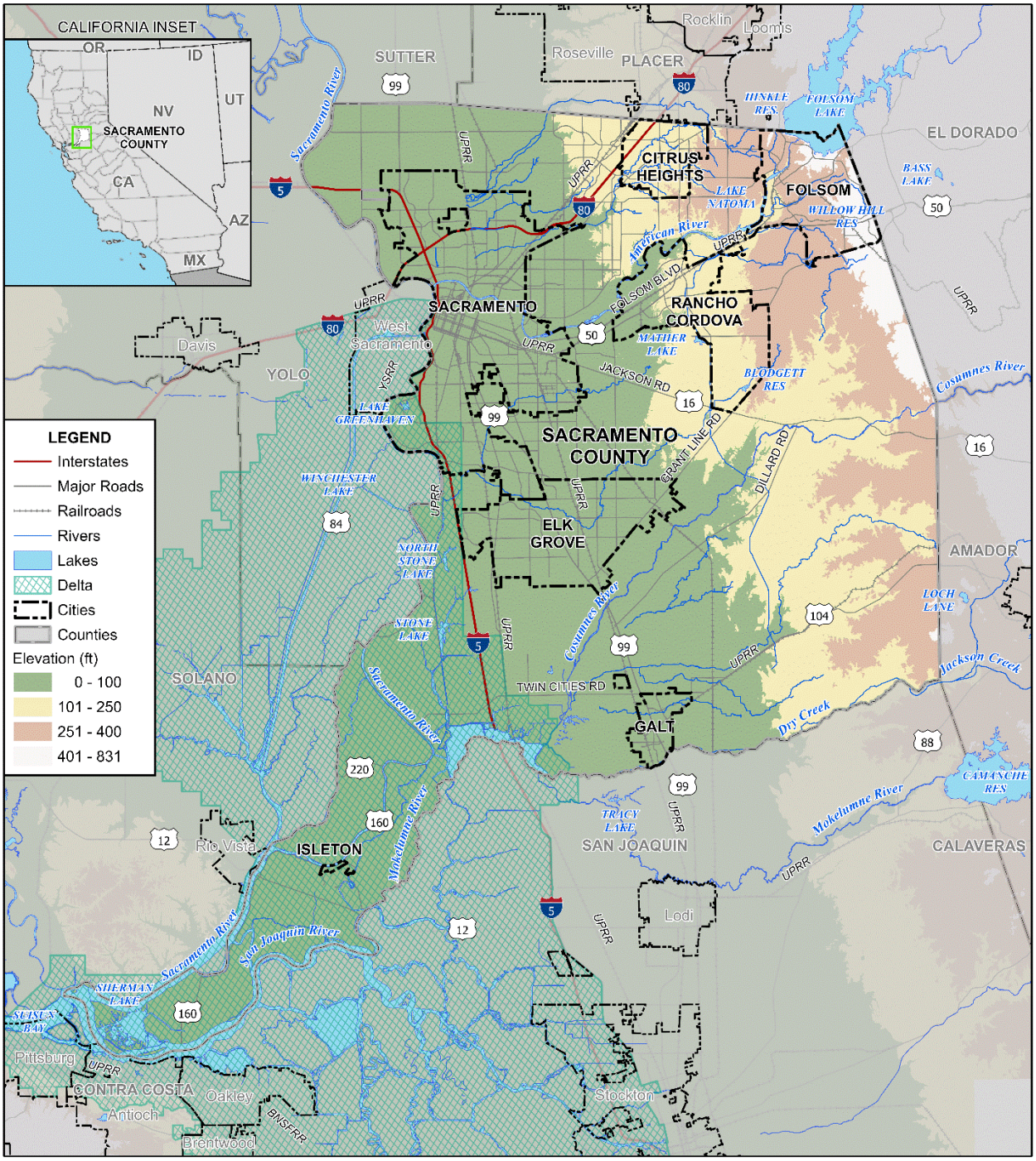
1.3 Sacramento County Profile

Sacramento County lies within California's Central Valley of California and is the state capitol of California. The County has a history as a center of government, trade, transportation and agriculture, and as a consequence, the City of Sacramento is a major transportation hub. Interstates 80 and 5; U.S. Highway 50; and State Highways 99, 16, and 160 all extend from the outer edges of the County and converge in downtown Sacramento. Similarly, all of the rail lines in the County converge in Sacramento at the site of the old Sacramento Rail Yard. Airports include Sacramento International, Sacramento Executive, Mather Air Force Base, McClellan Air Force Base and other smaller airports. Each of these major transportation corridors or locations impacts the land uses in the vicinity.

The County is divided into 25 community areas, seven of which are incorporated cities. Most of these communities are in the urbanized core in the western, northwestern or northern portion of the County. The southwestern, eastern and southern portions of the County are more agricultural and rural, residential. Many portions of the developed County are within the historic floodplains of the three major rivers (Sacramento, American, and Cosumnes Rivers) and are protected by a system of levees. The California Department of Finance estimated the total population of the County to be 1,604,745 in 2025.

A map of the County with elevations is shown in Figure 1-2.

Figure 1-2 Sacramento County Planning Area



Data Source: Sacramento County, Cal-Atlas; Map Date: 10/2/2026.

1.3.1. History

Early Spanish explorers and the Franciscan and Jesuit missionaries who followed them were the first Europeans to reach northern California. The interior of the Sacramento Valley, away from the easily defended and more accessible chain of coastal missions and pueblos, was left largely untouched by the Spanish and "Californios." Established settlement of the Sacramento area did not begin until the late 1830s and early 1840s, when resourceful and independent individuals such as Sutter and Jared Sheldon obtained land grants from the Mexican government, usually in exchange for an agreement to protect Mexican interests in these remote interior regions.

With the initial Euro-American settlement of Sacramento County by John Sutter in 1839 at what would become Sutter's Fort, the established outpost brought with it an increase in Euro-American trappers, hunters and settlers to the area. After the arrival of Sutter, several individuals obtained large Mexican Land Grants in the area. As a result of the Mexican War (1847-1848), California became part of the territory of the United States. In 1848, gold was discovered at Sutter's Mill in Coloma. With the discovery of gold in 1848, a torrent of settlers from the east flooded into the Sacramento region. As the population increased and easily found gold decreased, newcomers who decided to stay turned to alternative vocations, particularly agriculture. Many found land comparatively plentiful and cheap. Raising grain, livestock, and produce to sell to the thousands of miners heading to the gold fields proved a profitable venture. These combined events hastened the settlement of the area and the development of Sacramento as an economic and transportation center. The designation of Sacramento as the state capital, in 1854, also resulted in the area's increase in socio-political importance.

The County is the major component of the Sacramento Metropolitan Statistical Area (SMSA) which includes Sacramento, El Dorado and Placer Counties. The County Charter was established in 1933 and is still used today. The official County Seal was adopted by the Board of Supervisors on January 18, 1961, following a contest for an appropriate design.

1.3.2. Geography and Climate

Sacramento County lies just north of the center of California's Central Valley. The confluence of two of the state's major rivers, the Sacramento and the American, occurs within the County. The southwestern panhandle of the County extends far into the Sacramento-San Joaquin Delta, to the point just north of Antioch, where nearly all waters of the Central Valley converge. To the south, San Joaquin County is primarily agricultural. The wooded foothills of the Sierra Nevada rise to the east in Amador and El Dorado Counties. On the north, Placer County has experienced dramatic growth over the past decade, and much of the grasslands adjacent to the northern Sacramento County boundary have been converted to residential uses. Yolo and Sutter Counties to the northwest and west have experienced growth as well, though agricultural uses remain.

In general, topography in Sacramento County is characterized by a broad band of very flat valley floor land in the western sector, a transition zone of gently sloping alluvial plains in the central sector, and a low foothill region in the eastern sector. Elevations range from below sea level in the delta island area in the Southwest corner of the County to approximately 800 feet in the foothill region. Much of Sacramento County is low and flat. Some areas of the County are so flat that they have essentially no slope at all.

Natural drainageways in these areas are usually poorly defined, and drainage of storm waters is slow. Most of these areas lie in the western and southern portions of the County. The general drainage pattern in Sacramento County is from northeast to southwest. All drainage is ultimately conveyed out of the County by the Sacramento and San Joaquin Rivers.

Sacramento County is characterized by a mild climate, with year-round sunshine. The summers are warm, with dry days and mild nights. According to the WRCC, monthly average maximum temperatures in the warmest months (May through October) range from the upper-70s to the low-90s. In a typical year, maximum temperatures exceed 90°F on 65.4 days. Monthly average minimum temperatures in the County from November through April range from the upper-30s to the upper-50s. In a typical year, minimum temperatures fall below 32°F on 8.3 days. Average annual precipitation in the County is 18.15 inches per year. During the winter "rainy season" (November through February), over half the total annual precipitation falls, yet rain in measurable amounts occurs only about ten days monthly during the winter. Mountains surround the Sacramento Valley to the west, north and east. Because of the shielding influence of the high mountains, winter storms reach the valley in a modified form. However, torrential rain and heavy snow frequently fall on the Western Sierra Slopes, the Southern Cascades, and to a lesser extent, the Coastal Range. As a result, flood conditions occasionally occur along the Sacramento River and its tributaries, especially as a result of rain on snow events occurring in higher elevations.

1.3.3. Population and Demographics

The California Department of Finance 2025 estimates for population of Sacramento County and its jurisdictions are shown in Table 1-1.

Table 1-1 Sacramento County Population by Jurisdiction – 2025

Jurisdiction	Total Population
Citrus Heights	86,280
Elk Grove	182,842
Folsom	92,577
Galt	26,092
Isleton	764
Rancho Cordova	85,451
Sacramento	527,979
Unincorporated County	602,760
Total	**1,604,745**

Source: California Department of Finance, 2025 E-1 Report

Select social and economic information for the unincorporated Sacramento County are shown in Table 1-2.

Table 1-2 Unincorporated Sacramento County – Select Social and Economic Statistics

Statistic	Number
Populations	
Population under 5	5.7%
Population over 65	16.0%
Median Age	38.1
Race	
Population of one race:	86.6%
White alone	45.2%
Black or African American alone	9.6%
American Indian and Alaska Native alone	1.2%
Asian alone	17.8%
Native Hawaiian and Other Pacific Islander alone	1.2%
Some Other Race alone	11.7%
Population of two or more races:	13.4%
Income and Poverty	
Median income	$94,087
Mean Income	$119,881
Poverty rate – All families	8.4%
Poverty rate – All people	12.0%
Unemployment Rate (August 2025)	5.5

Source: 2020 US Census, 2023 US Census Bureau American Community Survey, California Employment Development Department

1.3.4. Economy and Tax Base

Sacramento County has a diverse economy. US Census estimates show economic characteristics for the unincorporated County. These are shown in Table 1-3 and Table 1-4.

Table 1-3 Unincorporated Sacramento County Civilian Employed Population 16 years and Over by Industry

Industry	Estimated Employment	Percent
Agriculture, forestry, fishing and hunting, and mining	6,963	0.9%
Construction	54,706	7.1%
Manufacturing	40,705	5.2%
Wholesale trade	12,767	1.6%
Retail trade	72,909	9.4%
Transportation and warehousing, and utilities	55,463	7.2%
Information	10,306	1.3%
Finance and insurance, and real estate and rental and leasing	41,176	5.3%

Industry	Estimated Employment	Percent
Professional, scientific, and management, and administrative and waste management services	96,320	12.4%
Educational services, and health care and social assistance	186,841	24.1%
Arts, entertainment, and recreation, and accommodation and food services	69,672	9.0%
Other services, except public administration	37,916	4.6%
Public administration	89,798	11.6%

Source: US Census Bureau American Community Survey 2023 Estimates

Table 1-4 Unincorporated Sacramento County – Income and Benefits

Income Bracket	Percent
<$10,000	4.8%
$10,000 – $14,999	2.9%
$15,000 - $24,9999	5.0%
$25,000 – $34,999	4.5%
$35,000 – $49,999	8.0%
$50,000 – $74,999	14.6%
$75,000 – $99,999	12.9%
$100,000 – $149,999	19.9%
$150,000 – $199,999	11.3%
$200,000 or more	15.9%

Source: US Census Bureau American Community Survey 2023 Estimates

Major employers in the County are shown in Table 1-5.

Table 1-5 Major Employers in Sacramento County Planning Area

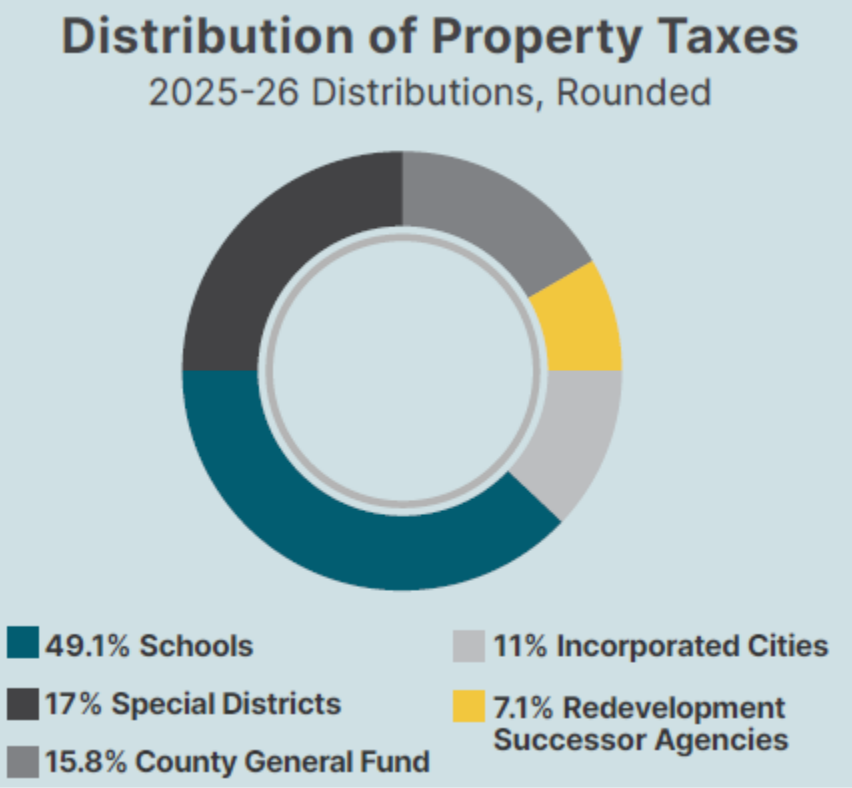
Employer Name	Location	Industry
Aerojet Rocketdyne Inc	Rancho Cordova	Aerospace Industries (manufacturing)
Agreeya Solutions Inc	Folsom	Information Technology Services
American River College	Sacramento	Junior-Community College-Tech Institutes
Ampac Fine Chemicals LLC	Rancho Cordova	Electronic Equipment & Supplies (manufacturing)
Apple Distribution Center	Elk Grove	Distribution Centers (wholesale)
California State University Sacramento	Sacramento	Schools-Universities & Colleges Academic
Colliers International Ltd	Sacramento	Real Estate
Department-Corrections-Rehab	Sacramento	State Govt-Correctional Institutions
Disabled American Veterans	Sacramento	Veterans' & Military Organizations
Employment Development Dept	Sacramento	Outplacement Consultants

Employer Name	Location	Industry
Environmental Protection Agency	Sacramento	State Government-Air/Water/Solid Waste Manage
Intel Corp	Folsom	Semiconductor Devices (manufacturing)
Kaiser Permanente South	Sacramento	Hospitals
L A Care Health Plan	Sacramento	Health Plans
Mercy General Hospital	Sacramento	Hospitals
Mercy San Juan Medical Ctr	Carmichael	Hospitals
Sacramento Bee	Sacramento	Newspapers (publishers/manufacturing)
Sacramento Municipal Utility	Sacramento	Utility Contractors
Securitas Security Svc USA	Sacramento	Security Guard & Patrol Service
SMUD	Sacramento	Utility Contractors
State Compensation Ins Fund	Sacramento	Insurance
Summit Funding Inc	Sacramento	Real Estate Loans
Sutter Medical Ctr-Sacramento	Sacramento	Hospitals
Villara	McClellan	Building Contractors
Water Resource Dept	Sacramento	Government Offices-State

Source: America's Labor Market Information System (ALMIS) Employer Database, 2025 2nd Edition.

Tax base information is tracked and maintained by the Sacramento County Assessor's Office. The County has a wide and varied tax base. Property assessments generate significant property tax revenue, one of the largest sources of discretionary funding for Sacramento County's General Fund. After the deduction of homeowners', disabled veterans', and charitable organizations' exemptions, the County's total net assessed value for 2025-26 is $244 billion. This year's assessment roll generates over $2.4 billion in property tax revenue, yielding an added $123 million in gross revenue over last year. Property tax revenue collected at the County level is distributed to over 175 local government agencies; cities, schools, and special districts such as fire, park, community service and cemetery districts. A distribution of property taxes can be seen on Figure 1-3.

Figure 1-3 Sacramento County – Property Tax Distribution 2025-2026



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

The following tables show the tax base for the County as well as for the incorporated jurisdictions. Table 1-6 shows the secured real property value by property type for the entire County. Table 1-7 shows the secured real property value by jurisdiction.

Table 1-6 2024 and 2025 Sacramento County Planning Area Distribution of Value by Property Type*

	Parcel Count				Assessed Values			
Property Type	**2025**	**2024**	**# Change**	**% Change**	**2025**	**2024**	**$ Change**	**% Change**
Vacant Land - Residential	17,779	17,537	242	1.4%	3,029,446,307	2,971,136,056	58,310,251	2.0%
Single Family Residences	403,361	398,509	4,852	1.2%	158,529,254,756	149,312,255,173	9,216,999,583	6.2%
Condominiums	14,117	14,133	-16	-0.1%	3,530,595,758	3,402,565,243	128,030,515	3.8%
Manufactured Homes	8,238	8,219	19	0.2%	621,932,174	586,040,389	35,891,785	6.1%
Multi-Family 2 to 4 units	15,480	16,209	-729	-4.5%	6,107,762,624	6,093,148,576	14,614,048	0.2%
Agricultural	2,995	2,990	5	0.2%	1,867,597,249	1,895,693,833	-28,096,584	-1.5%
Multi-family 5 or more units	4,126	3,921	205	5.2%	20,134,337,215	18,830,697,760	1,303,639,455	6.9%
Commercial/Industrial	17,291	17,247	44	0.3%	47,173,618,584	46,201,336,725	972,281,859	2.1%
Vacant Commercial/Industrial Land	3,512	3,472	40	1.2%	1,919,862,850	1,822,783,958	97,078,892	5.3%
Oil, Gas, and Minerals	119	119	0	0.0%	58,848,234	58,863,134	-14,900	-0.0%
Church & Welfare Parcels	1,351	1,344	7	0.5%	2,709,513,286	2,215,841,155	493,672,131	22.3%
Common Area Parcels	3,520	3,435	85	2.5%	3,290,286	1,713,360	1,576,926	92.0%
Locally Assessed Utility Parcels (owned/leased)	567	566	1	0.2%	0	0	0	0.0%
Government Owned	8,249	8,104	145	1.8%	0	0	0	0.0%
Misc. Other	3,600	3,460	140	4.0%	265,510,761	251,514,463	13,996,298	5.6%
Totals	**504,305**	**499,265**	**5,040**	**1.0%**	**245,951,570,084**	**233,643,589,825**	**12,307,980,259**	**5.3%**

Source: Sacramento County Assessor's Office – 2025 Assessor's Annual Report
*Values are gross totals (land, improvements, fixtures, and personal property) before exemptions

Table 1-7 Local Assessment Roll Totals by Jurisdiction 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

1.4 Plan Organization

The 2026 Sacramento County LHMP Update is organized as follows:

- Chapters
  - ✓ Chapter 1: Introduction
  - ✓ Chapter 2: Community Profile
  - ✓ Chapter 3: Planning Process
  - ✓ Chapter 4: Risk Assessment
  - ✓ Chapter 5: Mitigation Strategy
  - ✓ Chapter 6: Plan Adoption

- ✓ Chapter 7: Plan Implementation and Maintenance

- Annexes
  - ✓ Annex Prelude
  - ✓ Annex A: City of Citrus Heights
  - ✓ Annex B: City of Elk Grove
  - ✓ Annex C: City of Folsom
  - ✓ Annex D: City of Galt
  - ✓ Annex E: City of Rancho Cordova
  - ✓ Annex F: City of Sacramento
  - ✓ Annex G: American River Flood Control District
  - ✓ Annex H: Citrus Heights Water District
  - ✓ Annex I: Cosumnes Community Services District/Fire
  - ✓ Annex J: Los Rios Community College
  - ✓ Annex K: Reclamation District 800
  - ✓ Annex L: Reclamation District 1000
  - ✓ Annex M: Sacramento County Water Agency
  - ✓ Annex N: Sacramento Metro Fire District
  - ✓ Annex O: Sacramento Area Sewer District
  - ✓ Annex P: Southgate Recreation and Park District
  - ✓ Annex Q: Twin Rivers Unified School District
  - ✓ Annex R: Delta Annex
    - Delta Annex Chapter 1: City of Isleton
    - Delta Annex Chapter 2: Brannan Andrus Levee Maintenance District (Reclamation Districts 317, 407, 2067)
    - Delta Annex Chapter 3: Reclamation District 3
    - Delta Annex Chapter 4: Reclamation District 341
    - Delta Annex Chapter 5: Reclamation District 349
    - Delta Annex Chapter 6: Reclamation District 369
    - Delta Annex Chapter 7: Reclamation District 551
    - Delta Annex Chapter 8: Reclamation District 554
    - Delta Annex Chapter 9: Reclamation District 556
    - Delta Annex Chapter 10: Reclamation District 563
    - Delta Annex Chapter 11: Reclamation District 1002
    - Delta Annex Chapter 12: Reclamation District 1601
    - Delta Annex Chapter 13: Reclamation District 2111
    - Delta Annex Chapter 14: Delta Region Geologic Hazard Abatement District

- Appendices
  - ✓ Appendix A: Planning Process
  - ✓ Appendix B: References
  - ✓ Appendix C: Mitigation Strategy
  - ✓ Appendix D: Adoption Resolution
  - ✓ Appendix E: Threatened and Endangered Species
  - ✓ Appendix F: Public Survey
  - ✓ Appendix G: FEMA National Risk Index
  - ✓ Appendix H: Hazus Reports
  - ✓ Appendix I: FIS Flood Events
  - ✓ Appendix J: Repetitive Loss Area Analysis
  - ✓ Appendix K: Watershed Management Plan

The **Base Plan** provides the overall framework for this multi-jurisdictional LHMP. It is the umbrella document that includes the planning process, methodologies, and process requirements for all participating jurisdictions (i.e., unincorporated County and all Jurisdictional Annexes). As such, Chapters 1-7 of the Base Plan apply to the unincorporated County, the seven incorporated communities, and the 24 special Districts as participants to this LHMP Update seeking FEMA approval of the Plan. Because this is a multi-jurisdictional plan, the Base Plan addresses the LHMP hazard mitigation planning elements specific to the Sacramento County Planning Area which includes data, information and analysis specific to all participating jurisdictions and also includes data, information, and analysis specific to unincorporated Sacramento County.

The **Jurisdictional Annexes** detail the hazard mitigation planning elements specific to each additional participating jurisdiction to this Sacramento County LHMP Update. Each annex is not intended to be a standalone document, but appends to, supplements, and incorporates by reference the information contained in the Base Plan document. As such, all Chapters 1-7 of the Base Plan, including the planning process and other procedural requirements and planning elements apply to and were met by each participating jurisdiction. The annexes provide additional information specific to each participating jurisdiction, with a focus on providing additional details on the risk assessment and mitigation strategy.

The **Appendices** provide additional information, data, and planning process documentation that applies to all participating jurisdictions (i.e., unincorporated County and all jurisdictional annexes) to this Sacramento County LHMP Update.

Chapter 2 What's New

44 CFR §201.6(d)(3) and §201.7(d)(3): A local jurisdiction must review and revise its plan to reflect changes in development, progress in local mitigation efforts, and changes in priorities, and resubmit it for approval within 5 years in order to continue to be eligible for mitigation project grant funding.

The previous 2021 Local Hazard Mitigation Plan (LHMP), being updated as part of this 2026 Sacramento County LHMP Update, contained descriptions of planning processes, the risk assessments of identified hazards, and mitigation strategies for reducing the risk and vulnerability from these hazards. Since approval of the 2021 Sacramento County LHMP by FEMA, progress has been made on implementation of the 2021 mitigation strategies, as applicable by the respective participating jurisdictions. As part of this LHMP Update, a thorough review and update of the 2021 LHMP was conducted to ensure that this 2026 Sacramento County LHMP Update reflects current conditions and priorities in order to realign the updated mitigation strategy for the forthcoming five-year planning period. This chapter of the 2026 LHMP Update includes the following:

- **What's New in the LHMP Update**. Section 2.1 provides an overview of the approach to updating the previous LHMP and identifies new analyses, data and information included in this LHMP Update to reflect current community conditions. This includes a summary of new hazard and risk assessment data as it relates to the Sacramento County Planning Area and participating jurisdictions as well as information on current and future development trends affecting hazard vulnerability and related issues. The actual updated data, discussions, and associated analyses are contained in their respective sections within this LHMP Update.
- **Summary of Significant Changes to Current Conditions, Planning Area Vulnerability, and Hazard Mitigation Program Priorities**. Section 2.2 provides a summary of significant changes in current conditions, changes in hazard vulnerability, and resulting modifications to the Sacramento County hazard mitigation program priorities.
- **2021 Mitigation Strategy Status and Successes**. Section 2.3.2 provides a description of the status of mitigation actions from the 2021 LHMP and also indicates whether a project is no longer relevant or is recommended for inclusion in the updated mitigation strategy. This section also highlights key mitigation success stories since the 2021 LHMP.

This What's New chapter provides documentation of Sacramento County Planning Area's progress or changes in risk and vulnerability to hazards and overall hazard mitigation programs since their previous plans. Completion of this LHMP Update further provides documentation of the participating jurisdictions to this Sacramento County Planning Area's continued commitment and engagement in the hazard mitigation planning process.

2.1 What's New in the Plan Update

Preparing the 2026 LHMP Update involved a comprehensive review and update of each section of the 2021 LHMP and includes an assessment of the success of the participating jurisdictions in evaluating, monitoring, and implementing the mitigation strategy outlined in the 2021 LHMP. Only the information

and data still valid from the 2021 LHMP was carried forward as applicable into this LHMP Update. In addition, new information obtained from the County, each city, and each special district or agency to this LHMP Update were also integrated as appropriate.

Also to be noted, Chapter 7 Implementation and Maintenance of this LHMP Update identifies key requirements for updating future plans:

- Consider changes in vulnerability due to action implementation of mitigation actions;
- Document success stories where mitigation actions have proven effective;
- Document areas where mitigation actions were not effective;
- Document any new hazards that may arise or were previously overlooked;
- Incorporate new data or studies on hazards and risks;
- Incorporate new capabilities or changes in capabilities;
- Incorporate growth and development-related changes to inventories; and
- Incorporate new recommended mitigation actions or changes in the prioritization of mitigation actions.

These requirements and others as detailed throughout this Plan were addressed during this LHMP Update process.

As part of the comprehensive review and update of each section for this 2026 LHMP Update, the County, cities, and all participating jurisdictions recognized that updated data, if available, would enhance the analysis presented in the risk assessment and utilized in the development of the updated mitigation strategy. Highlights of new data used for this LHMP Update are identified below and also sourced in context within both the Chapter 4 Risk Assessment and the jurisdictional annexes. Sources of specific data used are also provided throughout this LHMP Update and included in Appendix D References. This new data and associated analyses contributed to the development of the updated risk assessment and mitigation strategy presented in Chapter 4 and Chapter 5 of this LHMP Update, as well as within the jurisdictional annexes to this Plan.

Highlights of new information and analyses contained in this LHMP Update includes the following:

- TO BE COMPLETED

2.2 Summary of Significant Changes to Current Conditions, Planning Area Vulnerability, and Hazard Mitigation Priorities

This section provides a summary by hazard of significant changes in current conditions and Sacramento County and each participating jurisdiction's hazard vulnerabilities and resulting modifications to the their mitigation program priorities since the 2021 LHMP. As a result of this analysis of factors resulting in changes in community vulnerability since the last Plan, mitigation planning priorities were modified by the County and each participating jurisdiction as reflected in each jurisdictions' 2026 lists of priority hazards of concern, LHMP goals and objectives, and the new list and prioritization of mitigation actions and projects for this 2026 LHMP Update.

PLACE AFTER FINAL MEETINGS

2.3 2021 LHMP Mitigation Strategy Successes and Status

Sacramento County and the participating jurisdictions successfully implemented numerous mitigation actions identified in the 2021 LHMPs' mitigation strategies, thus working diligently towards meeting their 2021 Sacramento County goals and objectives, as follows:

- GOAL 1: Minimize risk and vulnerability of the Sacramento County community to the impacts of natural hazards, including consideration of the exacerbation of natural hazards and unique hazards due to climate change; and protect lives and reduce damages and losses to property, public health, economy, and the environment.
- GOAL 2: Provide protection for critical facilities, infrastructure, utilities, and services from hazard impacts, to include hardening and other efforts to establish redundancy and reliability, to prevent or minimize loss, and to facilitate recovery.
- GOAL 3: Enhance public outreach, education, awareness, and preparedness for all hazards to minimize hazard related losses and to include effective strategies for reaching underserved communities and vulnerable populations.
- GOAL 4: Increase community capabilities and leverage interagency and public-private coordination and resources to mitigate losses and to be prepared for, respond to, and recover from a disaster event.
- GOAL 5: Assure conformance to federal and state hazard mitigation initiatives and maximize potential for mitigation implementation.

2.3.1. Success Stories

Since the 2021 LHMP, significant progress has been made on the implementation of the 2021 mitigation strategies.. Beyond the mitigation strategy implementation from the 2021 LHMP, Sacramento County and the participating cities and special districts also continue to implement additional hazard mitigation measures not contained within the previous LHMP. This section highlights key mitigation successes implemented since the 2021 LHMP.

Sacramento County

The County noted the following mitigation success stories.

Extreme Heat Mitigation and Regional Collaboration

The 2021 LHMP identified extreme heat as a natural hazard affecting unincorporated Sacramento County and included a specific mitigation action to reduce the urban heat island effect through "cool communities" strategies, including increased tree planting, cool/green roofs, and cool/pervious pavements. Since adoption of the 2021 LHMP, the County has continued to advance this mitigation approach through climate resilience planning, policy development, and regional collaboration. In 2025, Sacramento County and the City of Sacramento partnered with the Urban Land Institute (ULI) through a Technical Assistance Panel to identify practical strategies for reducing extreme-heat risk, culminating in the One Heat: Advancing Heat Resilience report. The effort evaluated existing City and County policies, engaged multidisciplinary experts and stakeholders, and identified opportunities to expand shade, tree canopy, cool surfaces, and other heat-

resilience strategies. The recommendations are helping inform ongoing County work, including urban forestry, development standards, and pursuit of funding for extreme-heat mitigation projects.

Adoption of the Communitywide Climate Action Plan

In November 2024, the Sacramento County Board of Supervisors adopted the County's Communitywide Climate Action Plan (CAP), establishing a comprehensive framework for reducing greenhouse gas emissions and increasing resilience to climate-related hazards in the unincorporated county. The CAP includes a Climate Adaptation and Resilience Strategy based on the County's climate vulnerability assessment and identifies adaptation measures addressing increased temperatures and extreme heat, flooding and severe precipitation, drought, sea level rise, wildfire, and other climate-related impacts. Adoption of the CAP represents an important advancement in the County's hazard-mitigation capabilities by establishing Countywide strategies and implementation actions that complement the LHMP and integrate climate resilience into ongoing County planning and implementation activities.

City of Rancho Cordova

Pump Stations

In 2021, the City of Rancho Cordova's six drainage pump stations relied on only two backup generators during power outages. One permanent generator served Bear Hollow Pump Station, while a portable generator was stationed at Mills Tower Pump Station, which had the highest flood risk during an outage. Providing backup power to other stations required transporting the generator on a contractor's truck, coordinating an electrician for connection, and traveling through storm conditions and potentially flooded streets.

To address this vulnerability, the City of Rancho Cordova submitted a FEMA Hazard Mitigation Grant Program application in 2021 and was awarded funding in 2022. By February 2025, four new generators (an example is shown on Figure 2-1) were installed, tested, and operational. As a result, all six City drainage pump stations now automatically transfer to standby power during an outage, eliminating reliance on transporting and manually connecting a shared generator. The completed project significantly improves the reliability and resilience of the City's drainage system, helping ensure continuous flood protection for residents, businesses, and property during storms and power outages.

Figure 2-1 Generator Delivery at Sunriver Pump Station (10000 Yukon River Way) and Final generator installation at Sunriver Pump Station



Source: City of Rancho Cordova

American River Flood Control District

Arcade Creek Erosion Repair Project

The Arcade Creek Erosion Repair Project was completed in October 2022. District staff was able to conduct the rip-rap revetment slope construction with in-house labor and some rental equipment. Engineering support from MBK Engineers helped develop the plans and obtain permitting. Rock revetment material was obtained from a local quarry. The entire project was competed with District funds only.

Cosumnes Community Services District/Fire

Planning

Since the 2021 LHMP was adopted, CSD/Fire has continued work on vegetation management, public education and outreach, mutual aid, staffing and resource planning, and facility and infrastructure improvements. Hazard mitigation is also considered through the Fire Department Strategic Plan and the Capital Improvement Program.

The Fire Department's 2022–2027 Strategic Plan addresses emergency response, community risk reduction, preparedness, personnel, infrastructure, resources, and communications. It is coordinated with the District

Strategic Plan and other District planning documents. The current CIP includes 123 projects totaling approximately $226 million, including fire-facility projects.

SacSewer

Develop Climate Adaptation and Resiliency Plan:

SacSewer successfully completed its Climate Adaptation and Resilience Plan (CARP) in 2026, delivering on a key strategic goal of investing strategically in environmental sustainability in the district's 10 Year Strategic Plan and fulfilling a mitigation action from the 2021 LHMP Update. Guided by the CARP's vulnerability assessment, SacSewer developed 11 coordinated adaptation and resilience strategies that collectively strengthen the agency's preparedness for future climate conditions. These strategies range from improving data and interagency partnerships to advancing planning, design, and capital investments that protect critical wastewater infrastructure. Finalization of the CARP marks a major milestone in SacSewer's long term resilience efforts, and implementation of the strategies will be an ongoing, multi year commitment.

GHG Emissions Inventory

In 2025, SacSewer completed an updated greenhouse gas (GHG) emissions inventory using 2023 data for the entire agency. This effort fulfilled a mitigation action identified in the 2021 LHMP Update and supported the CARP. Updating the inventory allows SacSewer to better understand its emissions profile and identify the areas that contribute most to the overall emissions output. The 2023 inventory revealed that SacSewer's fleet is the largest source of Scope 1 emissions, while purchased energy accounts for the district's largest Scope 2 emissions. This updated inventory provides a clearer baseline for future reduction strategies and strengthens SacSewer's long term climate resilience planning. It is recommended that SacSewer update its GHG emissions inventory every 3 years.

EchoWater Facility

In 2023, SacSewer completed the EchoWater Project, an upgrade to the Sacramento Regional Wastewater Treatment Plant. The project was finished on schedule and under budget, resulting in one of the nation's largest and most advanced tertiary treatment facilities. With its new Biological Nutrient Removal system, SacSewer now removes 99 percent of ammonia and 89 percent of nitrogen from treated wastewater. This major improvement significantly reduces nutrient loads to the Sacramento San Joaquin Delta, supporting long term water quality and ecosystem health. The upgraded treatment process also produces a reliable, drought resistant recycled water supply that supports agriculture and habitat conservation through the Harvest Water program. Completion of EchoWater Facility strengthens long term resilience by providing a sustainable recycled water resource and significantly improving nutrient management across the service area.

Figure 2-2 Aerial View of EchoWater Project Upgrades



Source: SacSewer

Twin Rivers Unified School District

HVAC Projects

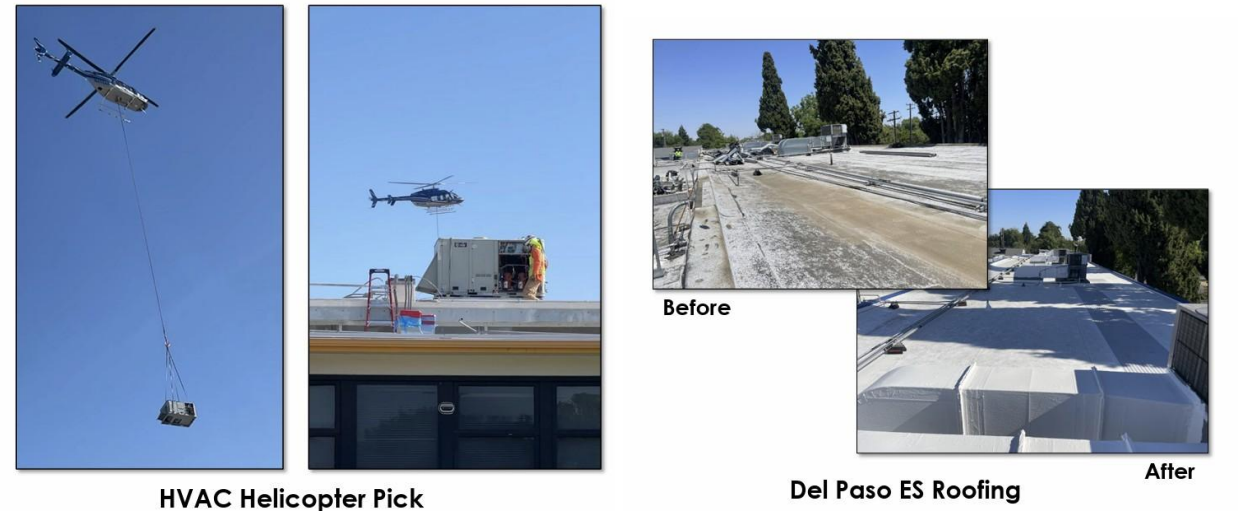
Since the 2021 LHMP, Twin Rivers Unified School District (TRUSD) has completed substantial facility improvements that strengthen the resilience of its schools to extreme heat, heavy rain, and severe storms. As documented in the District's June 2026 Citizens' Bond Oversight Committee report, TRUSD has completed approximately $29.4 million in HVAC and roofing improvements across numerous school sites.

Completed HVAC improvements have increased the District's ability to maintain safe indoor temperatures during periods of extreme heat and have reduced reliance on temporary cooling measures and emergency repairs. Completed roofing projects have replaced or rehabilitated aging roofing systems at multiple campuses, reducing vulnerability to water intrusion and building damage during heavy rain and severe storm events.

These investments are particularly important because TRUSD serves a large student population, including students who may be especially vulnerable to extreme temperatures and disruptions to school operations. The improvements also protect the District's more than $1.14 billion in public facilities and infrastructure and support continuity of instruction during increasingly frequent extreme-weather events.

The District continues to incorporate HVAC, roofing, drainage, and other resilience improvements into its capital improvement and facilities planning programs.

Figure 2-3 TRUSD HVAC and Roofing Improvements



Source: TRUSD

2.3.2. 2021 Mitigation Strategy Update

The 2021 LHMP contained 303 separate mitigation actions and projects from the 2021 participating jurisdictions. These have been combined below. Of these, X are complete, X are ongoing, and X have not been started. X 2021 actions have been identified for inclusion in this LHMP Update and have been carried forward in Chapter 5, along with new mitigation actions and projects identified for this 2026 Update.

Table 2-1 provides a status summary of the mitigation actions and projects from the 2021 LHMP.

NEED CITY OF SAC, CITY OF ISLETON, BALMD,AND RD 554 STATUS

Table 2-1 Sacramento County Planning Area 2021 LHMP: Mitigation Action Status Summary

Action Title	Complete	Ongoing	Not Yet Started	In 2026 Update*
Sacramento County				
All Hazard Actions				
Action 1. Integrate Local Hazard Mitigation Plan into Safety Element of General Plan	X			N
Action 2. Public Education and Awareness of Natural Hazards and Public Understanding of Disaster Preparedness		X		Y
Action 3. County-wide Mass Care and Shelter Plan Update	X			N
Action 4. County-wide Evacuation Annex Update	X			N
Action 5. Evacuation Planning Countywide		X		Y
Action 6. Expand Broadband/Wifi Access		X		Y
Climate Change and Pandemic Actions				
Action 7. Implement and improve telecommuting and remote work access for County operations		X		Y

Action Title	Complete	Ongoing	Not Yet Started	In 2026 Update*
Action 8. Implement the actions contained within the Sacramento County Climate Action/Adaptation Plan		X		Y
Action 9. Develop and incentivize carbon sequestration plans and programs		X		N
Action 10. Update the Sacramento County Climate Action for carbon neutrality by 2030	X			N
Dam Failure, Earthquake (and liquefaction), Flood: 1%, 0.5%, 0.2% annual chance, Flood: Localized Flood, Levee Failure, Subsidence, and Severe Weather: Heavy Rains and Storms Actions				
Action 11. Bicycle/pedestrian bridge across Discovery Park connecting Garden Highway to the Jibboom Street bridge			X	Y
Action 12. Acquire Floodprone Properties		X		Y
Action 13. Maintain and improve railroad embankment levee from south of Freeport to south of Hood, a reach owned by CA Parks Department (Railroad Museum)			X	Y
Action 14. McCormack Williamson flood control weir	X			N
Action 15. Flood risk mitigation for mobile home and recreational vehicle parks		X		Y
Action 16. Plan for Public Information (PPI)		X		Y
Action 17. Mitigation of repetitive loss flood areas and properties		X		Y
Action 18. Flood risk mapping		X		Y
Action 19. Storm Ready		X		Y
Action 20. Alder Creek flood hazard mitigation		X		Y
Action 21. Operational protocol for American River pump stations that are affected by the reoperation of Folsom Dam		X		N
Action 22. Arcade Creek flood control	X			N
Action 23. Beach Stone Lakes area flood risk reduction program		X		Y
Action 24. Protect critical facilities from flooding		X		Y
Action 25. Dam Safety (Activity 630)		X		Y
Action 26. Flood fighting for Delta legacy communities: Hood, Courtland, Locke, Walnut Grove		X		N
Action 27. Implement Delta Small Communities		X		Y
Action 28. Elevate houses to reduce flood risk		X		Y
Action 29. Flood emergency management exercises		X		Y
Action 30. Flood evacuation mapping		X		Y
Action 31. Floodproofing non-residential structures		X		Y
Action 32. Flood insurance studies (modeling and mapping the special flood hazard area)		X		N
Action 33. Update Hydrology Standards		X		Y
Action 34. Laguna Creek flood control, modeling, and mapping		X		N
Action 35. Update County GIS aerial photography and LiDAR topography		X		Y

Action Title	Complete	Ongoing	Not Yet Started	In 2026 Update*
Action 36. Maintain and improve Sacramento River levee from south of Freeport to south of Hood, a reach owned and operated by CA DWR Maintenance Area 9		X		Y
Action 37. Use existing Aggregate Mining Pits for Flood Control		X		N
Action 38. Implement Storm Drain Capital Improvement Plan		X		Y
Action 39. Woodside Condominiums Flood Risk Reduction			X	N
Action 40. Implement Actions In The Courtland Flood Risk Reduction Plan 2021			X	N
Action 41. Implement Actions In The Walnut Grove West Flood Risk Reduction Plan 2021			X	N
Action 42. Implement Actions In The Locke Flood Risk Reduction Plan 2021			X	N
Drought & Water Shortage, Severe Weather: Extreme Heat, and Wildfire Actions				
Action 43. Reduce the urban heat island effect through the implementation of "cool communities" strategies, including but not limited to, increasing tree plantings, using cool/green roofs and cool/pervious pavements		X		N
Action 44. Defensible Space and Vegetation Management; Development of Areas of Refuge			X	Y
Action 45. Wildfire Suppression - Regional Parks and Open Space (urban interface)		X		N
Action 46. Wildfire Fighting - Support		X		Y
Action 47. Wildfire Suppression		X		Y
Severe Weather: Extreme Cold and Freeze and High Wind and Tornado Actions				
Action 48. Establish Warming Centers with Backup Power			X	Y
City of Citrus Heights				
Action 1. Integrate Local Hazard Mitigation Plan into Safety Element of General Plan		X		Y
Action 2. Enhance Public Education and Awareness of Natural Hazards and Public Understanding of Disaster Preparedness		X		Y
Action 3. Cable Trellis w/ Vines Shading Project		X		Y
Action 4. Trash Racks and Debris Cages Project		X		Y
Action 5. Protection of Transportation Infrastructure Project		X		N
Action 6. Neighborhood Storm Drain Project		X		Y
Action 7. Neighborhood Storm Drain Master Plan		X		Y
Action 8. Storm Drain Inlet Retrofit Project		X		N
Action 9. Reduce Citrus Heights extreme heat events and associated hazards by Increase tree planting/canopy preservation/enhancement (this is in general plan) Project		X		Y
Action 10. Increase pedestrian and bicycle evacuation routes by constructing regional bike/pedestrian trail infrastructure, and expanding connection to neighborhoods (particularly in vulnerable areas) Project		X		Y
Action 11. Interconnected Transportation System Project		X		Y
Action 12. Critical Facility Generator Project			X	Y

Action Title	Complete	Ongoing	Not Yet Started	In 2026 Update*
Action 13. Critical Street Floodproofing Project			X	N
Action 14. Creek Maintenance and Restoration Project		X		Y
Action 15. CMP Storm Drain Replacement Project		X		N
City of Elk Grove Actions				
Action 1. Integrate Local Hazard Mitigation Plan into Safety Element of General Plan		X		Y
Action 2. Enhance Public Education and Awareness of Natural Hazards and Public Understanding of Disaster Preparedness		X		Y
Action 3. Elk Grove Green Street Project: Repurposing Urban Runoff with Green Instructure Technologies			X	N
Action 4. Mutual Aid Agreements		X		Y
Action 5. City of Elk Grove's Storm Drainage Master Plan (SDMP)		X		Y
Action 6. Create a Climate-Smart Stormwater Management System		X		Y
Action 7. Implement a Comprehensive and Climate-Smart Green Infrastructure Strategy		X		Y
Action 8. Upgrade the City's Laguna West Levee System to Mitigate Climate-Related Flood Impacts		X		Y
Action 9. Establish a Resilient Pedestrian and Bicycle Infrastructure Network		X		Y
City of Folsom Actions				
Action 1. Integrate Local Hazard Mitigation Plan into Safety Element of General Plan		X		Y
Action 2. Enhance Public Education and Awareness of Natural Hazards and Public Understanding of Disaster Preparedness		X		Y
Action 3. Redevelopment Area Drainage Improvements		X		Y
Action 4. Stormwater Basin Maintenance and Operation Project		X		Y
Action 5. Stormwater Utility Fee		X		Y
Action 6. Fuel Reduction and Modification		X		Y
Action 7. Comprehensive Cooling City Strategy			X	N
Action 8. Identification and Upgrades to Heating and Cooling Centers	X			N
Action 9. Landscape and Irrigation Modifications		X		N
Action 10. Landscape Ordinance and Model Water Efficient Landscape Ordinance Implementation	X			N
Action 11. Post Disaster Staff Training			X	N
Action 12. Weed Abatement Program		X		Y
City of Galt Actions				
Action 1. Integrate Local Hazard Mitigation Plan into Safety Element of General Plan		X		Y
Action 2. Enhance Public Education and Awareness of Natural Hazards and Public Understanding of Disaster Preparedness		X		Y

Action Title	Complete	Ongoing	Not Yet Started	In 2026 Update*
Action 3. Future Development Projects shall complete a Climate Action Plan Consistency Review Checklist.	X	X		Y
Action 4. Develop a Robust Geographic Based System (GIS) to Geographically Locate Issues/Actions/Mitigation in the City.	X	X		Y
Action 5. Perform Vegetative Control of City Drainages and Channels by Natural Methods		X		Y
Action 6. Continue Work with the Other Groundwater Sustainability Agencies (GSAs) in the Cosumnes Subbasin of the San Joaquin Valley Basin (DWR Basin No. 5-022.16) who are Working Together to Develop a Single Groundwater Sustainability Plan (GSP).		X		Y
Action 7. Increase Resiliency of City Critical Infrastructure and Emergency Operations and against Hazards.		X		Y
Action 8. Maintain City Drainages, Channels and Open Spaces		X		Y
City of Isleton Actions				
Action 1. Integrate Local Hazard Mitigation Plan into Safety Element of General Plan				Y
Action 2. Enhance Public Education and Awareness of Natural Hazards and Public Understanding of Disaster Preparedness				Y
Action 3. Support climate change mitigation laws				Y
Action 4. Support drought mitigation laws. Establish RWIP (Redundant Water for Isleton Plan)				N
Action 5. Levee Reinforcement Projects				Y
Action 6. Implement IFIP (Isleton Flood Improvement Plan) and create and activate IFMA (Isleton Flood Management Agency)				Y
Action 8. Activate Emergency Operation Plan (Cooling Center)				N
Action 9. Storm Water Runoff Rehabilitation Project				N
Action 10. Wastewater Treatment Plant Pond Levee Elevation Raise to 200-year Flood Standard				N
City of Rancho Cordova				
Action 1. Integrate Local Hazard Mitigation Plan into Safety Element of General Plan	X			X
Action 2. Enhance Public Education and Awareness of Natural Hazards and Public Understanding of Disaster Preparedness		X		X
Action 3. Sunrise Blvd Widening Kiefer to Jackson		X		X
Action 4. City of Rancho Cordova Disaster Debris Management Plan	X			
Action 5. Transportation Interconnectivity	X			
Action 6. Intergovernmental Agreement between the County of Sacramento and the City of Rancho Cordova	X			
Action 7. Land Use (Long Range)		X		X
Action 8. Post disaster training for staff		X		X
Action 9. Update/Maintain Emergency Operation Plans (EOPs)		X		X
Action 10. Increase Everbridge Enrollment	X			

Action Title	Complete	Ongoing	Not Yet Started	In 2026 Update*
Action 11. Developing and maintaining a database to track community vulnerability		X		X
Action 12. Landscape and Irrigation Requirements/Retro	X			
Action 13. Landscape Ordinance and Model Water Efficient Landscape Ordinance Implementation		X		X
Action 14. Restrict Impervious Surfaces in Front Yards		X		X
Action 15. Porous pavement and vegetative buffers		X		X
Action 16. Storm Water Pump Station Generator Purchase and Infrastructure Upgrades	X			
Action 17. SB-5 Urban Level of Flood Protection	X			
Action 18. Channel Vegetation Management and Erosion Control Projects		X		X
Action 19. Adoption of Hydromodification and Low Impact Development (LID) Standards	X			
Action 20. Implement Projects in the Stormwater Capital Improvement Program Master Plan		X		X
Action 21. Sunrise Blvd. & Monier Circle Drainage Improvements		X		X
Action 22. Roundabouts		X		X
Action 23. Dam Failure Mitigation and Preparedness for Evacuations		X		X
Action 24. Wildfire Weed Reduction and Resiliency		X		X
City of Sacramento Actions				
Action 1. Integrate Local Hazard Mitigation Plan into Safety Element of General Plan		X		Y
Action 2. Enhance Public Education and Awareness of Natural Hazards and Public Understanding of Disaster Preparedness		X		Y
Action 3. Coordination with Relevant Organizations and Agencies to Consider the Impacts of Urbanization and Climate Change on Long-Term Natural Hazard Safety		X		N
Action 4. Maintain and Identify Changes in Critical Facilities GIS Layer to Support Emergency Management Efforts		X		N
Action 5. Community Outreach on Multi-Hazard Preparation & Pre-mitigation		X		Y
Action 6. Evaluation and Mitigation of Critical Facilities in Identified Hazard Areas		X		Y
Action 7. Retrofit of Repetitive Loss Properties		X		Y
Action 8. Safeguard Essential Communication Services		X		Y
Action 9. Multi-lingual Disaster Education			X	N
Action 10. Cal OES Safety Assessment Program Evaluators		X		Y
Action 11. National Flood Insurance Program & Community Rating System Continuation		X		Y
Action 12. Develop a Master Generation Plan for Pump Stations		X		N
Action 13. Develop a Disaster Housing Plan		X		Y

Action Title	Complete	Ongoing	Not Yet Started	In 2026 Update*
Action 14. Disaster Resistant Business Program		X		N
Action 15. Develop Enhanced Emergency Planning for Special Needs Populations in the City of Sacramento Emergency Operations Plan and Other Planning Documents		X		Y
Action 16. Establish a Post-Disaster Action Plan		X		Y
Action 17. Flood Recovery Plan		X		Y
Action 18. Public Information Flood Response Plan (Action #18 from 2016)			X	N
Action 19. Construction of a New Emergency Operation Center (EOC) (Action 19 from 2016 plan)		X		N
Action 20. Emergency Operation Center (EOC) Expansion and Information Technology Upgrade (Action 20 from 2016 plan)		X		N
Action 21. Protection of Transportation Infrastructure (Action 21 from 2016 plan)		X		N
Action 22. Public Education Campaign for Everbridge System (Action 22 from 2016 plan)		X		Y
Action 23. Regional Emergency and Disaster Preparedness Exercises to Test Operational & Emergency Plans (Action 23 from the 2016 plan)		X		Y
Action 24. Special Needs and Critical Facilities Database and Advanced Warning System (Action 24 from 2016 plan)		X		Y
Action 25. Asset Inventory		X		Y
Action 26. Protection of City Information Technology Infrastructure (Action 27 from 2016 plan)		X		N
Action 27. Travel Time Model for Lower American and Sacramento Rivers and their Major Tributaries (Action 29 from 2016 plan)			X	N
Action 28. Watershed Spill Contamination to Drinking Water Quality: Preparedness for Events and Recovery		X		Y
Action 29. Purchase Drones for Use in Disaster Preparedness, Mitigation, and Response		X		Y
Action 30. Map and Assess Vulnerability to Sea Level Rise (Action 32 from 2016 plan)				N
Action 31. Emission Study of City Sump and Pump Stations (Action 33 from 2016 plan)			X	N
Action 32. Climate Change Mitigation Actions/Climate Change Adaptation Plan for Drinking Water Quality (Action 34 from 2016 plan)		X		N
Action 33. Harmful Algal Bloom (HAB) Surveillance and Response Planning (Action 35 from 2016 plan		X		Y
Action 34. Perform a Groundwater Recharge Feasibility Study (Action 37 from 2016 plan)		X		N
Action 35. Retrofit Historical Buildings		X		Y
Action 36. Heating Centers in High Priority Locations		X		N
Action 37. Cooling Centers in High Priority Locations		X		Y
Action 38. Extreme Weather Outreach Strategy		X		Y

Action Title	Complete	Ongoing	Not Yet Started	In 2026 Update*
Action 39. Severe Weather Action Plan		X		Y
Action 40. Coordinate with Stakeholder on Proposed Flood Control Project on Magpie Creek		X		Y
Action 41. Adopt Additional Floodplain Development Standards		X		Y
Action 42. Drainage Projects for Repetitive Loss Properties		X		Y
Action 43. Emergency Notification and Evacuation Planning		X		Y
Action 44. Historic Magpie Creek	X			N
Action 45. Natomas Internal Drainage Canals/Levees		X		Y
Action 46. Drainage Projects from the City's Priority Drainage Project List		X		Y
Action 47. Projects Identified in the Combined Sewer System Improvement Plan Update		X		N
Action 48. Easements for Open Land Along Levees		X		Y
Action 49. Emergency Management Planning and Levee Security		X		Y
Action 50. Flood Fighting Equipment		X		Y
Action 51. Flood Management Land Use Planning and Development		X		Y
Action 52. Florin Creek Pump at Pomegranate Avenue		X		Y
Action 53. Internal Drainage System Improvements		X		Y
Action 54. Levee and Structural Flood Management Improvements		X		Y
Action 55. Master planning to identify facilities needed to prevent 10-year event street flooding and 100-year event structure flooding		X		N
Action 56. Retrofit Pumping Plans with Discharge Monitoring Devices		X		Y
Action 57. Risk Communication and NFIP/CRS Projects		X		Y
Action 58. Trash Racks and Debris Cages		X		N
Action 59. Multi-Jurisdictional Modeling for Drainage Watersheds Greater than 10 Square Miles		X		Y
Action 60. Post-Flood Water Treatment Facility Recovery		X		Y
Action 61. Tree Trimming & Debris Removal		X		Y
Action 62. Install redundancies and Loop Feeds for Power Lines & Infrastructure	X			N
Action 63. Stabilization of Erosion Hazard Areas		X		Y
Action 64. Implement a Fire Education and Information Program		X		Y
Action 65. Fuels Reduction on the American River Parkway		X		Y
Action 66. Outreach on the Effects of Smoke on Air Quality		X		Y
Action 67. Implement 2040 Climate Action and Adaptation Plan		X		Y
American River Flood Control District Actions				
Action 1. Arcade Creek Erosion Repair Project	X			N
Action 2. American River Emergency Rock Revetment Preparedness Stockpile		X		Y
Action 3. Highway 160 Bridge Gap Levee Access		X		N

Action Title	Complete	Ongoing	Not Yet Started	In 2026 Update*
Citrus Heights Water District Actions				
Action 1. Implement ASR Technology		X		Y
Action 2. Construction of a New Storage Tank		X		Y
Action 3. Construction of a New Operations Building		X		N
Cosumnes Community Services District Actions				
Action 1. Drought Mitigation Planning		X		Y
Action 2. Enhance the District's Public Education, Awareness, and Outreach Program to Include all Hazards of Concern		X		Y
Action 3. Integrate the LHMP into Cosumnes CSD Strategic Plans		X		Y
Action 4. Wildfire Staffing		X		Y
Action 5. Mutual Aid Agreements		X		N
Action 6. Continue Vegetation Management Program		X		Y
Los Rios Community College				
Action 1. Pandemic Response Plan	X			N
Action 2. Emergency Operations Plan Update		X		N
Action 3. COVID-19 Education/Information Program	X			N
Action 4. Installing a Microgrid Project, at the Folsom Lake College, El Dorado Center (EDC) in Placerville, CA			X	N
Action 5. Backup Power for Police Dispatch	X			N
Action 6. Tree Mitigation – Districtwide		X		Y
RD 800 Actions				
Action 1. Reclamation District 800 Emergency Levee Repair Project	X			N
RD 1000 Actions				
Action 1. Asset Management Plan Update		X		Y
Action 2. Corporation Yard Improvements		X		Y
Action 3. Waterside Levee Inspection Capability		X		Y
Action 4. Pleasant Grove Area Levee Improvements	C			N
Action 5.Plant 1 Emergency Generator Natural Gas Conversion and Mobile Generators for Plants 2, ,3 and 5		X		Y
Action 6. Plant 8 Improvements		X		Y
Action 7. Expanded SCADA System		X		Y
Action 8. Update Emergency Operations Plan and Staffing		X		Y
Sacramento County Water Agency				
Action 1. Flood Hazard Mitigation		X		Y
Action 2. Improve Water Supply Portfolio		X		Y
Action 3. Seismic Upgrades		X		Y
Sac Metro Fire				
Action 1. Finalization and Implementation of Metro Fire's Community Risk Assessment and Associated Community Risk Reduction Plan		X		N

Action Title	Complete	Ongoing	Not Yet Started	In 2026 Update*
Action 2. Evaluation and Implementation of Measures Necessary to Mitigate Fire Stations that Would be Directly Affected by Dam Failure			X	N
Action 3. Modernization/Upgrade all District Facilities to Comply with Essential Services Code Requirements		X		Y
Action 4. Community Wildfire Protection Plan (CWPP) – Revision and Implementation of Resulting Changes			X	N
Action 5. Relocate the Essential Facilities in the 200 year Floodplain			X	N
Sacramento Regional Sanitation District				
Action 1. Develop Climate Change Resiliency Plan	X			N
Action 2. Replace current equipment with touchless technologies	X			N
Action 3. Complete I&I Study and Develop I&I Policy		X		Y
Action 4. Regional San Biogeneration Facility		X		Y
Action 5. Reduction of Fire Hazard of Regional San Bufferlands		X		Y
Action 6. Update GHG Emissions Inventory		X		Y
Action 7. Study Telecommute Options and Enhanced Information Technology Needs to Support Workforce	X			N
Sacramento Area Sewer District				
Action 1. Flood Control	X			N
Action 2. Pandemic Planning	X			N
Southgate Recreation and Park District				
Action 1. Drought Mitigation Actions/Drought Contingency Plan		X		Y
Action 2. Flood Mitigation Actions/Land Acquisition		X		Y
Action 3. Conservation Easements		X		Y
Action 4. Multi-jurisdictional Cooperation within Watersheds	X			Y
Action 5. Storm Water Management Practices – Implement Storm Water Management Practices as identified in Stormwater Quality Design Manual		X		Y
Action 6. Severe Weather: Heavy Rains and Storms Mitigation Actions/Tree Management		X		Y
Action 7. Integrate Local Hazard Mitigation Plan into District Master Plan		X		Y
Action 8. Covid-19 Response Plan	X			N
Twin Rivers School District				
Action 1. Reduce Risks to Property and Life due to Earthquake			X	N
Action 2. Reduce Risk to Flooding of Northern Area Schools		X		Y
Action 3. Stormdrain Upgrades/Revise and Update Districtwide Stormwater Prevention Plan		X		Y
Action 4. Prevent Loss of Life or Injury due to Extreme Heat		X		N
Action 5. Evacuation for Heavy Rains, Storms, Winds, and ALL Hazards		X		N
Action 6. Trees Trimmed/ Vegetation Removed to Minimize Impact During Fire Season		X		Y

Action Title	Complete	Ongoing	Not Yet Started	In 2026 Update*
BALMD				
Action 1. 2016 Sacramento County Flood Safety Plan (by GEI) and subsequent updating in 2021.				
Action 2. Regional Flood Management Plan Projects				
Action 3. Small Communities Plans – Flood Protection – Structural and Nonstructural Mitigation				
Action 4. 2021 Emergency Operations Plan (EOP) – Currently in development				
RD 3				
Action 1. 2017 and 2019 Storm Event Waterside Erosion Repairs		X		N
Action 2. FSRP Critical Erosion Repair	X			N
Action 3. Steamboat Slough Seepage Repairs		X		Y
Action 4. Interior Drainage Improvements		X		Y
Action 5. Relief Cut Plan		X		N
Action 6. Implement recommendations in West Walnut Grove Flood Risk Reduction Plan			X	N
Action 7. Addressing Unacceptable Items in the District's USACE Periodic Inspection Report		X		N
RD 341				
Action 1. San Joaquin River Multi-Benefit Project		X		Y
RD 349				
Action 1. 2017 and 2019 Storm Event Waterside Erosion Repairs		X		N
Action 2. Interior Drainage Improvements			X	Y
Action 3. Addressing Unacceptable Items in the District's USACE Periodic Inspection Report		X		N
Action 4. Relief Cut Plan		X		N
RD 369				
Action 1. Backup Power Project		X		Y
Action 2. Flood Safety Plan Updates, Training, and Exercises	X			N
Action 3. Small Communities Plans - flood protection - structural and nonstructural mitigation	X	X		Y
RD 551				
Action 1. 2017 and 2019 Storm Event Waterside Erosion Repairs		X		N
Action 2. FSRP Critical Seepage Repair			X	Y
Action 3. Addressing Unacceptable Items in the District's USACE Periodic Inspection Report		X		N
Action 4. Interior Drainage Improvements			X	Y
Action 5. Implement recommendations in Courtland Flood Risk Reduction Plan			X	N

Action Title	Complete	Ongoing	Not Yet Started	In 2026 Update*
RD 554				
Action 1. Small Communities Plans – Flood Protection – Structural and Nonstructural Mitigation				
Action 2. Disadvantaged Community Projects and subsequent updating in 2021.				
Action 3. 2016 Sacramento County Flood Safety Plan (by GEI) and subsequent updating in 2021.				
Action 4. 2021 Emergency Operations Plan (EOP) – Currently in development				
Action 5. Regional Flood Management Plan Projects				
RD 556				
Action 1. 2021 Emergency Operations Plan (EOP) – Currently in development		X		Y
Action 2. 2016 Sacramento County Flood Safety Plan (by GEI) and subsequent updating in 2021.	X			N
Action 3. Regional Flood Management Plan Projects	X			N
RD 563				
Action 1. Rock Slope Protection Project		X		Y
Action 2. Levee Geometry Levee Improvement Project		X		Y
Action 3. Levee Failure Repair Project	X			N
Action 4. Levee Seepage Repair Project		X		Y
Action 5. Backup Power Generator Project		X		Y
Action 6. Flood Exercise and Emergency Operations Plan Update	X			N
RD 1002				
Action 1.Regional Flood Management Plan Projects		X		Y
Action 2.2016 Sacramento County Flood Safety Plan (by GEI) and subsequent updating in 2021.	X			N
Action 3.2021 Emergency Operations Plan (EOP) – Currently in development	X			N
RD 1601				
Action 1. Levee Improvement Project		X		Y
Action 2. Rock Slope Protection Project		X		Y
Action 3. San Joaquin River Setback Levee		X		Y
Action 4. Backup Power Project	X			N
Action 5. Flood Safety Plan Updates, Training, and Exercises	X			N
RD 2111				
Action 1. Rock Slope Protection Project		X		Y
Action 2. Levee Improvement Projects		X		Y
Action 3. Overflow Weir Project			X	N
Action 4. Syphon Project		X		Y

Action Title	Complete	Ongoing	Not Yet Started	In 2026 Update*
Action 5. Backup Power Project		X		Y
Action 6. Flood Safety Plan Updates, Training, and Exercises	X			Y

* Actions and projects not carried forward were determined by the jurisdictions to be no longer feasible, relevant, lacked funding and local resources to implement, and/or no longer considered a priority.

Chapter 3 Planning Process

44 CFR §201.6(b) and §201.6(c)(1): An open public involvement process is essential to the development of an effective plan. In order to develop a more comprehensive approach to reducing the effects of natural disasters, the planning process shall include:
1) An opportunity for the public to comment on the plan during the drafting stage and prior to plan approval;
2) An opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, and agencies that have the authority to regulate development, as well as businesses, academia, and other private and nonprofit interests to be involved in the planning process; and
3) Review and incorporation, if appropriate, of existing plans, studies, reports, and technical information.
[The plan shall document] the planning process used to develop the plan, including how it was prepared, who was involved in the process, and how the public was involved.

Sacramento County, as the project lead, recognized the need for and importance of the update process for their 2021 LHMP and initiated its development. After receiving a grant from the Federal Emergency Management Agency (FEMA), which served as the primary funding source for this LHMP Update, Sacramento County contracted with Foster Morrison Consulting, Ltd. (Foster Morrison) to facilitate and develop the Plan. Jeanine Foster, a professional planner with Foster Morrison, was the project manager and Community Rating System (CRS) lead in charge of overseeing the planning process and the development of this LHMP Update. Chris Morrison, also a professional planner with Foster Morrison, was the lead planner for the development of this LHMP Update. The Foster Morrison's team's role was to:

- Assist in establishing the Hazard Mitigation Planning Committee (HMPC) as defined by the Disaster Mitigation Act (DMA);
- Meet the DMA requirements as established by federal regulations and following FEMA's planning guidance;
- Support objectives under the National Flood Insurance Program's (NFIP) CRS and the Flood Mitigation Assistance (FMA) program;
- Facilitate the entire planning process;
- Identify the data requirements that the HMPC participants could provide and conduct the research and documentation necessary to augment that data;
- Assist in facilitating the public input process;
- Produce the draft and final Plan documents; and
- Coordinate with the California Office of Emergency Services (Cal OES) and FEMA Region IX Plan reviews.

3.1 Local Government Participation

Sacramento County and the cities of Citrus Heights and Sacramento, as the three participating NFIP CRS communities, the other five incorporated communities, and 24 special districts, made a commitment to this 2026 Sacramento County Multi-Jurisdictional LHMP Update. The DMA planning regulations and

guidance stress that each local government (participating jurisdiction) seeking FEMA approval of their mitigation plan must participate in the planning effort in the following ways:

- Participate in the process as part of the HMPC;
- Detail where within the Sacramento County Planning Area the risk differs from that facing the entire area;
- Identify potential mitigation actions; and
- Formally adopt the Plan.

For all participating jurisdictions, "participation" meant the following:

- Attending and participating in the HMPC meetings;
- Completing and returning the Data Collection Worksheets;
- Collecting and providing other requested data (as available);
- Coordinating information sharing between internal and external agencies;
- Managing administrative details;
- Making decisions on LHMP process and content;
- Identifying mitigation actions for the Plan;
- Reviewing and providing comments on Plan drafts;
- Providing Draft documents of the LHMP for public review;
- Informing the public, local officials, and other interested stakeholders about the planning process and providing opportunity for them to comment on the draft Plan;
- Coordinating, and participating in the public input process; and
- Coordinating the formal adoption of the Plan by the governing boards for each jurisdiction.

The County and all jurisdictions seeking FEMA approval of this LHMP Update met all of these participation requirements. Multiple representatives from the County and all participating jurisdictions attended the HMPC meetings described in Table 3-5 and also brought together an internal planning team to help collect data, identify mitigation actions and implementation strategies, and review and provide data on Plan drafts. Appendix A provides additional information and documentation of the planning process.

In order to promote the integration of CRS into this planning process, the HMPC representatives from Sacramento County and the cities of Citrus Heights and Sacramento, as the three CRS communities, were selected based on their areas of expertise relative to the CRS mitigation categories as detailed in Table 3-1. In addition, the staff responsible for community land use and comprehensive planning for the three CRS communities, as well as for the other 5 incorporated communities, were active participants on the HMPC and provided data and information to support development of the Plan. Specifically, the planners for the three CRS communities, in association with Foster Morrison planners and other City community planners, were involved in the development of this LHMP Update through attendance at meetings, providing data and input on existing and future land use planning, and assisted with other LHMP planning elements. In addition to attending meetings, providing draft text for inclusion in the Plan, and reviewing Plan documents, County and City planners also provided information on development since the 2021 LHMP, mapping, text, and details on future development areas, input on current mitigation capabilities, and a variety of documents and information specific to their jurisdictions.

Table 3-1 Sacramento County Planning Area LHMP Staff Capability with Six Mitigation Categories

Jurisdiction/Departments	Prevention	Property Protection	Natural Resource Protection	Emergency Services	Structural Flood Control Projects	Public Information	Other
Sacramento County							
Kevin Siu, Floodplain Manager County Department of Water Resources	X	X	X	X	X	X	X
Antonio Augello, Assistant Planner Planning and Environmental Review | Long Range Planning	X	X	X		X	X	X
Matthew Hawkins County Office of Emergency Services	X	X	X	X	X	X	X
City of Citrus Heights							
Daniel Kehr, Principal Civil Engineer/Floodplain Manager General Services Department	X	X	X	X	X	X	X
Steffan Lui, Associate Planner Community Development Department	X	X	X			X	X
City of Sacramento							
KC Channakhone, Administrative Analyst Department of Utilities Engineering & Water Resources | Floodplain Management	X	X		X		X	X
Victor Randall, Senior Planner Long Range Planning	X	X	X		X	X	X

Specific individuals representing Sacramento County and the cities of Citrus Heights and Sacramento departments and other representatives from the participating jurisdictions to this Sacramento County LHMP Update were actively involved throughout the Plan development process as identified in Appendix A in the sign-in sheets for the meetings and as evident through the data, information and input provided by HMPC representatives to the development of this LHMP Update. This Chapter 3 and Appendix A provide additional information and documentation of the planning process and participants to this LHMP Update, including members of the steering and working committees, comprising the HMPC.

3.2 The 10-Step Planning Process

Foster Morrison established the planning process for updating the 2021 Sacramento County LHMP using the DMA planning requirements and FEMA's associated guidance. Specifically, the LHMP was developed pursuant to the requirements of DMA 2000, published at 44 CFR 201.6 and new LHMP Policy Guide effective April 11, 2025. This guidance is structured around a four-phase process:

1. Organize Resources;
2. Assess Risks;
3. Develop the Mitigation Plan; and
4. Implement the Plan and Monitor Progress.

Into this process, Foster Morrison integrated a more detailed 10-step planning process used for FEMA's CRS and FMA programs. Thus, the modified 10-step process used for this Plan meets the requirements of six major programs: FEMA's Hazard Mitigation Grant Program (HMGP); Pre-Disaster Mitigation (PDM) program; Building Resilient Infrastructure and Communities (BRIC), FMA Program; Severe Repetitive Loss (SRL) program; the NFIP's CRS program; and new flood control projects authorized by the U.S. Army Corps of Engineers (USACE).

Table 3-2 shows how the modified 10-step process fits into FEMA's four-phase process. The sections that follow describe each planning step in more detail.

Table 3-2 Mitigation Planning Processes Used to Develop the 2026 Sacramento County Local Hazard Mitigation Plan Update

DMA Process	Modified CRS Process
1) Organize Resources	
201.6(c)(1)	1) Organize the Planning Effort
201.6(b)(1)	2) Involve the Public
201.6(b)(2) and (3)	3) Coordinate with Other Departments and Agencies
2) Assess Risks	
201.6(c)(2)(i)	4) Identify the Hazards
201.6(c)(2)(ii)	5) Assess the Risks
3) Develop the Mitigation Plan	
201.6(c)(3)(i)	6) Set Goals
201.6(c)(3)(ii)	7) Review Possible Activities
201.6(c)(3)(iii)	8) Draft an Action Plan
4) Implement the Plan and Monitor Progress	
201.6(c)(5)	9) Adopt the Plan
201.6(c)(4)	10) Implement, Evaluate, and Revise the Plan

The LHMP Update involved a comprehensive review and update of each section of the 2021 LHMP and includes an assessment of the success of the County and all participating jurisdictions in evaluating, monitoring and implementing the mitigation strategies outlined in these previous plans, as described in more detail in Chapter 2 and throughout Chapter 4, Chapter 5, and Chapter 7.

The process followed to update the LHMP is detailed in the above table and the sections that follow and is in conformance with the latest DMA planning guidance, LHMP Policy Guide FP 206-21-0002 effective April 11, 2025, and the CRS 2025 Coordinator's Manual, as well as California initiatives, specifically SB

379 (Climate Change) and SB 1000 (Environmental Justice). As part of this LHMP Update, all sections of the Plan were reviewed and updated to reflect new data, processes, and resulting mitigation strategies. Only the information and data still valid from the 2021 LHMP were carried forward as applicable into this 2026 LHMP Update.

3.2.1. Phase 1: Organize Resources

Planning Step 1: Organize the Planning Effort

With each participating jurisdiction's commitment to participate in the DMA planning process and the CRS program as applicable, Foster Morrison worked with Sacramento County Department of Water Resources (County DWR), as overall project lead, to establish the framework and organization for development of the Plan. Early meetings were held with the County and key jurisdictional representatives to discuss the organizational and process aspects of this 2026 LHMP Update.

The initial kick-off meeting was held on December 3, 2025. Invitations to the kickoff meeting were extended to key County and City departments and special districts located within the Planning Area, as well as to other federal, state, and local stakeholders, including representatives from the public, which might have an interest in participating in the planning process. Representatives from the HMPC members to the 2021 LHMP and other identified stakeholders were used as a starting point for the invite list, with additional invitations extended as appropriate throughout the planning process. The list of invitees is included in Appendix A.

Hazard Mitigation Planning Committee

The HMPC was established as a result of these initial meetings, as well as through interest generated through the initial public meeting and outreach conducted for this project as detailed later in this chapter. The HMPC, comprised of key County, city, special district, and other government and stakeholder representatives and the public, developed the Plan with leadership from County DWR and project leads from other participating jurisdictions, and facilitation by Foster Morrison. This list includes all HMPC members that attended one or more HMPC meeting, as well as those who provided key input into the Plan development process. The following participated on the HMPC: TO BE COMPLETED AT THE END OF PLANNING PROCESS

Table 3-3 Sacramento County Hazard Mitigation Planning Committee

Last Name	First Name	Jurisdiction	Agency/Division	Position Title
Sacramento County				
Cities				
Districts				

Last Name	First Name	Jurisdiction	Agency/Division	Position Title
Other Agencies, Stakeholders, and the Public				
Consultant Team				

Utilizing a Common Planning Process

The County and all participating jurisdictions developed this LHMP Update utilizing a common Plan development process, that incorporated the "whole community" approach. This included establishing an HMPC that included key stakeholders for all jurisdictions ensuring that the five required categories of stakeholders, specific to each jurisdiction, were identified and included. Utilizing a common planning process involving all jurisdictional stakeholders promoted better stakeholder participation for all jurisdictions. This approach respected the time and availability of stakeholders, while maximizing participation of a common group of jurisdictional stakeholders by not requiring them to come to duplicate (or really 5 separate meetings) on the same Plan development element(s), which for this Plan would have resulted in 160 meetings to cover the 5 primary HMPC topics and meetings. It also spurred conversations between jurisdictions, as well as their public stakeholders, who were invited to come to these meetings. Additional considerations and benefits for utilizing a common planning process for the development of the Multi-Jurisdictional LHMP Update include:

- The interconnected nature of Sacramento County, its incorporated communities, and participating special districts, including its hazard environment, such as common watersheds, stream groups, flood control systems, regional faults, topography, and other hazard related elements of its built environment, is best suited for a common Plan development process.
- Common group of stakeholders to all participating jurisdictions necessitated a common Plan development process.
- Numerous participating jurisdictions have shared or overlapping boundaries and economic ties, often work under the same authorities, and have similar needs and capabilities.
- A common plan development process brings key stakeholders together in the same meetings instead of siloing them to specific jurisdictional meetings. This adds value by getting different groups discussing key issues collectively with different experiences and perspectives to bring to the table.
- Improves stakeholder communication and coordination by increasing stakeholder attendance in support of all jurisdictions and not diluting their participation by requiring attendance at multiple, duplicate meetings that they won't be able or willing to attend.
- Key public stakeholders invited to be part of the HMPC, to support the DMA and CRS program requirements, were better able to attend a limited set of meetings.
- All participating jurisdictions face similar threats and hazards which drive the resulting mitigation strategy that benefits the Sacramento County Planning Area as a whole by promoting a comprehensive and regional approach to mitigation.

Utilizing this common planning process resulted in multiple entities being engaged and in the room at the same time. All of this is shown in detail throughout the chapter and in Appendix A.

Steering Committee

In addition to the HMPC, a Steering Committee to the Planning Committee was established to help guide LHMP development, including the CRS components of floodplain management planning and the overall development of the LHMP. The Steering Committee is comprised of key representatives from Sacramento County and the Cities of Citrus Heights and Sacramento, as the three CRS communities, and includes non-local government and public representatives. The non-local government members of the Steering Committee (public citizens and other outside stakeholders) provided significant representation on the Steering Committee. See Table 3-4 and Appendix A for details on the makeup of the Steering Committee.

Table 3-4 Sacramento County LHMP Steering Committee to the HMPC

Community/ Representative	Department/Organization	County/ Cities	Public/ Resident	Stakeholder	# Meetings
Sacramento County					
Kevin Siu Floodplain Manager	Sacramento County Department of Water Resources, Floodplain Management	X			
Antonio Augello Assistance Planner	Sacramento County Planning and Environmental Review | Long Range Planning	X			
City of Citrus Heights					
Daniel Kehr Principal Civil Engineer/ Floodplain Manager	General Services Department	X			
Steffan Lui Associate Planner	Community Development Department	X			
City of Sacramento					
KC Channakhone Administrative Analyst	Department of Utilities Engineering & Water Resources | Floodplain Management	X			
Victor Randall Senior Planner	Long Range Planning	X			
Public and Stakeholder Representatives					

Meetings

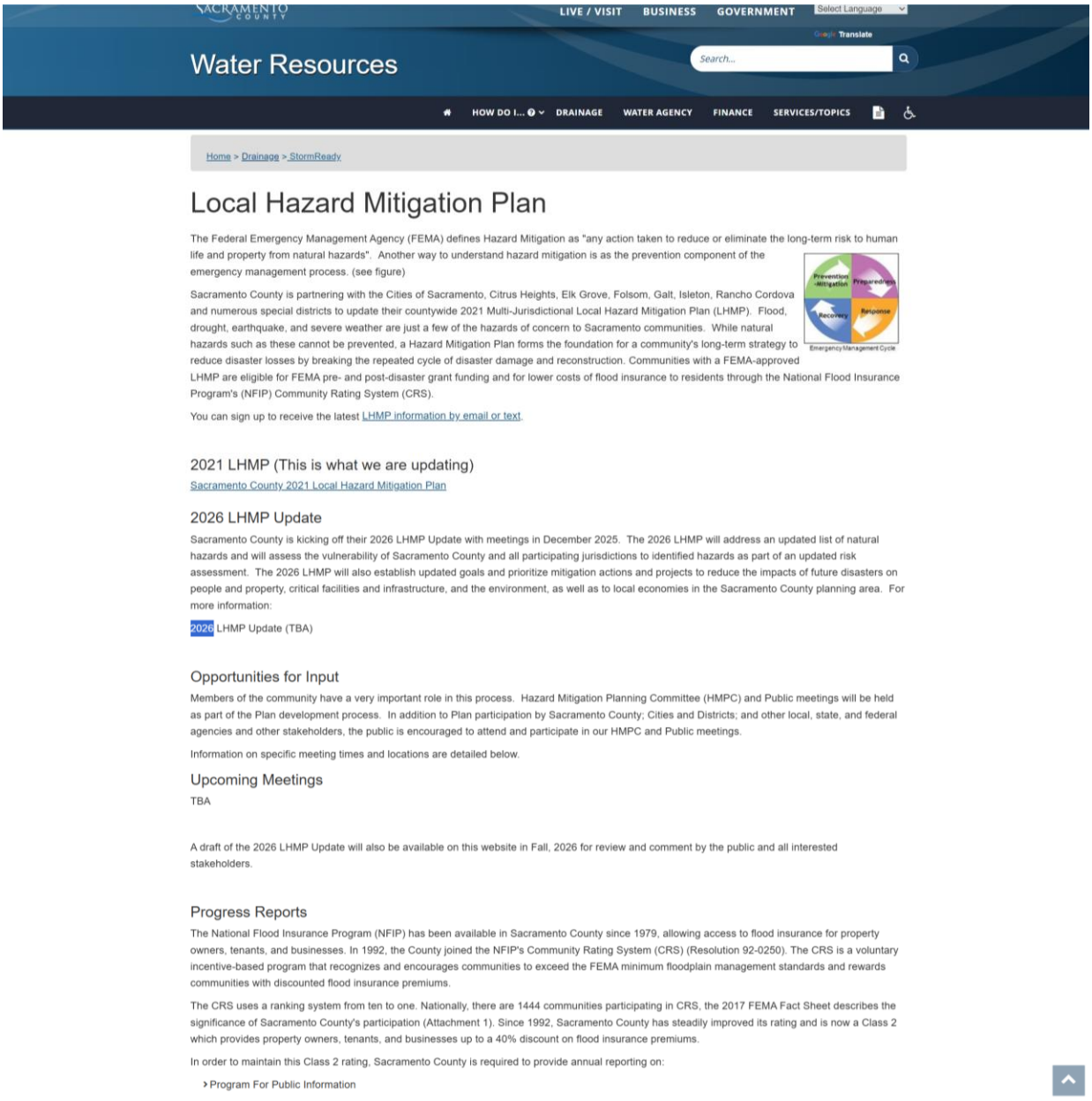
The planning process officially began with a project planning virtual meeting with Sacramento County DWR on October 2, 2026 and included five additional project planning virtual meetings with Sacramento County DWR and public engagement departments and staff, as well as with project and CRS leads for the Cities of Citrus Heights and Sacramento to plan for and address both the DMA and CRS plan development processes for this 2026 LHMP Update.

The HMPC kick-off meeting for all participating jurisdictions was held on December 3, 2025, followed by a public kick-off meeting held the same day at 5:30 pm. The kickoff meetings covered the scope of work and an introduction to the DMA and CRS requirements. Four additional HMPC meetings were held throughout the Plan development process to cover the other primary meeting topics. During the HMPC meetings, participants were provided with data collection worksheets to facilitate the collection of information necessary to support development of the Plan. Using FEMA guidance, these worksheets were designed to capture information on past hazard events, identify hazards of concern to each of the participating jurisdictions, identify values at risk to identified hazards, inventory existing capabilities, record possible 2026 mitigation actions, and to capture information on the status of mitigation action items from the 2021 Plan. A copy of the worksheets for this project are included in Appendix A. Each participating jurisdiction seeking FEMA approval of this LHMP Update completed and returned the worksheets to Foster Morrison for incorporation into this 2026 LHMP Update.

During the planning process, the HMPC communicated through virtual Team and Zoom meetings, email, telephone conversations, Dropbox websites, and through a County developed webpage dedicated to the LHMP development process. This later website was developed to provide information to the HMPC, the public and all other stakeholders on the LHMP process. Draft documents were also posted on these websites so that the HMPC members, stakeholders, and the public could easily access and review them.

The Sacramento County Multi-Jurisdictional LHMP website (StormReady.org as shown on Figure 3-1) can be accessed online at: https://waterresources.saccounty.gov/us/en/stormready/hazards/mitigation-plan.html#gsc.tab=0.

Figure 3-1 Sacramento County Local Hazard Mitigation Plan Update Website



Source: Sacramento County StormReady website

The HMPC met formally five times during the planning period (October 2025 – December 2026) which adequately covers the four phases of DMA and the 10-Step CRS planning process. Six project planning meetings were also held with the County and key participating CRS jurisdictions. Numerous internal jurisdictional meetings were held throughout the planning process to further support Plan development. The formal meetings and topics discussed are described in Table 3-5. Agendas and sign-in sheets for each of the meetings are included in Appendix A. Figure 3-2 provides an image of the LHMP Kickoff Meeting at the Coloma Center.

Table 3-5 Sacramento County LHMP Planning and HMPC Meetings

Meeting Type	Meeting Topic	Meeting Date(s)	Meeting Location(s)
Internal Project Planning Meeting #1 (County)	1) Overview of LHMP/CRS planning process 2) Initial identification of participating jurisdictions, HMPC members, and public and private stakeholders	October 2, 2025	Virtual Meeting
Internal Project Planning Meeting #2 (County)	1) Email/Outlook invite process and draft invites 2) Proposed LHMP website text 3) Public Outreach for project kickoff 4) Project Schedule	October 16, 2025	Virtual Meeting
Internal Project Planning Meeting #3 (County and CRS communities)	1) Overview of LHMP/CRS planning process 2) Email/Outlook invite process and draft invites for HMPC, including public and private stakeholders 3) Proposed LHMP website text for participating jurisdictions 4) Public Outreach for project kickoff 5) Project Schedule	October 20, 2025	Virtual Meeting
Internal Project Planning Meeting #4 (County and CRS communities)	1) Introduction to CRS plan development process for CRS steps 1, 2, 3 (organize resources, public outreach, agency and stakeholder coordination)	November 7, 2025	Virtual Meeting
Internal Project Planning Meeting #5 (County and CRS communities)	1) CRS plan development process requirements for CRS communities and public outreach coordinators	November 13, 2025	Virtual Meeting
HMPC #1 Kick-off Meeting	1) Introduction to DMA and the LHMP/CRS planning process 2) Organize Resources (CRS Steps 1,2&3): the role of the Planning Committee, planning for public involvement, coordinating with other agencies/stakeholders 3) Introduction to Hazard Identification	December 3, 2025	Coloma Community Center Sacrament, CA
Risk Assessment Worksheet: Working Meeting of Participating Jurisdictions	1) Review and discussion of risk assessment worksheet requirements for participating jurisdictions	February 26, 2026	Virtual Meeting
HMPC #2 Risk Assessment	1) Risk assessment overview and work session -CRS Step 4: Assess the Hazard -CRS Step 5: Assess the Problem	April 22, 2026	Citrus Heights Event Center Citrus Heights, CA

Meeting Type	Meeting Topic	Meeting Date(s)	Meeting Location(s)
HMPC #3 Mitigation Strategy: Goals	1) Overview of risk assessment summary/discussion of key hazard issues 2) Review and update of mitigation goals 3) Intro to Mitigation Action Strategy -CRS Step 6: Set Goals -CRS Step 7: Review possible activities	June 10, 2026	Sacramento County Environmental Management Division Building Rancho Cordova, CA
HMPC #4 Mitigation Strategy: Actions	1) Review of mitigation alternatives 2) Review and status update of mitigation actions from the 2021 LHMP 3) Identify updated list of mitigation actions by hazard 4) Review of mitigation selection criteria 5) Update and prioritize mitigation actions 6) Mitigation Action Strategy Implementation and Draft Action Development -CRS Step 7: Review possible activities -CRS Step 8: Draft an Action Plan	June 11, 2026	Laguna Room at District 56 Elk Grove, CA
HMPC #5 Draft Plan	1) Review of final HMPC, jurisdictional and public comments and input to Draft Plan 2) Review and documentation of changed conditions, vulnerabilities, and mitigation priorities 3) CRS Step 8: Draft an Action Plan 4) CRS Step 9 & 10: Plan Maintenance and Implementation Procedures	November 5, 2026	Sacramento County Environmental Management Division Building Rancho Cordova, CA

Figure 3-2 HMPC Kickoff Meeting December 3, 2025



Source: Sacramento County

Planning Step 2: Involve the Public

Public stakeholders are generally defined as any stakeholders not attached to local government in the Sacramento County Planning Area. Up-front coordination discussions with the County, as project lead, and floodplain managers from the three participating CRS jurisdictions established the initial plan for public involvement focusing on using established public information mechanisms and resources within the County Planning Area. Public involvement activities for this LHMP Update included press releases, social media communications, stakeholder and public meetings, development of an LHMP webpage and associated website postings, the collection of public and stakeholder comments on the draft Plan through a variety of mechanisms. This included other public outreach activities as further described below, as well as specific targeted outreach to different groups of people and other agencies throughout the Plan development process. The purpose of the outreach was to inform the public and other stakeholders of the Sacramento County LHMP Update project and how they could get involved and how to provide comments on the draft LHMP prior to submittal to Cal OES/FEMA. The outreach also invited the public and other stakeholders to attend the HMPC meetings for the project. Information and documentation on these outreach efforts can be seen in Appendix A to this LHMP.

Public Meetings

Three public meetings were planned for this LHMP Update project, during key phases of the LHMP development process. Public outreach efforts for these public meeting are described in this Chapter 3 and documentation of outreach efforts can further be seen in Appendix A.

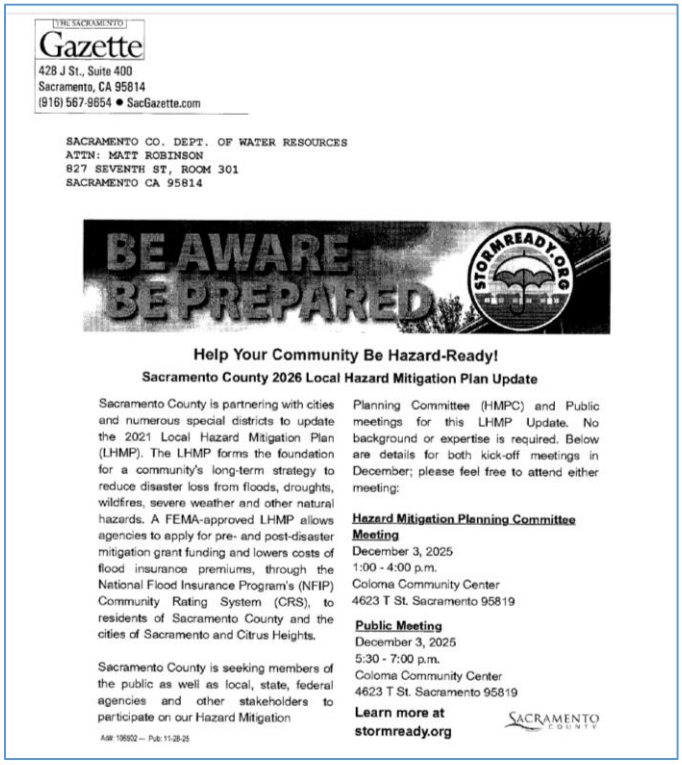
Early Public Meeting #1: LHMP Kickoff

Public outreach for this LHMP Update began at the beginning of the Plan development process with an advertisement placed in the local newspaper, social media posts, and other local outreach methods (see the paid advertisement in The Sacramento Gazette shown in Figure 3-3) announcing the informational public kickoff meeting and to inform the public of the purpose of DMA, CRS, and the hazard mitigation planning process for Sacramento and all participating jurisdictions. Members of the public were also invited to join the HMPC meetings. Outreach efforts also included posting meeting details on the Sacramento County StormReady.org LHMP webpage, and on websites for other participating jurisdictions. Public Meeting #1 outreach included the following:

- LHMP Webpage(s) for Sacramento County and Participating Jurisdiction (Primary LHMP webpage at StormReady.org)
- Newspaper Ad published in The Sacramento Gazette
- LHMP Public Outreach Flyer and Poster
- Local Radio Ad
- KCRA Channel 3, Article on LHMP project kickoff
- CBS News Sacramento, Article on LHMP project kickoff
- CBS News Sacramento, YouTube video on LHMP project kickoff
- KCRA Channel 3, YouTube video on LHMP project kickoff
- Sacramento County Website, News webpage included an LHMP project kickoff article
- Sacramento County social media posts (reposted by Cities of Citrus Heights and Sacramento)
- City of Sacramento Social Media post

All public outreach efforts are detailed in Table 3-7 below with supporting documentation included in Appendix A.

Figure 3-3 The Sacramento Gazette, Paid Advertisement November 28, 2025



THE SACRAMENTO
Gazette
428 J St., Suite 400
Sacramento, CA 95814
(916) 567-9854 ● SacGazette.com

SACRAMENTO CO. DEPT. OF WATER RESOURCES
ATTN: MATT ROBINSON
827 SEVENTH ST, ROOM 301
SACRAMENTO CA 95814

BE AWARE
BE PREPARED
STORMREADY.ORG

Help Your Community Be Hazard-Ready!

Sacramento County 2026 Local Hazard Mitigation Plan Update

Sacramento County is partnering with cities and numerous special districts to update the 2021 Local Hazard Mitigation Plan (LHMP). The LHMP forms the foundation for a community's long-term strategy to reduce disaster loss from floods, droughts, wildfires, severe weather and other natural hazards. A FEMA-approved LHMP allows agencies to apply for pre- and post-disaster mitigation grant funding and lowers costs of flood insurance premiums, through the National Flood Insurance Program's (NFIP) Community Rating System (CRS), to residents of Sacramento County and the cities of Sacramento and Citrus Heights.

Sacramento County is seeking members of the public as well as local, state, federal agencies and other stakeholders to participate on our Hazard Mitigation Planning Committee (HMPC) and Public meetings for this LHMP Update. No background or expertise is required. Below are details for both kick-off meetings in December; please feel free to attend either meeting:

Hazard Mitigation Planning Committee Meeting
December 3, 2025
1:00 - 4:00 p.m.
Coloma Community Center
4623 T St. Sacramento 95819

Public Meeting
December 3, 2025
5:30 - 7:00 p.m.
Coloma Community Center
4623 T St. Sacramento 95819

Learn more at stormready.org

SACRAMENTO COUNTY

Source: Sacramento County

Public Meeting #2: Risk Assessment

A second public meeting was held to provide an overview of the hazard risk assessment portion of the LHMP Update. This public meeting was held in the City of Citrus Heights the evening of the HMPC risk assessment meeting. The meetings were advertised through the Sacramento County StormReady.org website and through other public outreach efforts, such as posting of meeting flyers around the community and through posting on social media. Figure 3-3 provides a sample of public outreach conducted for the Risk Assessment public meeting.

Public Meeting #2 outreach included the following:

- LHMP Public Outreach Flyer for Risk Assessment Meetings
- City of Citrus Heights Planning Commission Meeting, LHMP noticed to the Public
- Sacramento County Social Media Posts for Risk Assessment Meetings

All public outreach efforts are detailed in Table 3-7 below with supporting documentation included in Appendix A.

Figure 3-4 Sacramento County Social Media Post, April 2026



Source: Sacramento County

Final Public Meeting #3: On the Draft LHMP

The first draft of the LHMP was provided to the HMPC in August 2026, with a public review draft provided in October 2026. A public meeting was held on November 4, 2026, to present the draft LHMP and to collect public comments on the public review draft prior to finalization and submittal to Cal OES/FEMA. The public meeting was advertised in a variety of ways to maximize outreach efforts to both targeted groups and to the public at large and included an advertisement in local newspapers inviting the public to attend either the formal public meeting or HMPC meeting. The advertisement in the local newspapers included information on the date, location and time of the meeting, where the draft Plan could be accessed in the community, and how to provide comments on the draft LHMP Update. In addition to a copy of the public review draft being placed on the County StormReady.org website in advance of these meetings, hard copies of the draft Plan were made available at various public locations in the Sacramento County Planning Area. These locations included: PLACE. Documentation to support the final public meeting, including meeting outreach, can be found in Appendix A. Figure 3-5 shows a sample of public outreach conducted for this final public meeting.

Figure 3-5 Public Invitation Press Release, October 2026

Source: Sacramento County

In addition to the advertisement for public participation, notices of public meetings were sent directly to all persons on the HMPC contact list and also to other agency and key stakeholders (including the public) with an interest in the Sacramento County Planning Area. The majority of these people reside in the Sacramento County Planning Area or in surrounding communities. Because this is a multi-jurisdictional planning effort,

all public outreach activities for this LHMP Update were conducted in cooperation with and on behalf of Sacramento County, as the project lead and CRS community, the Cities of Citrus Heights and Sacramento as the two CRS incorporated communities, the five other eligible CRS communities (Elk Grove, Folsom, Galt, Isleton, and Rancho Cordova), as well as for all other participating jurisdictions.

The formal public meetings for this project are summarized in Table 3-6.

Table 3-6 Schedule of Public and Stakeholder Meetings

Meeting Type	Meeting Topic	Meeting Date	Meeting Locations
Early Public Kickoff Meeting #1	1) Intro to DMA, CRS and mitigation planning 2) 2026 LHMP Update Process 3) How public and private stakeholders can participate in the Plan development process	December 3, 2025	Coloma Community Center Sacrament, CA
Risk Assessment Public Meeting #2	1) Overview of the Risk Assessment Data and process	April 22, 2026	Citrus Heights Event Center Citrus Heights, CA
Final Public Meeting #3	1)Presentation of Draft LHMP and solicitation of public and stakeholder comments	November 4, 2026	TBD

Public Comments

Public and private stakeholders were invited to provide comments and input throughout the LHMP Update process as part of the extensive public outreach efforts conducted for this project. Stakeholder and public comments and input were collected, consolidated, and organized to coincide with the three primary public meetings as described above, and prior to LHMP submittal to Cal OES and FEMA. These can be seen in Appendix A, Section A.9.4. Primary mechanisms for public input included email comments, social media comments, questions asked at public meetings, and input received as part of the public outreach survey conducted for the project.

Questions raised at public meetings, as well as input received from public comments, included a variety of input. Comments included questions on (INSERT). Relevant comments were considered and informed the LHMP Update as appropriate, including Plan sections that address the risk assessment and mitigation goals and strategies. For example, (INSERT).

Comments and input received from the survey are discussed below in the survey section and are included in full in Appendix A in Sections A.11 and A.11.2. All press releases, newspaper advertisements and articles, website postings, and public outreach efforts are on file with County DWR and are included in Appendix A. The draft Plan is currently available online on the Sacramento County Multi-Jurisdictional LHMP website (StormReady.org) and can be accessed online at: https://waterresources.saccounty.gov/us/en/stormready/hazards/mitigation-plan.html#gsc.tab=0

Other Public Outreach Efforts

In addition to the public meetings described above, the LHMP Update process also included the following public outreach activities included in Table 3-7 which are further documented and described in Appendix A. The public outreach activities described herein were conducted with participation from and on behalf of all jurisdictions participating in this LHMP Update, including the three CRS communities (Sacramento County and cities of Citrus Heights and Sacramento); the other five incorporated communities, as eligible CRS communities, and all other participating jurisdictions.

Table 3-7 Other Public Outreach Efforts

Effort	Description
1. Sacramento County LHMP Update Website	Information on the LHMP Update process, LHMP documents, and final HMPC and public meeting locations were posted on the County StormReady.org LHMP website. The LHMP webpage also included a link to the Survey once launched. See StormReady.org
1.a City of Citrus Heights LHMP Update Webpage	The City of Citrus Heights developed an LHMP webpage providing an overview of the LHMP Update process and provided a link to the primary LHMP website located at StormReady.org.
1.b City of Sacramento LHMP Update Webpage	The City of Sacramento developed an LHMP webpage providing an overview of the LHMP Update process and provided a link to the primary LHMP website located at StormReady.org.
a. Newspaper Ad published in The Sacramento Gazette, 11/28/25 announcing the LHMP Project Kickoff	A paid ad was placed in The Sacramento Gazette, announcing the LHMP Project Kickoff and inviting the public and all interested stakeholders to attend the LHMP Kick off meetings in early December.
2. b. Public Outreach Flyer and Poster for Kickoff Meetings	An initial public outreach flyer was developed for the initial public and planning team kick off meetings and to use throughout the project as outreach materials.
3. Fall 2025. Storm Ready Newsletter Insert into the Utility Bill: Consolidated Utilities Billing Services (CUBS)	A Newsletter, Know Your Flood Risk: Be Aware Be Prepared, was sent out in Fall 2025 as part of the utility bill. This Newsletter was sent to 254,000 properties that receive utility bills from Sacramento County. The newsletter included a section notifying recipients that the LHMP Update was kicking off and to go to StormReady.org for more information.
4. Fall 2025. County DWR Direct Mailer to all residents in the SFHA and Local Flood Hazard Areas, including RL properties	A Newsletter, Be Storm Ready, was sent as a direct mailing from Sacramento County to all residents in a FEMA Special Flood Hazard Area (SFHA) and to those located within Local Flood Hazard areas, including Repetitive Loss properties. The Newsletter notifying recipients that "THIS PROPERTY IS IN OR NEAR A FLOOD HAZARD AREA" was sent to 41,805 County residents.
5. c. November 2025, Local Radio Ad for LHMP Kickoff Meetings	A local radio ad was developed advertising the LHMP Update and Project Kickoff. The Ad provides information on the kickoff meetings and directs people back to StormReady.org website for more information.
h. Sacramento County News webpage LHMP Project Kickoff Article 12/1/2025	An article was printed on the Sacramento County primary website on the News Page announcing the LHMP Project Kickoff and inviting the public and all interested stakeholders to attend the LHMP Kick off meetings in early December and how to participate in the project.

Effort	Description
i. Sacramento County Social Media Post (reposted by Cities of Citrus Heights and Sacramento 12/1/2025	Sacramento County posted a social media post on 12/1/2026 announcing the LHMP Project Kickoff and inviting the public and all interested stakeholders to attend the LHMP Kick off meetings in early December. The social media post was reposted by the cities of Citrus Heights and Sacramento.
d. KCRA Channel 3, Article on LHMP Project Kickoff, 12/3/2026	KCRA Channel 3 published an article on the LHMP Update and Project Kickoff, why the project is important, and how community members could get involved.
e. CBS News Sacramento Article on LHMP Project Kickoff, 12/3/2026	CBS Sacramento News published an article on the LHMP Update and Project Kickoff, why the project is important, and how community members could get involved.
f. CBS News Sacramento YouTube video on LHMP Project Kickoff, 12/3/2026	CBS Sacramento News launched a YouTube video on the LHMP Update and Project Kickoff, why the project is important, and how community members could get involved. Received 675 views
g. KCRA Channel 3, YouTube video on LHMP Project Kickoff, 12/3/2026	KCRA Channel 3 launched a YouTube video on the LHMP Update and Project Kickoff, why the project is important, and how community members could get involved.
6. Fall 2025, Digital Ads for LHMP Update Project	Digital Ads were developed for the LHMP Update project to be displayed in the Sacramento County area announcing the LHMP Update Project Kickoff.
j. City of Sacramento Social Media Post announcing the LHMP Project Kickoff 12/5/2026	The City of Sacramento posted a social media post on 12/5/2026 announcing the LHMP Project Kickoff and inviting the public and all interested stakeholders to get involved in the project.
k. Public Outreach Flyer for the Risk Assessment Meetings	A public outreach flyer was developed to invite the public, other stakeholders and the HMPC members to the risk assessment meetings.
l. City of Sacramento emails w/ Risk Assessment Meeting Flyer 4/10/2026	City of Sacramento sent emails, which included the Risk Assessment Meeting Flyer, to internal and external stakeholders and the public inviting them to participate in the April Risk Assessment Meetings.
n. City of Elk Grove sent out the Risk Assessment Meeting Flyer to the Elk Grove 101 alumni group 4/13/2026	City of Elk Grove sent out an email, with the flier, for the LHMP Risk Assessment Meetings to the Elk Grove 101 alumni group. It is a group of approximately 150 EG residents and business owners who have gone through our training course on local government.
o. Sacramento County Social Media Post for Risk Assessment Meetings 4/10/2026	Sacramento County developed and posted a social media post inviting participation in the upcoming Risk Assessment Meetings for the LHMP Project.
7.m, LHMP Update noticed to the Public at the Citrus Heights Planning Commission meeting 4/14/2026	City of Citrus Heights, LHMP project lead, noticed the public at the April, 14, 2026 City Planning Commission Meeting of the LHMP Update and how the public can get involved.
7.m LHMP Flyers placed in Citrus Heights City Hall lobby inviting all stakeholders to the Risk Assessment Meetings.	City of Citrus Heights place Risk Assessment Meeting Flyers in the lobby of City Hall inviting all public and private stakeholders to the Risk Assessment Meeting
8. April 25, 2026. Cordova Community Council's Kids Day at the Park in Rancho Cordova	LHMP Update Flyers utilized at a booth to promote the LHMP Update project at the Cordova Community Council's Kids Day at the Park in Rancho Cordova.

Effort	Description
9. April 2026, LHMP Project Flyer posted at the City of Sacramento, Department of Utilities, Main Building	A public outreach flyer on how to get involved in the Sacramento County LHMP Update project was posted in the Department of Utilities main campus lobby breakroom at 1395 35th Ave., Sacramento CA.
9. April 2026, LHMP Project Flyer posted at the City of Sacramento, Department of Utilities, Building 9	A public outreach flyer on how to get involved in the Sacramento County LHMP Update project was posted in the Department of Utilities Building 9 bulletin board.
9. April 2026, LHMP Project Flyer posted at the Sacramento Marina	A public outreach flyer on how to get involved in the Sacramento County LHMP Update project was posted at the Sacramento Marina at the public counter, bulletin boards, and break room.
9. April 25, 2026, Trails in Bloom Event	A public outreach flyer on how to get involved in the Sacramento County LHMP Update project was provided at the City of Sacramento table for the Trails in Bloom Event on 4/45/2026.
9. April 26, 2025, ECOS Earth Day Event	A public outreach flyer on how to get involved in the Sacramento County LHMP Update project was posted at the City of Sacramento table for the ECOS Earth Day Event on 4/26/2026.
10. April 26, 2025, ECOS Earth Day Event	A public outreach flyer on how to get involved in the Sacramento County LHMP Update project was posted at two Sacramento County tables for the ECOS Earth Day Event on 4/26/2026. The two tables were the County Sustainability Office table and the County DWR table.
11. LHMP Survey launched on the Sacramento County StormReady LHMP webpage 4/27/2026	An LHMP Survey including questions on hazards of concern, community preparedness, Disaster communications, and possible risk reduction measures was developed and included on the Sacramento County LHMP webpage at StormReady.org
12. May 16, 2026, City of Rancho Cordova's Spring Service Day	A public outreach flyer on how to get involved in the Sacramento County LHMP Update project was provided on the City of Rancho Cordova table as part of their Spring Service Day event.

Public Outreach Survey

An integral element in hazard mitigation planning is broad public participation. Information provided by residents fosters a better understanding of local hazard concerns and can spawn innovative ideas to reduce impacts of future hazard events. A survey was developed to gather information the public on relevant topics, such as hazard of concern, alert systems used, insurance, possible mitigation strategies, information sources, and others. The survey was hosted on Survey Monkey, and was accessible between April 2026 and November 2026 on the Sacramento County StormReady.org LHMP website. Survey participation was promoted through public and HMPC meetings and other public outreach efforts. Specifically, survey respondents were sought through:

- TO BE PLACED

Survey results were collated, analyzed, and integrated into the LHMP Update. X individuals answered the survey. Where appropriate, survey responses that identified specific regional issues are discussed in the survey analysis. Results were downloaded from Survey Monkey and are summarized below. Complete survey results are included in Appendix A.

- TO BE PLACED

Program for Public Information (PPI) Strategy

As part of their overall flood outreach programs, Sacramento County and the City of Sacramento have in place a Program for Public Information (PPI) strategy designed to maximize credits under CRS Activity 330, Outreach Projects. The City of Citrus Heights, as a new jurisdiction to the CRS program is evaluating the use of a PPI in their City. The objective of CRS credit for a PPI is to provide additional credit for information programs that are designed to meet local needs and that are monitored, evaluated, and revised to improve their effectiveness. The PPI is an ongoing public information effort to design and transmit the messages that the community determines are most important to its flood safety and the protection of its floodplains' natural functions. Program elements include instructing residents on actions they should take before, during and after storm events to mitigate their flood risk. These actions can include being aware of your own flood risk, implementing mitigation options available such as elevating or retrofitting a home, or understanding the benefits of purchasing flood insurance, even if a resident is outside of a federal flood hazard area.

The County and City PPI programs are important to consider in the development and implementation of this LHMP Update to ensure coordination and effectiveness of all public outreach and education efforts in the Sacramento County Planning Area.

Planning Step 3: Coordinate with Other Departments and Agencies

Early in the planning process, the HMPC determined that data collection, mitigation strategy development, and LHMP review and approval would be greatly enhanced by inviting other local, state and federal agencies and organizations to participate in the process. Based on their involvement in hazard mitigation planning, their landowner status in the Sacramento County Planning Area, and/or their interest as a neighboring jurisdiction, representatives from the following agencies were invited to participate on the HMPC:

- TO BE PLACED

Additional Agency Coordination

Coordination with key agencies, organizations, and advisory groups throughout the planning process allowed the HMPC to review common problems, development policies, and mitigation strategies as well as identifying any conflicts or inconsistencies with regional mitigation policies, plans, programs and regulations. Coordination involved contacting these agencies through a variety of mechanisms and informing them on how to participate in the LHMP Update process and if they had any expertise or assistance, they could lend to the planning process or specific mitigation strategies. Coordination with these groups included holding face-to-face or virtual meetings, sending outreach e-mails, (some with follow up phone calls), and making phone calls alone to out of area agencies. All of these groups and agencies were solicited asking for their assistance and input, telling them how to become involved in the LHMP Update process, and inviting them to the HMPC meetings. This coordination with other agencies is

documented in Appendix A and includes a summary table of who was contacted, the method of contact, and the purpose. Supporting documentation such as emails and meeting logs are also included.

In addition, as part of the overall stakeholder and agency coordination effort, the Planning Committee coordinated with and utilized input to the LHMP Update from the following agencies:

- TO BE PLACED

Several opportunities were provided for the groups listed above to participate in the planning process. At the beginning of the planning process, invitations were extended to many of these groups to actively participate on the HMPC. Specific participants from these groups are detailed in Appendix A. Others assisted in the process by providing data directly as requested in the Data Worksheets or through data contained on their websites or as maintained by their offices. Further as part of the public outreach process, all groups were invited to attend the public and HMPC meetings and to review and comment on the draft LHMP prior to submittal to CAL OES and FEMA.

Other Community Planning Efforts and Hazard Mitigation Activities

Coordination with other community planning efforts is also paramount to the success of this LHMP Update. Hazard mitigation planning involves identifying existing policies, tools, and actions that will reduce a community's risk and vulnerability to hazards. The 32 participating jurisdictions to this Plan use a variety of comprehensive planning mechanisms, such as general and master plans, ordinances, and others, to guide growth and development. Integrating existing planning efforts and mitigation policies and action strategies into this LHMP Update establishes a credible and comprehensive Plan that ties into and supports other community programs. The development of this LHMP Update incorporated information from the following existing plans, studies, reports, and initiatives as well as other relevant data from neighboring communities, regional agencies, and other jurisdictions. This gives a general overall list of plans, studies, and reports. More can be found in Appendix B to this Plan Update.

- TO BE PLACED

Specific source documents are referenced at the beginning of each section of Chapter 4 and in Appendix B. These and other documents were reviewed and considered, as appropriate, during the collection of data to support Planning Steps 4 and 5, which include the hazard identification, vulnerability assessment, and capability assessment. Data from these plans and documents were incorporated into the hazard risk assessment sections of the LHMP. Where data and information from the existing studies and reports is used in this LHMP Update, the source document is referenced throughout this Plan. The information was also used to identify potential hazard mitigation strategies for inclusion in this LHMP Update and in assessing the capabilities of the participating jurisdictions in implementing the resulting mitigation strategy. Appendix B, References, provides a detailed list of references used in the preparation of this LHMP Update.

Coordination with Underserved Communities and Socially Vulnerable Populations

As detailed in FEMA's current 2025 LHMP guidance, the LHMP development process should utilize the Whole Community approach to hazard mitigation planning. New 2025 FEMA guidance defines planning for the "Whole Community" as a focus on enabling the participation in national preparedness activities of

a wider range of players from the private and nonprofit sectors, including nongovernmental organizations and the general public, in conjunction with the participation of all levels of government in order to foster better coordination and working relationships.

In consideration of these new FEMA requirements as well as applicable California state laws and LHMP requirements, the Plan development process focused on key sectors of public and private entities that would enhance hazard mitigation planning for Sacramento County. Engagement and coordination with a variety of community-based organizations that work directly with or provide support to underserved communities and socially vulnerable populations was a critical component to Sacramento County in addressing equity in mitigation planning and implementation.

For this LHMP project, significant efforts were made to identify and engage appropriate community members and groups to support the Plan development process. In Sacramento County, vulnerable populations primarily include seniors, children and students, large households, low income, homeless populations, people with disabilities, those with lack of or limited mobility, and those with limited access to public transportation services for evacuations and other hazard response needs. There is also a seasonal farmworker population which can create additional challenges during hazard events.

Many of the services for vulnerable and underserved populations fall to applicable local government agencies, primarily the County, and supplemented by various non-profit and other community based organizations. Thus, reaching out to the County departments providing these types of services was the initial step to meeting this element. These efforts were augmented by coordination with other community based organizations supporting vulnerable populations in Sacramento County. As part of the planning process, efforts made to identify and engage these groups in the Sacramento County 2026 LHMP Update project included the following:

- **Sacramento County Public Health:** Sacramento County Public Health works to protect and improve the health of the community through disease prevention, health promotion, and emergency preparedness. Public Health programs focus on preventing illness, promoting healthy environments, and supporting the well-being of Sacramento County residents. Representatives from the County Public Health Department were invited to be on the HMPC and provide input into the Plan development process, including input on the Draft LHMP.
- **Sacramento County Disability Advisory Council:** The Disability Advisory Commission (DAC) advises the Sacramento County Board of Supervisors on issues pertaining to the disability community and County compliance with Federal and State laws and regulations. Representatives from the County Disability Advisory Council were invited to be on the HMPC and provide input into the Plan development process, including input on the Draft LHMP.
- **Sacramento County Office of Emergency Services, Mass Care and Shelter:** The Mass Care and Shelter OES function oversees the planned coordination, stakeholder communication, and prioritization of resources for mass care and emergency assistance services for diverse populations throughout the Sacramento Operational Area (OA) from pre-disaster through recovery. Safety and health of the diverse populations served is the first consideration for mass care. The Sacramento County OES, Mass Care and Shelter coordinator were invited to be on the HMPC and provide input into the Plan development process, including input on the Draft LHMP.

- **Sacramento County Office of Diversity, Equity, and Inclusion:** The County Office of Diversity, Equity, and Inclusion works to engage the workforce and community on topics of equity and inclusion and apply an equity lens on the day-to-day operations of the County and public service delivery. This involves working to identify and eliminate inequities and barriers to access and engagement (e.g. policies, practices, attitudes, bias and cultural messages) that have prevented BIPOC, LGBTQIA+, people with disabilities and historically marginalized communities, full participation and equitable outcomes. Representatives from the County Office of Diversity, Equity, and Inclusion were invited to be on the HMPC and provide input into the Plan development process, including input on the Draft LHMP.
- **Sacramento County Volunteer Organizations Active in Disasters:** The Sacramento Region Voluntary Organizations Active in Disasters (VOAD) is an all-inclusive coalition of faith and community-based organizations, including but not limited to: congregations, nonprofit organizations such as The Salvation Army, American Red Cross, food banks, 2-1-1, businesses that want to help during a disaster, and government partners including FEMA, and the state/city/county Office of Emergency Services. Sacramento Regional VOAD is part of a national network of VOAD organizations. VOAD network responds to disasters more effectively by working and planning together before disasters strike. Once disasters occur, a VOAD is ready to respond with resources, volunteers, and coordination of services to those who need assistance during & after a disaster. Representatives from the Sacramento Region VOAD were invited to be on the HMPC and provide input into the Plan development process, including input on the Draft LHMP.
- **Community Link Capital Region:** Community Link Capital Region works to help people turn ideas into action through information, planning, civic engagement and advocacy for human needs. Representatives from the Community Link Capital Region were invited to be on the HMPC and provide input into the Plan development process, including input on the Draft LHMP.
- **The Regional Center for Volunteerism – Hands on Sacred Heart (HOS):** HOS was created in 1998 as a program of Community Link in response to the community's need for a full-service volunteer action center. Founding volunteers wanted to create social change through volunteerism and education, believing that each person's involvement would make a real difference in the community. Representatives from the Regional Center for Volunteerism – Hands on Sacred Heart were invited to be on the HMPC and provide input into the Plan development process, including input on the Draft LHMP.
- **Child Action Center:** The Child Action Center works to invest in the people and programs that shape Sacramento's child care system. Through programs, policy efforts, and community partnerships, the Child Action Center connects families to affordable, quality care, supports providers in growing their businesses, and ensures *real* voices influence policy change. Representatives from the Child Action Center were invited to be on the HMPC and provide input into the Plan development process, including input on the Draft LHMP.
- **American Red Cross:** Red Cross Gold Country Region, including the Sierra-Delta Chapter, covers multiple northern California Counties including Sacramento. The Rid Cross' mission is to prevent and alleviate human suffering in the face of emergencies. This involves providing relief to individuals and communities impacted by disasters, teaching life-saving skills, and supporting those in need through various services. These services include disaster relief, including providing shelter, food, and health services during emergencies. They also offer training in first aid, CPR, and other life-saving skills.

Local Red Cross representatives were invited to be on the HMPC and review and provide comments on the Public Review Draft LHMP.

- **Salvation Army:** The Salvation Army in Sacramento is dedicated to providing support and assistance to those in need. With a mission rooted in Christian principles, the Salvation Army Sacramento offers a range of programs and services to address the diverse challenges faced by individuals and families. Their comprehensive approach includes emergency assistance, such as food and shelter, as well as long-term solutions like addiction rehabilitation and job training. The organization operates various community programs, including youth outreach, family services, and disaster relief efforts. Local Salvation Army representatives were invited to be on the HMPC and review and provide comments on the Public Review Draft LHMP.
- **Alta California Regional Center (ACRC):** The ACRC creates partnerships to support all eligible individuals with developmental disabilities, children at risk, and their families in choosing services and supports through individual lifelong planning as a means to achieve healthy and productive lives in their own communities. Local ACRC representatives were invited to be on the HMPC and review and provide comments on the Public Review Draft LHMP.
- **Area 4 Agency on Aging:** Agency on Aging Area 4 (AAA4) serves aging adults (60+), adults with disabilities, and the people who care for them in seven counties, including Sacramento. Their mission is to enrich the lives of older adults and people with disabilities by fostering networks of support, advocating for individual choice, collaborating with others, ensuring equity, and striving to do so with conviction. Local AAA4 representatives were invited to be on the HMPC and review and provide comments on the Public Review Draft LHMP.
- **Paratransit:** The primary focus of Paratransit is to expand mobility and accessibility by providing innovative programs and services to the community. For some forty years Paratransit been dedicated to providing independence to people with mobility challenges. Local Paratransit representatives were invited to be on the HMPC and review and provide comments on the Public Review Draft LHMP.
- **Sacramento Food Bank and Family Services:** Sacramento Food Bank & Family Services (SFBFS) was founded in 1976 with the purpose of nourishing community members experiencing hunger. As the need has grown over the past five decades, so has the organization. Today, SFBFS serves as the largest hunger relief organization in Sacramento County and the regional food bank, supporting a network of 112 partners to provide nutritious, meaningful food to neighbors in need. . Local SFBFS representatives were invited to be on the HMPC and review and provide comments on the Public Review Draft LHMP.
- **Society for the Blind:** Since 1954, Society for the Blind has provided services and programs for people who are blind or have low vision. Today, the Society for the Blind is a nationally recognized agency and the only rehabilitative teaching center for a 27 county region of northern California. This includes providing life and job skills training, mentorship, and access to tools to maintain independence for thousands of youth, adults and seniors in Sacramento and the surrounding areas experiencing vision loss. Local Society for the Blind representatives were invited to be on the HMPC and review and provide comments on the Public Review Draft LHMP.

3.2.2. Phase 2: Assess Risks

Planning Steps 4 and 5: Identify the Hazards and Assess the Risks

Foster Morrison led the HMPC and the participating jurisdictions in a research effort to identify, document, and profile all the hazards that have, or could have, an impact to the Sacramento County Planning Area. Starting with the 2021 LHMP, natural hazards of concern were added, deleted, and modified for this LHMP Update. Data collection worksheets were developed and used in this effort to aid in determining hazards and vulnerabilities and where the risk varies across the Sacramento County Planning Area. Geographic information systems (GIS) were used to display, analyze, and quantify hazards and vulnerabilities.

The HMPC and participating jurisdictions also conducted a capability assessment to review and document the Sacramento County Planning Area's current capabilities to mitigate risk from and vulnerability to hazards. By collecting information about existing government programs, policies, regulations, ordinances, and emergency plans, the HMPC and participating jurisdictions could assess those activities and measures already in place that contribute to mitigating some of the risks and vulnerabilities identified.

NFIP Participation

Also addressed in the risk assessment and mitigation strategy of this 2026 LHMP is an assessment of the County's and seven cities' floodplain management programs and participation in the NFIP, including a discussion of their continued compliance with NFIP requirements and the County's and cities of Citrus Height's and Sacramento's CRS programs. It should be noted that this requirement applies only to eligible NFIP communities. Participating special districts and agencies to this LHMP Update do not address their compliance with the NFIP as they are not eligible jurisdictions for purposes of the NFIP.

High Hazard Potential Dam (HHPD) Program

Dams are an aging infrastructure; the average age of dams in the US is 61-65 years. High hazard potential is a classification standard for any dam whose failure or mis-operation will cause loss of human life and significant property destruction. Many of these high hazard dams lack regular maintenance and improvements and present an ongoing risk to nearby communities. In response, the Consolidated Appropriations Act, 2019 appropriated millions for the HHPD program for each of fiscal years 2021 through 2026. The purpose of the HHPD program is to provide assistance for repair, removal or rehabilitation of HHPDs, and may include funding for technical, planning, design, and construction activities. The focus on this recent program is to provide funding for those dams that pose an unacceptable risk to the public. In order to be eligible for this grant program, all dam risks must be addressed in both state and local hazard mitigation plans, in addition to other eligibility requirements. This LHMP Update is being developed to establish eligibility and access of Sacramento County to FEMA's HHPD grant program. Of the 32 participating jurisdictions, only the City of Folsom owns one dam, the Willow Hill Reservoir Dam, within the Sacramento County Planning Area. Other possible eligible HHPD dams in Sacramento County include the Calero and Chesbro Dams, owned by Rancho Murietta CSD, and the Rancho Seco Dam, owned by Sacramento Municipal Utility District (SMUD). Thus, this LHMP Update is also being developed to establish eligibility and access of Sacramento County, as project lead, the City of Folsom, and other eligible jurisdictions, to FEMA's HHPD grant program.

3.2.3. Phase 3: Develop the Mitigation Plan

Planning Steps 6 and 7: Set Goals and Review Possible Activities

Foster Morrison facilitated brainstorming and discussion sessions with the HMPC that described the purpose and process of developing planning goals and objectives, a comprehensive range of mitigation alternatives, and a method of selecting and defending recommended mitigation actions using a series of selection criteria. This information is included in Chapter 5 Mitigation Strategy. Additional documentation on the process the HMPC used to develop the goals and mitigation strategy is in Appendix C.

Planning Step 8: Draft an Action Plan

Based on input from the HMPC regarding the draft risk assessment and the goals and activities identified in Planning Steps 6 and 7, a complete first draft of the LHMP Update was developed. This HMPC Review Draft was provided for HMPC review and comment via a Dropbox web link. Other agencies and the public members of the HMPC and Steering Committee were also invited to comment on this Draft. HMPC comments were integrated into the second Public Review Draft, which was advertised and distributed to collect public and private stakeholder input and comments. Comments and input on the Public Review Draft were integrated, as appropriate, along with additional internal review comments and a Final Draft LHMP was produced and submitted for review and approval by CAL OES and FEMA Region IX, contingent upon final adoption by governing boards of all participating jurisdictions.

3.2.4. Phase 4: Implement the Plan and Monitor Progress

Planning Step 9: Adopt the Plan

In order to secure buy-in and officially implement the LHMP Update, the Plan was adopted by the governing boards of each participating jurisdiction using the sample resolutions contained in Appendix D.

Planning Step 10: Implement, Evaluate, and Revise the Plan

The true worth of any mitigation plan is in the effectiveness of its implementation. Up to this point in the planning process, all of the HMPC's efforts have been directed at researching data, coordinating input from participating entities, and developing appropriate mitigation actions and projects. Each recommended action includes key descriptors, such as a lead manager and possible funding sources, to help initiate implementation. An overall implementation strategy is described in Chapter 7 Plan Implementation and Maintenance.

Finally, there are numerous organizations within the Sacramento County Planning Area whose goals and interests interface with hazard mitigation. Coordination with these other planning efforts, as addressed in Planning Step 3, is paramount to the implementation and ongoing success of this plan and mitigation in the Sacramento County Planning Area and is addressed further in Chapter 7.

Implementation and Maintenance Process: 2021 LHMP

The previous 2021 LHMP included a process for Plan maintenance and implementation of the mitigation strategy as well as formal updates to the LHMP. The 2021 process called for quarterly and annual reviews with the status of mitigation strategy implementation documented in an annual report. In addition, the 2021 processes called for a formal plan update as required by DMA regulations every 5 years. With respect to Sacramento County and the City of Sacramento, as the two CRS communities, periodic reviews were conducted, with an annual status report developed and publicized on community websites in accordance with CRS. With respect to other participating jurisdictions to the 2021 LHMP, no formal process was utilized for periodic reviews. Some jurisdictions periodically assessed implementation status and opportunities as part of annual budget processes, including budget processes associated with the Capital Improvement Program (CIP) and others. This 2026 LHMP Update, once approved and adopted, will meet the DMA formal 5-year update requirement for all participating jurisdictions.

In addition, the 2021 LHMP was relied on and integrated into other planning mechanisms in the Sacramento County Planning Area. Table 3-8 lists the planning mechanisms the 2021 LHMP was integrated into by Sacramento County. Specific to each participating jurisdiction that participated in both the 2021 and 2026 LHMPs, the jurisdictional annexes identify the planning mechanisms the 2021 LHMP were integrated into.

Table 3-8 Incorporation of 2021 Sacramento County LHMP Update into Other Planning Mechanisms

Planning Mechanism 2021 LHMP Was Incorporated or Implemented Through	Details: How was it incorporated?
Sacramento County Emergency Operations Plan (EOP), 2022	The EOP used the risk assessment from the 2021 LHMP to inform the hazard concerns and threats in the EOP update. Other portions of the 2021 LHMP were incorporated to the extent they aligned with the EOP and associated annexes.
Sacramento County General Plan Safety Element	The 2021 LHMP was incorporated by reference into the Safety Element of the General Plan
Sacramento County 2024 Communitywide Climate Adaptation Plan	The 2024 CAP includes the following as part of CAP Measure 13 (Flood): "In accordance with federal law, the Sacramento County Local Hazard Mitigation Plan (LHMP) will be updated periodically to adapt to potential changes in flooding hazard conditions, including climate change influences. As the effects of global climate change continue to manifest, Sacramento County's adaptation strategies and mitigation actions may need to evolve to accommodate changing conditions. Regular updates to the LHMP will include adjustments to Sacramento County's adaptation strategies and mitigation actions, so they are deployed accurately and in a timely manner." The 2024 CAP also includes reference to the LHMP in Measure 02 (All): "The County will set up annual progress report/check-in meetings with agencies, organizations, businesses, and others who are assigned to implement each adaptation measure. The assessment will include whether certain measures are completed, need to be revised, or are no longer applicable. The meetings can potentially be combined with annual LHMP check-in meetings, and/or following a significant hazard event or a disaster declaration".

Planning Mechanism 2021 LHMP Was Incorporated or Implemented Through	Details: How was it incorporated?
Hazard Mapping and Development Review	PER incorporated natural-hazard mapping into the County's Parcel Viewer to support planning and development review. The Parcel Viewer includes mapped hazard information such as liquefaction/seismic hazard zones and CAL FIRE Fire Hazard Severity Zones (FHSZ), which assist staff and applicants in identifying properties and proposed development within mapped hazard areas and determining applicable planning and development requirements.

The plan implementation and maintenance process as set forth in the 2021 LHMP has been updated for this LHMP Update. The revised implementation and maintenance process for the Sacramento County 2026 LHMP Update is set forth in Section 7 of this Plan document. A strategy for continued public involvement for this update process is also included in Chapter 7.

Chapter 4 Risk Assessment

44 CFR Requirement §201.6(c)(2): [The plan shall include] A risk assessment that provides the factual basis for activities proposed in the strategy to reduce losses from identified hazards. Local risk assessments must provide sufficient information to enable the jurisdiction to identify and prioritize appropriate mitigation actions to reduce losses from identified hazards.

As defined by the Federal Emergency Management Agency (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 risk assessment process identifies and profiles relevant hazards and assesses the exposure of lives, property, and infrastructure to these hazards. The process allows for a better understanding of a community's potential risk to natural hazards and provides a framework for developing and prioritizing mitigation actions to reduce risk from future hazard events.

This risk assessment followed the methodology described in the FEMA publication Understanding Your Risks—Identifying Hazards and Estimating Losses (FEMA 386-2, 2002), which breaks the assessment down into a four-step process:

1. Identify Hazards;
2. Profile Hazards;
3. Inventory Assets; and
4. Estimate Losses.

Data collected through this process has been incorporated into the following sections of this chapter:

- **Section 4.1 Hazard Identification** identifies the natural hazards that threaten the Sacramento County Planning Area and unincorporated Sacramento County and describes why some hazards have been omitted from further consideration.
- **Section 4.2 Sacramento County Planning Area Assets Inventory and Growth and Development Trends** identifies the populations; structures and values; critical facilities and community lifelines; cultural, historical, and natural resources; and economic and community activities of value. It also identifies past growth in the Sacramento County Planning Area and reviews future development trends. This information is not hazard specific and covers the entire Sacramento County Planning Area and unincorporated Sacramento County.
- **Section 4.3 Hazard Profiles and Vulnerability Assessment** provides an overview of each hazard, its location and extent, and discusses the risk, vulnerability, and impacts of each natural hazard to the Sacramento County Planning Area and unincorporated Sacramento County. The hazard profile also describes previous occurrences of hazard events and the likelihood of future occurrences. The vulnerability assessment evaluates the Sacramento County's exposure to natural hazards considering: populations; structures and values; critical facilities and infrastructure; community lifelines; natural, historic, and cultural resources; economic assets and community activities; and future development trends, and where possible, estimates potential hazard losses.

- **Section 4.4 Capability Assessment** inventories existing mitigation activities and policies, regulations, plans, and programs that pertain to hazards and mitigation in the Sacramento County Planning Area and unincorporated Sacramento County and can affect net vulnerability.
- **Section 4.5 Natural Hazard Summary** summarizes the results of the risk assessment and whether a hazard is considered a priority for mitigation strategy planning.

This risk assessment covers the entire geographical extent of Sacramento County (i.e., the Sacramento County Planning Area) and unincorporated Sacramento County. And as required by FEMA, this risk assessment for the Sacramento County Planning Area also includes an evaluation of how the hazards and risks vary across the Planning Area.

This LHMP Update involved a comprehensive review and update of each section of the 2021 LHMP. Information from the 2021 LHMP was used in this Update, where valid and applicable. As part of the risk assessment update, new data was used, where available, and new analyses were conducted. Where data from existing studies and reports was used, the source is referenced throughout this risk assessment. Refinements, changes, and methodologies used in the development of this risk assessment update are summarized in Chapter 2 What's New and are also detailed in this risk assessment portion of the Plan Update.

4.1 Hazard Identification

44 CFR Requirement §201.6(c)(2)(I): [The risk assessment shall include a] description of the type…of all natural hazards that can affect the jurisdiction.

The Sacramento County Hazard Mitigation Planning Committee (HMPC) conducted a hazard identification study to determine the hazards that threaten the Planning Area. This section details the methodology and results of this effort.

Data Sources

The following data sources were used for this Hazard Identification portion of the plan:

- 2017 Sacramento County General Plan
- 2021 Sacramento County Hazard Mitigation Plan
- 2023 State of California Hazard Mitigation Plan
- California Department of Water Resources
- California Office of Emergency Services
- FEMA Disaster Declaration Database
- FEMA's National Risk Index, 2024
- HMPC input
- National Climatic Data Center Storm Events Database
- National Oceanic and Atmospheric Administration
- U.S Department of Agriculture

Full data sources for this LHMP Update are included in Appendix B.

4.1.1. Results and Methodology

Using existing hazards data and input gained through planning meetings, the HMPC agreed upon a list of hazards that could affect the Sacramento County Planning Area. Hazards data from the California Office of Emergency Services (Cal OES), FEMA, California Department of Water Resources, the National Oceanic and Atmospheric Administration (NOAA), and many other sources were examined to assess the significance of these hazards to the Planning Area.

The following hazards in Table 4-1, listed alphabetically, were identified and investigated for this LHMP Update. As a starting point, the 2021 Sacramento County LHMP Update and the 2023 California State Hazard Mitigation Plan were consulted to evaluate the applicability of new hazards of concern to the State to the Sacramento County Planning Area. Building upon this effort, hazards from the past plan were also identified, and comments explain how hazards were updated from the previous plan. Most hazards from the 2021 plan were profiled in this LHMP Update, with the exception of pandemic and volcano. Liquefaction was placed inside the earthquake hazard. Aquatic nuisance species hazards and sea level rise were added.

Table 4-1 Sacramento County Hazard Identification and Comparison between 2021 and 2026 LHMP

2026 Hazards	2021 Hazards	Comment
Aquatic Nuisance Species (plant/animal)	–	This is a new hazard.
Climate Change	Climate Change	This hazard was kept
Dam Failure	Dam Failure	This hazard was kept.
Drought & Water Shortage (w/tree mortality)	Drought and Water Shortage	This hazard was kept. Tree Mortality was included as a subhazard.
Earthquake (w/subhazards)	Earthquake	This hazard was kept and liquefaction and other subhazards were added.
–	Earthquake Liquefaction	This was brought into the earthquake hazard above.
Flood: 1%/0.5%/0.2% annual chance	Flood: 1%/0.5%/0.2% annual chance	This hazard was kept.
Flood: Localized Stormwater	Flood: Localized/Stormwater	This hazard was kept.
Landslides, Mudslides, and Debris Flow	Landslide, Mudslide, and Debris Flows	This hazard was kept.
Levee Failure	Levee failure	This hazard was kept.
–	Pandemic	This hazard was dropped from the LHMP.
Sea Level Rise		This hazard was added as a stand alone hazard.

2026 Hazards	2021 Hazards	Comment
Severe Weather: Extreme Cold and Freeze	Severe Weather: Winter Storms and Freeze	This hazard was kept, with the additional focus on extreme cold temperatures; winter storms are primarily addressed in Severe Weather: Heavy Rains and Storms.
Severe Weather: Extreme Heat	Severe Weather: Extreme Heat	This hazard was kept.
Severe Weather: Heavy Rains and Storms (Hail, Lightning, Wind)	Severe Weather: Heavy Rains and Storms (winds, hail, lightning)	This hazard was kept.
Severe Weather: High Winds and Tornadoes	Severe Weather: High Winds/Tornadoes	This hazard was kept.
Subsidence	Subsidence	This hazard was kept.
	Volcano	This hazard was dropped from the LHMP.
Wildfire (with smoke and air quality)	Wildfire	This hazard was kept, and smoke and air quality subhazards were added.

Certain other hazards were excluded from consideration for this Plan Update. They are shown in Table 4-2.

Table 4-2 Sacramento County – Excluded Hazards

Hazard Excluded	Why Excluded
Avalanche	The County has no areas at risk to avalanche.
Coastal Flooding, Erosion, and Sea Level Rise	The County is not on the coast. Sea level rise is considered though as the Delta area is subject to sea level rise.
Hurricane	The County is not on the coast.
Tsunami	The County is not on the coast.
Volcano	Given the location of active or potentially active volcanoes relative to the Planning Area, it was felt this hazard was not of concern to the County.

Table 4-3 was completed by the County and HMPC to identify, profile, and rate the significance of identified hazards. Those hazards identified as a high or medium significance in Table 4-3 are considered priority hazards for mitigation planning. Those hazards that occur infrequently or have little or no impact in Sacramento County were determined to be of low significance and not considered a priority hazard. Significance was determined based on the hazard profile, focusing on key criteria such as frequency, extent, and resulting damage, including deaths/injuries and property, natural and cultural resources, and economic damage. The ability of a jurisdiction to reduce losses through implementation of existing and new mitigation measures was also considered as to the significance of a hazard. This assessment was used to prioritize those hazards of greatest significance, enabling the County to focus resources where they are most needed.

Table 4-3 Sacramento County 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	Limited	Medium	–
Dam Failure	Significant	Occasional	Catastrophic	High	Medium
Drought & Water Shortage (w/tree mortality)	Extensive	Likely	Critical	High	High
Earthquake (w/subhazards)	Extensive	Occasional	Catastrophic	Medium	Low
Flood: 1%/0.5%/0.2% annual chance	Significant	Occasional/ Unlikely	Critical	High	Medium
Flood: Localized Stormwater	Significant	Highly Likely	Limited	Medium	Medium
Landslides, Mudslides, and Debris Flow	Limited	Occasional	Negligible	Medium?	Medium
Levee Failure	Significant	Occasional	Catastrophic	High	Medium
Sea Level Rise	Limited	Likely	Negligible	Medium	High
Severe Weather: Extreme Cold and Freeze	Extensive	Highly Likely	Limited	Medium	Medium
Severe Weather: Extreme Heat	Extensive	Highly Likely	Critical	High	High
Severe Weather: Heavy Rains and Storms (Hail, Lightning, Wind)	Extensive	Highly Likely	Limited to Critical	Medium	Medium
Severe Weather: High Winds and Tornadoes	Extensive	Highly Likely	Limited to Critical	Medium	Low
Subsidence	Limited	Likely	Limited	Medium	Medium
Wildfire (with smoke and air quality)	Extensive	Highly Likely	Catastrophic	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

4.1.2. Disaster Declaration History

One method used to identify hazards was the researching of past events that triggered federal and/or state emergency or disaster declarations in the Sacramento County Planning Area. Federal and/or state disaster declarations may be granted when the severity and magnitude of an event surpasses the ability of the local government to respond and recover. Disaster assistance is supplemental and sequential. When the local government's capacity has been surpassed, a state disaster declaration may be issued, allowing for the provision of state assistance. Should the disaster be so severe that both the local and state governments' capacities are exceeded, a federal emergency or disaster declaration may be issued allowing for the provision of federal assistance.

The federal government may issue a disaster declaration through FEMA, the U.S. Department of Agriculture (USDA), and/or the Small Business Administration (SBA). FEMA also issues emergency declarations, which are more limited in scope and without the long-term federal recovery programs of major disaster declarations. The quantity and types of damage are the determining factors.

A USDA declaration will result in the implementation of the Emergency Loan Program through the Farm Services Agency. This program enables eligible farmers and ranchers in the affected county as well as contiguous counties to apply for low interest loans. A USDA declaration will automatically follow a major disaster declaration for counties designated major disaster areas and those that are contiguous to declared counties, including those that are across state lines. As part of an agreement with the USDA, the SBA offers low interest loans for eligible businesses that suffer economic losses in declared and contiguous counties that have been declared by the USDA. These loans are referred to as Economic Injury Disaster Loans. USDA declarations are discussed in the next section.

Based on the disaster declaration history provided in Table 4-4, Sacramento County is among the many counties in California susceptible to disaster. Details on federal and state disaster declarations were obtained by the HMPC, FEMA, and Cal OES and compiled in chronological order in Table 4-4. A review of state declared disasters indicates that Sacramento County received 37 state declarations between 1950 and 2025. Of the 37 state declarations: 26 were associated with severe winter storms, heavy rains, or flooding; 3 were for fire; 3 were for drought; 2 were from levee break, 1 were from pandemic, 1 was for earthquake; and 1 was from economic disaster. A review of federal disasters shows 29 federal disaster declarations from 1950 to 2025. Of these 29 federal declarations: 18 were associated with severe winter storms, heavy rains, or flooding; 3 for fire; 2 were from earthquake, 2 were from levee break, 1 was from pandemic, 1 for drought; and 2 was for hurricane (a nationwide declaration for Katrina evacuations and one from Hillary). A summary of these events by disaster type is shown in Table 4-5.

Table 4-4 Sacramento County Federal and State Disaster Declarations, 1950-2025

Year	Disaster Name	Disaster Type	Disaster Cause	State Declaration #*/ Date	Federal Declaration#/ Date
2025	Wildfires and Straight-line Winds	Wildfire	Fire	N25-25 1/7/2025 (statewide)	DR-4856 1/8/2025 (statewide)

Year	Disaster Name	Disaster Type	Disaster Cause	State Declaration #*/ Date	Federal Declaration#/ Date
2024	Severe Winter Storms, Tornadoes, Flooding, Landslides, Mudslides	Flood	Storms	Proclaimed 3/22/2024	DR-4769 4/13/2024
2024	State of Emergency for Atmospheric River Storms (Statewide)	Flood	Storms	Proclaimed 1/31/2024	–
2023	Tropical Storm Hilary (statewide)	Flood	Storms	Proclaimed 8/19/2023	DR-4750 11/21/2023
2023	Severe Winter Storms, Straight-line Winds, Flooding, Landslides, Mudslides	Flood	Storms	–	DR-4699 4/3/2023
2023	State of Emergency for Atmospheric River Storms (Statewide)	Flood	Storms	N-6-23 N-7-23 N-9-23 N-10-23 3/8/2023	–
2023	State of Emergency for Atmospheric River Storms (Statewide)	Flood	Storms	Proclaimed 2/21/2023	–
2023	Severe Winter Storms, Flooding, Mudslides	Flood	Storms	–	EM-3591 1/9/2023
2023	Severe Winter Storms, Flooding, Landslides, Mudslides	Flood	Storms	–	DR-4683 1/14/2023
2022	State of Emergency for Atmospheric River Storms (Statewide)	Flood	Storms	Proclaimed 12/30/2022	–
2021	Drought	Drought	Drought	Proclaimed 4/10/2021	–
2020	Wildfires	Fire	Fire	Proclaimed 10/27/2020	DR-4569 10/16/2020
2020	Wildfires (statewide)	Fire	Fire	Proclaimed 9/5/2020	DR-4558 10/22/2020
2020	Covid-19	Pandemic	Pandemic	3/4/2020	DR-4482 1/20/2020
2017	California Severe Winter Storms, Flooding, Mudslides	Flood	Storms	3/7/2017	DR-4308 4/1/2017
2017	California Severe Winter Storms, Flooding, And Mudslides	Flood	Storms	2/10/2017	DR-4305 3/16/2017
2017	California Severe Winter Storms, Flooding, Mudslides	Flood	Storms	–	DR-4301

Year	Disaster Name	Disaster Type	Disaster Cause	State Declaration #*/ Date	Federal Declaration#/ Date
2015	Tree Mortality	Drought	Drought	Proclaimed 10/30/2015	–
2014	Napa Earthquake	Natural	Earthquake	–	EM-4193 9/17/2014
2014	California Drought	Drought	Drought	GP 2014-13 1/17/2014	–
2008	Central Valley Drought	Drought	Drought	GP 2008-03 6/12/2008	–
2008	2008 January Storms	Flood	Storms	GP 2008-01 1/5/2008	–
2005/2006	2005/06 Winter Storms	Flood	Storms	–	DR-1628 2/3/2006
2005	Hurricane Katrina Evacuations	Economic	Hurricane	–	EM-3248 2005 9/13/2005
2001	Energy Emergency	Economic	Greed	GP 2001 1/1/2001	–
1998	1998 El Nino Floods	Flood	Storms	Proclaimed	DR-1203 2/19/1998
1997	1997 January Floods	Flood	Storms	Proclaimed 1/2/97-1/31/97	DR-1155 1/4/1997
1996	Torrential Winds and Rain	Flood	Storms	GP 96-01 1/21/1996	–
1995	1995 Late Winter Storms	Flood	Storms	Proclaimed	DR-1046 1/10/1995
1995	1995 Severe Winter Storms	Flood	Storms	Proclaimed 1/6/95-3/14/95	DR-1044 1/13/1995
1989	Loma Prieta Earthquake	Earthquake	Earthquake	Proclaimed 10/18/89-10/30/89	DR-845 10/18/1989
1986	1986 Storms	Flood	Storms	Proclaimed 2/18-86-3/12/86	DR-758 2/18/1986
1983	Winter Storms	Flood	Flood	Proclaimed 12/8/82-3/21/83	DR-677 2/9/1983
1982	High Tides and Rains	Flood	Storms	Proclaimed 12/8/1982	–
1982	Heavy Rains and Flooding	Flood	Storms	Proclaimed DC 82-03 4/1/1982	–
1980	Delta Levee Break	Flood	Levee break	Proclaimed 1/23/1980	EM-3078 1/23/1980
1977	1977 Drought	Drought	Drought	–	EM-3023 1/20/1977

Year	Disaster Name	Disaster Type	Disaster Cause	State Declaration #*/ Date	Federal Declaration#/ Date
1973	Southern Pacific Railroad Fires and Explosions (Roseville)	Fire	Explosion	Proclaimed 4/30/1973	–
1972	Andrus Island Levee Break	Flood	Levee break	Proclaimed 6/21/1972	DR-342 6/27/1972
1969	1969 Storms	Flood	Storms	Proclaimed 1/23/69-3/12/69	DR-253 1/26/1969
1964	1964 Late Winter Storms	Flood	Storms	–	DR-183 12/24/1964
1963	1963 Floods	Flood	Storms	Proclaimed 2/14/1964	–
1958	1958 April Storms and Floods	Flood	Storms	Proclaimed 4/5/1958	DR-52 4/4/1958
1958	1958 February Storms and Floods	Flood	Storms	CDO 58-03 2/26/1958	–
1955	1955 Floods	Flood	Flood	Proclaimed 12/22/1955	DR-47 12/23/1955
1950	1950 Floods	Flood	Flood	OCD 50-01 11/21/1950	–

Source: Cal OES, FEMA. Retrieved November 2025.

Table 4-5 Sacramento County – Federal and State Disaster Declarations Summary 1950-2025

Disaster Type	State Declarations		Federal Declarations	
	Count	Years	Count	Years
Drought	3	2008, 2014, 2021	1	1977
Economic	1	2001	0	–
Earthquake	1	1989	2	1989, 2014
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*
Hurricane	0	–	2	2005, 2023
Levee Break	2	1972, 1980	2	1972, 1980
Pandemic	1	2020	1	2020
Fire	3	1973, 2020 (twice)	3	2020 (twice), 2025
Totals	**37**	–	**29**	**–**

Source: Cal OES, FEMA. Retrieved November 2025.

Sacramento County Disasters since 2021 LHMP

- 2025 Wildfires and Straight-line Winds (both a federal and state disaster declaration)

- 2024 Severe Winter Storms, Tornadoes, Flooding, Landslides, Mudslides (both a federal and state disaster declaration)
- 2024 State of Emergency for Atmospheric River Storms (state disaster declaration)
- 2023 Tropical Storm Hilary (both a federal and state disaster declaration)
- 2023 Severe Winter Storms, Straight-line Winds, Flooding, Landslides, Mudslides (federal disaster declaration)
- 2023 State of Emergency for Atmospheric River Storms (state disaster declaration)
- 2023 State of Emergency for Atmospheric River Storms (state disaster declaration)
- 2023 Severe Winter Storms, Flooding, Mudslides (federal disaster declaration)
- 2023 Severe Winter Storms, Flooding, Landslides, Mudslides (federal disaster declaration)
- 2022 State of Emergency for Atmospheric River Storms (state disaster declaration)
- 2021 Drought (state disaster declaration)
- 2020 Wildfires (both a federal and state disaster declaration)
- 2020 Wildfires (both a federal and state disaster declaration)

USDA Disaster Declarations

In addition to the FEMA and Cal OES disaster declarations above, the USDA also issues disaster declarations. Agriculture-related disasters and disaster designations are quite common. Many counties in the United States have been designated as disaster areas in the past several years, even in years of record crop production. The Secretary of Agriculture is authorized to designate counties as disaster areas to make emergency (EM) loans available to producers suffering losses in those counties and in counties that are contiguous to a designated county. USDA Secretarial disaster designations must be requested of the Secretary of Agriculture by a governor or the governor's authorized representative, by an Indian Tribal Council leader or by an FSA State Executive Director (SED). The Secretarial disaster designation is the most widely used.

The USDA database was queried for USDA Secretarial Disaster Declarations for Sacramento County. The online database goes back to 2012. USDA Secretarial Disasters for Sacramento County are shown in Table 4-6.

Table 4-6 Sacramento County – USDA Secretarial Disaster Declarations from 2012-2025

Year Declared/Disaster Type	Designation Number	Primary or Contiguous	Begin Date
2012			
Drought	S3379	Contiguous	9/5/2012
Drought	S3452	Contiguous	12/19/2012
2013			
Drought – FAST TRACK	S3558	Contiguous	7/31/2013
Drought – FAST TRACK	S3569	Primary	8/21/2013
2014			
Drought – FAST TRACK	S3626	Primary	1/15/2014
Drought – FAST TRACK	S3637	Contiguous	1/23/204
Drought – FAST TRACK	S3743	Contiguous	1/1/2014
Drought	S3797	Primary	2/25/2014

Year Declared/Disaster Type	Designation Number	Primary or Contiguous	Begin Date
2015			
Drought – FAST TRACK	S3784	Primary	1/1/2015
2016			
Drought – FAST TRACK	S3952	Primary	1/1/2016
Severe weather including excessive rainfall and high winds	S4164	Contiguous	3/3/2016
Excessive rain, high winds, cold temperatures, and hail	S4170	Primary	3/1/2016
2017			
Drought – FAST TRACK	S4144	Contiguous	1/1/2017
Drought – FAST TRACK	S4163	Primary	10/1/2016
Excessive rain	S4237	Contiguous	10/1/2016
2018			
–	–	–	–
2019			
Excessive rain	S4656	Primary	5/15/2019
2020			
Drought – FAST TRACK	S4697	Primary	4/21/2020
2021			
Drought – FAST TRACK	S4916	Primary	10/1/2020
2022			
Drought – FAST TRACK	S5146	Primary	10/1/2021
Freeze	S5229	Contiguous	2/21/2022
Freeze	S5231	Contiguous	4/11/2022
Freeze	S5332	Contiguous	4/11/2022
2023			
Drought – FAST TRACK	S5371	Primary	10/1/2022
2024			
–	–	–	–
2025			
–	–	–	–

Source: USDA. Retrieved 4/8/2026.

As shown in Table 4-6, there have been 26 drought declarations, 3 freeze declarations, and excessive rain/high winds/cold temperatures/ hail declarations. Of these, 3 drought and 3 freeze declarations have occurred since 2021.

4.2 Sacramento County Asset Inventory and Growth and Development Trends

As a starting point for analyzing the Sacramento County Planning Area's vulnerability to identified hazards, a variety of data was used to define a baseline against which all disaster impacts could be compared. If a catastrophic disaster was to occur in the Sacramento County Planning Area, this section describes significant lands, assets, and other resources at risk. This section is broken into two parts:

- **Asset Inventory** – The assets inventory identifies the Sacramento County Planning Area's and unincorporated Sacramento County's total assets, including the people and populations: structures; critical facilities and infrastructure, and 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 Sacramento County Planning Area and unincorporated Sacramento County, potentially at risk to identified hazards as discussed in Section 4.3 Hazard Profiles and Vulnerability Assessment.
- **Growth and Development Trends** – A discussion of growth and development trends in the Sacramento County Planning Area with a focus on unincorporated Sacramento County, both current and future, is presented.

Data Sources

- 2013-2017 American Community Survey
- 2017 Sacramento County General Plan
- 2017 Sacramento County General Plan Land Use Element
- 2021-2029 Sacramento County Housing Element
- 2025 Sacramento County Parcel/Assessor Data
- Administration for Community Living
- CalAtlas
- California Department of Conservation
- California Department of Developmental Services
- California Department of Finance
- California Department of Fish and Game's Natural Diversity Database
- California Department of Fish and Wildlife Service
- California Department of Housing and Community Development
- California Department of Parks and Recreation Office of Historic Preservation
- California Department of Water Resources (CA DWR) Special Populations and Disadvantaged Community Mapping
- California Environmental Protection Agency (Cal EPA) Disadvantaged Communities
- California Environmental Quality Act (CEQA)
- California Natural Diversity Database
- Center for Disease Control (CDC) Social Vulnerability Index
- FEMA Community Disaster Resilience Zones
- FEMA National Risk Index
- Hazus-MH 6.1
- National Environmental Policy Act (NEPA)
- Sacramento County 2025 Economic Development Strategic Plan
- Sacramento County Agricultural Commissioner
- Sacramento County Building Department and Planning Department
- Sacramento County Economic Development Strategic Plan

- Sacramento County General Plan Economic Development Element
- Sacramento County General Plan Land Use Element
- Sacramento County General Plan Open Space Element Background Report
- Sacramento County GIS
- Sacramento County GIS
- Sacramento County Planning Team
- State Department of Water Resource's Delta Atlas
- State of California Department of Conservation
- U.S. Fish and Wildlife Service National Wetlands Inventory maps
- US Census Bureau
- US Fish and Wildlife Service October 2024 National Wetlands Inventory

Full data sources for this LHMP Update are included in Appendix B.

4.2.1. Assets Inventory

If a catastrophic disaster was to occur in the Sacramento County Planning Area, this section describes populations, structures, critical facilities and infrastructure, and other key assets and resources at risk that comprise the existing built environment. Assets inventoried in this baseline assessment include:

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

Populations

Life safety is a priority issue for hazard mitigation planning. The people that live, work and recreate in the Sacramento County Planning Area, and those that live and work in surrounding communities may also potentially at risk during a natural hazard event.

The estimated population of Sacramento County (both incorporated communities and the unincorporated County) for January 1, 2025, was 1,604,745. Populations potentially at risk are described in the Table 4-7 based on California Department of Finance estimates. The most recent estimates are dated 1/1/2025, which are shown in the table below.

Table 4-7 Sacramento County Planning Area – Populations 2025

Jurisdiction	Total Population
Citrus Heights	86,280
Elk Grove	182,842
Folsom	92,577
Galt	26,092
Isleton	764
Rancho Cordova	85,451

Jurisdiction	Total Population
Sacramento	527,979
Unincorporated County	602,760
Total	**1,604,745**

Source: Cal DOF E-1. 1/1/2025

Table 4-8 illustrates the pace of population growth in Sacramento County dating back to 1930. The data on population and housing growth shows that Sacramento County saw tremendous growth during the late 20th century. That growth slowed somewhat between 2010 and 2020, and the County has seen smaller population growth since 2020, with a slight increase in population since the 2020 LHMP. Details on population growth in the cities are included in their respective annexes to this LHMP Update.

Table 4-8 Sacramento County Planning Area – Population Growth 1930-2025

Year	Population	Percent Change
1930	141,199	–
1940	170,333	20.0%
1950	277,140	62.7%
1960	502,778	81.4%
1970	631,498	25.6%
1980	783,381	24.1%
1990	1,041,219	32.9%
2000	1,223,499	17.5%
2010	1,445,327	18.1%
2020	1,555,365	7.6%
2025	1,604,745	3.2$

Sources: California Department of Finance, US Census Bureau

Vulnerable and Underserved Populations

Vulnerable populations include those who may be disproportionately affected by hazards or may need additional help or accommodation during a hazard event or disaster. The vulnerable and underserved populations discussion for the Sacramento County Planning Area is based on the following sources:

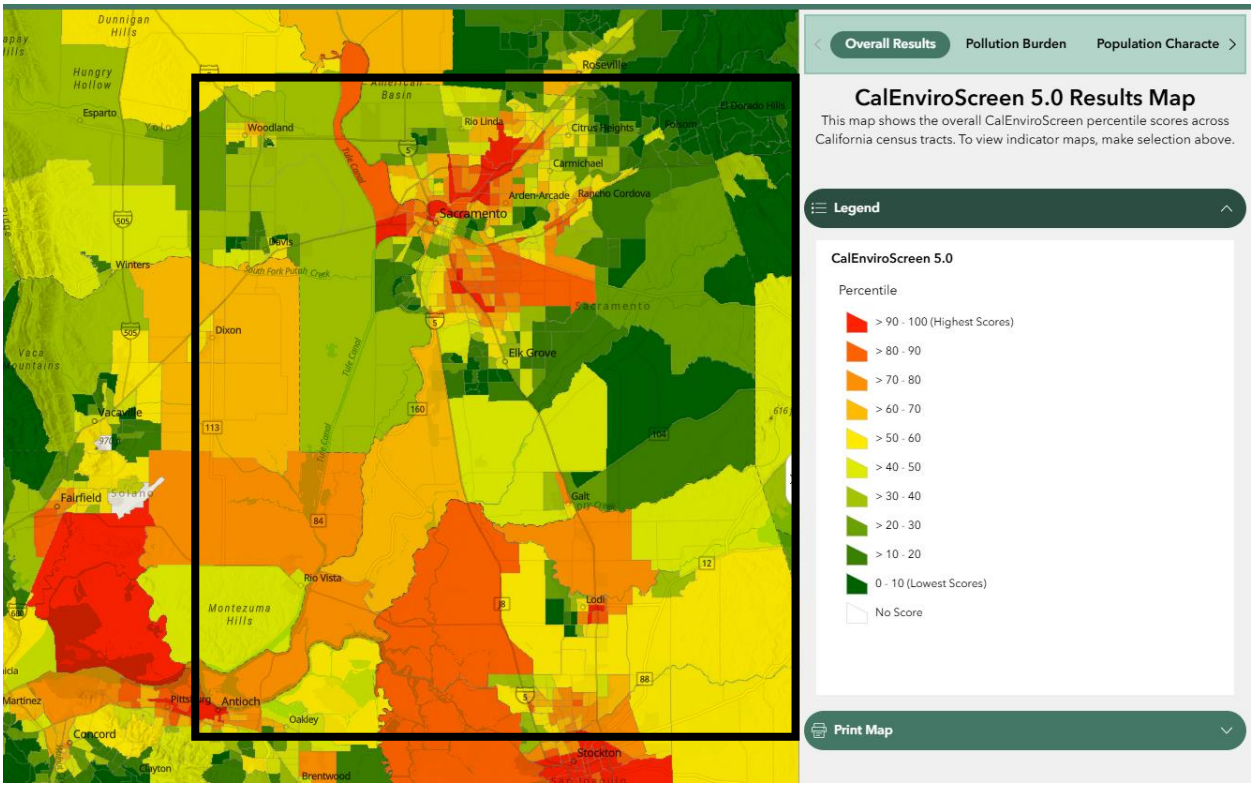
- California Environmental Protection Agency (Cal EPA) Disadvantaged Communities
- Center for Disease Control (CDC) Social Vulnerability Index
- California Department of Water Resources (CA DWR) Special Populations and Disadvantaged Community Mapping
- FEMA Community Disaster Resilience Zones
- FEMA National Risk Index
- Local Input

Note: These sources below show information for the Sacramento County Planning Area and unincorporated Sacramento County. Information on specific data for the incorporated jurisdictions can be found in their respective annexes to this Plan Update.

Cal EPA Disadvantaged Communities

Disadvantaged communities are defined by CalEPA as the top 25 percent of communities experiencing disproportionate amounts of pollution, environmental degradation, and socioeconomic and public health conditions according to the Office of Environmental Health Hazard Assessment's CalEnviroScreen tool. Cal EPA is responsible for identifying disadvantaged communities for the purposes of the Cap-and-Trade funding program. This uses the CalEnviroScreen 5.0 Tool. Maps showing these areas in the Planning Area are shown on Figure 4-1. As shown, there is great variance throughout the County in locations of disadvantaged communities.

Figure 4-1 Sacramento County Planning Area – Cal EPA Disadvantaged Communities

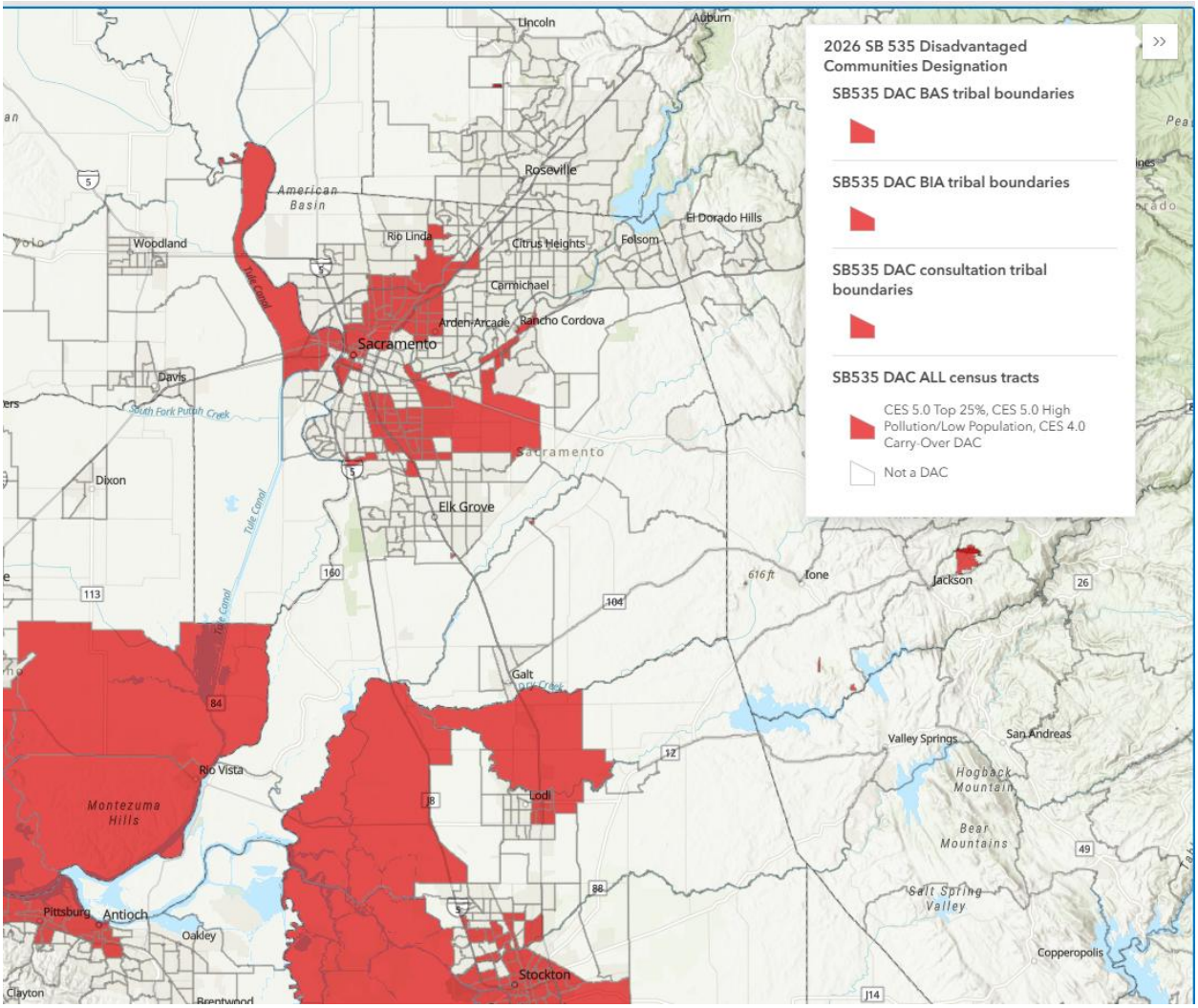


Source: Cal EPA, map retrieved 9/22/2025.

Cal EPA has another way to track disadvantaged communities. California Climate Investments are funds (Greenhouse Gas Reduction Fund and appropriated by the Legislature) from the proceeds of the State's Cap-and-Trade Program specifically targeted for investment in disadvantaged communities in California. These funds must be used for programs that further reduce emissions of greenhouse gases. Senate Bill 535 directed that at least a quarter of the proceeds go to projects that provide a benefit to disadvantaged communities and at least 10 percent of the funds go to projects located within those communities. Cal EPA

has also mapped these communities. Those communities that fall inside this program in Sacramento County are shown on Figure 4-2. As shown, these areas are limited in Sacramento County.

Figure 4-2 Sacramento County SB 535 Disadvantaged Communities (2026)



Source: Cal EPA, map retrieved 10/6/2026.

CDC Social Vulnerability Index

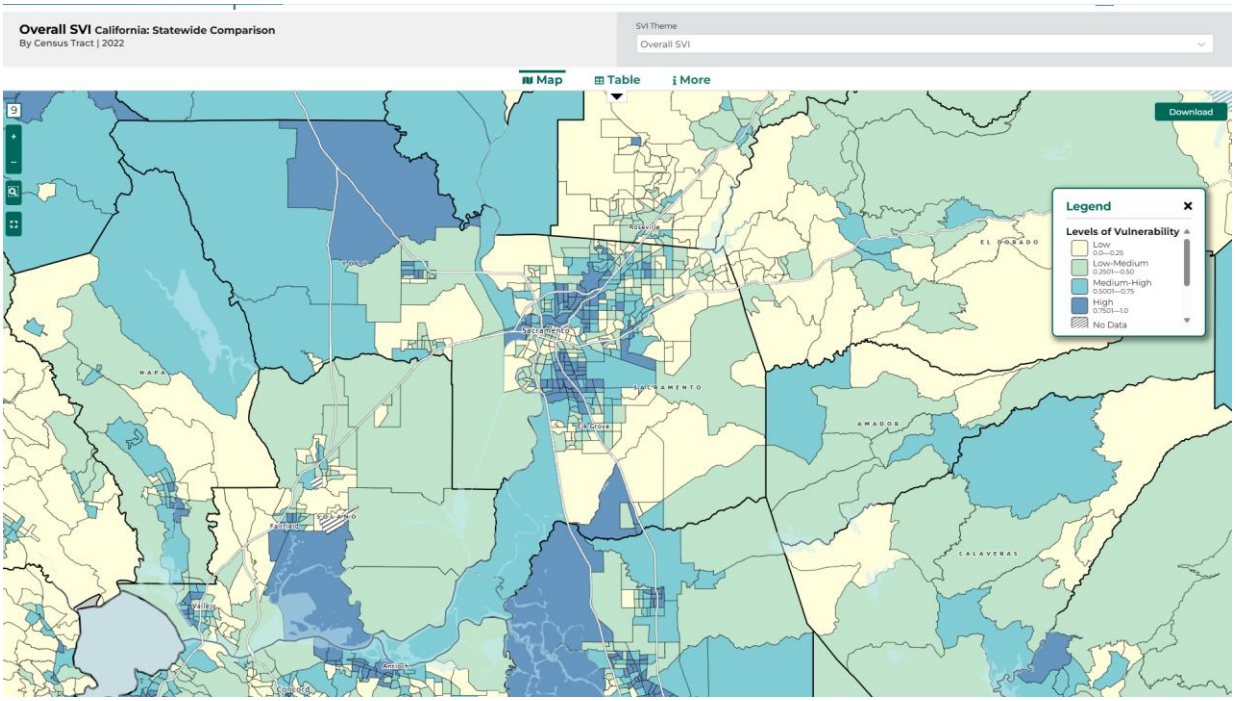
Every community must prepare for and respond to hazardous events, whether a natural disaster like a tornado or disease outbreak, or a human-made event such as a harmful chemical spill. A number of factors, including poverty, lack of access to transportation, and crowded housing may weaken a community's 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. CDC Social Vulnerability Index

(CDC SVI) uses 15 U.S. census variables to help local officials identify communities that may need support before, during, or after disasters.

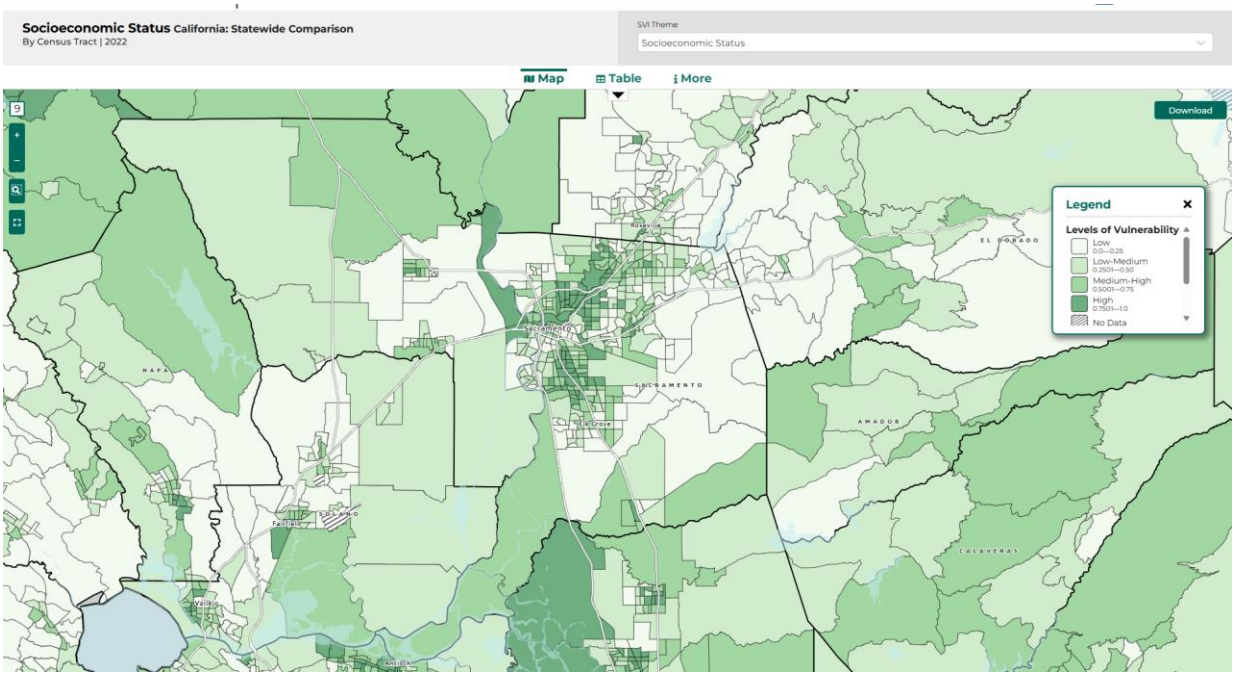
The Agency for Toxic Substances and Disease Registry's (ATSDR) Geospatial Research, Analysis & Services Program (GRASP) created databases to help emergency response planners and public health officials identify and map communities that will most likely need support before, during, and after a hazardous event. 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 are shown in the Sacramento County Planning Area below. The overall SVI map is shown in Figure 4-3; the socioeconomic SVI for the Planning Area is shown in Figure 4-4; the household composition SVI is shown in Figure 4-5; the minority and language SVI is shown in Figure 4-6; and the housing and transportation SVI is shown in Figure 4-7. As shown on all of these maps, the County shows changes across the County in social vulnerability, ranging from areas of Low to High levels of vulnerability across the County.

Figure 4-3 Sacramento County Planning Area – Overall Social Vulnerability



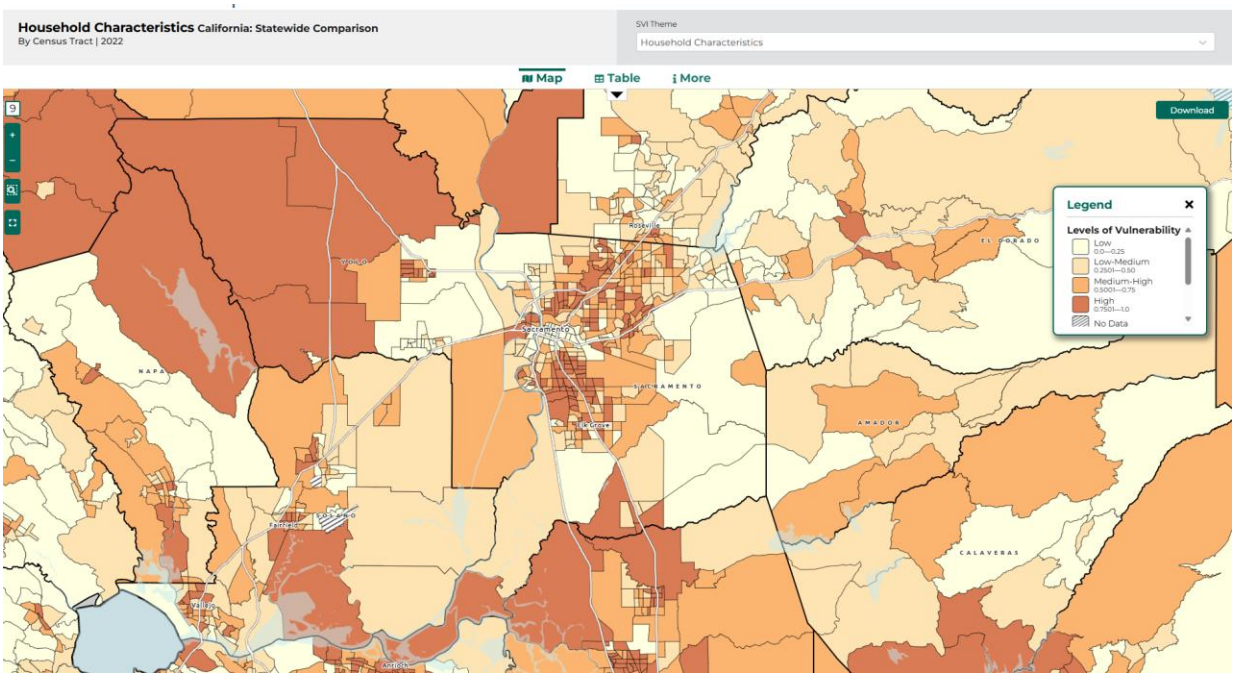
Source: CDC Social Vulnerability Index – map retrieved 9/22/2025.
Level of Vulnerability Rating: **Yellow** – Low; **Green** – Low/Medium; **Aqua** – Medium/High; **Blue** – High; **Grey Hatched** – No Data; **Grey** – Not Available

Figure 4-4 Sacramento County Planning Area – Socioeconomic Status Vulnerability



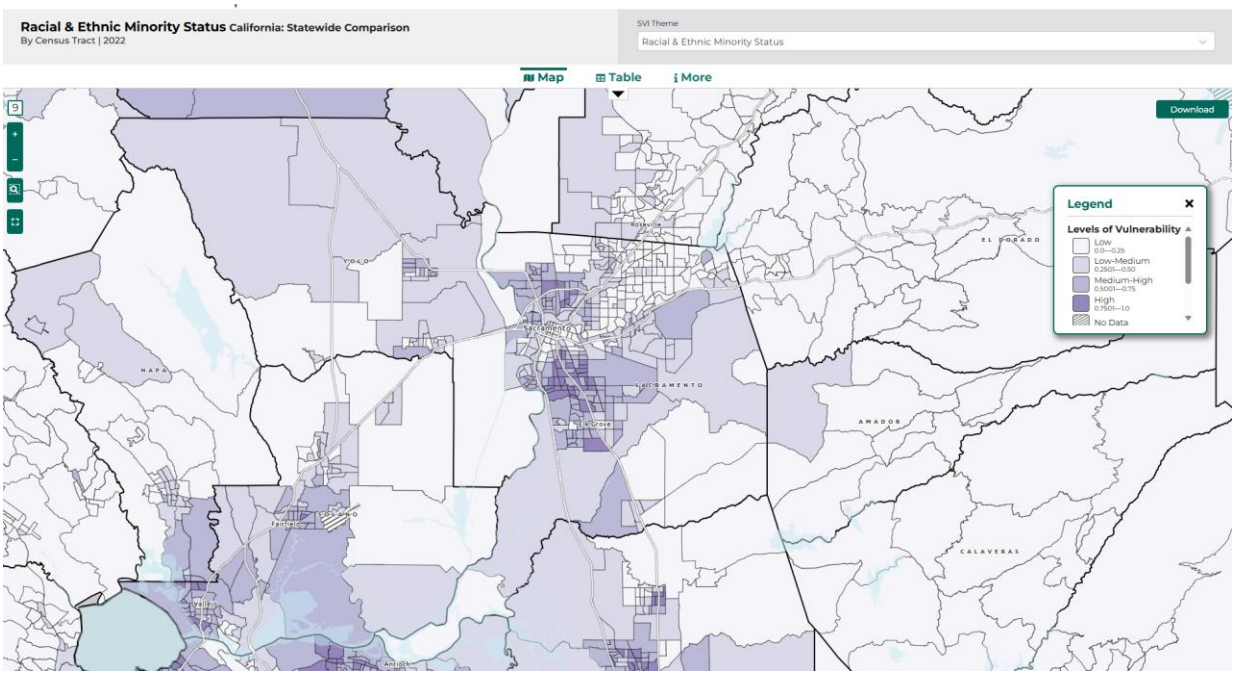
Source: CDC Social Vulnerability Index – map retrieved 9/22/2025.
Level of Vulnerability Rating: **Faint Green** – Low; **Light Green** – Low/Medium; **Green** – Medium/High; **Dark Green** – High; **Grey Hatched** – No Data; **Grey** – Not Available

Figure 4-5 Sacramento County Planning Area – Household Composition and Disabilities Social Vulnerability



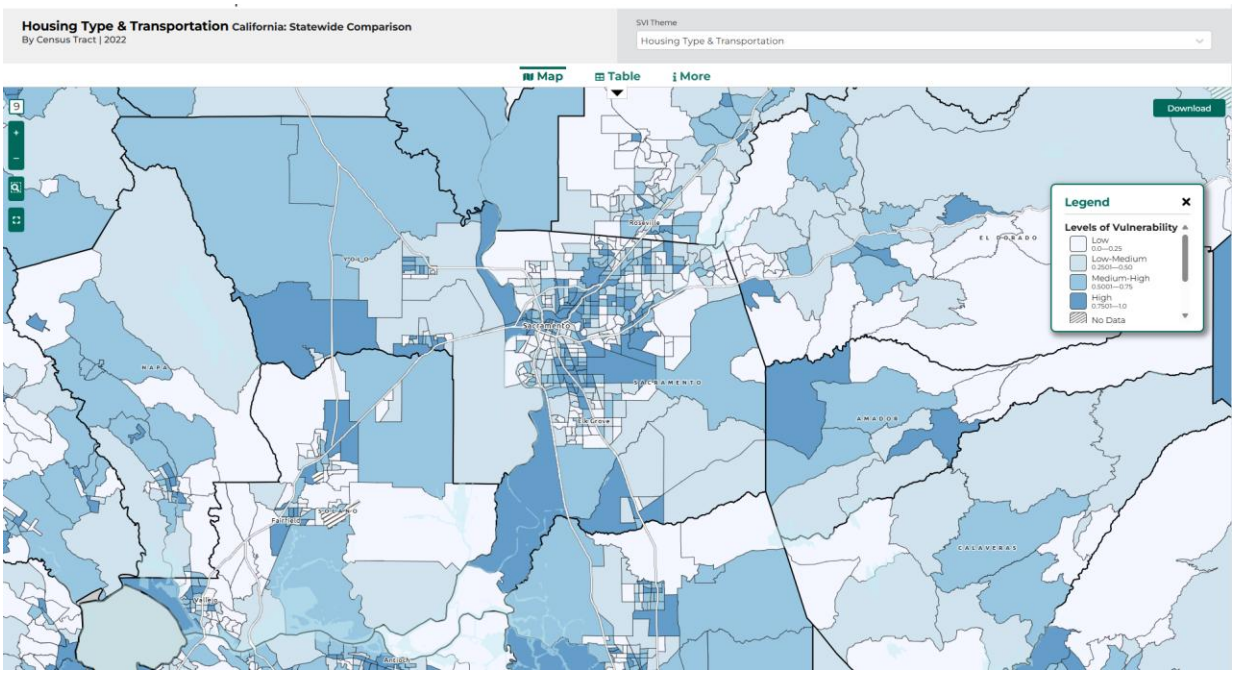
Source: CDC Social Vulnerability Index – map retrieved 9/22/2025.
Level of Vulnerability Rating: **Faint Orange** – Low; **Light Orange**– Low/Medium; **Orange** – Medium/High; **Dark Orange** – High; **Grey Hatched** – No Data; **Grey** – Not Available

Figure 4-6 Sacramento County Planning Area – Minority/Language Social Vulnerability



Source: CDC Social Vulnerability Index – map retrieved 9/22/2025.
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 4-7 Sacramento County Planning Area – Housing/Transportation Social Vulnerability

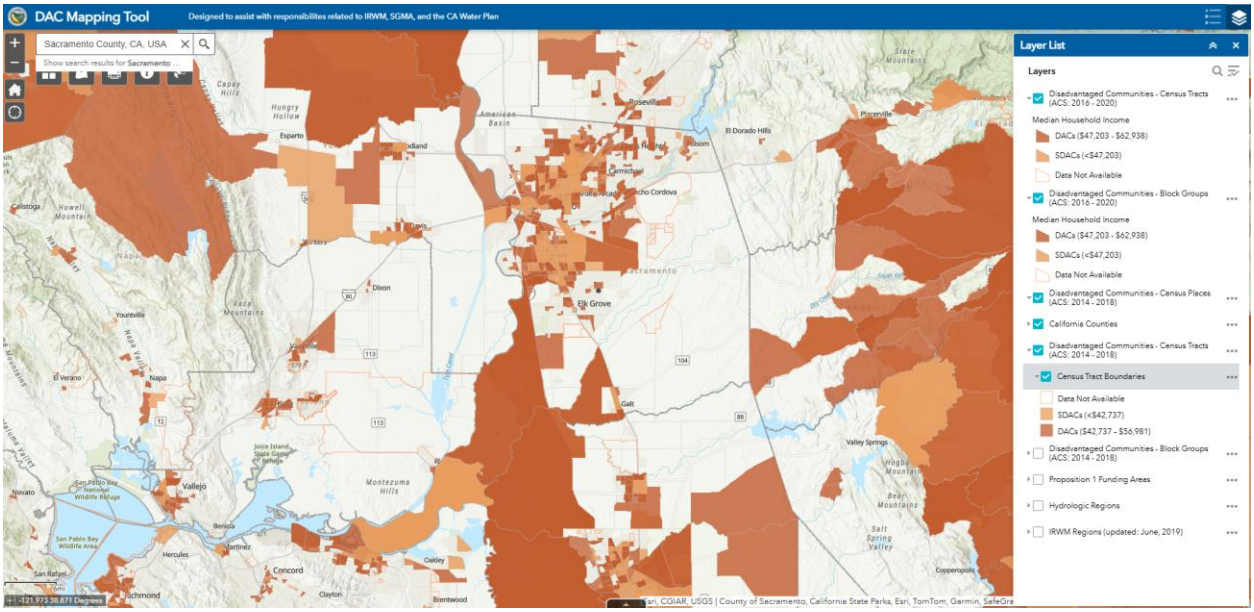


Source: CDC Social Vulnerability Index – map retrieved 9/22/2025.
Level of Vulnerability Rating: **Faint Blue** – Low; **Light Blue** – Low/Medium; **Blue** – Medium/High; **Dark Blue** – High; **Grey Hatched** – No Data; **Grey** – Not Available

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 Planning Area considered disadvantaged are shown in Figure 4-8.

Figure 4-8 Sacramento County Planning Area – Disadvantaged Areas



Source: Cal DWR DAC Mapping Tool – retrieved 9/22/2025.

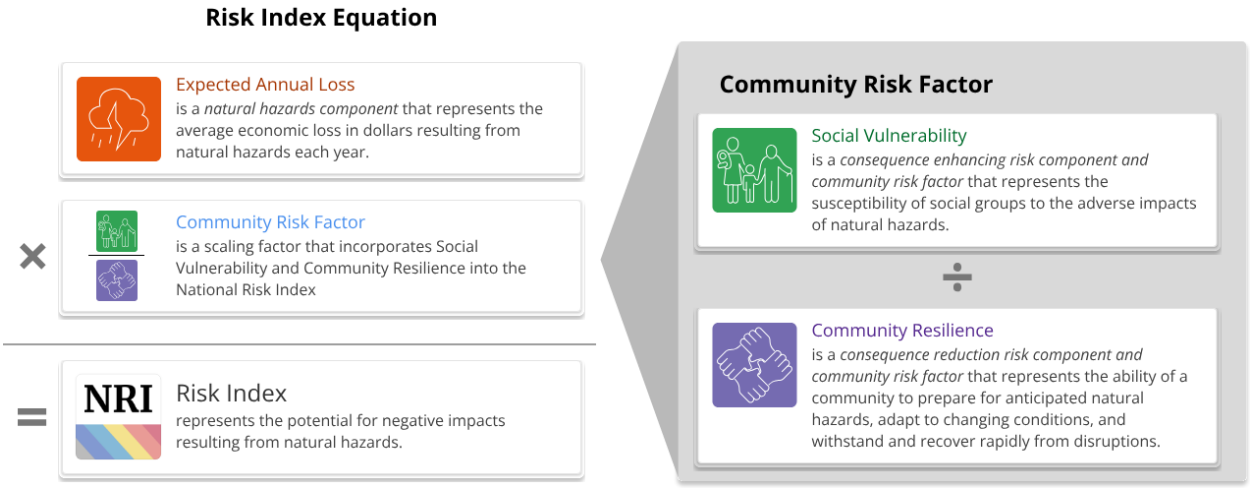
FEMA National Risk Index

Beginning in 2016, FEMA's Natural Hazards Risk Assessment Program (NHRAP) started work on the National Risk Index by adopting an established vision for a multi-hazard view of risk that combines the likelihood and consequence of natural hazards with social factors and resilience capabilities. The goal was to take a broad, holistic view and create a nationwide baseline of natural hazard risk.

A community's susceptibility to natural hazards varies from location to location. The National Risk Index is a dataset and online tool to help illustrate the United States communities most at risk for 18 natural hazards. It was designed and built by FEMA in close collaboration with various stakeholders and partners in academia; local, state, and federal government; and private industry. In the National Risk Index, risk is defined as the potential for negative impacts as a result of a natural hazard.

The risk equation behind the Risk Index includes three components (see Figure 4-9): a natural hazards component (Expected Annual Loss), a consequence enhancing component (Social Vulnerability), and a consequence reduction component (Community Resilience).

Figure 4-9 National Risk Index Equation



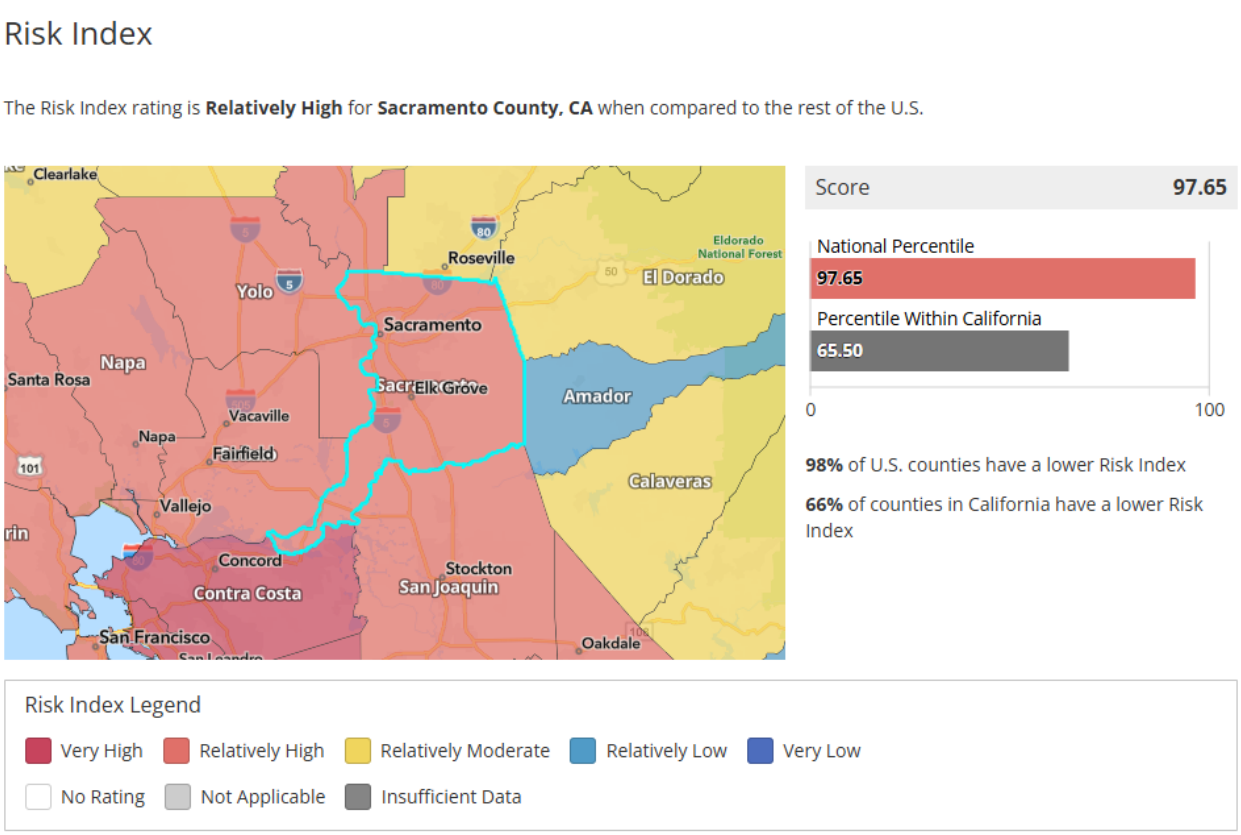
Source: FEMA National Risk Index

Using these three components, composite Risk Index values and hazard type Risk Index values are calculated for each community (county and Census tract) included in the Index. Risk Index values form an absolute basis for measuring Risk within the National Risk Index, and they are used to generate Risk Index percentiles and ratings across communities.

Data from the National Risk Index for the Sacramento County Planning Area is seen below. Figure 4-10 shows a summary map and score for the County. As shown, Sacramento County's Risk Index rating is Relatively High. Figure 4-11 shows the expected annual loss map and score. As shown, Sacramento County's expected annual loss rating is Relatively High. Figure 4-12 shows the social vulnerability map and score. As shown, Sacramento County has a Relatively High social vulnerability. Figure 4-13 shows the community resilience map and score. As shown, communities in Sacramento County have a Relatively High ability to prepare for anticipated natural hazards, adapt to changing conditions, and withstand and recover rapidly from disruptions.

The Sacramento County FEMA National Risk Index Report is included in its entirety in Appendix G.

Figure 4-10 FEMA National Risk Index – Summary Map and Score for Sacramento County



Source: FEMA National Risk Index, retrieved 10/08/2025.

Figure 4-11 FEMA National Risk Index – Expected Annual Loss Map and Score for Sacramento County

Expected Annual Loss

In **Sacramento County, CA**, expected loss each year due to natural hazards is **Relatively High** when compared to the rest of the U.S.



Score **97.83**

National Percentile
97.83

Percentile Within California
70.70

0 100

98% of U.S. counties have a lower Expected Annual Loss

71% of counties in California have a lower Expected Annual Loss

Expected Annual Loss Legend

Very High | Relatively High | Relatively Moderate | Relatively Low | Very Low

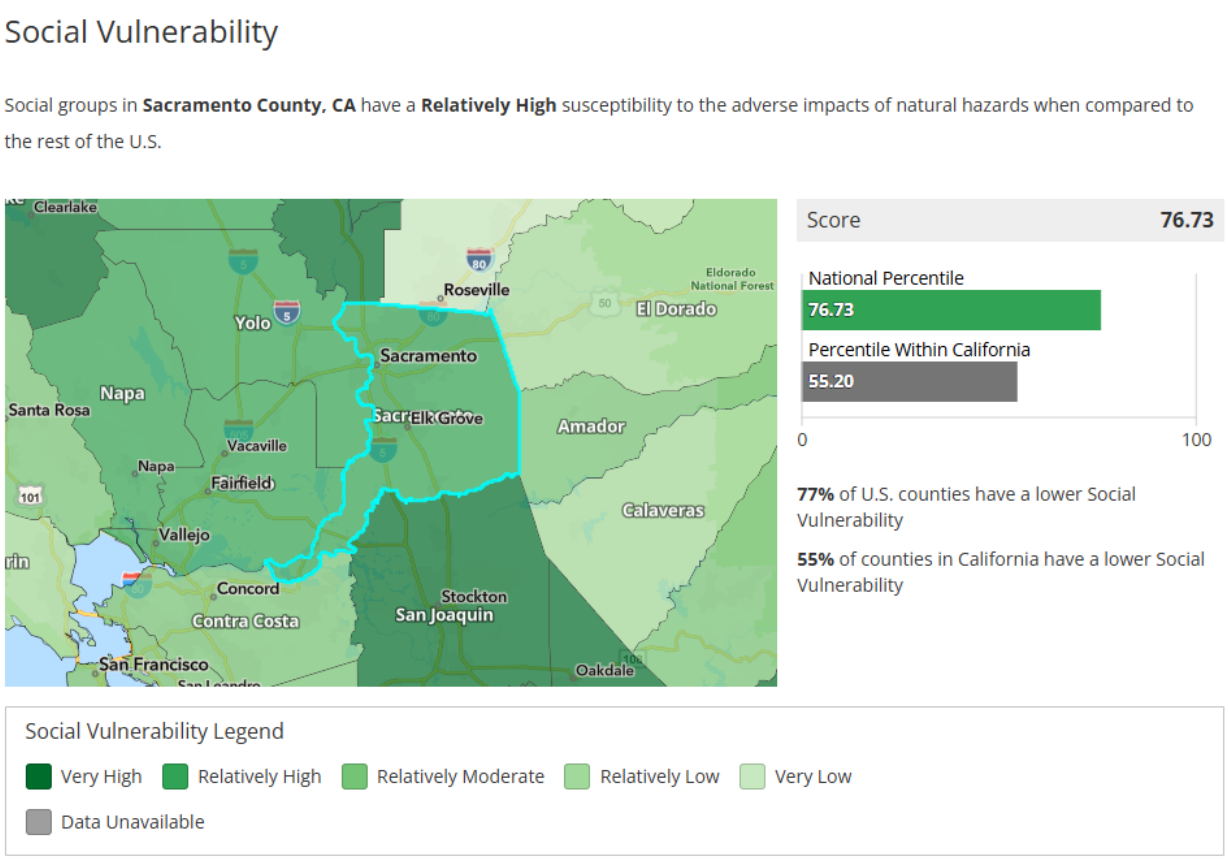
No Expected Annual Losses | Not Applicable | Insufficient Data

Composite Expected Annual Loss	**$171,810,097.70**
Composite Expected Annual Loss Rate National Percentile	**37**

Building EAL	**$89,204,829.22**	Population EAL	**2.96** fatalities
Building EAL Rate	**$1 per $2.96K of building value**	Population EAL Rate	**1 per 535.07K people**
Agriculture EAL	**$48,251,123.56**	Population Equivalence EAL	**$34,354,144.93**
Agriculture EAL Rate	**$1 per $10.23 of agriculture value**		

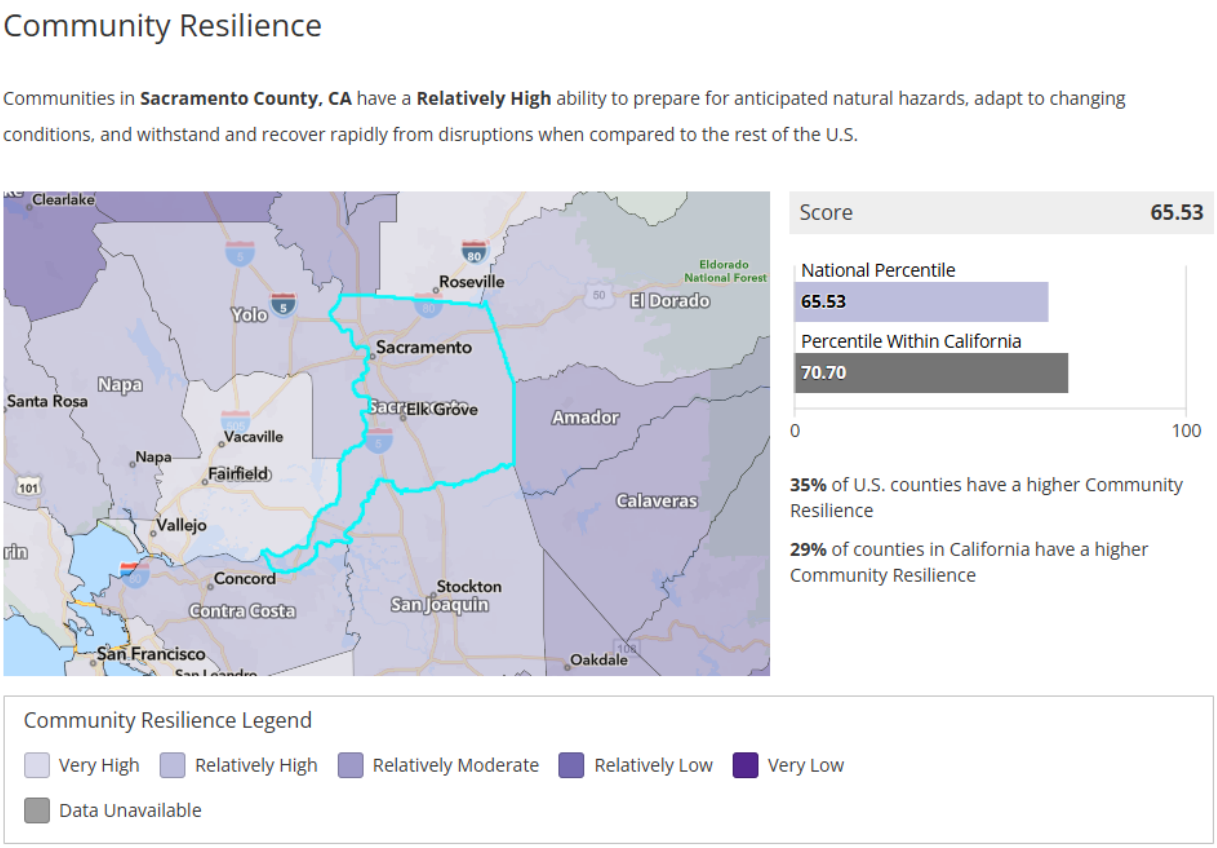
Source: FEMA National Risk Index, retrieved 10/08/2025.

Figure 4-12 FEMA National Risk Index – Social Vulnerability Map and Score for Sacramento County



Source: FEMA National Risk Index, retrieved 10/08/2025.

Figure 4-13 FEMA National Risk Index – Community Resilience Map and Score for Sacramento County



Source: FEMA National Risk Index, retrieved 10/08/2025.

Local Input

The HMPC provided additional local input on the vulnerable and underserved populations in the County. This is included in the sections below.

Homeless Populations

The HMPC noted that there is a homeless population in unincorporated Sacramento County. The most recent official data comes from the 2026 Point-in-Time Count conducted in January 2026 and released in May 2026. Key 2026 Point-in-Time (PIT) Count Findings for Unincorporated areas include:

- Unsheltered homeless: 1,140 people on the night of the count.
- This represents a 103% increase from 561 people in the 2024 PIT count.
- Unincorporated areas now account for 27% of the total unsheltered homeless population in Sacramento County (up significantly as homelessness disperses from the City of Sacramento).

The overall Sacramento County Planning Area context (for reference) was also provided:

- Total homeless in Sacramento County: 7,458 people (12.7% increase from 6,615 in 2024).

- Unsheltered countywide: 4,205 (6.6% increase).
- Sheltered: 3,253 (21.8% increase).

The sharp rise in unsheltered numbers (more than doubling since 2024) contrasts with a decline in the City of Sacramento (down 19%).

Homelessness in unincorporated Sacramento County has become more visible and dispersed in recent years. Areas such as Arden-Arcade, Rio Linda, North Highlands, and parts of South Sacramento see notable concentrations. In the South Sacramento Area, there are specific areas where homelessness is more prevalent: Parkway (often referred to as South Sacramento Parkway or the Parkway corridor); Florin area; Vineyard community; and parts of Valley Hi / North Laguna (unincorporated pockets). These areas have seen increased visibility of encampments in recent years, especially as homelessness has dispersed from the City of Sacramento proper.

Sacramento County's Department of Homeless Services and Housing (DHSH) conducts regular outreach in unincorporated areas and along the American River Parkway. In the first half of 2025, county teams provided over 31,000 services to 771 unduplicated individuals and helped transition 203 people out of unsheltered homelessness.

Housing Element Special Populations

The County Planning Team noted that the Sacramento County 2021-2029 Housing Element discusses special populations in the County. Households with special housing needs often have greater difficulty in finding decent and affordable housing. As a result, these households may experience a higher prevalence of overpaying, overcrowding, and other housing problems. These are discussed below.

Seniors

Seniors may need assistance related to repair and maintenance of the homes that they own; modifications to their homes to better meet mobility and self-care limitations; financial assistance to meet rental housing costs for those seniors who do not own their homes; and supportive services to meet daily needs.

According to data from the 2010-2014 and the 2014-2018 American Community Survey, the population of seniors (65 and above) experienced a higher percentage increase than that of the general population . While the total population only increased by 3.3%, the individuals 65+ group increased by 13.5%, from 73,722 to 83,697. According to data from the 2014-2018 American Community Survey, 10.4 percent of seniors in unincorporated Sacramento County are living below the federal poverty level.

Disabled Citizens

A "disability" includes, but is not limited to, any physical or mental disability as defined in California Government Code Section 12926. Physical, mental, and/or developmental disabilities could prevent a person from working, restrict a person's mobility or make caring for oneself difficult. Therefore, disabled persons often require special housing needs related to potential limited earning capacity, the lack of accessible and affordable housing, and higher health costs associated with disabilities.

According to the 2013-2017 American Community Survey, 21 percent of the unincorporated County's total population have some sort of disability. Of the 38,824 people with a disability between the ages of 18 and 64, 15,881 (41 percent) experience difficulty with independent living. These individuals have mobility impairments, self-care limitations, or other conditions that may require special housing accommodations, financial assistance programs, or services.

Individuals with mobility difficulties may require special accommodations or modifications to their homes to allow for continued independent living. Individuals with self-care limitations may require residential environments that include in-home or on-site support services, ranging from congregate to convalescent care.

According to the 2013-2017 American Community Survey, there are 43,662 people with a disability between the ages 0 and 64 in unincorporated Sacramento County. Of those who have a disability:

- 10 percent have hearing limitation and 10 percent have vision difficulty;
- 29 percent have cognitive difficulty;
- 26 percent have ambulatory difficulty; and,
- 11 percent have self-care difficulty.

People with Developmental Disabilities

A "developmental disability" is defined as a disability that originates before an individual becomes 18 years old; continues, or can be expected to continue, indefinitely; and constitutes a substantial disability for that individual. This includes mental retardation, cerebral palsy, epilepsy, and autism.

According to the Administration for Community Living (ACL), individuals with developmental disabilities comprise between 1.2 and 1.65 percent of the U.S. population. This would equate to between 7,131 and 9,805 people with developmental disabilities in the unincorporated County based on Department of Finance population estimates for 2019.

According to the California Department of Developmental Services (DDS) data, the total number of people with developmental disabilities who are served by DDS in unincorporated Sacramento County is approximately 7,700, this number falls within the estimated range discussed above. According to DDS data, the vast majority of the people with disabilities represented below live in the home of their parent, family, or guardian rather than in a care facility.

Many people with developmental disabilities can live and work independently within a conventional housing environment. However, some will require supportive housing arrangements because of self-care limitations. The Housing Action Plan chapter includes a program to amend the Zoning Code related to supportive living uses to take a more comprehensive approach to supportive housing consistent with changes to State law to increase housing, especially for special needs groups. The Housing Action Plan chapter also includes the Housing Incentive Program and the Universal Design program, which will incentivize developers to include universal design components in residential developments. The Housing Action Plan Chapter also includes the Safe at Home Program. The Safe at Home Program is administered by SHRA and it provides repairs to improve accessibility and safety to low income homeowners at no cost.

The County currently administers a number of programs that serve people with various special needs, including those that have developmental disabilities. In particular, the Sacramento County Department of Department of Child, Family and Adult Services administers the In-Home Supportive Services (IHSS) program that serves income-eligible individuals age 65 and older or individuals with disabilities and allows them to stay in their homes by assisting them to perform activities of daily living. The California Department of Social Services (CDSS) is expecting approximately 350,000 more recipients to join the IHSS program statewide over the 10-year period of 2020-21 through 2030-31 due to the aging population. Similarly, Sacramento County is expecting another 10,000 recipients to join over the same 10-year period. The Housing Action Plan Chapter includes a program related to implementation of the IHSS program.

People Experiencing Homelessness

Every two years in January Sacramento County and the incorporated cities partner with Sacramento Steps Forward (SSF) in an effort to document every individual in the County experiencing homelessness during a twenty-four-hour period; this is known as the "Point-in-Time Homeless Count." This effort provides a single-night snapshot of individuals and families staying at emergency/transitional shelters as well as those sleeping outside. The Homeless Count is a requirement for federal funding from the U.S. Department of Housing and Urban Development (HUD).

Note: The section below contains dated information that has been supplanted by more recent information. It is preserved here to show how these counts have changed over time.

The 2019 Homeless Count for Sacramento County report estimates that 5,570 individuals experienced homelessness throughout the County (unincorporated areas and the cities) on the night of the count. The report found that the estimate of 5,570 people who are homeless each night could correspond to between 10,000 to 11,000 residents in Sacramento County experiencing homelessness during the span of the year. The number of individuals experiencing homelessness on the night of the count suggests that approximately 36 in every 10,000 residents in the County experience homelessness each night.

Of the 5,570 individuals, 1,670 were sheltered individuals who accessed emergency shelters or transitional housing and 3,900 were unsheltered individuals who were sleeping outdoors or in vehicles, abandoned buildings, or other locations that are not suitable for human habitation (70 percent unsheltered and 30 percent sheltered). The 2017 Homeless Count was the first year that Sacramento County reported more people experiencing unsheltered homelessness than sheltered homelessness (56 percent unsheltered and 44 percent sheltered). The 2019 report confirms that this trend is growing, consistent with the growth statewide. Of those individuals who were unsheltered, a majority (73 percent, 2,858 individuals) were in the City of Sacramento. The City of Rancho Cordova had six percent and the cities of Citrus Heights, Folsom, Galt, Elk Grove, and Isleton had one percent or less. The remaining 18 percent (711 individuals) of those who were unsheltered were in the unincorporated County.

The majority of people experiencing homelessness are single adults (73 percent) and more than half of these single adults (56 percent) are unsheltered. People in families with children represent 20 percent of people experiencing homelessness and half (10 percent) of these families are sheltered while half are outside of shelters (10 percent). Unaccompanied youth households, including some minors (under 18) as well as transitional age youth (18-24), make up 8 percent of people experiencing homelessness.

A majority of the people experiencing homelessness identified as male (62 percent), 38 percent identified as female, 25 individuals (less than 1 percent) identified as transgender and 16 individuals (less than 1 percent) identified as gender nonconforming.

According to 2020 Housing Inventory County data from Sacramento Steps Forward, Sacramento County has a capacity of 182 beds in its emergency shelters. In order to meet the need identified by the 2019 PIT report and provide shelter for 711 individuals, the County would need to provide an additional 711 emergency shelter beds.

Large Households

The California Department of Housing and Community Development defines large households as households having five or more persons. Large households have special needs relating to household size and income as they oftentimes require three or more bedrooms to avoid overcrowding. The number of large households have not changed significantly from the numbers reported in the 2010 Census. According to the 2010 Census, the number of large families was 26,811, or 13 percent of all households. According to 2013-2017 ACS data, the unincorporated area of Sacramento County has a total of 27,887 large families, or 12 percent of all households.

According to ACS 2013-2017 data, about half of large households (51.2 percent) own their home and a little less than half rent (48.8 percent). Large households who rent are most likely to experience problems of overpayment and overcrowding because renter households are more likely than homeowners to have low incomes, and there are fewer rental housing units with three or more bedrooms to meet the space needs of large households.

The Housing Action Plan Chapter includes the Housing Incentive Program, which incentivizes the development of units with three or more bedrooms for large families. In addition, Housing Element Goal HE 7 in the Housing Action Plan Chapter includes several programs that promote fair housing choice.

Female Headed Households

According to the 2013-2017 American Community Survey, there are 35,602 female-headed households in unincorporated Sacramento County. This total includes 22,239 female-headed households with children which is 14.2 percent of all households. Approximately 29 percent of all female-headed households are under the poverty level compared to just 14 percent of all families.

Several of the programs that will benefit other special needs groups will also benefit female-headed households such as the Housing Choice Voucher program (as discussed in the ELI section), the Renters Helpline or the Housing Incentive Program (discussed in the large household section). In addition, those programs under Housing Element Goal HE 5 Preservation of Existing Affordable Housing Stock and Provision of Affordable Housing are geared toward lower-income households and will also serve female headed households.

Farmworkers

In Sacramento County, the majority of farmworkers work in the southern portion of the County near the Sacramento-San Joaquin Delta and the City of Galt. Farmworkers are grouped into two categories: migrant and settled farmworkers. Migrant farmworkers travel from one geographic location to another, depending on where and when farm work is available. Settled farmworkers usually live in rental housing or single family housing in the community in which they work or in housing on a site provided by the farmer. The Sacramento County Environmental Management Department (EMD) inspects facilities that house five or more agricultural workers in compliance with the State Employee Housing Act.

The California Employment Development Department (EDD) estimates that the number of agricultural workers will increase slightly from 5,440 in 2016 to 5,670 in 2026. According to EDD data, the hourly median wage for a farm worker in the Sacramento—Roseville—Arden-Arcade Metropolitan Statistical area (MSA) as of 2018 is between $11.56 and $11.71 or between $24,062 and $24,357 annually. A household of one earning $24,000 a year would be in the very low-income category and a household of four earning $24,000 a year would be in the extremely low-income category based on 2018 income limits set by the U.S. Department of Housing and Urban Development.

Extremely Low Income

The extremely low-income (ELI) group includes households with incomes of 30 percent or less of the area median income. According to 2012-2016 CHAS data sets, there are approximately 33,645 ELI households in unincorporated Sacramento County, or 16.5 percent of the unincorporated County's total households. Of these ELI households, approximately 24 percent are owners and 76 percent are renters. SACOG has projected that unincorporated Sacramento County needs an additional 2,233 units for ELI households during the 2021-2029 planning period (assuming that 50 percent of projected very low-income households qualify as ELI).

Approximately 11 percent of ELI renter households pay more than 30 percent of their household income on housing and 73 percent of ELI renter households pay more than 50 percent. In 2019, the upper threshold of the ELI income category for a family of four was an annual income of $25,750.

The Housing Action Plan chapter includes several programs to address the housing needs of ELI households, including the Housing Choice Voucher program and well as those programs related to homelessness. The Housing Action Plan chapter also includes a program to amend the Zoning Code related to supportive living uses, including boarding houses, transitional housing, scattered shelters, residential care homes, and nonconforming dwelling units to take a more comprehensive approach to supportive housing consistent with changes to State law. These housing types may assist ELI households in particular.

Immigrants and Refugees

CDSS defines both refugees and asylees as people who are unable or unwilling to return to their home country because of persecution or a well-founded fear of persecution due to race, religion, nationality, political opinion, or membership in a particular social group. The main difference between refugees and asylees is where they apply for protection. A refugee applies for protection while oversees and enters the United States as a refugee, while an asylee requests protection and is granted asylum within the U.S. CDSS

defines an asylum seeker as a person who is at a U.S. port of entry or has entered the United States and is requesting asylum.

According to the 2015-2019 American Community Survey, approximately 20.9 percent of Sacramento County's population (including the incorporated cities) is foreign born. Of the foreign born population, 57.6 percent are naturalized U.S. Citizens and 42.4 percent are not U.S. Citizens; 18.6 percent entered the U.S. during 2010 or later and 81.4 percent entered the U.S. before 2010.

County staff conducted a focus group meeting with organizations that provide housing services for immigrants, refugees, asylees, and asylum seekers in Sacramento County. When asked about the national origin of these populations, attendees responded that they assisted populations from Afghanistan, Turkey, Russia, Ukraine, countries in Africa such as Cameroon, and several other countries. Attendees shared that the languages spoken by the communities that they serve vary widely but include Pashto, Dari, Farsi, Russian, Ukrainian, Arabic, and Spanish. When asked about where these populations are generally located in the County, attendees responded that they place people in proximity to family members and wherever housing is both available and affordable. Attendees indicated that they found housing for these populations in communities such as North Highlands, South Sacramento, Carmichael and Arden Arcade.

When asked about the housing barriers that immigrants, refugees, asylees, and asylum seekers face in the County, attendees responded that rental requirements, a lack of units with three or more bedrooms for large families, a lack of naturally occurring affordable housing, and a lack of language accessibility all serve as the primary barriers. These populations may not meet upfront rental requirements including social security numbers, credit history, income, or security deposits. For asylum seekers, it can take over a year to attain a work permit, which is necessary in order to show sufficient income to housing providers. Some housing providers also require prospective tenants to have incomes of three times the rent or more. The Regional Analysis of Impediments to Fair Housing Choice also conducted stakeholder focus group meetings. During these meetings, refugees were identified as one of the hardest populations to house due to family size, lack of understanding of the system, language access, substandard housing conditions and fear of retaliation from landlords.

Structures

Structures include buildings used for a variety of purposes and reflect the Sacramento County Planning Area's existing built environment. Depending on the nature and extent of a hazard event or disaster, all structures may be exposed to some level of risk, where certain buildings or concentrations of buildings are more vulnerable. This section captures the structures, and associated land, structure, and contents values, which comprise the Sacramento County Planning Area's and unincorporated Sacramento County's existing built environment.

Parcel and Structure Inventory and Assessed Values

An inventory of structures located within the Sacramento County Planning Area and unincorporated County was developed utilizing data from the Sacramento County Assessor's Office. It is based on the 2025 Assessor's data/Parcel layer provided by Sacramento County GIS. This data represents best available data.

While conducting an inventory of structure assets within the Sacramento County Planning Area is a key element of this asset inventory, understanding the total assessed value of structures and built environment is a starting point to understanding the overall value of identified assets in the Planning Area. When the total assessed values are combined with potential values associated with other community assets such as area populations, public and private critical infrastructure, historic and cultural resources, and natural resources, and other identified assets, the big picture emerges as to what is potentially at risk and vulnerable to the damaging effects of natural hazards within the Sacramento County Planning Area.

Methodology

The 2025 Sacramento County Assessor's data and County Parcel layer was utilized as the basis for the inventory of assessed values for both improved and unimproved parcels within the Sacramento County Planning Area. This data provides the land and improved values assessed for each parcel, along with key information such as property use. Other GIS data, such as jurisdictional boundaries, roads, streams, and area features, was also obtained from Sacramento County and CalAtlas to support mapping and analysis of the existing built environment.

Data Limitations & Notations

Although based on best available data, the resulting information should only be used as an initial guide to overall values in the Sacramento County Planning Area. In the event of a disaster, structures and other infrastructure improvements are at the greatest risk of damage. Depending on the type of hazard and resulting damages, the land itself may not suffer a significant loss. For that reason, the values of structures and other improvements are of greatest concern. Also, it is critical to note a specific limitation to the assessed values data within the Sacramento County Planning Area, created by Proposition 13. Instead of adjusting property values annually, no adjustments are made until a property transfer occurs. As a result, overall property value information is likely significantly low and does not reflect current market, replacement, or true potential loss values for properties within the Sacramento County Planning Area.

Another limitation to this data is found in the Williamson Act, also known as the California Land Conservation Act of 1965, that enables local governments to enter into contracts with private landowners for the purpose of restricting specific parcels of land to agricultural or related open space use. When the County enters into a contract with the landowners under the Williamson Act, the landowner agrees to limit the use of the land to agriculture and compatible uses for a period of at least ten years and the County agrees to tax the land at a rate based on the agricultural production of the land rather than its real estate market value. This further affects the County's overall values for assessed taxable lands and structures.

Property Use Categories

The Sacramento County Planning Area Assessor data included property use categories which provides detailed descriptive information about how each property is generally used, such as residential, commercial, or industrial. The property use codes were refined and categorized into the following property use categories and linked back to the Assessor data. The final property use categories for the Sacramento County Planning Area include:

- Agricultural

- Care / Health
- Church / Welfare
- Industrial
- Miscellaneous
- Office
- Public / Utilities
- Recreational
- Residential
- Retail / Commercial
- Unknown
- Vacant

Once property uses were grouped into categories, the number of total and improved parcels and land and improved values were inventoried for the Sacramento County Planning Area by property use.

Estimated Content Replacement Values

The Sacramento County Planning Area assigned property use categories were used to develop estimated content replacement values (CRVs) that are potentially at loss from hazards. FEMA's standard CRV factors, derived from Hazus, were utilized to develop more accurate loss estimates for the total assets inventory and for all mapped hazard analyses. FEMA's CRV factors estimate content values as a percent of improved structure value by property use. Table 4-9 shows the breakdown of the different property uses in the Sacramento County Planning Area and their estimated CRV factors.

Table 4-9 Sacramento County Planning Area – Content Replacement Factors by Property use

Sacramento County Property Use Categories	Hazus Content Replacement Values
Agricultural	100%
Care / Health	100%
Church / Welfare	100%
Industrial	150%
Miscellaneous	100%
Office	100%
Public / Utilities	100%
Recreational	100%
Residential	50%
Retail / Commercial	100%
Unknown	0%
Vacant	0%

Source: Hazus 6.1

Parcel and Structure Asset Inventory with Values Results

Values associated with land and improved structures were identified and summed in order to determine assessed values at risk in the Sacramento County Planning Area. Together, the land and improved structure values make up the majority of assessed values associated with each identified parcel or asset. Improved parcel counts were based on the assumption that a parcel was improved if a structure value was present. Content replacement values were then added to the assessed values, as described below, to provide an estimate of land, structure, and contents values at risk in the Planning Area.

Table 4-10 shows the total values or exposure for the entire Sacramento County Planning Area broken out by jurisdiction. The values for unincorporated Sacramento County are broken out by property use category and are provided in Table 4-11. More information on parcels and structures at risk for each jurisdiction can be found in their respective annexes.

Table 4-10 Sacramento County Planning Area – Total Parcels and Structures by Jurisdiction

Jurisdiction	Total Parcel Count	Improved Parcel Count	Total Land Value	Improved Structure Value	Estimated Contents Value	Total Value
Citrus Heights	25,949	24,885	$3,188,797,972	$10,609,996,768	$5,763,037,652	$19,561,832,392
Elk Grove	60,368	55,371	$8,368,074,476	$22,515,598,268	$12,985,847,821	$43,869,520,565
Folsom	30,114	27,122	$5,949,502,984	$15,868,123,165	$9,457,834,905	$31,275,461,054
Galt	9,194	7,892	$957,863,330	$2,460,939,232	$1,437,483,106	$4,856,285,668
Isleton	527	330	$31,604,337	$59,856,684	$38,265,993	$129,727,014
Rancho Cordova	28,211	24,135	$4,143,952,779	$10,220,821,502	$7,170,819,145	$21,535,593,426
Sacramento	158,989	145,962	$21,994,252,779	$59,295,379,262	$38,597,477,657	$119,887,109,698
Unincorporated Sacramento County	185,757	170,464	$25,320,943,871	$59,429,995,705	$36,837,273,688	$121,588,213,264
Grand Total	**499,109**	**456,161**	**$69,954,992,528**	**$180,460,710,586**	**$112,288,039,965**	**$362,703,743,079**

Source: 2025 Sacramento County Parcel/Assessor Data

Table 4-11 Unincorporated Sacramento County – Total Parcels and Structures by Property Use

Jurisdiction / Property Use	Total Parcel Count	Improved Parcel Count	Total Land Value	Structure Value	Estimated Contents Value	Total Value
Unincorporated Sacramento County						
Agricultural	2,607	1,462	$1,026,896,032	$933,340,053	$933,340,053	$2,893,576,138
Care / Health	207	190	$151,498,548	$728,831,895	$728,831,895	$1,609,162,338
Church / Welfare	468	400	$168,033,833	$767,202,922	$767,202,922	$1,702,439,677
Industrial	1,658	1,275	$1,056,484,809	$3,620,440,502	$5,430,660,753	$10,107,586,064

Jurisdiction / Property Use	Total Parcel Count	Improved Parcel Count	Total Land Value	Structure Value	Estimated Contents Value	Total Value
Miscellaneous	4,010	14	$24,189,561	$162,576	$162,576	$24,514,713
Office	1,426	1,272	$556,996,782	$1,612,045,278	$1,612,045,278	$3,781,087,338
Public / Utilities	617	1	$1,344,231	$1,622,492	$1,622,492	$4,589,215
Recreational	228	129	$86,170,734	$120,199,362	$120,199,362	$326,569,458
Residential	165,242	163,247	$19,331,720,362	$48,742,963,774	$24,371,481,887	$92,446,166,023
Retail / Commercial	2,262	2,100	$1,533,588,517	$2,871,726,470	$2,871,726,470	$7,277,041,457
Unknown	433	0	$8,789	$0	$0	$8,789
Vacant	6,599	374	$1,384,011,673	$31,460,381	$0	$1,415,472,054
Unincorporated Sacramento County Total	**185,757**	**170,464**	**$25,320,943,871**	**$59,429,995,705**	**$36,837,273,688**	**$121,588,213,264**

Source: 2025 Sacramento County Parcel/Assessor Data

Critical Facilities and Infrastructure

Beyond just structures, it is important to identify the critical facilities and infrastructure that are critical for life safety and the economy. Critical facilities commonly include all public and private facilities that a community considers essential for the delivery of vital services and for the protection of the community. They usually include emergency response facilities (fire stations, police stations, rescue squads, and emergency operation centers [EOCs]), custodial facilities (jails and other detention centers, long-term care facilities, hospitals, and other health care facilities), schools, emergency shelters, utilities (water supply, wastewater treatment facilities, and power), communications facilities, and any other assets determined by the community to be of critical importance for the protection of the health and safety of the population.

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.

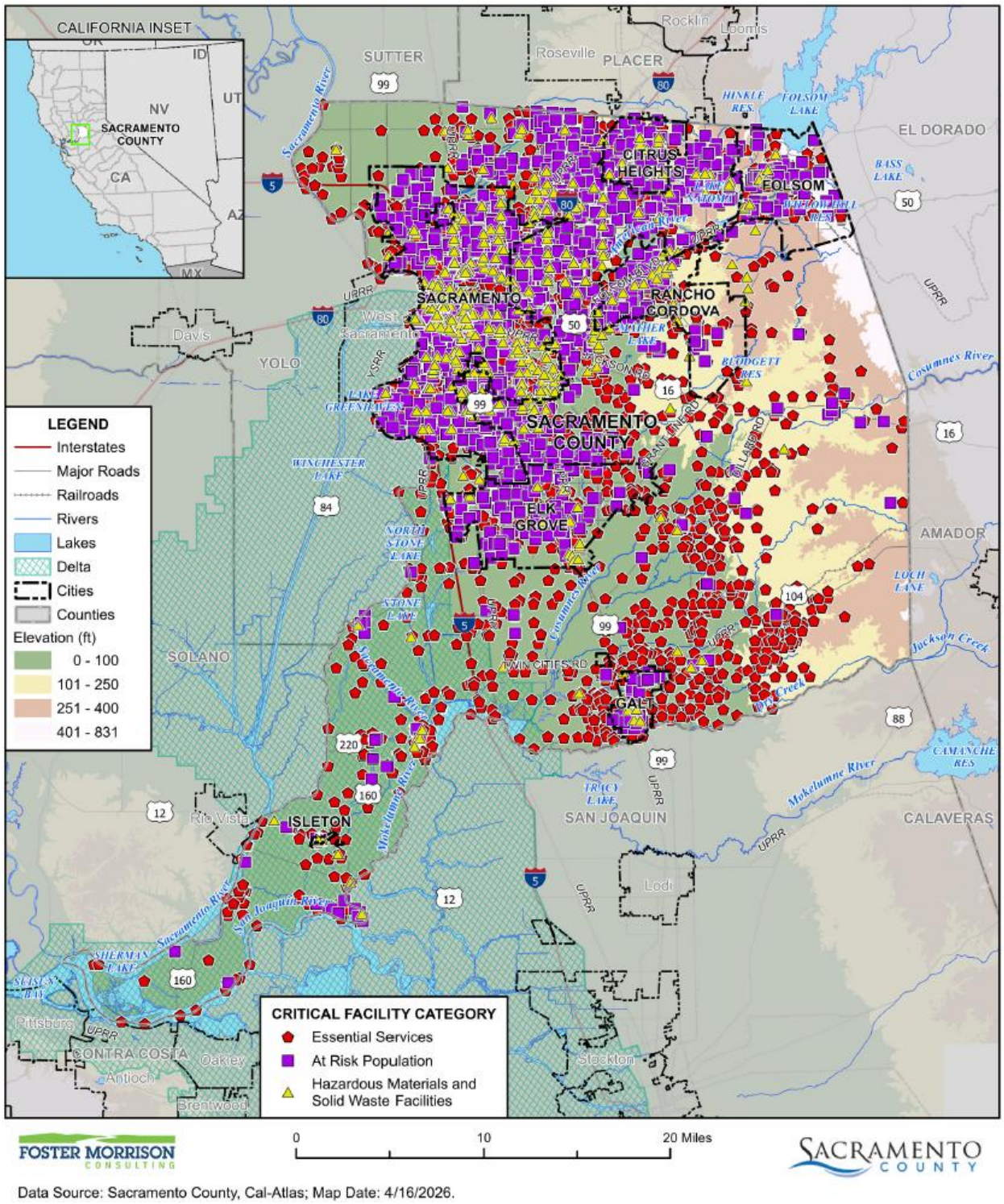
- Essential Services Facilities include, without limitation, public safety, emergency response, emergency medical, designated emergency shelters, communications, public utility plant facilities and equipment, and government operations facilities.
- At Risk Population Facilities include, without limitation, 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.

Mapped critical facilities in the Sacramento County Planning Area are shown on Figure 4-14. A summary of critical facilities in the Planning Area is shown in Table 4-12 and detailed in Table 4-13.

Figure 4-14 Sacramento County Planning Area – Critical Facilities



Data Source: Sacramento County, Cal-Atlas; Map Date: 4/16/2026.

Table 4-12 Sacramento County Planning Area – Critical Facilities by Jurisdiction and Critical Facility Category

Jurisdiction /Critical Facility Category	Facility Count
Citrus Heights	
Essential Services Facilities	76
At Risk Population Facilities	108
Hazardous Materials and Solid Waste Facilities	12
Citrus Heights Total	**196**
Elk Grove	
Essential Services Facilities	318
At Risk Population Facilities	172
Hazardous Materials and Solid Waste Facilities	18
Elk Grove Total	**508**
Folsom	
Essential Services Facilities	152
At Risk Population Facilities	89
Hazardous Materials and Solid Waste Facilities	10
Folsom Total	**251**
Galt	
Essential Services Facilities	118
At Risk Population Facilities	40
Hazardous Materials and Solid Waste Facilities	11
Galt Total	**169**
Isleton	
Essential Services Facilities	9
At Risk Population Facilities	4
Hazardous Materials and Solid Waste Facilities	3
Isleton Total	**16**
Rancho Cordova	
Essential Services Facilities	221
At Risk Population Facilities	152
Hazardous Materials and Solid Waste Facilities	20
Rancho Cordova Total	**393**
Sacramento	
Essential Services Facilities	1,284
At Risk Population Facilities	843
Hazardous Materials and Solid Waste Facilities	249

Jurisdiction /Critical Facility Category	Facility Count
Sacramento Total	**2,376**
Unincorporated Sacramento County	
Essential Services Facilities	2,549
At Risk Population Facilities	950
Hazardous Materials and Solid Waste Facilities	177
Unincorporated Sacramento County Total	**3,676**
Grand Total	**7,585**

Source: Sacramento County GIS

Table 4-13 Sacramento County Planning Area – Critical Facilities by Jurisdiction, Critical Facility Category, and Facility Type

Jurisdiction /Critical Facility Category	Critical Facility Type	Facility Count
Citrus Heights		
Essential Services Facilities	Emergency Evacuation Center	8
	EMS Stations	4
	FDIC Insured Banks	13
	Fire Station	5
	Law Enforcement	2
	Microwave Service Towers	17
	Water Well	27
	Total	**76**
At Risk Population Facilities	Colleges, Universities, and Professional Schools	3
	Day Care Center	27
	Mobile Home Parks	10
	Places of Worship	37
	School	31
	Total	**108**
Hazardous Materials and Solid Waste Facilities	Leaky Underground Storage Tank	12
	Total	**12**
Citrus Heights Total		**196**
Elk Grove		
Essential Services Facilities	Cellular Tower	2
	Emergency Evacuation Center	8
	EMS Stations	7
	FDIC Insured Banks	26

Jurisdiction /Critical Facility Category	Critical Facility Type	Facility Count
	Fire Station	6
	Hospital or Urgent Care	1
	Law Enforcement	2
	Microwave Service Towers	107
	Sewage Treatment Plant	1
	Water Well	158
	Total	**318**
At Risk Population Facilities	Day Care Center	36
	Mobile Home Parks	1
	Places of Worship	90
	School	45
	Total	**172**
Hazardous Materials and Solid Waste Facilities	EPA ER TRI Facility	6
	EPA ER TSCA Facility	3
	Leaky Underground Storage Tank	4
	Solid Waste Facility	4
	Waste Transfer Station	1
	Total	**18**
Elk Grove Total		**508**
Folsom		
Essential Services Facilities	Bridge	1
	Cellular Tower	7
	Emergency Evacuation Center	4
	FDIC Insured Banks	19
	Fire Station	5
	Hospital or Urgent Care	4
	Law Enforcement	4
	Microwave Service Towers	86
	Power Plants	5
	Public Transit Stations	3
	Water Well	14
	Total	**152**
At Risk Population Facilities	Colleges, Universities, and Professional Schools	1
	Community Center	1
	Day Care Center	13
	Mobile Home Parks	6

Jurisdiction /Critical Facility Category	Critical Facility Type	Facility Count
	Places of Worship	40
	School	28
	Total	**89**
Hazardous Materials and Solid Waste Facilities	EPA ER TRI Facility	2
	Leaky Underground Storage Tank	8
	Total	**10**
Folsom Total		**251**
Galt		
Essential Services Facilities	Cellular Tower	2
	Emergency Evacuation Center	5
	EMS Stations	2
	FDIC Insured Banks	6
	Fire Station	3
	Law Enforcement	2
	Microwave Service Towers	58
	Sewage Treatment Plant	1
	Water Well	39
	Total	118
At Risk Population Facilities	Day Care Center	6
	Mobile Home Parks	4
	Places of Worship	14
	School	16
	Total	**40**
Hazardous Materials and Solid Waste Facilities	EPA ER TRI Facility	3
	Leaky Underground Storage Tank	7
	Waste Transfer Station	1
	Total	**11**
Galt Total		**169**
Isleton		
Essential Services Facilities	Emergency Evacuation Center	1
	EMS Stations	1
	Fire Station	2
	Law Enforcement	1
	Microwave Service Towers	2
	Water Well	2
	Total	**9**

Jurisdiction /Critical Facility Category	Critical Facility Type	Facility Count
At Risk Population Facilities	Day Care Center	1
	Mobile Home Parks	1
	School	2
	Total	**4**
Hazardous Materials and Solid Waste Facilities	Leaky Underground Storage Tank	3
	Total	**3**
Isleton Total		**16**
Rancho Cordova		
Essential Services Facilities	Bridge	15
	Cellular Tower	14
	City Facility	5
	Drainage Pump Station	6
	Emergency Evacuation Center	6
	EMS Stations	6
	FDIC Insured Banks	10
	Fire Station	4
	Hospital or Urgent Care	4
	Law Enforcement	4
	Microwave Service Towers	75
	Power Plants	1
	Public Transit Stations	4
	State Government Buildings	1
	Water Well	66
	Total	**221**
At Risk Population Facilities	Colleges, Universities, and Professional Schools	3
	Community Center	5
	Day Care Center	23
	Mobile Home Parks	8
	Places of Worship	76
	School	34
	Senior Living or Other Living	3
	Total	**152**
Hazardous Materials and Solid Waste Facilities	EPA ER FRP Facility	1
	EPA ER TRI Facility	3
	Leaky Underground Storage Tank	11
	Solid Waste Facility	2

Jurisdiction /Critical Facility Category	Critical Facility Type	Facility Count
	Tank Farm	2
	Waste Transfer Station	1
	Total	20
Rancho Cordova Total		**393**
Sacramento		
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**
Hazardous Materials and Solid Waste Facilities	EPA ER FRP Facility	2
	EPA ER TRI Facility	39
	EPA ER TSCA Facility	3
	Leaky Underground Storage Tank	173

Jurisdiction /Critical Facility Category	Critical Facility Type	Facility Count
	Solid Waste Facility	23
	Tank Farm	4
	Waste Transfer Station	5
	Total	**249**
Sacramento Total		**2,376**
Unincorporated Sacramento County		
Essential Services Facilities	Airport	3
	Bridge	52
	Cellular Tower	23
	Emergency Evacuation Center	54
	EMS Stations	49
	FDIC Insured Banks	59
	Fire Station	57
	Hospital or Urgent Care	4
	Law Enforcement	26
	Microwave Service Towers	1,017
	Port Facilities	46
	Power Plants	40
	Public Transit Stations	7
	Pump Station	7
	Sandbag Site	3
	Sewage Treatment Plant	4
	State Government Buildings	3
	Water Well	1,095
	Total	**2,549**
At Risk Population Facilities	Colleges, Universities, and Professional Schools	12
	Community Center	4
	Day Care Center	140
	Mobile Home Parks	65
	Places of Worship	414
	School	315
	Total	**950**
Hazardous Materials and Solid Waste Facilities	EPA ER FRP Facility	2
	EPA ER TRI Facility	22
	EPA ER TSCA Facility	1
	Leaky Underground Storage Tank	129

Jurisdiction /Critical Facility Category	Critical Facility Type	Facility Count
	Solid Waste Facility	22
	Waste Transfer Station	1
	Total	**177**
Unincorporated Sacramento County Total		**3,676**
Grand Total		**7,585**

Source: Sacramento County GIS

Community Lifelines

Assessing the vulnerability of the Sacramento County Planning Area 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 and/or economic security. Information on community lifelines include:

- Lifelines are the most fundamental services in the community that, when stabilized, enable all other aspects of society to function.
- FEMA has developed a construct 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.

For this Plan, Community Lifelines includes the following (as defined by FEMA):

- **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

In the Sacramento County Planning Area, these community lifelines are all in place and functional as part of regular government operations. It should also be noted that these community lifelines collectively

include many of the individual components of other community assets inventoried for this LHMP including structures and critical facilities and infrastructure.

After the HMPC reviewed the list of hazards from Table 4-3, it was determined that most hazard events or disasters that occur would not overwhelm the community lifelines in the County. A matrix was put together in Table 4-14 for the hazards of concern in the Sacramento County Planning Area. As shown, only earthquake and dam failure (depending on the location and severity of event – downstream levees may be affected by a Folsom Dam super release scenario) are thought be able to (temporarily) overwhelm the community lifelines in the County. The remaining hazards would likely not overwhelm community lifelines.

Table 4-14 Sacramento County Planning Area – Hazards and their Potential to Overwhelm Community Lifelines

Hazard	Potential to Overwhelm Community Lifelines	Hazard	Potential to Overwhelm Community Lifelines
Severe Weather: Extreme Cold and Freeze	Limited	Earthquake (w/subhazards)	High
Severe Weather: Extreme Heat	Limited	Flood: 1%/0.5%/0.2% Annual Chance	Moderate
Severe Weather: Heavy Rains and Storms	Limited	Flood: Localized Flooding	Limited
Severe Weather: High Winds and Tornado	Limited	Landslide, Mudslide, and Debris Flow	Limited
Aquatic Nuisance Species (plant/animal)	Limited	Levee Failure	Moderate
Climate Change	Limited	Sea Level Rise	Limited
Dam Failure	High	Subsidence	Limited
Drought and Water Shortage (w/tree mortality)	Limited	Wildfire (w/smoke and air quality)	Low

Source: Sacramento County Planning Team

Efforts to mitigate potential impacts to community lifelines are key to building resilience. These community lifelines connect to the sectors in the National Mitigation Framework and the Recovery Support Functions under the National Disaster Recovery Framework; the same agencies and departments that support these sectors also often support community lifelines and the recovery mission.

Note: This inventory of community lifelines and hazard analysis only occurs in this overall asset inventory for Sacramento County. To limit redundancy, it is not discussed further in the hazard profiles and vulnerability assessments in Section 4.3 below.

More information on these community lifelines in the Sacramento County Planning Area and how they may be affected by a hazard event or disaster can be found in each jurisdictional annex to this Base Plan.

Natural, Historical, and Cultural Resources

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

- 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

Natural resources are important to include in cost/benefit analyses for future projects and may be used to leverage additional funding for mitigation projects that also contribute to community goals for protecting sensitive natural resources. Awareness of natural resource assets can lead to opportunities for meeting multiple objectives. For instance, protecting wetlands areas protects sensitive habitat as well as reducing the force of and storing floodwaters.

The Sacramento County General Plan Open Space Element noted that Sacramento County is home to a variety of important vegetation and wildlife. Much of this section is sourced from that document.

Natural habitats in the County include vernal pools, wetlands, special status species habitats, riparian, oak woodland and grassland prairies. Wetland and riparian areas in the County include historic backwater basins along the Sacramento River, the American River Parkway, and the nationally significant valley oak riparian forest along the lower Cosumnes River.

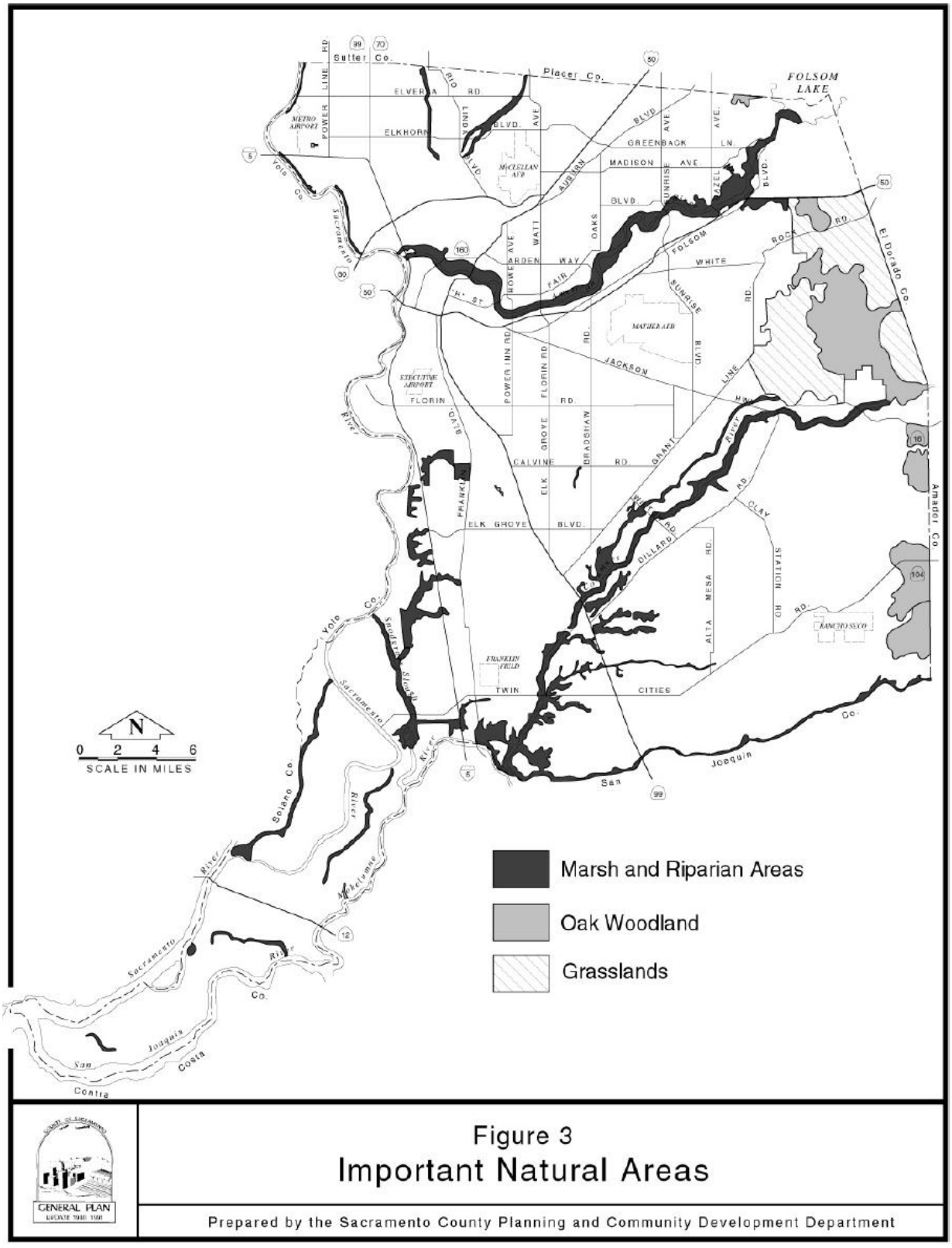
The Beach/Stone Lakes area, a designated National Wildlife Refuge, hosts thousands of waterfowl migrating along the Central Valley leg of the Pacific Flyway. The area is a dynamic and vigorous habitat supporting, among other species, American white pelican, great blue heron, northern harrier, coyote, grey fox, beaver, and possibly bobcat. The County's American River Parkway, bisecting the urban environs, has protected a vibrant riparian forest stretching along the lower American River. The undammed Cosumnes, exemplary of what was once expansive woodlands, represents a comparatively unaltered Central Valley ecosystem with slough, wetland, and riparian habitats, each slightly different in its ecological balance. Other significant wetland and riparian areas exist along Delta sloughs and seasonal creeks flowing into the major drainages.

Sacramento County is home to a variety of native tree and grassland habitats. The native tree habitats are defined as oak woodlands, oak savannah, and mixed riparian woodlands and the dominant grassland habitat being that of the California Prairie. These vegetative habitats are very important to the future of Sacramento County; however, due to the combined effects of urbanization, agricultural conversion, overgrazing, the introduction of invasive plant and wildlife species, climatic changes, and fuel wood harvesting, California's native vegetation have been unable to maintain existing populations.

Sacramento County once supported limited oak savannah and riparian woodland, with an herbaceous layer of perennial grasses and both annual and perennial wildflowers. These woodland areas were centered on the County's three main rivers: Sacramento, American and Cosumnes. Expansive native valley grassland, also referred to as California prairie, stretched out from the edge of these woodlands and blanketed the bulk of the County's landscape. Vernal pools were scattered in both low and high density clusters throughout the valley grassland habitat. After European settlement of the County, many of the native perennial grasses were replaced by Mediterranean annual grasses. However, within the vernal pools native vegetation uniquely suited to springtime inundation survived. Today these vernal pools harbor a number of listed plant and animal species. In addition to vernal pools, other seasonal and emergent wetlands occurred, mostly in association with the many natural drainage systems that previously flowed through the County, but which are now either channelized or confined within a system of artificial levees.

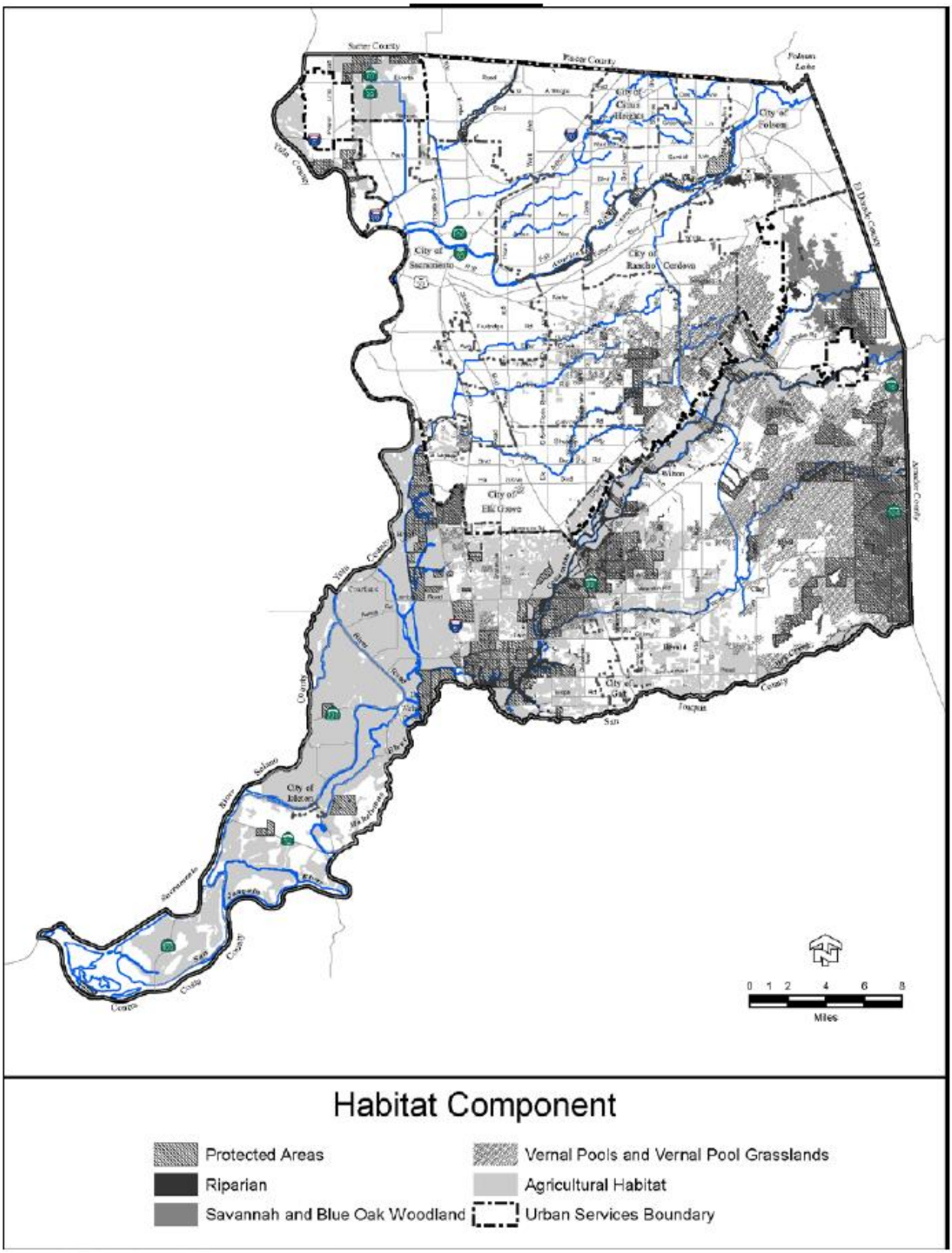
The County of Sacramento is fortunate to have several locations where vestiges of the once vast and diverse Central Valley natural habitat areas still exist. Habitat areas include riparian zones, riverine habitats, wetlands, woodlands, and grasslands. These are shown in Figure 4-15 and Figure 4-16. These maps delineates areas considered primarily natural such as riparian zones, marshlands, and oak woodlands. The boundaries are drawn based on review of reports and maps of public and private agencies including the U.S. Fish and Wildlife Service's (USFWS) National Wetlands Inventory maps, the State Department of Water Resource's Delta Atlas, the California Department of Fish and Game's Natural Diversity Database, and aerial photography.

Figure 4-15 Important Natural Areas in Sacramento County



Source: Sacramento County General Plan Open Space Element Background Report (2017). Retrieved 12/16/2025.

Figure 4-16 Habitat Component Areas in Sacramento County



Source: Sacramento County General Plan Open Space Element (2017). Retrieved 12/16/2025.

Remaining marsh and riparian areas in the County include backwater basins and riparian woodlands along the Sacramento, American, and Cosumnes Rivers and other smaller waterways, and in the Delta. These biologically dynamic areas host thousands of waterfowl migrating along the Central Valley leg of the Pacific Flyway. In addition, numerous other migratory and resident species, some of which are listed as threatened or endangered, inhabit the County's natural areas. Species include majestic colony birds such as the American egret and great blue heron, the opportunistic coyote, the industrious beaver, deer, and elusive grey fox and bobcat.

The wetland and riparian areas are regarded as the County's most important resource. Such habitat becomes all the more significant when viewed against the acreage lost since the time of European settlement. Approximately 95 percent of the Central Valley's wetlands have disappeared in the last 100 years, reducing habitat for millions of migratory waterfowl. Riparian habitat has suffered a similar fate. In the Sacramento River Valley only 25,000 of the estimated 500,000 acres of the riparian habitat existing in 1850 exists today.

The aquatic environment of the County supports tens of thousands of anadromous fish and rears a comparable number of resident species. Anadromous fish include salmon, bass, shad, and sturgeon. Resident fish include trout, catfish, sunfish, and bullhead. With the development of urban areas and water projects, fisheries have declined. This loss has been generated by habitat destruction, water diversion, and temperature increases.

Extending out from the riparian zone are the distinctive upland habitats of the Central Valley, scattered with oak, blanketed with grazing lands, and dotted with vernal pools. Native oaks, signature trees of the Central Valley have declined in population over the years to accommodate agriculture and development. Concentrated efforts will need to be undertaken if the County is to preserve the isolated groves and diminishing woodlands. Native grasslands have virtually disappeared due to grazing and development. The once prolific and well adapted bunchgrass has been displaced by invasive weeds from the Mediterranean region. The vernal pools which once dotted vast areas of the Central Valley landscape, are found only in concentrations in the southern section of the County. The pools sustain flora and fauna adapted to the ephemeral nature of these small yet vibrant habitats.

The preservation and restoration of the diverse habitats located throughout the County is extremely important to help support ecosystem processes and functions. Each habitat type or plant community must be conserved to maintain a viable, self-perpetuating ecosystem. For instance, not only do nesting sites need to be preserved for the Swainson's Hawk, but foraging habitat must also be protected to provide a viable food source. A full range of native biodiversity, maintained in an integrated manner, helps promote sustainable habitat and wildlife populations. Large landscape level preserves interconnected by habitat corridors are increasingly recognized as the most effective method to protect species by preserving ecological landscapes.

Significant Natural Areas of Sacramento County

Sourced from information provided in the Sacramento County General Plan Background Report, Table 4-15 below outlines the location and rationale for listing of significant natural areas in Sacramento County.

Table 4-15 Description of Significant Natural Areas in Sacramento County

Location	Comments
Mokelumne/Cosumnes Drainage	
Lower Cosumnes River	Support more than 100,000 waterfowl; sandhill crane here; important and unique natural area; variety of hydrological conditions in small area at merging of Valley River and Delta systems; undammed, represents unaltered valley ecosystem; system of sloughs and marshes each slightly different in its ecological balance; intermixing of habitats enhances ecological diversity.
Deer Creek - Cosumnes Riparian Corridor	Good riparian woodland cover along most of both banks of both water courses; occasional clear spots; generally is narrow band along each watercourse, occasionally widens to hardwood forest in valley portion.
Badger Creek	Wetlands, riparian and valley oaks amid valley grassland. Excellent example of historical Sacramento Valley habitat. Especially scenic from Highway 99.
Lower Mokelumne, Dry Creek, Grissley and Bear Sloughs	Riparian vegetation along all water courses; excellent grassland, riparian, woodland mix along Bear Slough; some of grassland and woodland along Mokelumne has been leveled since 1973.
Mokelumne River	Riparian vegetation on levee side of river.
Dry Creek	Riparian corridor occasionally widening to woodland areas.
Laguna Creek	Intermittent stream with riparian habitat; two miles of riparian woodland with large trees; lower reaches include seasonal marsh along creek and tributaries.
Stones Lake/Delta	
Beach Lake/ Morrison Creek*	Permanent and seasonal marsh in what used to be Beach Lake; riparian forest along Morrison Creek, essentially intact since 1937, dominated by cottonwood and willow; a riparian area abundantly rich in wildlife and plant communities.
Lower Laguna Creek*	Seasonal wetland, ponds and vernal pools with adjacent grassland; channel modifications in conjunction with upstream improvements along Laguna Creek.
North Stone Lake*	Morrison Creek levee on north, I-5 on east, Hood-Franklin Road on south and Southern Pacific Railroad on west.
South Stone Lake	Includes 93 acres riparian, 446 acres marsh, 186 acres upland, 121 acres water; rest of 3,480 acres is agriculture; supports excellent warm water fishery; supplements North Stone Lake as important wildlife area; part of number one ranked site for new western National Wildlife Refuge; with North Stone Lake, is one of the most important ecological complexes in Delta.
Snodgrass Slough	Shrub brush and occasional riparian woodland along northernmost Delta slough in Sacramento.
Delta Meadows*	Significant prime natural resource area; remnant of valley oak woodland; in excess of 110 bird species, abounds with small mammals; state park acquisition project.
Lost Slough	Waterway and adjacent riparian habitat linking Lower Cosumnes and Delta Meadows, Snodgrass Slough and the Delta river system.
Steamboat Slough	Riparian shrub-brush and woodland at south end near Howard Landing and along north portion.
Grand Island Tip	Mason's lilaeopsis, Delta tule pea, and Sacramento anthacid beetle found here; state designated significant natural area.
Georgiana Slough	Shrub-brush and occasional woodland riparian along open slough.
Seven Mile Slough	Riparian trees and shrub-brush along a little-used slough.

Location	Comments
Brannan Island*	Site of Antioch Dunes evening primrose, very rare plant; state designated significant nature area.
Mayberry Slough	Deadend slough, isolated for wildlife habitat.
Southwest Tip of County	Upland habitat; blue heron rookery; several rare and endangered species.
Chain Island	Isolated island, formerly diked with coastal brackish marsh habitat; Mason's ilaeopsis and Suisun marsh aster; state designated significant natural area.
Eastern Sacramento County	
Upper Laguna Creek	Dense stand of riparian vegetation listed as one of three most important sections on Laguna Creek (the other two are now urban creek sections).
Sloughhouse South	One of best sites of valley elderberry longhorn beetle habitat; state designated significant natural area.
Meiss-Ione Road Overlook	Only lesser nighthawks in Sacramento County; vernal pools with unusual dwarf plant.
Scott Road Raptor Area	Open shortgrass prairie with sparse to dense valley and blue oak thickets, mostly in southern area; dense cottonwood-willow riparian vegetation along stream courses; habitat for one of largest concentrations of raptoral birds in Sacramento region; grand wildflower displays in spring.
Sloughhouse Vernal Pools	Concentrations of vernal pools; very rare Sacramento orcutt grass found near County dump; state designated significant natural area.
Rancho Seco Lake*	About 500 plants of Sacramento orcutt grass; state designated significant natural area.
Jackson Highway Oak Woodland	None
Twin Cities Road Oak Woodland	None
South Area Vernal Pools	Quality of pools is unknown; may contain rare and endangered plants.
North Sacramento	
Garden Highway	Greatest concentration of riparian woodland in Sacramento County along Sacramento River; riparian woodlands are seven times greater in extent than disturbed riprap areas to south; coexists with several homes; Swainson's hawk nests.
Alder Creek	Excellent riparian area; diverse vegetation and wildlife; spillway and marsh; upstream ponds add diversity; good beaver and muskrat habitat.
Fair Oaks Bald Spot*	Excellent examples of vernal pools with Sacramento orcutt grass; state designated significant natural area.
Lake Natoma*	American River bluffs, 100 feet high, cut by several small canyons; rich foothill woodland plant community; some of most varied and dense floral displays in Sacramento County; cottonwood dredger tailing riparian at Negro Bar with jungle-like mixture of oak, buckeye, elderberry, et al on higher ground.
East Main Drain*	Waterfowl habitat; year round habitat; much disturbance, dumping.
Dry Creek*	Dual channel with grassland/farming in between creates good wildlife habitat. Good riparian cover along creek channels.
American River Parkway*	Mix of riparian, freshwater marsh, oak woodland, grassland, inhabited by great variety of plant and wildlife species.

Source: Sacramento General Plan Background Report (2017).

* indicates all or a major part of the area is in public or quasi-public ownership

Special Status Species

To further understand natural resources that may be particularly vulnerable to a hazard event, as well as those that need consideration when implementing mitigation activities, it is important to identify at-risk species (i.e., endangered species) in the Planning Area. An endangered species is any species of fish, plant life, or wildlife that is in danger of extinction throughout all or most of its range. A threatened species is a species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range. Both endangered and threatened species are protected by law and any future hazard mitigation projects are subject to these laws. Candidate species are plants and animals that have been proposed as endangered or threatened but are not currently listed.

The California Natural Diversity Database, a program that inventories the status and locations of rare plants and animals in California, was queried to create an inventory of special status species in Sacramento County. A summary list of these species is found below in Table 4-16. Appendix E lists the name, federal status, state status, California Department of Fish and Wildlife status, and the California Rare Plant rank of species in Sacramento County.

Table 4-16 Sacramento County Planning Area – Summary of Special Status Species

Type	Number
Animals - Amphibians	2
Animals - Birds	52
Animals – Crustaceans	5
Animals - Fish	18
Animals - Insects	8
Animals - Mammals	10
Animals – Mollusks	2
Animals – Reptiles	3
Community – Terrestrial	9
Plants – Vascular	36

Source: California Natural Diversity Database. Retrieved December 2025.

Wetlands

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 (USACE) 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.

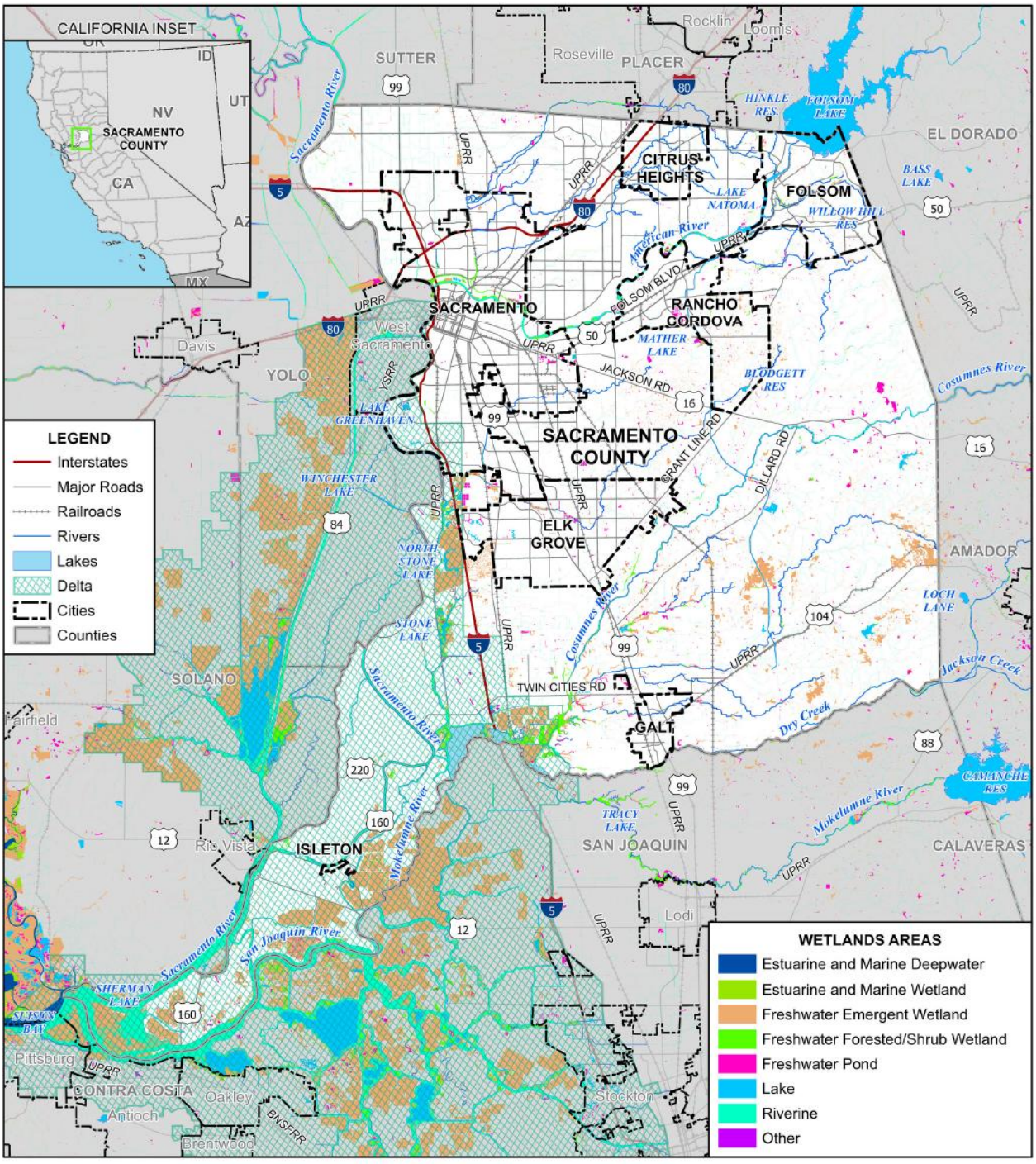
Wetlands are a valuable natural resource for communities providing beneficial impact to water quality, wildlife protection, recreation, and education, and play an important role in hazard mitigation. Wetlands provide drought relief in water-scarce areas where the relationship between water storage and 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.

Fresh emergent wetland habitats occur in Sacramento County on virtually all exposures and slopes, provided a basin or depression is saturated or at least periodically flooded. They are most common on level to gently rolling topography. They are found in various depressions or at the edge of rivers or lakes. Soils are predominantly silt and clay, although coarser sediments and organic material may be intermixed. In some areas organic soils (peat) may constitute the primary growth medium. Climatic conditions are highly variable and range from the extreme summer heat to winter temperatures well below freezing.

The US Fish and Wildlife Service has maps of wetlands in the United States. Those wetlands that fall in Sacramento County are shown on Figure 4-17. They are detailed in Table 4-17 and are shown by jurisdiction. More information on the locations of wetlands in each City can be found in their respective annexes to this LHMP Update.

Figure 4-17 Sacramento County Planning Area – Wetlands Locations



Data Source: U.S. Fish and Wildlife Service National Wetlands Inventory 10/2024 (downloaded 01/2025), Sacramento County, Cal-Atlas; Map Date: 1/30/2026.

Table 4-17 Sacramento County Planning Area – Wetlands by Jurisdiction

Jurisdiction / Wetlands Area Type	Wetlands Count	Wetlands Area (in Acres)	% of Total Acres of the Planning Area*	% of Total Acres of the Jurisdiction**
City of Citrus Heights				
Freshwater Emergent Wetland	8	2	0.004%	2%
Freshwater Forested/Shrub Wetland	461	39	0.1%	53%
Freshwater Pond	50	5	0.01%	6%
Riverine	522	28	0.1%	38%
Citrus Heights Total	**1,041**	**74**	**0.2%**	**100%**
City of Elk Grove				
Freshwater Emergent Wetland	653	234	0.5%	38%
Freshwater Forested/Shrub Wetland	66	14	0.03%	2%
Freshwater Pond	684	182	0.4%	29%
Lake	423	100	0.2%	16%
Riverine	870	92	0.2%	15%
Elk Grove Total	**2,696**	**621**	**1.4%**	**100%**
City of Folsom				
Freshwater Emergent Wetland	1,424	244	0.6%	51%
Freshwater Forested/Shrub Wetland	342	86	0.2%	18%
Freshwater Pond	199	52	0.1%	11%
Lake	22	52	0.1%	11%
Riverine	564	42	0.1%	9%
Folsom Total	**2,551**	**476**	**1.1%**	**100%**
City of Galt				
Freshwater Emergent Wetland	186	31	0.1%	23%
Freshwater Forested/Shrub Wetland	39	44	0.1%	32%
Freshwater Pond	95	44	0.1%	33%
Riverine	181	17	0.04%	12%
Galt Total	**501**	**135**	**0.3%**	**100%**

Jurisdiction / Wetlands Area Type	Wetlands Count	Wetlands Area (in Acres)	% of Total Acres of the Planning Area*	% of Total Acres of the Jurisdiction**
City of Isleton				
Freshwater Emergent Wetland	19	22	0.1%	64%
Freshwater Forested/Shrub Wetland	1	1	0.002%	3%
Freshwater Pond	3	7	0.02%	21%
Riverine	21	4	0.01%	13%
Isleton Total	**44**	**35**	**0.1%**	**100%**
City of Rancho Cordova				
Freshwater Emergent Wetland	1,784	288	0.7%	33%
Freshwater Forested/Shrub Wetland	61	62	0.1%	7%
Freshwater Pond	937	174	0.4%	20%
Lake	1	40	0.1%	5%
Riverine	464	298	0.7%	35%
Rancho Cordova Total	**3,247**	**862**	**2.0%**	**100%**
City of Sacramento				
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%**
Unincorporated Sacramento County				
Estuarine and Marine Deepwater	1	0.3	0.001%	0.001%
Estuarine and Marine Wetland	1	22	0.1%	0.1%
Freshwater Emergent Wetland	10,272	25,795	59.6%	65%
Freshwater Forested/Shrub Wetland	3,192	3,311	7.6%	8%
Freshwater Pond	2,851	2,842	6.6%	7%

Jurisdiction / Wetlands Area Type	Wetlands Count	Wetlands Area (in Acres)	% of Total Acres of the Planning Area*	% of Total Acres of the Jurisdiction**
Lake	119	1,437	3.3%	4%
Riverine	9,773	6,153	14.2%	16%
Unincorporated Sacramento County Total	**26,209**	**39,559**	**91.4%**	**100%**
Grand Total	**39,732**	**43,302**	**100.0%**	**100%**

Source: USFWS October 2024 National Wetlands Inventory

*this shows what percentage of the overall Sacramento County Planning Area is located in these wetlands

** this shows what percentage of the individual jurisdiction is located in these wetlands

Wetlands Natural and Beneficial Functions

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 Sacramento County Planning Area.

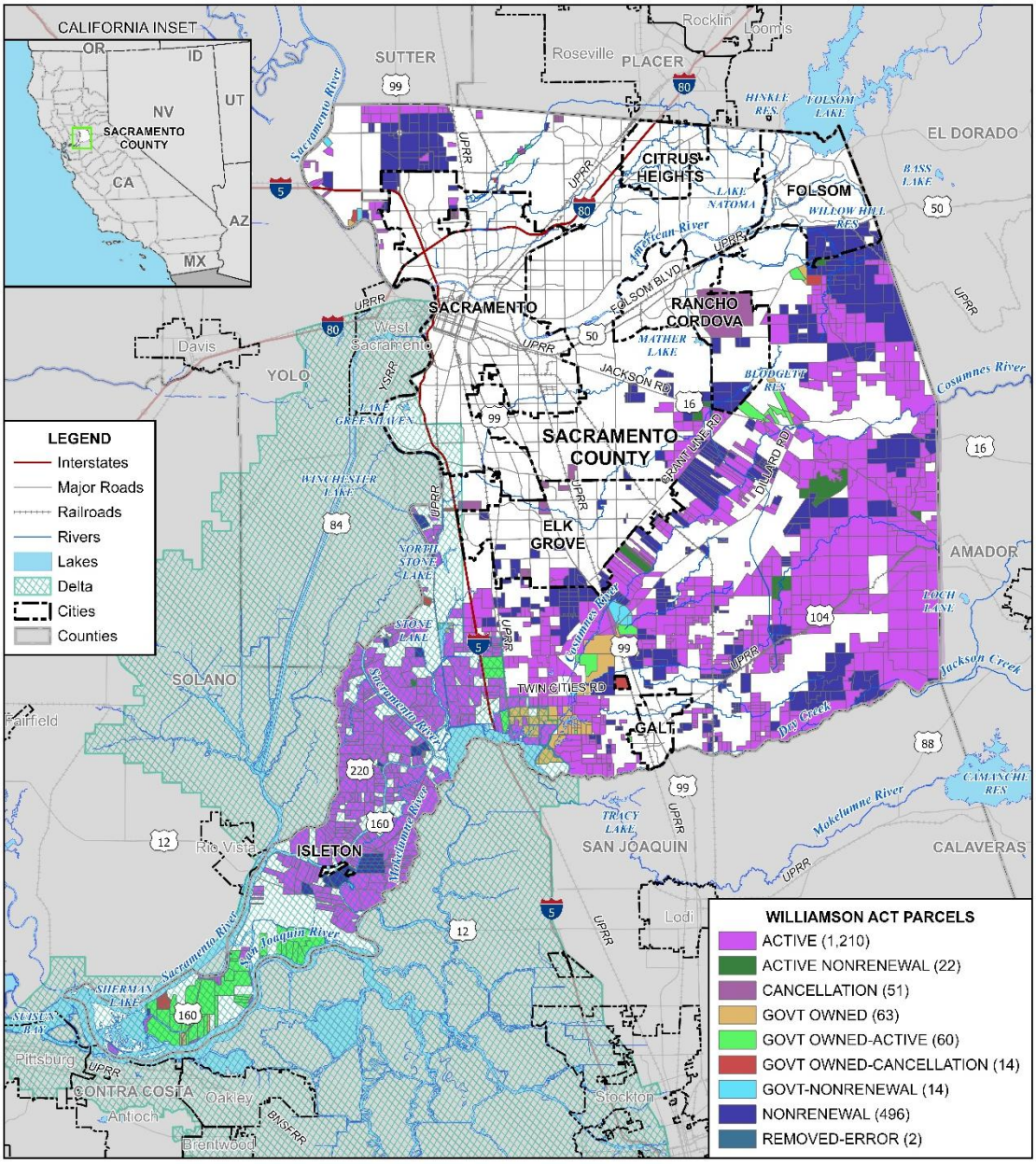
A prime example of a natural floodplain functions in Sacramento is the American River Parkway. American River Parkway provides 23-miles of fishing, boating, guided natural and historic tours, bike paths, and much more.

Farmlands

Williamson Act

The Williamson Act, also known as the California Land Conservation Act of 1965, enables local governments to enter into contracts with private landowners for the purpose of restricting specific parcels of land to agricultural or related open space use. When the County enters into a contract with the landowners under the Williamson Act, the landowner agrees to limit the use of the land to agriculture and compatible uses for a period of at least ten years and the County agrees to tax the land at a rate based on the agricultural production of the land rather than its real estate market value. This affects the County's overall values for assessed taxable lands. The County has designated areas as agricultural preserves within which the County will enter into contracts for the preservation of the land in agriculture. Locations from the most recent map (dated 2024) can be seen on Figure 4-18 and detailed in Table 4-18 for Sacramento County Planning Area.

Figure 4-18 Sacramento County Planning Area – Williamson Act Lands



Data Source: Sacramento County GIS, Williamson Act Parcels 9/15/2024 (downloaded 1/22/2026) Cal-Atlas; Map Date: 10/2/2026.

Table 4-18 Sacramento County Planning Area – Williamson Act Parcel Status with Acreages by Jurisdiction

Jurisdiction/ Williamson Act Parcel Status	Parcel Count	Parcel Area (in Acres)
Elk Grove		
ACTIVE	4	544
CANCELLATION	5	583
NONRENEWAL	18	1,878
Elk Grove Total	**27**	**3,006**
Folsom		
NONRENEWAL	14	5,079
Folsom Total	**14**	**5,079**
Galt		
GOVT OWNED-ACTIVE	1	39
GOVT OWNED-CANCELLATION	1	297
NONRENEWAL	1	38
Galt Total	**3**	**373**
Isleton		
GOVT-NONRENEWAL	1	47
Isleton Total	**1**	**47**
Rancho Cordova		
ACTIVE	1	125
CANCELLATION	1	3,895
NONRENEWAL	10	2,142
Rancho Cordova Total	**12**	**6,162**
Sacramento		
ACTIVE	1	112
NONRENEWAL	5	692
Sacramento Total	**6**	**803**
Unincorporated Sacramento County		
ACTIVE	1,204	161,397
ACTIVE NONRENEWAL	22	5,014
CANCELLATION	45	1,029
GOVT OWNED	63	6,361
GOVT OWNED-ACTIVE	59	12,554
GOVT OWNED-CANCELLATION	13	924
GOVT-NONRENEWAL	13	1,083
NONRENEWAL	448	59,915

Jurisdiction/ Williamson Act Parcel Status	Parcel Count	Parcel Area (in Acres)
REMOVED-ERROR	2	47
Unincorporated Sacramento County Total	**1,869**	**248,324**
Grand Total	**1,932**	**263,794**

Source: California Department of Conservation. Retrieved 12/15/2025.

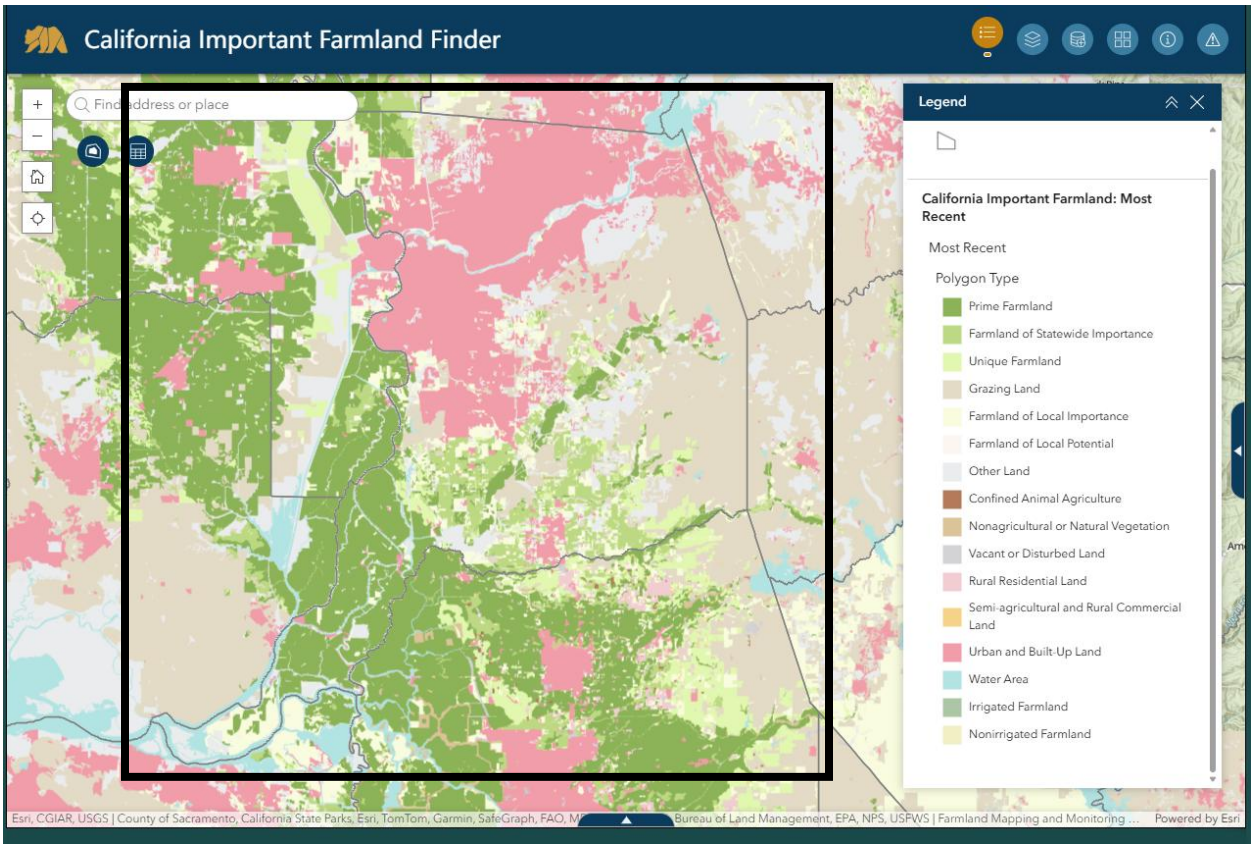
State Inventory of Important Farmland

The Farmland Mapping and Monitoring Program was established in 1984 to document the location, quality, and quantity of agricultural lands and conversion of those lands over time. The program provides impartial analysis of agricultural land use changes throughout California. For inventory purposes, several categories were developed to describe the qualities of land in terms of its suitability for agricultural production. The State Department of Conservation utilizes the following classification system:

- The **Prime Farmland category** describes farmland with the best combination of physical and chemical features able to sustain long term agricultural production. This land has the soil quality, growing season, and moisture supply needed to produce sustained high yields. Land must have been used for irrigated agricultural production at some time during the four years prior to the mapping date.
- **Farmland of Statewide Importance** is farmland similar to Prime Farmland but with minor shortcomings, such as greater slopes or less ability to store soil moisture. Land must have been used for irrigated agricultural production at some time during the four years prior to the mapping date.
- **Unique Farmland** is farmland of lesser quality soils used for the production of the state's leading agricultural crops. This land is usually irrigated but may include non-irrigated orchards or vineyards as found in some climatic zones in California. Land must have been cropped at some time during the four years prior to the mapping date.
- **Farmland of Local Importance** is either currently producing crops or has the capability of production. This farmland category is determined by each county's board of supervisors and a local advisory committee.

The 2022 maps are the most recent versions. These lands are shown in Figure 4-19.

Figure 4-19 Sacramento County – Map of Important Farmlands 2022



Source: State of California Department of Conservation. Retrieved 12/15/2025.

Cultural and Historical Resources

Sacramento County has a large stock of historically significant homes, public buildings, and landmarks. To inventory these resources, information was collected from a number of sources. The California Department of Parks and Recreation Office of Historic Preservation (OHP) was the primary source of information. The OHP is responsible for the administration of federally and state mandated historic preservation programs to further the identification, evaluation, registration, and protection of California's irreplaceable archaeological and historical resources. 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.

- The **National Register of Historic Places** is the nation's official list of cultural resources worthy of preservation. The National Register is part of a national program to coordinate and support public and private efforts to identify, evaluate, and protect historic and archeological resources. Properties listed include districts, sites, buildings, structures, and objects that are significant in American history, architecture, archeology, engineering, and culture. The National Register is administered by the National Park Service, which is part of the U.S. Department of the Interior.
- The **California Register of Historical Resources** program encourages public recognition and protection of resources of architectural, historical, archeological, and cultural significance and identifies historical resources for state and local planning purposes; determines eligibility for state historic

preservation grant funding; and affords certain protections under the California Environmental Quality Act. The Register is the authoritative guide to the state's significant historical and archeological resources.

- **California Historical Landmarks** are sites, buildings, features, or events that are of statewide significance and have anthropological, cultural, military, political, architectural, economic, scientific or technical, religious, experimental, or other value. Landmarks #770 and above are automatically listed in the California Register of Historical Resources.
- **California Points of Historical Interest** are sites, buildings, features, or events that are of local (city or county) significance and have anthropological, cultural, military, political, architectural, economic, scientific or technical, religious, experimental, or other value. Points designated after December 1997 and recommended by the State Historical Resources Commission are also listed in the California Register.

Historical resources included in the programs above are identified in Table 4-19.

Table 4-19 Sacramento County Planning Area – Historical 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
Alta Mesa Farm Bureau Hall (N1476)	X				1/7/1987	Wilton
American River Grange Hall #172 (P823)	X			X	5/15/1996	Rancho Cordova
Archway, The (P614)				X	5/18/1983	Rio Linda
B. F. Hastings Building (606)		X			5/22/1957	Sacramento
Blue Anchor Building (N1171)	X				2/3/1983	Sacramento
Brewster Building (N2099)	X				8/16/2000	Galt
Brewster House (N638)	X				6/23/1978	Galt
Brighton School (N952)	X				4/3/1981	Sacramento
Brown, John Stanford, House (N2252)	X				7/28/2004	Walnut Grove
Business & Professional Building, Consumer Affairs Building (C8)			X		2/10/2000	Sacramento
California Almond Growers Exchange Processing Facility (967)		X			10/1/1985	Sacramento

Name (Landmark Plaque Number)	National Register	State Landmark	California Register	Point of Interest	Date Listed	City/Area
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
Chinese Diggings, Natoma Station Ground Sluice (P712)				X	11/22/1988	Folsom
Chung Wah Cemetery (N1918)	X				8/21/1995	Folsom
Cohn House (N1001)	X				1/21/1982	Folsom
Coloma Road at Nimbus Dam (746)		X			7/5/1960	Folsom
Coloma Road at Sacramento's Fort (745)		X			7/5/1960	Sacramento
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
Delta Meadows Site (N130)	X				11/5/1971	Locke
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
Ehrhardt, William, House (N2209)	X				7/10/2003	Elk Grove
Elk Grove Grammar School / Elk Grove Unified School Distr (P717)				X	6/12/1989	Elk Grove
Elk Grove Historic District (N1553)	X				3/1/1988	Elk Grove
Fifteen Mile House-Overland Pony Express Route in California (698)		X			9/11/1959	Rancho Cordova
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

Name (Landmark Plaque Number)	National Register	State Landmark	California Register	Point of Interest	Date Listed	City/Area
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
Folsom Depot (N1035)	X				2/19/1982	Folsom
Folsom Powerhouse (N258)	X				10/2/1973	Folsom
Folsom-Overland Pony Express Route in California (702)		X			9/11/1959	Folsom
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
Grave of Alexander Hamilton Willard (657)		X			9/26/1958	Franklin
Grave of Elitha Cumi Donner Wilder (719)		X			12/2/1959	Elk Grove
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
Imperial Theatre (N1148)	X				10/29/1982	Walnut Grove
Indian Stone Corral (N349)	X				4/16/1975	Orangevale
Isleton Chinese And Japanese Commercial Districts (N1674)	X				3/14/1991	Isleton
J Street Wreck (N1692)	X				5/16/1991	Sacramento
Jean Harvie School, Walnut Grove Community Center (P665)				X	8/20/1985	Walnut Grove
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
Liberty Schoolhouse (P579)				X	12/21/1981	Galt
Locke Historic District (N87)	X				5/6/1971	Locke
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
Murphy's Ranch (680)		X			5/11/1959	Elk Grove
Negro Bar (P798)				X	5/31/1994	Folsom
New Helvetia Cemetery (592)		X			5/22/1957	Sacramento
Nisenan Village Site (N562)	X				3/21/1978	Carmichael
Nisipowinan Village Site (900)	X	X			6/16/1976	Sacramento
Old Elk Grove Hotel Site (P532)				X	6/29/1979	Sacramento
Old Fair Oaks Bridge (N2342)	X				9/25/2006	Fair Oaks
Old Folsom Powerhouse (633)		X			3/3/1958	Folsom
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
Prairie City (464)		X			8/30/1950	Prairie City
Public Works Office Building, Caltrans Building (C5)			X		11/5/1999	Sacramento
Rae House (P743)				X	5/8/1991	Galt
River Mansion (P149)				X	11/3/1969	Sacramento

Name (Landmark Plaque Number)	National Register	State Landmark	California Register	Point of Interest	Date Listed	City/Area
Rosebud Ranch (N846)	X				12/31/1979	Hood
Ruhstaller Building (N1003)	X				1/21/1982	Sacramento
Runyon House (N2109)	X				10/27/2000	Courtland
Rusch Home (P737)				X	2/11/1991	Citrus Heights
Sacramento Air Depot Historic District (N1747)	X				1/21/1992	North Highlands
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
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 First County Free Library Branch in California (817)		X			6/1/1967	Elk Grove
Site of Grist Mill Built by Jared Dixon Sheldon (439)		X			6/2/1949	Slough house
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
Slocum House (N744)	X				1/31/1979	Fair Oaks
Sloughhouse (575)		X			5/17/1957	Sloughhouse

Name (Landmark Plaque Number)	National Register	State Landmark	California Register	Point of Interest	Date Listed	City/Area
Southern Pacific Railroad Company's Sacramento Depot (N353)	X				4/21/1975	Sacramento
Southern Pacific Railroad Superintendent House (N2411)	X				6/13/2008	Folsom
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
Terminal of California's First Passenger Railroad (558)		X			12/31/1956	Folsom
The Villa (Serve Our Seniors, Incorporated) (P764)				X	2/14/1992	Orangevale
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
Utah Condensed Milk Company Plant (N650)	X				8/3/1978	Galt
Van Voorhies House (N535)	X				11/17/1977	Sacramento
Wagner, Anton, Duplex (N923)	X				11/10/1980	Sacramento
Walnut Grove Chinese-American Historic District (N1630)	X				3/22/1990	Walnut Grove
Walnut Grove Commercial/Residential Historic District (N1634)	X				4/12/1990	Walnut Grove
Walnut Grove Gakuen Hall (N882)	X				6/17/1980	Walnut Grove
Walnut Grove Japanese-American Historic District (N1631)	X				3/22/1990	Walnut Grove
Western Hotel (601)		X			5/22/1957	Sacramento
Westminster Presbyterian Church (N2203)	X				5/22/2003	Sacramento
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

Name (Landmark Plaque Number)	National Register	State Landmark	California Register	Point of Interest	Date Listed	City/Area
Witter, Edwin, Ranch (N1675)	X				3/14/1991	Sacramento
Woodlake Site (N88)	X				5/6/1971	Sacramento
Yeong Wo Cemetery (P810)				X	5/30/1995	Folsom

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 Sacramento County Planning Area to natural hazards and disasters also involves inventorying the economic assets and community activities of value to the Sacramento County Planning Area.

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

Economic assets and drivers in the Sacramento County Planning Area include a diverse mix of public- and private-sector activities. Within unincorporated Sacramento County, the three largest employment sectors are government, health care and social assistance, and retail trade. Other significant sectors include construction, administrative and support and waste management and remediation services, accommodation and food services, and manufacturing. Health care and construction have experienced particularly strong employment growth and provide important employment opportunities within the unincorporated County.

The County's economic base is also supported by major employers and concentrations of employment throughout the Planning Area. Major employment and industrial centers include Metro Air Park, McClellan Park, Mather, Capital Commerce Center, and the Aerojet employment area, which collectively support industrial, manufacturing, logistics, aerospace, research and development, and other employment activities. These employment centers, along with major public agencies, health care institutions, educational institutions, and other large employers, represent important economic assets whose continued operation can influence the County's ability to recover following a disaster.

Commercial areas are also an important component of the County's economic resiliency. The unincorporated County includes 15 identified commercial corridors, which contain concentrations of businesses, employment, retail and services and serve surrounding communities. Maintaining access to these commercial areas and major employment centers, as well as supporting the continuity of transportation, utilities, communications, freight movement, and workforce access, is important to minimizing economic disruption and supporting recovery following a disaster.

It should be noted that though these sections are categorized by type, there are economic interdependencies between each of these categories.

Government

Government represents the largest employment sector in unincorporated Sacramento County. According to the Sacramento County Economic Development Strategic Plan's Lightcast analysis, Government accounted for approximately 26% of employment in the unincorporated County in 2022. Health Care and Social Assistance was the second-largest sector, accounting for approximately 15% of employment, followed by Retail Trade at approximately 10%. Together, Government and Health Care and Social Assistance account for approximately 40% of employment in the unincorporated County, providing a significant and relatively stable employment base.

In addition to this, the Sacramento County 2025 Economic Development Strategic Plan (EDSP) identified "Government" as the largest of the major employment sectors analyzed, representing approximately 26% of employment and growing approximately 20% between 2012 and 2022. Government also has a location quotient of 1.81, indicating that the unincorporated County has a relatively high concentration of government employment.

Agricultural Industry

One of the larger economic drivers in the County is agriculture. According to the most recent Sacramento County Agricultural Commissioner's report from 2025, in 2024 the gross production value of agricultural commodities in Sacramento County totaled $536,154,000, representing an 8% decrease from the previous year. Wine grapes remained the County's top-valued commodity, with a gross value of $167,905,000 across more than 37,173 harvested acres. However, this reflects an 18% decline due to reduced yields and lower prices per ton. Market milk reclaimed its position as the County's second-highest valued commodity at $51,213,000, a 10% increase over 2023. Pears followed closely in third place, valued at $49,559,000. Notable gains in 2024 included walnuts (up 55%), ryegrass (up 50%), almonds (up 42%), and corn for grain (up 37%).

The County General Plan Economic Development Element identifies maintaining a healthy and competitive agricultural industry, supporting agricultural businesses and higher-value products, and encouraging agricultural processing and agritourism as important components of the County's economic base. Building upon the General Plan element, the County's Economic Development Strategic Plan (EDSP) recognizes agriculture and the rural economy as an important area for regional collaboration, including support for farm-to-fork programs, agritourism, agricultural innovation, preservation of agricultural land, and the

promotion of agribusiness and agriculture-related industries. The EDSP also identifies Ag Tech as a priority industry for the County's broader business attraction and economic diversification efforts

Health Care

Another major employment sector includes the healthcare sector. Kaiser Permanente, UC Davis Health, Sutter Health, and Dignity health are all significant employment facilities within Sacramento County. This is a large factor to the County's economy by providing high-volume employment, generating substantial direct and indirect output, fostering innovation through research/education, and offering economic stability. It complements the dominant government sector and supports diversification efforts.

Health Care and Social Assistance is also a significant and growing component of the unincorporated County economy. According to the EDSP's Lightcast analysis, the sector accounted for approximately 15% of employment in the unincorporated County in 2022 and grew approximately 71% between 2012 and 2022.

Construction

Construction is another significant component of the unincorporated County economy. According to the EDSP's Lightcast analysis, construction represented approximately 9% of employment and grew approximately 82% between 2012 and 2022, the highest growth rate among the top sectors analyzed. Construction also had a location quotient of 1.83, indicating a relatively high concentration of construction employment in the unincorporated County compared to the nation. The sector is particularly relevant to community recovery and resilience because natural hazards can affect construction activity, development, and infrastructure investment, increasing the need for construction activity and a skilled workforce to support rebuilding and recovery efforts.

Commercial Centers

Commercial real estate conditions also present challenges within the unincorporated County. While the office market has remained relatively stable, office vacancies remain elevated, and retail vacancies continue to affect many commercial areas. Vacant and underutilized commercial properties, particularly along commercial corridors, can deter private investment and affect the economic vitality and overall sense of place within surrounding communities. Addressing commercial vacancies and encouraging reinvestment are therefore important components of the County's broader commercial corridor revitalization efforts.

The County has identified 15 commercial corridors within unincorporated Sacramento County that serve as important concentrations of businesses, services, and economic activity. The EDSP recognizes these corridors as a vital part of the local economy and prioritizes reducing vacancy, increasing public and private investment, addressing barriers to development and infrastructure, and supporting commercial corridor improvements.

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

More information on economic assets for the incorporated jurisdictions in the County can be found in the respective jurisdictional annexes to this Base Plan.

Community Activities of Value

Inventorying economic assets in the Sacramento County Planning Area 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 provide economic benefits to the Planning Area. 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

In Sacramento County, some of the major community events that provide economic benefit to the Planning Area include:

- Farm-to-Fork Festival: This annual festival (typically in September) and year-round initiatives celebrate local agriculture with tastings, chef demos, markets, and events. It draws crowds, supports local producers, and generates significant tourism revenue.
- Music Festivals at Discovery Park (Sacramento): Large-scale events like Aftershock and GoldenSky. A long-term agreement ensures these continue through 2035, bringing hundreds of thousands of out-of-town visitors annually and stimulating hotels, restaurants, and services.
- California State Fair (Cal Expo, Sacramento): A multi-week summer event with exhibits, rides, entertainment, and agriculture showcases. It attracts regional and out-of-state visitors, boosting the local economy through admissions, concessions, and related spending.
- Sacramento County Fair: A multi-day summer event with exhibits, rides, entertainment, and agriculture showcases. It attracts local and regional visitors, boosting the local economy through admissions, concessions, and related spending.
- Golden 1 Center (e.g., Sacramento Kings games, concerts) and smaller venues generate ongoing revenue.
- Cultural and Harvest Festivals: Events like the Sacramento Harvest Festival, Lantern Street Festival, Aloha Festival, and arts-focused gatherings (e.g., Second Saturdays Art Walk in Midtown Sacramento) draw crowds for food, crafts, and entertainment.

This list is a sample of major events. Many more events occur during the year.

Sacramento County's economy is supported by an interconnected network of businesses, employment centers, commercial districts, transportation systems, utilities, public services, and supply chains. As a result, the economic impacts of a natural hazard may extend beyond businesses or facilities that experience direct physical damage. Disruptions to transportation and roadway access, utilities, telecommunications, freight movement, workforce availability, and public services can affect business operations throughout the County and delay economic recovery.

Major employment and industrial centers, including Metro Air Park, McClellan Park, Mather, Capital Commerce Center, and the Aerojet employment area, represent important concentrations of employment and economic activity. The County's 15 commercial corridors are also important economic assets, supporting concentrations of businesses and services throughout unincorporated communities. Disruptions affecting access, utilities, workforce availability, or supporting infrastructure in these areas could affect multiple businesses simultaneously and have broader economic impacts.

Transportation and logistics infrastructure is particularly important to economic continuity. Sacramento International Airport, major highway and roadway connections, freight routes, and other transportation infrastructure support the movement of workers, visitors, goods, and services throughout the County. Businesses also depend on reliable electricity, water, wastewater, telecommunications, and other critical infrastructure. Disruption of these systems can affect businesses even when their individual facilities are not directly damaged by a hazard.

Business continuity and economic recovery efforts should therefore consider not only direct impacts to individual businesses, but also the ability of employees and customers to access businesses, the movement of goods and supplies, the availability of utilities and communications, and the continued operation of public and private services necessary to support economic activity.

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

More information on community activities of value specific to participating jurisdictions can be found in the respective jurisdictional annexes to this Base Plan.

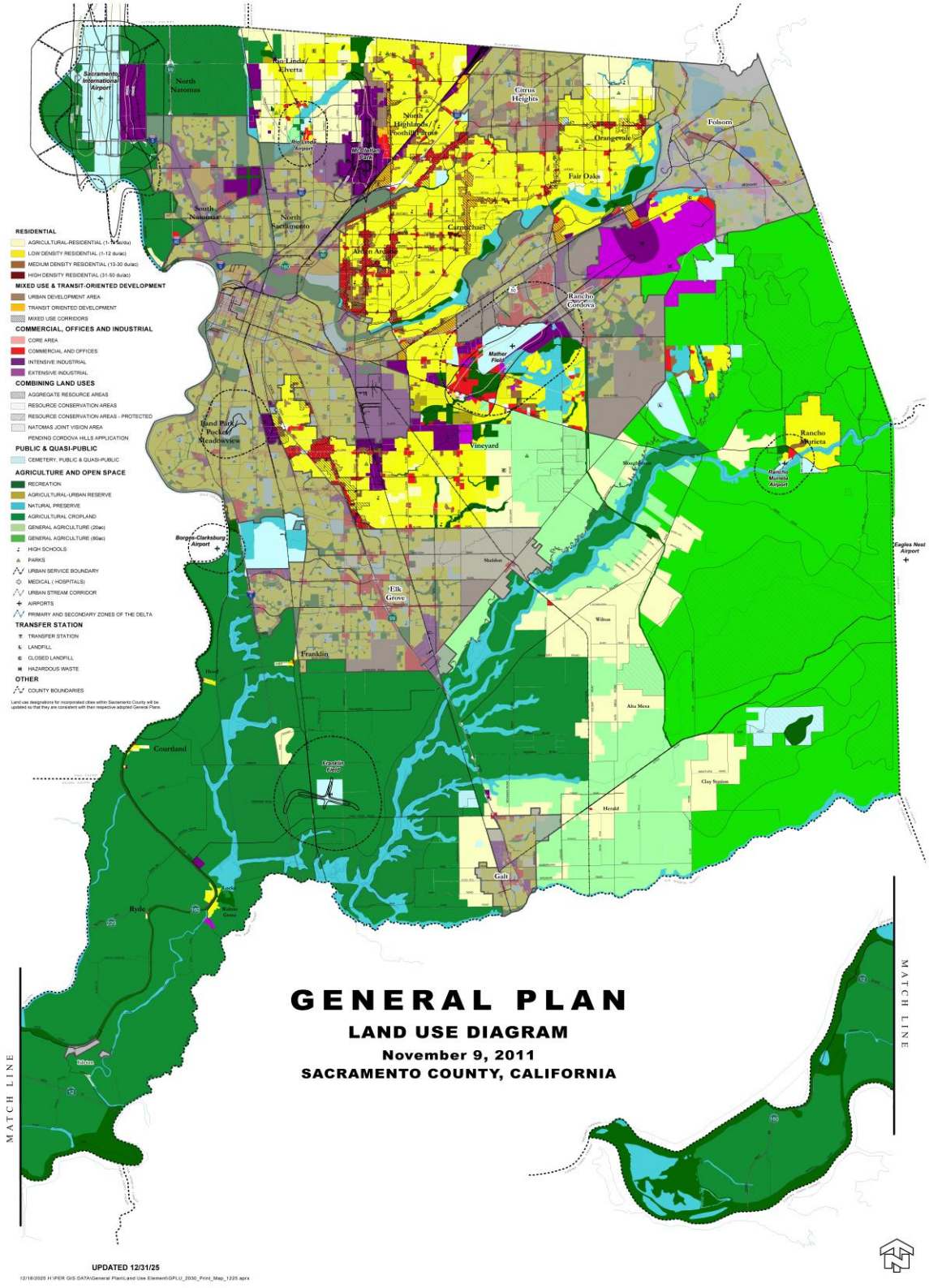
4.2.2. Growth and Development Trends

As part of the planning process, trends in growth and development, both current and future, were examined, both as a whole and in the context of hazard-prone areas, and how the changes in growth and development affect loss estimates and vulnerability over time. This discussion focuses on unincorporated Sacramento County.

Land Use

The future use of land in the County is fundamental to attaining the vision of a balanced, self-sustaining community. A land use pattern which balances growth between rural and urban areas, as well as providing a balance between housing, employment, natural resources, and services in the County is a key element in maintaining the quality of life and unique character of the County. Descriptions of allowed uses for each classification are detailed in the Sacramento County General Plan Land Use Element. Figure 4-20 is sourced from this section. The map date is 2011, but is the Land Use Map included in the updated 2022 Land Use Element.

Figure 4-20 Sacramento County General Plan Land Use



Source: Sacramento County General Plan Land Use Element (updated in 2025). Retrieved 10/12/2026.

Population Projections

As indicated in the previous section, Sacramento County had been steadily growing from 1940 to 2020, with a recent slowing in population growth. Long term forecasts by the California Department of Finance project population growth in Sacramento County continuing through 2070. Table 4-20 shows the population projections for the County Planning Area as a whole through 2070. As shown, populations are expected to continue to grow over time.

Table 4-20 Population Projections for the Sacramento County Planning Area (incorporated and unincorporated), 2025-2070

	2025	2030	2035	2040	2045	2050	2055	2060	2065	2070
Sacramento County	1,596,561	1,650,119	1,719,203	1,791,624	1,865,449	1,938,123	2,004,744	2,065,364	2,120,313	2,174,404

Source: California Department of Finance, P-2 Report

Development since 2021 Plan

The Sacramento County Planning Department sought to track total building permits issued since 2021 for unincorporated Sacramento County. A summary of this development is shown in Table 4-21. Development by in known hazard areas is shown in Table 4-22. All development in the identified hazard areas, including the 1% annual chance floodplains and high wildfire risk areas, were completed in accordance with the current and applicable development codes and standards in place at the time. 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 County to identified priority hazards.

Table 4-21 Unincorporated Sacramento County Development 2021–2025 Summary

Property Use	2021	2022	2023	2024	2025
Residential	171	196	121	122	144
Commercial	206	213	201	161	153
Industrial	68	72	51	37	28
Other	28	29	39	58	51
Total	**473**	**510**	**412**	**378**	**376**

Source: Sacramento County Planning Department

Table 4-22 Unincorporated Sacramento County Development in Hazard Areas since 2021

Property Use	2021	2022	2023	2024	2025
Residential	59	60	34	36	32
Commercial	73	70	81	60	69
Industrial	36	35	25	21	18
Other	11	10	14	17	25
Total	**179**	**175**	**154**	**134**	**144**

Source: Sacramento County Planning Department

Future Development Areas

It is important to review future development plans for the County. 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 hazard events and disasters.

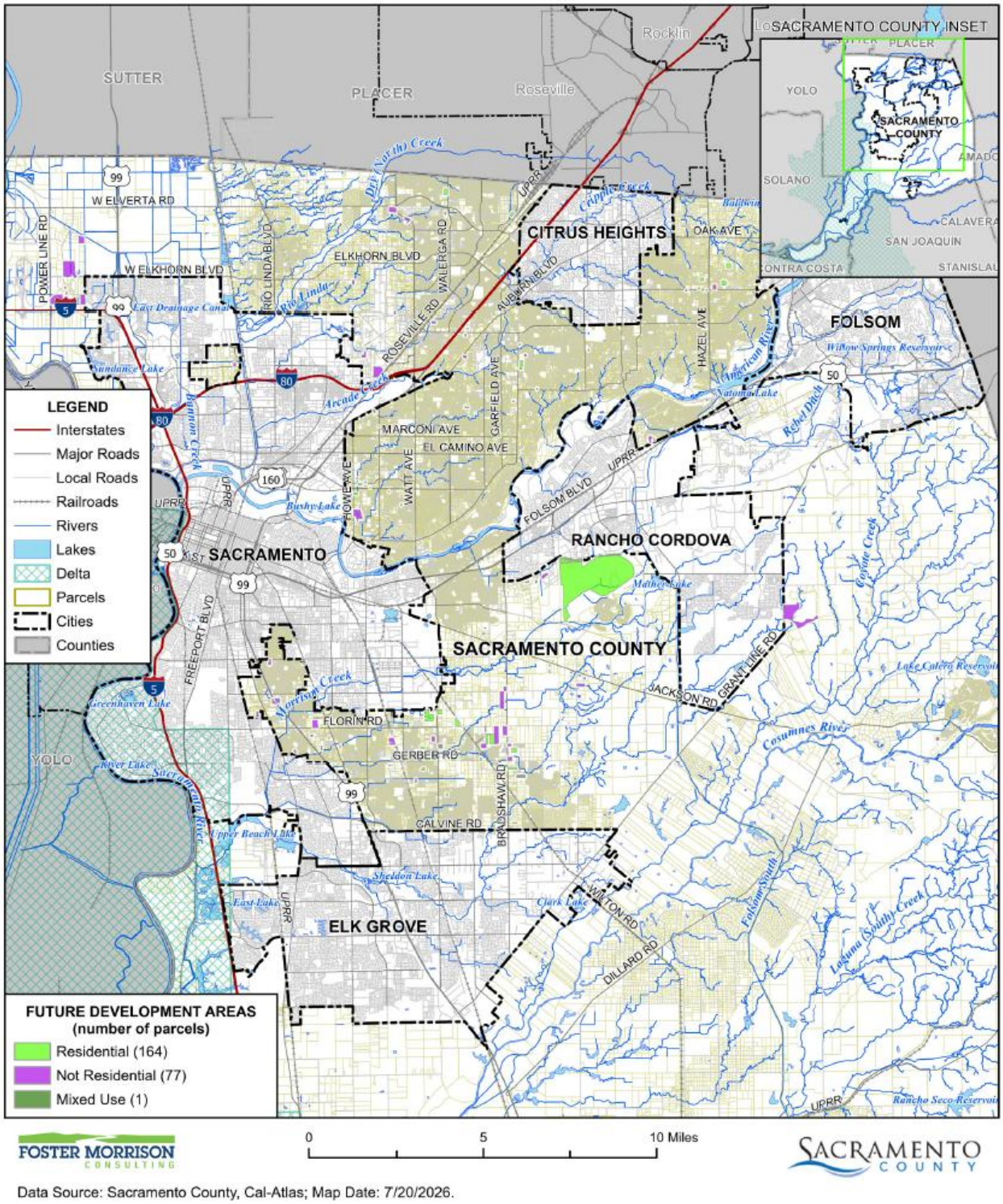
GIS Analysis

Sacramento County provided 129 areas that the County would be developing over the next 5 years. While not yet fully standardized (the County is working on ways to standardize this in the future), generally speaking the following categories of future development are used:

- **Complete**: typically means an application is complete for further processing.
- **Closed**: Project is closed and is not longer being worked on.
- **Close Pending**: Project is closed but physical file is in process or it's during the appeal period.
- **Paid**: application fee has been paid but likely has not been assigned to a Planner for review.

These 129 areas were mapped in GIS. These areas are shown on Figure 4-21 and detailed in Table 4-23.

Figure 4-21 Unincorporated Sacramento County – Future Development Areas



Data Source: Sacramento County, Cal-Atlas; Map Date: 7/20/2026.

Table 4-23 Unincorporated Sacramento County – Future Development Areas by Type and Status with Parcels and Acres

Future Development Type and Status	Site/Location Name	Total Parcel Count	Improved Parcel Count	Unimproved Parcel Count	Total Acres	Total Improved Acres	Total Unimproved Acres
Residential							
Complete	1530 Howe Avenue Apartments (UPPamendSPPamendUPMDRS)	1	1	0	4.5	4.5	0.0
	6809 Fleming Tentative Parcel Map (PMRSPZDRS)	1	1	0	1.5	1.5	0.0
	Napa Valley Subdivision Extension of Time (XSP)	1	0	1	2.5	0.0	2.5
	Southeast Watt Tentative Map Time Extension #2 (XSP)	1	0	1	9.9	0.0	9.9
	The Legacy Apartments New Units (SPMDRS)	1	1	0	11.0	11.0	0.0
	Wildhawk West Subdivision Map Extension (XSP)	1	0	1	9.8	0.0	9.8
	Complete Total	**6**	**3**	**3**	**39.2**	**16.9**	**22.2**
Closed	2260 Park Town Cir Multifamily (UPZDRS)	1	1	0	1.0	1.0	0.0
	2391 Arden Way Apartment Conversion (UPMDRS)	1	1	0	0.5	0.5	0.0
	2511 Larkspur Lane Townhomes (DRSmjPRC)	1	1	0	0.4	0.4	0.0
	2856 Arden Way MultiFamily Development (DRSmjPRC)	1	1	0	0.1	0.1	0.0
	2862 Arden Way MultiFamily Development (DRSmjPRC)	1	1	0	0.3	0.3	0.0
	3411 Olson Street Adaptive Reuse (DRSmajor)	1	0	1	2.1	0.0	2.1
	3435 California Ave Parcel Map (PMRDRSinc)	1	0	1	0.2	0.0	0.2
	5250 Date Ave MultiFamily (SPZDRS)	1	1	0	0.9	0.9	0.0
	5429 Marconi Ave MultiFamily Apartments	1	0	1	2.3	0.0	2.3
	9055 Gerber Road Apartments	1	0	1	9.6	0.0	9.6
	Altal Estates (CZBSDPDRS)	1	1	0	2.4	2.4	0.0
	Antelope North Production Homes (DRSmajor)	1	0	1	5.1	0.0	5.1
	Beech Avenue Parcel Map (PMRDRS)	1	1	0	4.9	4.9	0.0

Future Development Type and Status	Site/Location Name	Total Parcel Count	Improved Parcel Count	Unimproved Parcel Count	Total Acres	Total Improved Acres	Total Unimproved Acres
	Beech Hill Apartments (PSSDRS)	1	0	1	1.3	0.0	1.3
	Black Hawk Apartments (DRSmjrPRC)	1	1	0	1.0	1.0	0.0
	Blossom Ridge Production Homes (DRSmajor)	1	0	1	9.2	0.0	9.2
	Cuong Rezone and Parcel Map (RZBPMRSPZDRS)	1	1	0	2.5	2.5	0.0
	EVA Flight Training Academy Residence Hall (DRSmjrPRC)	1	0	1	0.0	0.0	0.0
	Florin Road Subdivision (RZBSDPDRS)	1	0	1	14.6	0.0	14.6
	Gerber Creek Unit 2 (DRSmajor)	1	0	1	4.9	0.0	4.9
	Gerber Creek Unit 3 (DRSmajor)	1	0	1	0.1	0.0	0.1
	Gerber Road Apartments (PSSDRS)	1	0	1	9.6	0.0	9.6
	Hurley Way The Sonnets Townhomes Map Extension (XSP)	1	0	1	0.7	0.0	0.7
	Kestrel at Winding Ranch (DRSmajor)	1	0	1	11.5	0.0	11.5
	Kestrel at Winding Ranch Production Homes (DRSmajor)	1	0	1	11.5	0.0	11.5
	Lakewood Road Tentative Subdivision Map Resubmission (RSPDRS)	1	0	1	3.9	0.0	3.9
	Markston Apartments (DRSmjPRC)	1	0	1	1.1	0.0	1.1
	Morvai 102 Production Homes (DRSmajor)	1	0	1	23.2	0.0	23.2
	Morvai 70 Production Homes (DRSmajor)	1	0	1	13.5	0.0	13.5
	Murieta Hills East Unit 1 Lots 125 & West Unit 1 Lots 16 (DRSmajor)	1	0	1	0.2	0.0	0.2
	NEC Florin Rd at Hedge Ave Subdivision (SPPDRS)	1	0	1	14.6	0.0	14.6
	North Vineyard Greens Production Homes (DRSmajor)	1	0	1	0.1	0.0	0.1
	Power Inn Apartments (PSSDRS)	1	0	1	1.3	0.0	1.3
	Riverhaven Subdivision (DRSMajor)	1	1	0	2.9	2.9	0.0

Future Development Type and Status	Site/Location Name	Total Parcel Count	Improved Parcel Count	Unimproved Parcel Count	Total Acres	Total Improved Acres	Total Unimproved Acres
	San Juan Apartments Phase 2 (DRSmjPRC)	1	0	1	1.3	0.0	1.3
	Sierra Gardens (DRSMajor)	1	0	1	40.0	0.0	40.0
	Silveira Subdivision Homes (DRS-major)	72	0	72	9.9	0.0	9.9
	Summer Trace Apartments (DRSmjPRC)	1	1	0	2.6	2.6	0.0
	The Lane at Loma Vista (DRSmajor)	1	0	1	0.1	0.0	0.1
	Village at Elder Creek	42	0	42	6.9	0.0	6.9
	Vineyard Glen Oxform	1	0	1	10.1	0.0	10.1
	Willow Vista Production Homes (DRSmajor)	1	0	1	37.3	0.0	37.3
	Closed Total	**154**	**12**	**142**	**265.9**	**19.6**	**246.3**
Close Pending	6702 Filbert Ave Subdivision (SDPCZBSPZDRS)	1	0	1	9.8	0.0	9.8
	Mission Ave Apartments East (PSSDRS)	1	0	1	1.1	0.0	1.1
	Mission Ave Apartments West (PSSDRS)	1	0	1	1.6	0.0	1.6
	Close Pending Total	**3**	**0**	**3**	**12.5**	**0.0**	**12.5**
Paid	Manzanita Muldrow Place (SDPSPPaddDRSmajor)	1	0	1	1.3	0.0	1.3
	Paid Total	**1**	**0**	**1**	**1.3**	**0.0**	**1.3**
Residential Total		**164**	**15**	**149**	**318.8**	**36.5**	**282.3**
Not Residential							
Complete	AlFarooq Mosque (UPPDRS)	1	1	0	2.4	2.4	0.0
	Echo Hotel at Florin Towne Centre (UPPDRS)	1	1	0	19.6	19.6	0.0
	Florin Towne Centre Tentative Parcel Map (PMRDRS)	1	1	0	19.6	19.6	0.0
	Metro Air Park West Commercial (PMRDRS)	1	0	1	16.5	0.0	16.5
	North Vineyard Plaza Map Extension (XPR)	1	1	0	7.7	7.7	0.0
	Rising South Point Parcel Map (PMRDRS)	1	1	0	3.9	3.9	0.0
	Complete Total	**6**	**5**	**1**	**69.8**	**53.3**	**16.5**
Closed	1100 Howe Ave Fitness Building (DRSmajor)	1	1	0	32.0	32.0	0.0

Future Development Type and Status	Site/Location Name	Total Parcel Count	Improved Parcel Count	Unimproved Parcel Count	Total Acres	Total Improved Acres	Total Unimproved Acres
	11363 Pyrites Way Design Review	1	1	0	1.2	1.2	0.0
	2227 Wyda Way Minor Auto Repair Facility (DRSmjPRC)	1	0	1	1.0	0.0	1.0
	2322 Gold River Rd Storage Building (DRSmjr)	1	1	0	0.5	0.5	0.0
	2577 Elkhorn Blvd Metal Building	1	1	0	2.5	2.5	0.0
	3101 Fulton Ave Commercial Building (DRSmjPRC)	1	1	0	0.4	0.4	0.0
	4600 Auburn Boulevard Rezone (GPBCZB)	1	0	1	3.7	0.0	3.7
	4800 Amber Lane	1	0	1	0.3	0.0	0.3
	6302 22nd Street Agricultural Structure (DRSmajor)	1	1	0	4.5	4.5	0.0
	6350 Bradshaw Road Rezone (CZBGPBDRS)	1	1	0	6.2	6.2	0.0
	7325 Reese Road Metal Building	1	1	0	8.5	8.5	0.0
	7360 Metro Air Parkway Costco Depot (DRSmjPRC)	1	0	1	91.7	0.0	91.7
	American Tower Data Center (DRSmjPRC)	1	1	0	3.6	3.6	0.0
	ARCO Metro Air Park (UPB-DRS)	1	0	1	1.4	0.0	1.4
	Auburn Falls Northcrest Community Center (DRSmajor)	1	0	1	1.8	0.0	1.8
	Auburn Falls Sunset Ridge Community Building (DRSmajor)	1	0	1	0.9	0.0	0.9
	Auburn Falls Engle Road Community Center (DRSmajor)	1	0	1	0.9	0.0	0.9
	AutoZone Store at DateTyler (DRS Mjr)	1	0	1	1.8	0.0	1.8
	Bombardier Court Spec Shells (DRSmjPRC)	1	0	1	2.0	0.0	2.0
	Bowling Green Park Improvement Project (DRSmajor)	1	0	1	4.9	0.0	4.9
	Braden Cordova Hills (DRS-Major PRC)	1	0	1	135.8	0.0	135.8
	Cambria Suites MAP (SPPDRSmajor)	1	0	1	1.5	0.0	1.5
	Cardinal Oaks Park (DRSmajor)	1	0	1	0.4	0.0	0.4

Future Development Type and Status	Site/Location Name	Total Parcel Count	Improved Parcel Count	Unimproved Parcel Count	Total Acres	Total Improved Acres	Total Unimproved Acres
	Caselman North West Landscaping	1	1	0	2.9	2.9	0.0
	Costco Depot Parking Lot (DRSmajor)	1	0	1	1.4	0.0	1.4
	Crown Sacramento Phase 2 (DRSmjPRC)	1	0	1	4.0	0.0	4.0
	CSI Training Building (DRSmajor)	1	0	1	7.3	0.0	7.3
	Elder Creek Rd Truck Parking (DRSmajorPRC)	1	0	1	31.5	0.0	31.5
	Filipino Community Center (DRSmajor)	1	0	1	1.9	0.0	1.9
	FlorinBradshaw Commercial (RZBSDPUPBSPPDRS)	1	0	1	18.5	0.0	18.5
	Folsom Tire Shop Expansion (DRSmajor)	1	1	0	0.8	0.8	0.0
	Frasinetti Winery Tasting Room (DRSmajor)	1	1	0	3.6	3.6	0.0
	Fruitridge Community Center & Park Restoration (DRSMjr)	1	0	1	4.6	0.0	4.6
	Gardner Parke Neighborhood Park (DRSmajor)	1	0	1	6.9	0.0	6.9
	Happy Lane Industrial Buildings (SPZ-DRS)	2	0	2	2.2	0.0	2.2
	Hoa Dam Temple (DRS Mjr)	1	0	1	0.5	0.0	0.5
	Jack N. Sheldon Park and Florin Creek Trail Improvements	1	0	1	2.3	0.0	2.3
	JATC Training Center Expansion (DRSmjPRC)	1	1	0	2.0	2.0	0.0
	Ji Dental Office	1	0	1	0.0	0.0	0.0
	Kiddie Academy (DRSmajor)	1	0	1	1.4	0.0	1.4
	Kid's Empire Antelope (DRSmjPRC)	1	1	0	1.1	1.1	0.0
	Living Water Church (DRSmajor)	1	0	1	1.1	0.0	1.1
	Logisticenter at Metro Air Park Design Review	1	0	1	20.7	0.0	20.7
	Maita Toyota Service Building Addition	1	1	0	2.3	2.3	0.0
	MAP Buildings 17 & 18 (DRSmjPRC)	1	0	1	19.1	0.0	19.1

Future Development Type and Status	Site/Location Name	Total Parcel Count	Improved Parcel Count	Unimproved Parcel Count	Total Acres	Total Improved Acres	Total Unimproved Acres
	MAP Commerce Center Building A (DRSmajor)	1	0	1	13.7	0.0	13.7
	MAP Commerce Center Building B (DRSmajor)	1	0	1	49.5	0.0	49.5
	MAP Commerce Center Building C (DRSmajor)	1	0	1	49.5	0.0	49.5
	MAP Commerce Center Building D (DRSmajor)	1	0	1	49.5	0.0	49.5
	MAP Commerce Center Building E (DRSmajor)	1	0	1	49.5	0.0	49.5
	MAP Commerce Center Building F (DRSmajor)	1	0	1	49.5	0.0	49.5
	MAP Commerce Center Building G (DRSmajor)	1	0	1	49.5	0.0	49.5
	McClellan Park West Lot 173 (DRSmjPRC)	1	1	0	1.7	1.7	0.0
	McClellan Police Modular Classroom (DRSmajor)	1	0	1	7.3	0.0	7.3
	Nottoli Community Dog Park Renovations	1	0	1	9.6	0.0	9.6
	Rio Del Oro Plaza Parcel Map (PMRDRS)	1	1	0	1.7	1.7	0.0
	RMCC Church Addition (DRSmajor)	1	1	0	3.3	3.3	0.0
	SCOE Warehouse Office Building (DRSmjPRC)	1	0	1	9.3	0.0	9.3
	Sierra Creek Park (DRSmajor)	1	0	1	7.3	0.0	7.3
	Sierra Gardens Open Space Landscaping & Walls	1	0	1	40.0	0.0	40.0
	Sierra Village Apartments Garage (DRSmajor)	1	1	0	4.5	4.5	0.0
	Somers Hangar Expansion (DRSmajor)	1	1	0	2.0	2.0	0.0
	UHaul at 47th Ave (DRS Mjr PRC)	1	0	1	5.0	0.0	5.0
	UHaul at Pyrites Way (DRS Major PRC)	1	1	0	6.9	6.9	0.0
	US Cold Storage Phase 3 (DRSMjr PRC)	1	1	0	41.6	41.6	0.0
	Vineyard Glen Murphy	1	0	1	3.7	0.0	3.7
	Walmart #1881 Grocery Pickup (DRSmajor)	1	1	0	12.9	12.9	0.0

Future Development Type and Status	Site/Location Name	Total Parcel Count	Improved Parcel Count	Unimproved Parcel Count	Total Acres	Total Improved Acres	Total Unimproved Acres
	Walmart #4309 Expansion (DRSmajor)	1	1	0	6.3	6.3	0.0
	Wilbur Way Metal Shop (DRSMajor)	1	0	1	0.9	0.0	0.9
	Closed Total	**70**	**24**	**46**	**918.3**	**152.9**	**765.4**
Close Pending	IUMienBuddhist Temple (UPPDRS)	1	1	0	10.4	10.4	0.0
	Close Pending Total	**1**	**1**	**0**	**10.4**	**10.4**	**0.0**
Not Residential Total		**77**	**30**	**47**	**998.5**	**216.6**	**781.9**
Mixed Use							
Closed	Bradshaw Sikh Temple Dining Hall Addition (DRSmjPRC)	1	1	0	9.4	9.4	0.0
	Closed Total	**1**	**1**	**0**	**9.4**	**9.4**	**0.0**
Mixed Use Total		**1**	**1**	**0**	**9.4**	**9.4**	**0.0**
Grand Total		**242**	**46**	**196**	**1,326.8**	**262.5**	**1,064.3**

Source: Sacramento County

4.3 Hazard Profiles and Vulnerability Assessment

44 CFR Requirement §201.6(c)(2)(i): [The risk assessment shall include a] description of the…location and extent of all natural hazards that can affect the jurisdiction. The plan shall include information on previous occurrences of hazard events and on the probability of future hazard events.
44 CFR §201.6(c)(2)(i): [The risk assessment shall include a] description of the…location and extent of all natural hazards that can affect the jurisdiction. The plan shall include information on previous occurrences of hazard events and on the probability of future hazard events.
44 CFR §201.6(c)(2)(ii): [The risk assessment shall include a] description of the jurisdiction's vulnerability to the hazards described in paragraph (c)(2)(i) of this section. This description shall include an overall summary of each hazard and its impact on the community.
44 CFR §201.6(c)(2)(ii)(A): The plan should describe vulnerability in terms of the types and numbers of existing and future buildings, infrastructure, and critical facilities located in the identified hazard areas.
44 CFR §201.6(c)(2)(ii)(B): [The plan should describe vulnerability in terms of an] estimate of the potential dollar losses to vulnerable structures identified in paragraph (c)(2)(i)(A) of this section and a description of the methodology used to prepare the estimate.
44 CFR §201.6(c)(2)(ii)(C): [The plan should describe vulnerability in terms of] providing a general description of land uses and development trends within the community so that mitigation options can be considered in future land use decisions.

The hazards identified in Section 4.1 Hazard Identification, are profiled individually in this section. The Hazard Profiles set the stage for the Vulnerability Assessment, where the vulnerability is quantified, as data allows, for each of the identified hazards.

Hazard Profiles Methodology

Each hazard is profiled in the following format:

- **Hazard/Problem Description**—This section gives a description of the hazard and associated issues followed by details on the hazard specific to the Sacramento County Planning Area and unincorporated Sacramento County. Where known, this includes information on the hazard extent, location, seasonal patterns, speed of onset/duration, and magnitude and/or any secondary effects.
- **Past Occurrences**—This section contains information on historical incidents, including impacts where known. Hazard research, historical incident worksheets and other input from the Hazard Mitigation Planning Committee were used to capture information on past occurrences.
- **Likelihood of Future Occurrence**—The frequency of past events is used in this section to gauge the likelihood of future occurrences. Where possible, frequency was calculated based on existing data. It was determined by dividing the number of events observed by the number of years on record and multiplying by 100. This gives the percent chance of the event happening in any given year (e.g., three droughts over a 30-year period equates to a 10 percent chance of experiencing a drought in any given year). The likelihood of future occurrences is categorized into one of the following classifications:
  - ✓ **Highly Likely**—Near 100 percent chance of occurrence in next year or happens every year.
  - ✓ **Likely**—Between 10 and 100 percent chance of occurrence in next year or has a recurrence interval of 10 years or less.

- ✓ **Occasional**—Between 1 and 10 percent chance of occurrence in the next year or has a recurrence interval of 11 to 100 years.
- ✓ **Unlikely**—Less than 1 percent chance of occurrence in next 100 years or has a recurrence interval of greater than every 100 years.

➢ **Climate Change**—This section contains the effects of climate change (as applicable). The possible influence of climate change on the hazard is discussed.

Vulnerability Assessment Methodology

With the Sacramento County Planning Area's hazards identified and profiled, a vulnerability assessment was conducted to describe the vulnerability and impact that each hazard would have on the Sacramento County Planning Area and specific to each jurisdiction. The vulnerability assessment quantifies, to the extent feasible, using best available data, assets at risk to identified hazards and estimates potential losses. This section focuses on the vulnerabilities of the Sacramento County Planning Area as a whole and specific to unincorporated Sacramento County. The vulnerability assessment is done in the following format:

➢ **General Vulnerability Discussion** – An assessment of the vulnerability of Sacramento County Planning Area to each hazard is provided in addition to the estimate of the risk of future occurrence. This is followed by a general discussion of the hazard and its vulnerability on the unincorporated Sacramento County. 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 one of 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.

➢ **Local Concerns** – This includes information on how unincorporated Sacramento County is uniquely affected by or vulnerable to each hazard. Information contained in this section also supports the resulting mitigation strategy for the unincorporated County. Local concerns sections specific to each of the other participating jurisdictions are included in their jurisdictional annexes to this Plan.

➢ **Assets at Risk** – A discussion of the assets at risk follows. 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.
- ✓ **FEMA NRI Hazard Vulnerability** – For each hazard in the FEMA National Risk Index in Sacramento County, the relevant portions of the hazard analysis done by FEMA is presented. This includes the Hazard Risk Index Rating, Expected Annual Loss Values, Exposure Values, and the Historic Loss Ratio Rating.

- **Impacts** – A discussion on hazard impacts is included. Impacts describe how each hazard can affect the County 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 will influence or affect the hazard over time is included here and considers factors related to climate change, changes in population patterns, and changes in land use and development. This section also discusses future development plans relative to each hazard. Future conditions and future development is addressed specifically for mapped hazards, and in more general terms for those hazards that are unmapped.

Existing Built Environment and Assets at Risk

Vulnerability can be quantified in those instances where there is a known, identified hazard area, such as a mapped floodplain. In these instances, the numbers and types of assets subject to the identified hazard can be counted and their values tabulated. Other information can be collected in regard to the hazard area, such as the location of critical facilities, historic structures, and valued natural resources. Together, this information conveys the impact, or vulnerability, of the Sacramento County Planning Area and unincorporated Sacramento County to that hazard.

The vulnerability assessment identified seven hazards in the Sacramento County Planning Area for which specific geographical hazard areas have been defined and for which sufficient data exists to support a quantifiable vulnerability analysis. These hazards are:

- Dam Failure
- Earthquake (with subhazards like liquefaction)
- Flood: 1%/0.5%/0.2% annual chance
- Landslide, Mudslides, and Debris Flows
- Levee Failure
- Sea Level Rise
- Wildfire

These hazards were analyzed using GIS, Sacramento County data, and hazard data.

The vulnerability and potential impacts from the nine priority hazards that do not have specific mapped areas nor the data to support additional vulnerability analysis are discussed in more general terms. These include:

- Aquatic Nuisance Species (plants/animals)
- Climate Change
- Drought and Water Shortage
- Flood: Localized/Stormwater
- Severe Weather: Extreme Cold and Freeze
- Severe Weather: Extreme Heat
- Severe Weather: Heavy Rain and Storms
- Severe Weather: High Winds and Tornadoes
- Subsidence

Power Outages/Failure: A Common Vulnerability of all Hazards

An additional impact or vulnerability common to most all hazards is power outage or power failure. There are two major power providers in Sacramento County - 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 Department of Energy, major blackouts are on the upswing. 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. Electric power disruptions can be generally grouped into two categories: intentional and unintentional.

Intentional Disruptions

There are four types of intentional disruptions:

- **Planned**: Some disruptions are intentional and can be scheduled based on maintenance or upgrading needs.
- **Unscheduled**: Some intentional disruptions must be done "on the spot." in response to an emergency.
- **Demand-Side Management**: Some customers (i.e., on the demand side) have entered into an agreement with their utility provider to curtail their demand for electricity during periods of peak system loads.
- **Load Shedding**: When the power system is under extreme stress due to heavy demand and/or failure of critical components, it is sometimes necessary to intentionally interrupt the service to selected customers to prevent the entire system from collapsing, resulting in rolling blackouts.

The California Independent System Operator (CAISO) is tasked with managing the power distribution grid that supplies most of California, except in areas served by municipal utilities. CAISO is thus the entity that coordinates statewide flow of electrical supply. CAISO uses a series of stage alerts to the media based on system conditions. The alerts are:

- Stage 1 – reserve margin falls below 7 percent
- Stage 2 – reserve margin falls below 5 percent
- Stage 3 – reserve margin falls below 1.5 percent

Rotating blackouts become a possibility when Stage 3 is reached. Rotating outages and/or blackouts such as those experienced in 2000/2001 and 2006 can occur due to losses in transmission or generation and/or extremely severe temperatures that lead to heavy electric power consumption. Key California events include the following:

On January 17, 2001, CAISO declared a Stage 3 Emergency and notified the then Governor's Office of Emergency Services that PG&E was dropping firm load of 500 megawatts (MW) in Northern California leading to rolling blackouts. Cal OES, in turn, issued an Electrical Emergency Message to all Emergency Services Agencies to prepare for rolling blackouts. This scenario was repeated the following day, January 18, 2001, and again on March 19, 2001.

A July 2006 heat storm event affected the entire state as well as most of the West, producing record energy demand levels in California. The State was able to avoid rotating outages due to a combination of favorable factors that included no major transmission outages, lower than typical generator outages, significant customer response to pleas for energy conservation, high imports from the Pacific Northwest despite unusually high loads, outstanding cooperation among western control area operators, and prompt response to fires that potentially threatened major interties. However, the event brought to light the vulnerability of the electric distribution system, as over 3,500 distribution transformers failed, leaving over two million customers without power at various times over the ten-day event, many for several hours and a small minority for up to three days.

In 2020, the state battled both extreme heat and wildfires. As a result of extreme heat, the CAISO declared a Stage 3 emergency. PG&E initiated rotating outages in August at the request of California's grid operator. The outages, which impacted 220,000 customers, occurred during periods of high heat. These rolling blackouts lasted less than a week.

Unintentional Disruptions

Unintentional or unplanned disruptions are outages that come with essentially no advance notice. This type of disruption can be the most problematic. The following are categories of unplanned disruptions:

- Accident by the utility, utility contractor, or others
- Malfunction or equipment failure
- Equipment overload (utility company or customer)
- Reduced capability (equipment that cannot operate within its design criteria)
- Tree contact other than from storms
- Vandalism or intentional damage
- Weather, including lightning, wind, earthquake, flood, and broken tree limbs taking down power lines
- Wildfire that damages transmission lines

This was the case in 2023. The Agricultural Commissioner noted that (unintentional) power outages during the January 2023 atmospheric river and levee failure events were severe and prolonged, with consequences to agriculture:

- Electric drainage pump stations, the primary means of preventing field flooding in below-sea level Delta parcels, were non-operational during outages. Growers activated large portable generators to run pumps continuously for approximately three weeks. Without these generators, field flooding would have resulted even without a levee breach.
- Irrigation pump outages during critical summer irrigation windows (heat events, peak crop water demand) are a separate and significant concern. Power interruptions during July–August high-demand periods, when Sacramento's grid faces peak load stress, can cause crop damage and irrigation scheduling failures within hours.
- Cold storage and packing facilities serving Sacramento County's fruit, vegetable, and dairy sectors are vulnerable to temperature extremes during extended outages, risking product spoilage.

Public Safety Power Shutoff

An intentional disruption type of power shortage/failure event has recently been occurring in California. In recent years, several wildfires have started 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), coordinated to prepare all Californians for the threat of wildfires and power outages during times of extreme weather. To help protect customers and communities during extreme weather events, electric power may be shut off for public safety in an effort to prevent a wildfire. This is called a Public Safety Power Shutoff (PSPS).

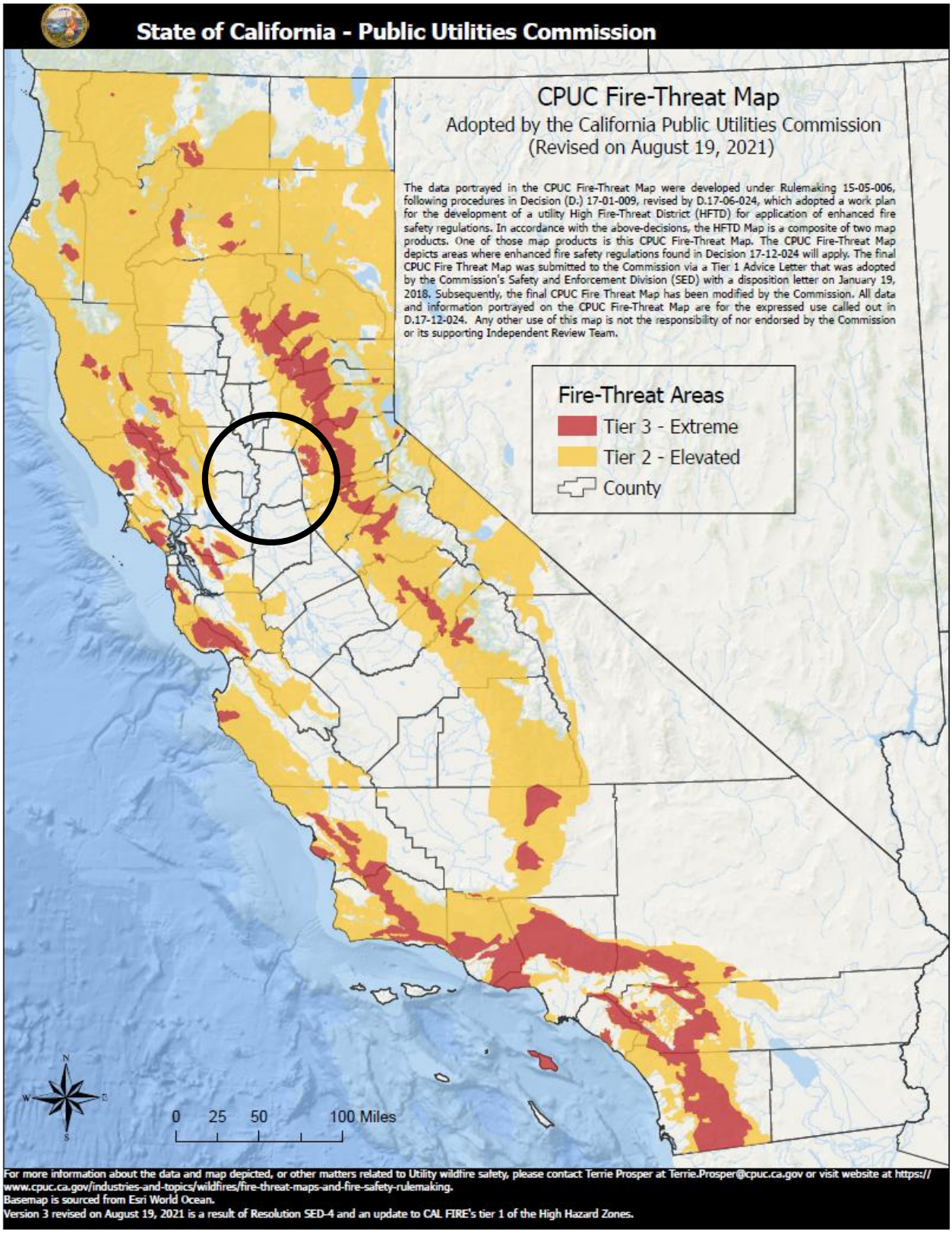
Public Safety Power Shutoff Criteria

The Wildfire Safety Operations Center (WSOC) monitors fire danger conditions across both SMUD and PG&E's service area, including PSPS conditions. These factors include:

- A Red Flag Warning declared by the National Weather Service
- Low humidity levels generally 20% and below
- Forecasted sustained winds generally above 25 mph and wind gusts in excess of approximately 45 mph, depending on location and site-specific conditions such as temperature, terrain and local climate
- Condition of dry fuel on the ground and live vegetation (moisture content)
- On-the-ground, real time observations from PG&E's WSOC and field observations from PG&E crews; as well as from SMUD crews.

The most likely electric lines to be considered for shutting off for safety will be those that pass through areas that have been designated by the CPUC as at elevated (Tier 2) or extreme (Tier 3) risk for wildfire (seen on Figure 4-22). This includes both distribution and transmission lines. The specific area and number of affected customers will depend on forecasted weather conditions and which circuits PG&E needs to turn off for public safety. Although a customer may not live or work in a high fire-threat area, their power may also be shut off if their community relies upon a line that passes through an area experiencing extreme fire danger conditions. This means that any customer who receives electric service from PG&E or SMUD should be prepared for a possible PSPS. PSPS events, while preventative in nature, can cause a variety of issues related to the lack of power to those impacted by the PSPS. For the Sacramento County Planning Area, a significant concern is the impact to their communication systems as well as on other critical infrastructure and services. PSPS events also cause concerns for certain vulnerable populations. As seen on Figure 4-22, Sacramento County is located outside the Tier 2 and Tier 3 areas.

Figure 4-22 State of California Tier 2 and 3 Areas



PG&E and SMUD both note that extreme weather threats can change quickly. When possible, PG&E and SMUD will provide customers with advance notice prior to turning off the power, as well as updates until power is restored. Timing of notifications (when possible) are:

- Approximately 48 hours before power is turned off
- Approximately 24 hours before power is turned off
- Just before power is turned off
- During the public safety outage
- Once power has been restored

When a PSPS is forecasted, PG&E and SMUD will notify County Emergency Management Agencies so they may monitor and make any plans they see needed. Customers affected will also get notified so they may also take steps to plan and make arrangements they deem necessary for the event. PG&E will support the customers with Community Resource Centers (CRC) near the affected areas of the PSPS and offer other programs to qualified customers. We will also work with the public safety agencies in the area to help mitigate any other issues related to the PSPS event. PG&E and SMUD offer many tools to help assist the agencies in monitoring and planning for these events. The County noted that there have been events in the past where wildfires have not occurred, but wildfire conditions were high. During these times of high winds, high temps, and high wildfire risk, a PSPS occurred in the County. These PSPS events are listed below and in each jurisdiction's respective annex to this Base Plan (It should be noted that "customers" in PG&E and SMUD vernacular refer to both households or business addresses):

- Oct 9 – 12, 2019; 16,400 customers impacted.
- Oct 23 – 25, 2019; 10,400 customers impacted.
- Oct 26 - Nov 1, 2019; 18,800 customers impacted.

A search of the CPUC PSPS Dashboard showed no events of PSPS in Sacramento since October of 2021.

It was also noted that PG&E is working to enhance its power network with Enhanced Powerline Safety Settings (EPSS) capable lines (SMUD does not currently utilize EPSS). EPSS are advanced safety settings. They allow PG&E powerlines to automatically turn off power within one-tenth of a second. This can happen when there is a hazard, like a tree branch falling into a powerline, which can cause a fire. These settings are in high fire-risk and surrounding areas. These have not yet been installed in and near the Sacramento County area, as PG&E focuses on other very high fire hazard areas in its service territory first. It is thought these EPSS capable lines may eventually come to the Sacramento County Planning Area.

Climate Change and Power Outages/Failures (Energy Shortage)

Changing climate is expected to bring more frequent and intense natural disasters. Key climate parameters are starting to move outside of historically observed variability at a rate that makes historical data a poor predictor of future climate. For example, the warmest years on record in California occurred in 2014, 2015, 2016, and 2019. 2023 was a remarkably hot year as well. In addition, the 2016-2017 year broke the record as the wettest ever recorded in the northern Sierra Nevada Mountains.

Changes in temperatures, precipitation patterns, extreme events, and sea level rise have the potential to decrease the efficiency of thermal power plants and substations, decrease the capacity of transmission lines,

render hydropower less reliable, spur an increase in electricity demand, and put energy infrastructure at risk of flooding.

With climate warming, higher costs from increased demand for cooling in the summer are expected to outweigh the decreases in heating costs in the cooler seasons. Hotter temperatures in California will mean more energy (typically measured in "cooling-degree days") needed to cool homes and businesses both during heat waves and on a daily basis, during the daytime peak of the diurnal temperature cycle. During future heat waves, historically cooler coastal cities (e.g., San Francisco and Los Angeles) are projected to experience greater relative increases in temperature, such that areas that never before relied on air conditioning will experience new cooling demands.

Secondary impacts of energy shortages are most often felt by vulnerable populations. For example, those who rely on electric power for life-saving medical equipment, such as respirators, are extremely vulnerable to power outages. Also, during periods of extreme heat emergencies, the elderly and the very young are more vulnerable to the loss of cooling systems requiring power sources.

Additional impacts from a power disruption can also affect remote areas. This can affect evacuation messaging and coordination difficulties, and a reduction in firefighting capabilities due to lack of water access in more remote areas (especially for those on wells).

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 4.1 Hazard Identification. ***The severe weather hazards are discussed first to paint the picture of the Sacramento County's Planning Area's climate and hazard environment which often lead to other hazards such as flood and wildfire. The remainder of the hazards follow alphabetically.***

Data Sources

In general, information provided by the County, participating jurisdictions, and the HMPC is integrated into this section with information from other data sources. The data sources listed below formed the basis for this Hazard Profiles portion of the plan. Where data and information from these studies, plans, reports, and other data sources were used, the source is referenced as appropriate throughout this risk assessment.

- "Wildland fire management and air quality in the southern Sierra Nevada: Using the Lion Fire as a case study with a multi-year perspective on PM2.5 impacts and fire policy" by D. Schweizer and R. Cisneros
- 2011 California Geologic Survey Deep Seated Landslide Susceptibility data
- 2017 February Winter Storm After Action Report from Sacramento County OES
- 2017 January Winter Storms After Action Report
- 2017 Sacramento County Climate Vulnerability Assessment
- 2017 Vulnerability Assessment
- 2018 California State Hazard Mitigation Plan
- 2020 US Census Bureau Average Household Size
- 2021 *Critical Infrastructure at Risk – Sea Level Rise Planning Guidance for California's Coastal Zone* by the California Coastal Commission
- 2023 California State Hazard Mitigation Plan
- 2024 California Climate Adaptation Study

- 2024 review from UC Davis Health
- 2024 Sacramento County Climate Action Plan
- 2024 Sacramento County Flood Insurance Study
- 2025 Sacramento County Parcel/Assessor Data
- 2026 American, Bear, and Cosumnes Watersheds Resilience Plan
- Agricultural Commissioner
- American River Flood Control District
- American Society of Civil Engineers
- Bureau of Land Management
- CA DWR Division of Safety of Dams
- CA DWR Pixel website
- CA DWR SGMA Data Viewer
- CAL FIRE
- CAL FIRE (FHSZ SRA 2024, FHSZ FRA 2007)
- CAL FIRE (LRA 2025)
- CAL FIRE eGIS WUI21_1 Dataset
- Cal OES
- Cal-Adapt
- Cal-Adapt – Precipitation: Decadal Averages Map
- Cal-Adapt 2017/2023
- Cal-Adapt Sea Level Rise, UC Berkeley, San Francisco Bay
- Cal-Adapt SLR GIS
- California Adaptation Planning Guide
- California Climate Adaptation Strategy (CAS) – 2014
- California Coastal Inundation Depth Layer Mosaics
- California Department of Fish and Wildlife
- California Department of Water Resources
- California Department of Water Resources Statewide Airborne Electromagnetic Survey
- California Division of Mines and Geology
- California Energy Commission
- California Environmental Protection Agency
- California Geological Survey
- California Independent System Operator
- California Natural Resource Agency
- California Natural Resources Report
- California Ocean Protection Council
- California's Adaptation Planning Guide: Understanding Regional Characteristics
- California's Fourth Climate Change Assessment
- CDFW Invasive Species Program
- Center for Western Weather and Water Extremes
- Central Valley Flood Protection Board
- CGS Liquefaction Zones 2015
- CGS Liquefaction Zones 2015
- Climate Change and Health Profile Report –Sacramento County
- Contract Counties
- County Emergency Operations Plan
- Delta Risk Management Strategy
- Department of Boating and Waterways
- DSOD/Cal OES
- DSOD/NID Dam Status 1/25

- FEMA
- FEMA CIS 2026
- FEMA DFIRM 02/22/2024
- FEMA National Risk Index
- FEMA Region IX (PIVOT database)
- FEMA: Building Performance Assessment: Oklahoma and Kansas Tornadoes
- FEMA's Community Information System
- FirstStreet.org
- FM Global Insurance company
- Geological Information Services
- Hazard Mitigation Planning Committee
- Hazus-MH 6.1
- Levee Failures in the Sacramento-San Joaquin River Delta. URS 2011
- Levees in History: The Levee Challenge. Dr. Gerald E. Galloway, Jr., P.E., Ph.D., Water Policy Collaborative, University of Maryland, Visiting Scholar
- Multi-Hazard Identification and Risk Assessment
- NASA.gov
- National Aeronautics and Space Administration
- National Center for Atmospheric Research
- National Climate Assessment
- National Drought Mitigation Center
- National Flood Insurance Program
- National Integrated Drought Information System
- National Inventory of Dams
- National Levee Database
- National Oceanic and Atmospheric Administration
- National Oceanic and Atmospheric Administration Storm Prediction Center
- National Oceanic and Atmospheric Administration's National Climatic Data Center
- National Park Service
- National Performance of Dams Program
- National Weather Service
- National Weather Service XMAC site
- NFIP's Community Rating System
- NOAA National Centers for Environmental Information (NCEI) Storm Events Database
- NOAA Storm Prediction Center
- Public Policy Institute
- Sacramento Air Quality Management District
- Sacramento Bee
- Sacramento County (Amended) Safety Element Background Report
- Sacramento County 2022 General Plan Background Report
- Sacramento County Climate Action Plan: Communitywide Greenhouse Gas Reduction and Climate Change Adaptation
- Sacramento County Department of Water Resources
- Sacramento County General Plan Safety Element Background Report
- Sacramento County GIS
- Sacramento County Office of Emergency Services
- Sacramento County Planning Team
- Sacramento County Public Works
- Sacramento Metro Fire District CWPP
- Sacramento-San Joaquin Delta and California Coastal Inundation Depth Layer Mosaics 2016
- South Sacramento Habitat Conservation Plan

- State of California Sea Level Rise Guidance 2024 Science and Policy Update
- Susceptibility to Deep-Seated Landslides map – CSG Map Sheet 58
- The Board of Supervisors Report
- The Watershed Management Plan
- U.S. Department of Agriculture Secretarial Disaster Declarations
- U.S. Drought Monitor
- Uniform California Earthquake Rupture Forecast model
- United Nations Intergovernmental Panel on Climate Change Sixth Assessment Synthesis Report
- United States Geological Survey
- United States Geological Survey Open File Report 2015-3009
- University of California, Berkeley's Department of Environmental Science, Policy, and Management
- US Army Corp of Engineers
- US Bureau of Reclamation
- US Forest Service
- USDA Forest Service Region 5
- USGS Earthquake Intensity Zonation and Quaternary Deposits, Miscellaneous Field Studies Map 9093, 1977
- USGS Emergency Assessment of Post-Fire Debris Flow Hazards
- USGS National Earthquake Information Center database
- Vaisala National Lightning Detection Network
- Western Regional Climate Center
- Wildfire Safety Operations Center

Full data sources for this LHMP Update are included in Appendix B.

4.3.1. Severe Weather: General

Severe weather is generally any destructive weather event, and usually occurs throughout the Sacramento County Planning Area as temperature extremes, localized storms that bring heavy rain and strong winds, and other extreme weather events.

The National Oceanic and Atmospheric Administration's (NOAA's) National Climatic Data Center (NCDC) has been tracking severe weather since 1950. Their Storm Events Database contains data on the following: all weather events from 1993 to current (except from 6/1993-7/1993); and additional data from the Storm Prediction Center, which includes tornadoes (1950-1992), thunderstorm winds (1955-1992), and hail (1955-1992). This database contains 560 severe weather events that occurred in Sacramento County between January 1, 1950, and January 31, 2026. Table 4-24 summarizes these events.

*Table 4-24 NCDC Severe Weather Events for Sacramento County 1950-1/31/2026**

Event Type	Number of Events	Deaths	Deaths (indirect)	Injuries	Injuries (indirect)	Property Damage	Crop Damage
Cold/Wind Chill	23	7	1	0	0	$0	$0
Dense Fog	10	6	3	38	3	$2,120,000	$0
Dense Smoke	2	0	0	0	0	$0	$0
Drought	83	0	0	0	0	$0	$0
Excessive Heat	26	12	2	2	0	$0	$0

Event Type	Number of Events	Deaths	Deaths (indirect)	Injuries	Injuries (indirect)	Property Damage	Crop Damage
Extreme Cold/Wind Chill	1	0	0	0	0	$0	$0
Flash Flood	9	4	0	0	0	$138,400,000	$0
Flood	165	2	0	1	0	$142,877,000	$7,800,000
Frost/Freeze	12	0	0	0	0	$200,000	$5,000,000
Funnel Cloud	7	0	0	0	0	$0	$0
Hail	9	0	0	0	0	$111,030	$0
Heat	42	0	1	30	1	$0	$0
Heavy Rain	29	0	0	1	0	$365,000	$50,000
Heavy Snow	1	0	0	0	0	$0	$0
High Surf	1	0	0	0	0	$0	$0
High Wind	55	3	0	0	0	$9,530,000	$39,000
Lightning	1	0	0	0	0	$150,000	$0
Strong Wind	44	4	2	2	1	$3,827,000	$0
Thunderstorm Winds	10	0	0	0	0	$70,000	$5,000
Tornado	15	0	0	0	0	$1,505,000	$0
Wildfire	13	2	1	2	0	$5,000,000	$0
Winter Storm	2	0	0	0	0	$0	$0
Total	**560**	**40**	**10**	**76**	**5**	**$304,155,030**	**$12,894,000**

Source: NCDC. Retrieved 4/24/2026.

*Note: Losses reflect totals for all impacted areas, some of which fell outside of Sacramento County

The NCDC table above summarizes severe weather events that occurred in Sacramento County. Only a few of the events actually resulted in federal and state disaster declarations. It is further interesting to note that different data sources capture different events during the same time period, and often display different information specific to the same events. While these inconsistencies are recognized, the value in this data is in depicting the County's "big picture" hazard environment.

As previously mentioned, most all of Sacramento County's federal and state disaster declarations have been a result of severe weather. For this Plan Update, severe weather is discussed in the following subsections:

- Extreme Cold and Freeze
- Extreme Heat
- Heavy Rains and Storms (Hail, Lightning, Wind)
- High Winds and Tornadoes

For purposes of this Plan, the City of Sacramento co-op weather station (elevation: 70 feet above mean sea level (msl)) was used to illustrate and inform the severe weather hazards. This station was chosen due to its length of record (1877 to 2016 for WRCC, and through 2025 for NWS).

4.3.2. Severe Weather: Extreme Cold and Freeze

Hazard Profile

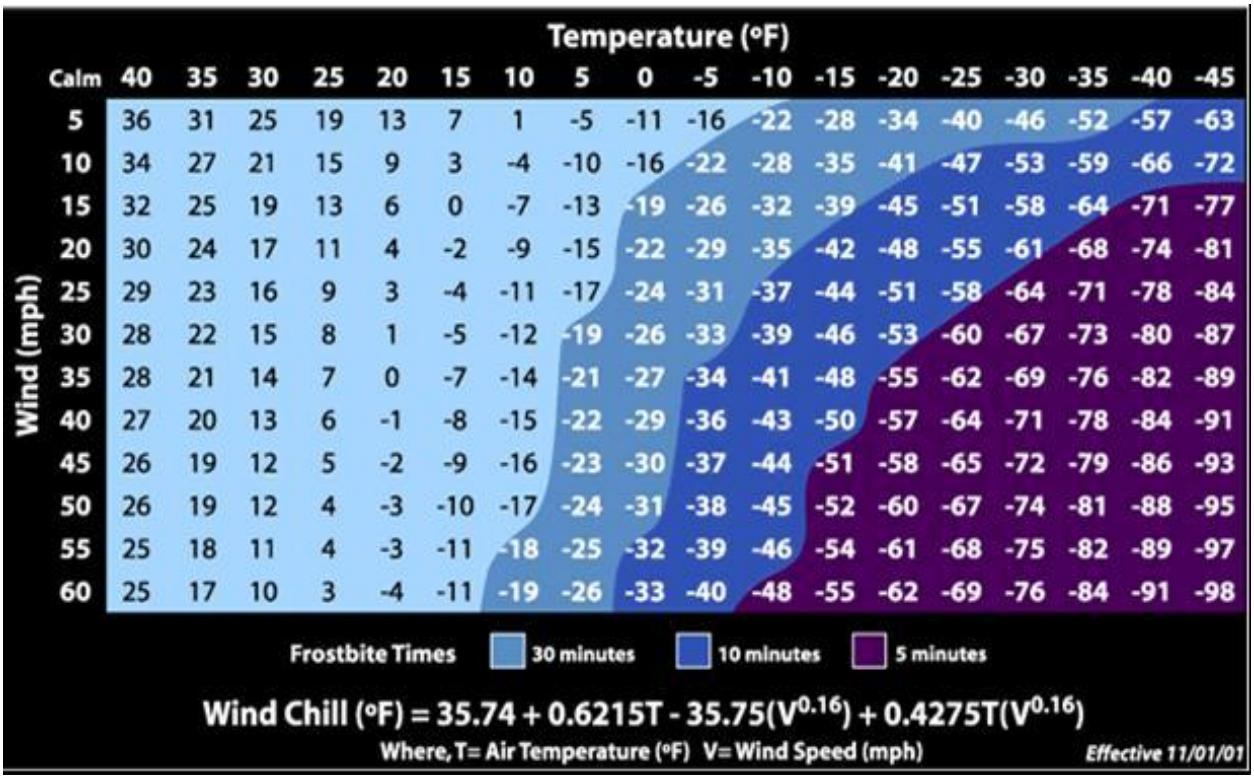
This hazard profile contains multiple sections that detail how this hazard can affect the Sacramento County Planning Area and unincorporated Sacramento County. These sections include a hazard/problem description; description of location and extent; past occurrences of this hazard; likelihood of future occurrences; and how climate change can affect or influence this hazard.

Hazard/Problem Description

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 the agricultural industry.

In 2001, the NWS implemented an updated Wind Chill Temperature index (shown in Figure 4-23), which is reproduced below. This is the index used still today. This index was developed to describe the relative discomfort/danger resulting from the combination of wind and temperature. Wind chill is based on the rate of heat loss from exposed skin caused by wind and cold. As the wind increases, it draws heat from the body, driving down skin temperature and eventually the internal body temperature.

Figure 4-23 Wind Chill Temperature Chart



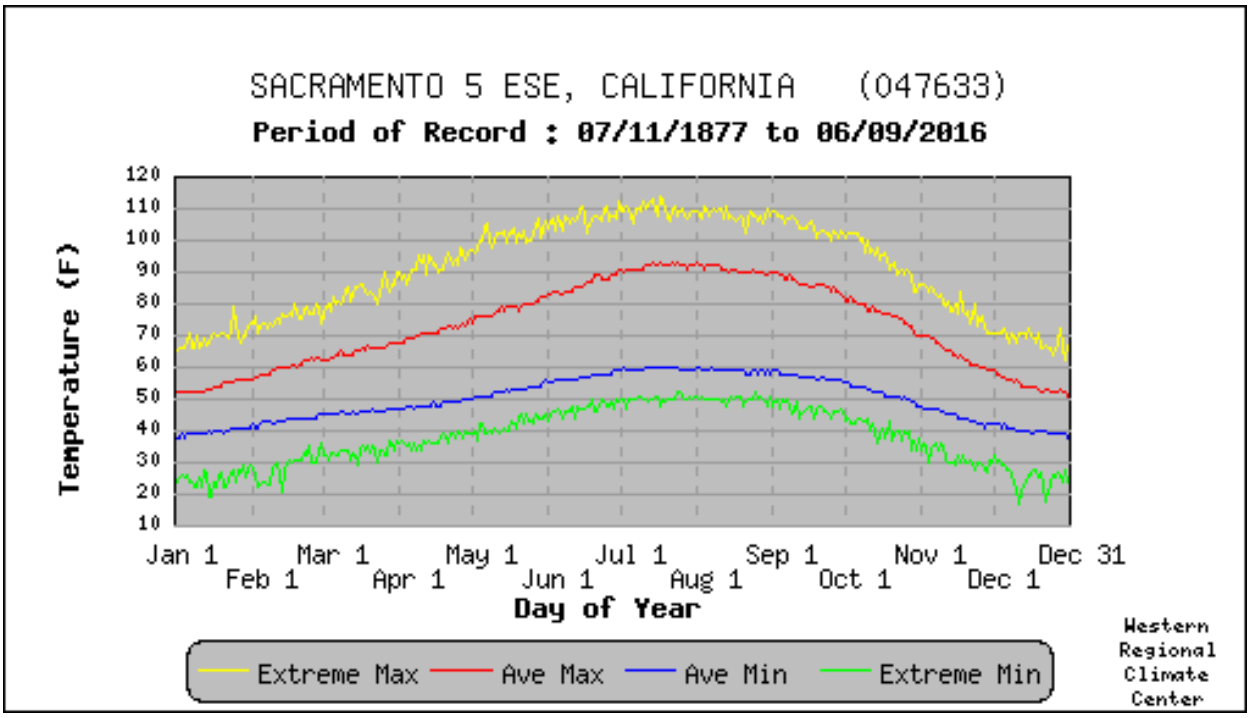
Source: National Weather Service

It should be noted that the WRCC and NWS maintain data on weather normal and extremes in the western United States. Each of these data sources maintain data in slightly different ways. Data from the WRCC stopped being collected in April of 2016. NWS covers the entire time period to present. Therefore, both data sets are shown below. WRCC and NWS data for the County is summarized below.

Sacramento County – WRCC Sacramento 5 ESE Weather Station, Period of Record 1877 to 2016

According to the WRCC, monthly average minimum temperatures in the County from November through April range from the upper-30s to the upper-50s. The lowest recorded daily extreme was 17°F on December 11, 1932. In a typical year, minimum temperatures fall below 32°F on 8.3 days with no days falling below 0°F. Average daily temperatures for Sacramento County are shown in Figure 4-24. Table 4-25 shows the record low temperatures by month for Sacramento County.

Figure 4-24 Sacramento County – Sacramento 5 ESE (WRCC) Daily Temperature Averages and Extremes 1877 to 2016



Source: Western Regional Climate Center

Table 4-25 Sacramento County – Sacramento 5 ESE (WRCC) Record Low Temperatures 1877 to 2016

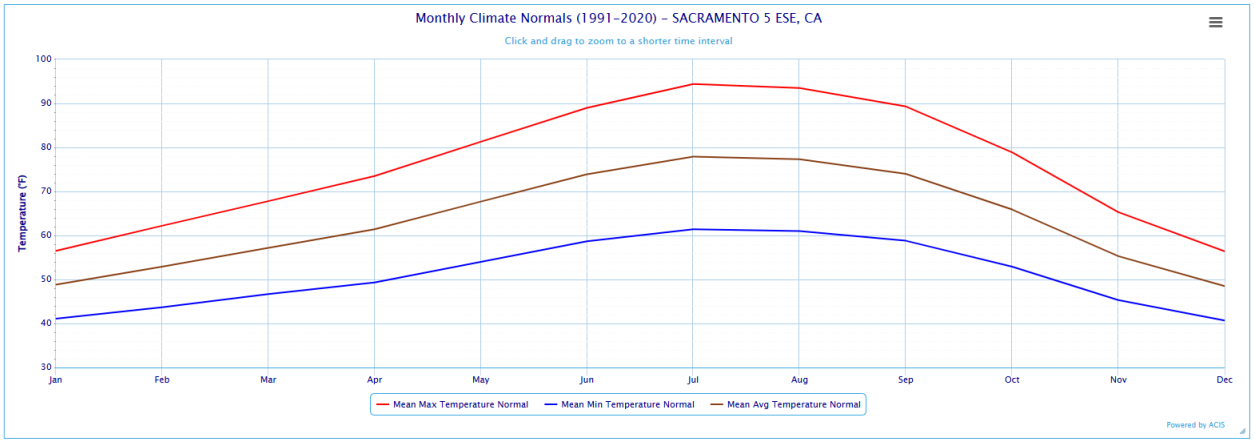
Month	Record Low	Date	Month	Record Low	Date
January	19°	1/14/1888	July	47°	7/3/1901
February	21°	2/13/1884	August	48°	8/30/1887
March	29°	3/15/1880	September	44°	9/18/1882
April	34°	4/10/1927	October	34°	10/30/1935
May	37°	5/3/1950	November	27°	11/28/1880
June	43°	6/1/1929	December	17°	12/11/1932

Source: Western Regional Climate Center. Retrieved 12/3/2025.

Sacramento County – NWS Sacramento 5 ESE Weather Station, Period of Record 1877 to 2025

According to the NWS, monthly average minimum temperatures in the coldest months (December through February) range from the low-40s to mid-50s. The lowest recorded daily extreme was 17°F on December 11, 1932. Figure 4-25 shows the average daily low temperatures and extremes for the County. Table 4-26 shows the record low temperatures for the County.

Figure 4-25 Sacramento County – Sacramento 5 ESE Station (NWS) Daily Temperature Averages and Extremes, 1991-2020



Month	Mean Max Temperature Normal (°F)	Mean Min Temperature Normal (°F)	Mean Avg Temperature Normal (°F)
January	56.5	41.1	48.8
February	62.2	43.7	52.9
March	67.8	46.7	57.2
April	73.5	49.3	61.4
May	81.3	54.0	67.7
June	89.0	58.7	73.9
July	94.4	61.4	77.9
August	93.5	61.0	77.3
September	89.3	58.8	74.0
October	78.9	52.9	65.9
November	65.3	45.3	55.3
December	56.4	40.7	48.5
Annual	75.7	51.1	63.4

Source: National Weather Service XMAC site. Retrieved 12/3/2025.

Table 4-26 Sacramento County – Sacramento 5 ESE Station (NWS) Record Low Temperatures 1877 to 2025

Temperature	Date
17.0°	12/11/1932
18.0°	12/22/1990
19.0°	1/15/1888
19.0°	1/14/1888
21.0°	12/23/1990
21.0°	12/12/1932
21.0°	2/13/1884
22.0°	12/21/1990
22.0°	1/11/1949
22.0°	1/21/1937

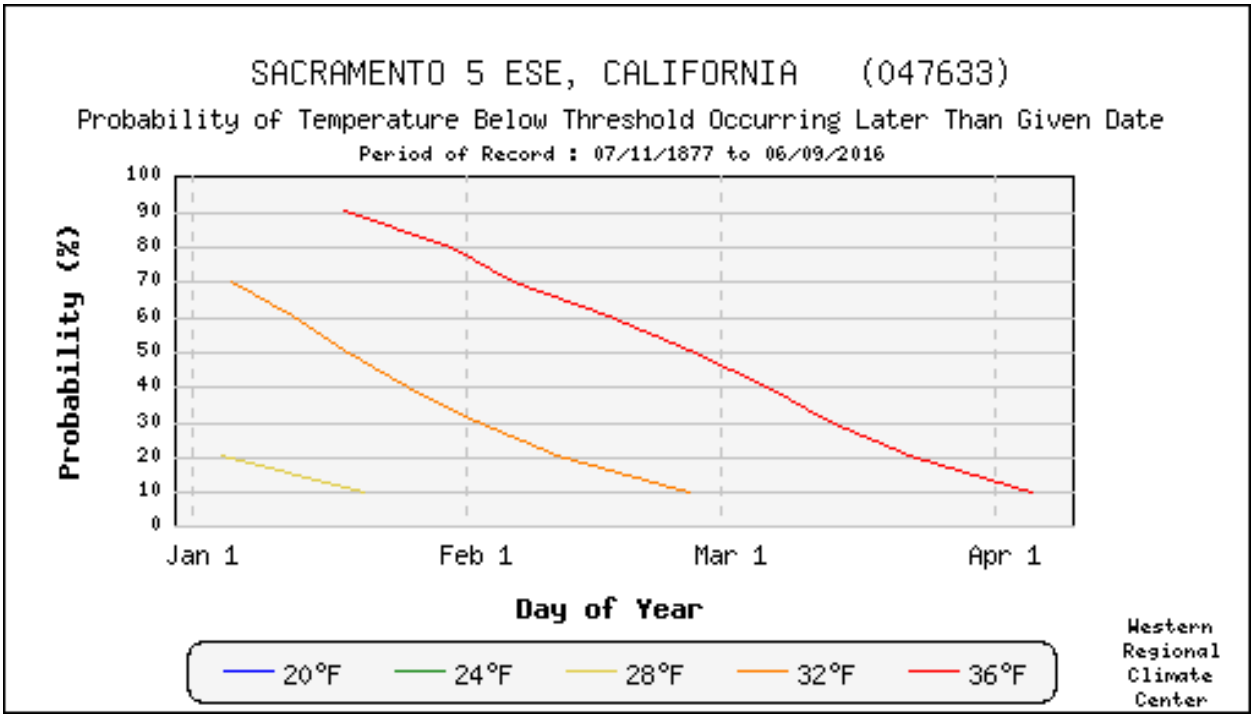
Source: National Weather Service XMAC site. Retrieved 12/3/2025.

Location and Extent

Extreme cold and freeze events occur on a regional basis. Extreme cold can occur in any location of the County. All portions of the County 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

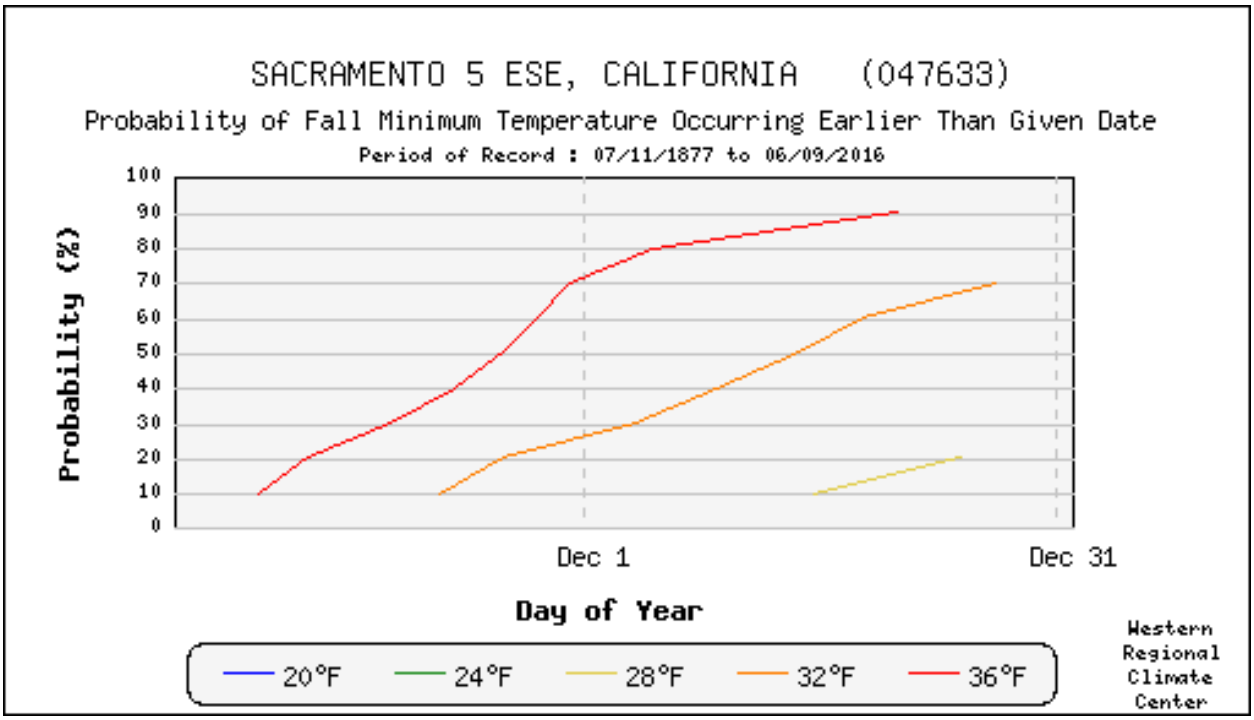
indicates that there are 8.3 days that fall below 32°F. ***Note***: there are no National Weather Service XMAC freeze probabilities, so only the WRCC is captured below. Freeze has a slow onset and can generally be predicted in advance for the County. Freeze events can last for hours (in a cold overnight), or for days to weeks at a time. Figure 4-26 and Figure 4-27 show the probabilities in the County of freeze for both spring and fall. There has not been a past occurrence of freeze in the months of May through September.

Figure 4-26 Sacramento County – Spring Freeze Probabilities



Source: Western Regional Climate Center. Retrieved 12/3/2025.

Figure 4-27 Sacramento County – Fall Freeze Probabilities



Source: Western Regional Climate Center. Retrieved 12/3/2025.

Past Occurrences

Disaster Declaration History

The County has had no past federal or state disaster declarations for extreme cold and freeze, as shown on Table 4-4. 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.

NCDC Events

The NCDC data shows 16 extreme cold and freeze incidents for Sacramento County since 1993. Information for these events is shown in Table 4-27.

*Table 4-27 NCDC Cold and Freeze Events for Sacramento County 1950-1/31/2026**

Event Type	Number of Events	Deaths	Deaths (indirect)	Injuries	Injuries (indirect)	Property Damage	Crop Damage
Extreme Cold/Wind Chill	1	0	0	0	0	$0	$0
Frost/Freeze	12	0	0	0	0	$200,000	$5,000,000
Heavy Snow	1	0	0	0	0	$0	$0
Winter Storm	2	0	0	0	0	$0	$0

Event Type	Number of Events	Deaths	Deaths (indirect)	Injuries	Injuries (indirect)	Property Damage	Crop Damage
Total	**16**	**0**	**0**	**0**	**0**	**$200,000**	**$5,000,000**

Source: NCDC

*Note: Losses reflect totals for all impacted areas, some of which fell outside of Sacramento County

Hazard Mitigation Planning Committee 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 HMPC noted the following events that have occurred since the previous LHMP.

February 2026: Multiple freeze and cold weather events in mid-to-late February.

- Freeze Warning and Cold Weather Advisory issued around February 19–20, 2026, for the Sacramento Valley (including Northern, Central, and Southern portions). Sub-freezing lows (20–32°F, coldest in northern areas) overnight into mornings. Warnings expired around 9 a.m. on some days, with gradual warming.
- NWS Sacramento highlighted freeze impacts on agriculture. Cold Weather Advisory extended in some cases through mid-morning.

January 2026: Extreme Cold Warning issued for parts of interior Northern California (affecting areas near Sacramento/Central Valley), with temperatures dropping below freezing (forecast lows 25–32°F) and hazards to crops, livestock, and unhoused populations. Duration: Overnight into early January 9, 2026.

2023: The Agricultural Commissioner noted that cold snaps in early 2023 followed the atmospheric river events, adding stress to already flood-compromised crops. Nursery stock (worth $28.4M in 2024) and early-season vegetable starts are the most vulnerable categories, as containerized nursery plants lack soil insulation and are often kept in unheated structures.

March and April 2022: Late-season frost events coincided with early bud-break for wine grapes and pear trees across the County, creating frost damage risk during one of the most critical and vulnerable crop-development windows. Wine grape growers and pear producers in the Sacramento Valley activated frost protection measures during these events.

February 2022: Hard Freeze Warning issued for the Central Valley (including Sacramento County), with widespread lows in the 20s°F and potential sub-freezing temperatures for several hours. Warming centers were activated in Sacramento due to freezing overnight lows.

Late December 2021 – Early 2022 Winter Storm (Statewide, including Sacramento area): This was part of a broader California winter storm with extreme cold, freezing temperatures, and snowfall in higher elevations. It caused power outages affecting over 109,000 households statewide (some lasting up to 7 days), leading to prolonged use of warming centers in multiple counties, including Sacramento. Sacramento

County experienced freezing conditions, with related impacts noted in local emergency planning documents.

Events before 2021

- **2021 LHMP:** It was noted by the Sacramento County OES that due to environmental exposure due to extreme cold events:
  - ✓ 2 deaths occurred in 2021
  - ✓ Another six occurred in 2019
- 6 deaths occurred in 2018

In the 2014 LHMP, the County Office of Emergency Services (OES) and other departments provided input and After Action Reports that noted that extreme cold events continue to occur on an annual basis. Past events of note include:

- An extreme cold event took place in 2014:
  - ✓ The Sacramento region experienced an extreme cold event beginning Tuesday evening, December 30th, 2014 and extending through Friday morning, January 2nd, 2015. During that time, Sacramento experienced sustained cold indices ranging from 50-56 degree highs with associated low temperatures ranging from 27-36 degrees.
  - ✓ The County and City of Sacramento opened a joint warming center located in the City of Sacramento at the Southside Park Pool Building from December 31-January 2. A total of 36 people stayed at the warming center during this cold weather event. At the same time, the City of Elk Grove and the City of Galt decided to open warming centers in their jurisdictions as well.
  - ✓ Both the City and County OES, along with the City Parks & Recreation, County Department of Human Assistance (DHA) Hands on Sacramento (HOS) Sacramento Medical Reserve Corp. (SMRC) and others worked cooperatively in activating and managing the warming center in order to provide a warm environment for the community including the homeless. In addition to the County and City warming operations, the homeless providers continued to operate their independent facilities thereby providing a warm environment for the homeless.

Likelihood of Future Occurrence

Highly Likely—Extreme cold and freeze are likely to continue to occur annually in the Sacramento County Planning Area. In a typical year, minimum temperatures fall below 32°F on 18.3 days in the County. This equates to a likelihood of future occurrences being considered highly likely.

It is likely that climate change will decrease the chance of future occurrence as well as future impacts. More information on climate change and extreme cold and freeze can be found in the next section. More information on future impacts can be found in the Future Conditions/Future Development section of the Vulnerability Assessment below.

Climate Change and Extreme Cold and Freeze

Multiple sources discuss how extreme cold and freeze are likely to be affected by climate change. This is discussed below.

2024 Sacramento County Climate Action Plan (CAP)

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 Figure 4-28.

Figure 4-28 Sacramento County – Changes in Annual Minimum (and Maximum) Temperatures Under Medium and High Emissions Scenarios

Annual Averages	Historic (1961-1990)	Medium Emissions Scenario		High Emissions Scenario	
		Mid-Century (2035-2064)	Late Century (2070-2099)	Mid-Century (2035-2064)	Late Century (2070-2099)
Temperature					
Maximum Temperature (°F)	74.0	78.3	79.8	79.4	82.7
Minimum Temperature (°F)	48.4	52.2	53.4	53.2	56.8
Extreme Heat					
Extreme Heat Days[1] (#)	4	17	24	22	40
Heat Waves[2] (#)	NA	1.9	2.8	2.6	5.8

Notes: # = number; °F = degrees Fahrenheit; NA = not applicable.

[1] The threshold for an extreme heat day for the City of Sacramento, which serves as a proxy for the county, is 103.8 °F.

[2] Heat waves are defined by Cal-Adapt as four or more consecutive extreme heat days.

Source: **CEC 2020a, 2020b.**

Source: 2024 County of Sacramento CAP

California Climate Adaptation Study

According to the 2024 California Climate Adaptation Study (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. Milder average winter temperatures could result in reduced risks of extreme cold, but heightened variability could also result in more extreme cold events and associated adverse health effects.

California Natural Resources Report

According to a California Natural Resources Report in 2024, 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.

UC Davis Health Study

Recent studies, including a 2024 review from UC Davis Health, note that shorter, warmer winters reduce natural die-off of vectors and pathogens, increasing risks of diseases like Lyme disease, malaria, and fungal

infections. Warmer conditions allow vectors to remain active longer, even into winter months, and expand into new regions.

Vulnerability Assessment

Vulnerability—Medium

Extreme cold and freeze events happen in the Sacramento County Planning Area each year. It can impact key assets in the Planning Area. The whole of the 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 unincorporated Sacramento County and the Sacramento County Planning Area. This is included in the Local Concerns section below. After that, vulnerability is discussed in multiple sections that detail how this hazard can affect both the entire Sacramento County Planning Area as well as the unincorporated portions of Sacramento County. How the hazard affects the other participating jurisdictions can be found in their respective annexes to this LHMP Update. These sections below include assets at risk, impacts, and how future development may affect the vulnerability of the County to this hazard.

Local Concerns (unincorporated Sacramento County)

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

General Concerns

The County noted that buildings were unlikely to see damage, but that residents of the County were at risk to cold and freeze. Of significant concern is the impact to populations with special needs such as the elderly and those requiring the use of medical equipment. The residents of nursing homes and elder care facilities are especially vulnerable to extreme temperature events. Those that are work or recreate outside are also vulnerable. Those who are unsheltered or otherwise lack reliable access to a heated indoor environment are particularly vulnerable during extreme cold events, which is why the County uses outreach, shelter/warming resources, and other emergency response measures during severe weather events. In addition to vulnerable populations, pets and livestock are at risk to freeze and cold.

Older residential buildings may also increase vulnerability to extreme cold where they have limited insulation, inefficient or inadequate heating systems, or older plumbing. These conditions can increase household energy burden, particularly for lower-income households, increase the potential for frozen or damaged pipes, and increase reliance on supplemental heating sources.

Agriculture Concerns

The County is also concerned that cold and freeze could affect crop production in the County. The Agricultural Commissioner noted the following concerns:

- **Crop loss risk for nursery stock and vegetable starts**: Sacramento County's nursery industry ($28.4M in 2024) is acutely vulnerable to below-freezing temperatures. Tender vegetable transplants

and nursery container stock lack soil insulation and are frequently held in structures without adequate heating.

- **Wine grape and pear frost damage during bud-break**: Late frost events in March-April directly threaten early shoot growth in wine grapes (37,173 acres, $167.9M in 2024) and pears (4,848 acres, $49.5M in 2024). Bud-break frost is a perennial agricultural risk with catastrophic potential in a single cold night.
- **Dissemination of timely frost advisories and resources to small producers**: Reaching all producers, including those in isolated rural areas and limited-English-proficient farming communities, with timely NWS freeze warnings is an ongoing concern for the Agricultural Commissioner's Office.

Local concerns for each of the jurisdictions can be found under the Local Concerns heading in each respective jurisdictional annex to this LHMP Update.

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 for the Sacramento County Planning Area and unincorporated Sacramento County.

Additionally, for each hazard in the FEMA National Risk Index in Sacramento County, the relevant portions of the hazard analysis done by FEMA is presented below. This includes the Hazard Risk Index Rating, Expected Annual Loss Values, Exposure Values, and the Historic Loss Ratio Rating. These are presented for the Sacramento County Planning Area as a whole.

People and Populations

All populations within the Sacramento County Planning Area are vulnerable to extreme cold and freeze, but this hazard generally affects people spending large amounts of time outside to a greater extent. Prolonged exposure to cold can cause frostbite or hypothermia and can be life-threatening. Vulnerable populations to cold and freeze include the unsheltered; individuals who exercise or recreate 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 Sacramento County Planning Area have some measure of risk from extreme cold and freeze. Though rare, buildings in the County can be affected directly by freeze as 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 and power lines during freeze and winter storm events.

Critical Facilities and Infrastructure

Winter storms in the County generally include cold temperatures and periods of heavy rain. Freeze and ice can also occur during these events and when accompanied by high winds and cold temperatures, 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 County. Depending on the facility type and function, critical facilities and infrastructure may be affected directly by freeze and extreme cold and winter weather events. 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 Sacramento County Planning Area may be affected. During periods of freeze, trees in the Planning Area 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 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.

FEMA NRI Hazard Vulnerability Assessment

The FEMA NRI was queried for additional specific data on Sacramento County's vulnerability to Extreme Cold and Freeze. The NRI contains data and analysis for 18 separate natural hazards. The NRI hazards related to Sacramento County's Extreme Cold and Freeze hazards are: cold wave, ice storm, and winter weather. According to the NRI, there has been 1 event on record between the years 2005-2021, with an average of 0.1 events per year. As shown in Table 4-28, while cold waves and ice storms are expected to cause no expected annual losses and are given no historic loss ratio, winter weather could cause a total of $6,177 in expected annual losses, with a rating of very low. Winter weather has a very low rating for both social vulnerability and community resilience, with a risk index score of 11.5 out of 100.

Table 4-28 Sacramento County Planning Area – Cold Wave, Ice Storm, and Winter Weather Vulnerability Ratings from FEMA NRI

NRI Hazard	Hazard Risk Index Rating*	Expected Annual Loss Values (total)**	Exposure Value (total)***	Historic Loss Ratio Rating
Cold Wave	0	$0	$0	–
Ice Storm	0	$0	$0	–
Winter Weather	11.5	$6,177	$18,646,097,037,780	Very Low

Source: FEMA NRI Report, retrieved 12/15/2025.

*Hazard Risk Index is calculated using data for only a single hazard type, and reflect a communities expected annual loss value, community risk factors, and the adjustment factor used to calculate the risk value.

**Expected annual loss represents the average economic loss in dollars resulting from natural hazards each year.

***Exposure is a natural hazard consequence factor that is the representative value of buildings, populations, or agriculture potentially exposed to a natural hazard occurrence.

Additional information on the FEMA NRI can be found in Section 4.2 and Appendix G.

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 Sacramento County Planning Area. Infrastructure such as roads and utilities are at risk to freezing temperatures and snow, 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 Planning Area include 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 unsheltered may be at higher risk.

Impacts to identified assets at risk to this hazard and the overall vulnerability of the County 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 these factors for Sacramento County include the following:

- Climate change is unlikely to exacerbate extreme cold and freeze and their associated impacts to the County. This was discussed in greater detail in the Climate Change and Extreme Cold and Freeze section of the Hazard Profile above.
- The population of Sacramento County is expected to increase as time progresses. Future population growth should be considered, as having more or less people in a community affects the overall hazard vulnerability to the County. Changes in populations patterns should also be considered. There are 129 areas where the unincorporated County is expected development to occur in the next 5 years. Especially vulnerable individuals to this hazard include older adults, children, outdoor workers, , those below the poverty line and the unsheltered. 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 County's overall vulnerability. Changes in population and population patterns may or may not increase the impacts and vulnerability of the County 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. County 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. There are 129 areas where the unincorporated County is expected development to occur in the next 5 years. Due to adherence to protective building codes, changes in land use and development will likely not increase the impacts and associated vulnerabilities of the County 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. As the building stock in the County continues to age, 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 County are considered can help make for a more resilient community.

4.3.3. Severe Weather: Extreme Heat

Hazard Profile

This hazard profile contains multiple sections that detail how this hazard can affect the Sacramento County Planning Area. These sections include a hazard/problem description; description of location and extent; past occurrences of this hazard; and how climate change can affect or influence this hazard.

Hazard/Problem Description

According to information provided by 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 a normal year, about 175 Americans succumb to the demands of summer heat. In the 40-year period from 1936 through 1975, nearly 20,000 people were killed in the United States by the effects of heat and solar radiation. In the heat wave of 1980, more than 1,250 people died. Recently in California, records were set across the state during a July 2024 heat event. 2025 was considered one of the hottest on record.

Heat disorders generally have to do with a reduction or collapse of the body's ability to shed heat by circulatory changes and sweating or a chemical (salt) imbalance caused by too much sweating. When heat gain exceeds a level at which the body can remove it, or when the body cannot compensate for fluids and salt lost through perspiration, the temperature of the body's inner core begins to rise, and heat-related illness may develop. Elderly persons, small children, those on certain medications or drugs, and persons with weight and alcohol problems are particularly susceptible to extreme heat. Extreme heat can also affect the agricultural industry.

During periods of extreme heat, ozone concentrations can occur. Ground-level ozone is an air pollutant of concern because it is a strong irritant that can cause constriction of the airways, forcing the respiratory system to work harder to provide oxygen. It can also cause other health problems including aggravated respiratory disease such as emphysema, bronchitis and asthma, lung damage, wheezing, chest pain, dry

throat, headache, nausea, reduced resistance to infection, increased fatigue and weakened athletic performance. More discussion can be found in the Section 4.3.17 Wildfire.

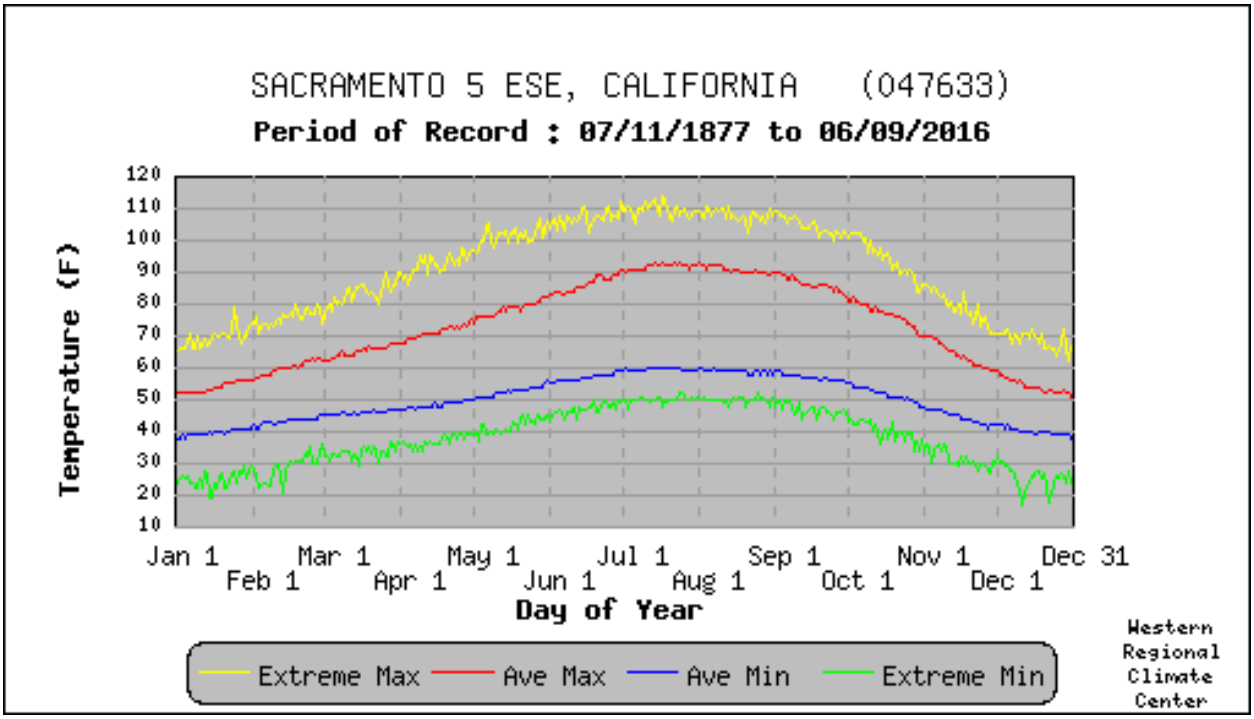
Location and Extent

Extreme heat events occur on a regional basis. Extreme heat can occur in any location of the County. All portions of the County are at risk to extreme heat. Extreme heat occurs throughout the Planning Area primarily during the summer months. The WRCC and NWS maintain data on weather normal and extremes in the western United States. Each of these data sources maintain data in slightly different ways. Data from the WRCC stopped being collected in April of 2016. NWS covers the entire time period to present. Therefore, both data sets are shown below. WRCC and NWS data for the County is summarized below.

Sacramento County – WRCC Sacramento 5 ESE Weather Station, Period of Record 1877 to 2016

According to the WRCC, in Sacramento County, monthly average maximum temperatures in the warmest months (May through October) range from the upper-70s to the low-90s. The highest recorded daily extreme was 114°F on July 17, 1925. In a typical year, maximum temperatures exceed 90°F on 65.4 days. Figure 4-29 shows the average daily high temperatures and extremes for the County. Table 4-29 shows the record high temperatures by month for the County.

Figure 4-29 Sacramento County – Sacramento 5 ESE (WRCC) Daily Temperature Averages and Extremes 1877 to 2016



Source: Western Regional Climate Center. Retrieved 12/17/2025.

Table 4-29 Sacramento County – Sacramento 5 ESE (WRCC) Record High Temperatures 1877 to 2016

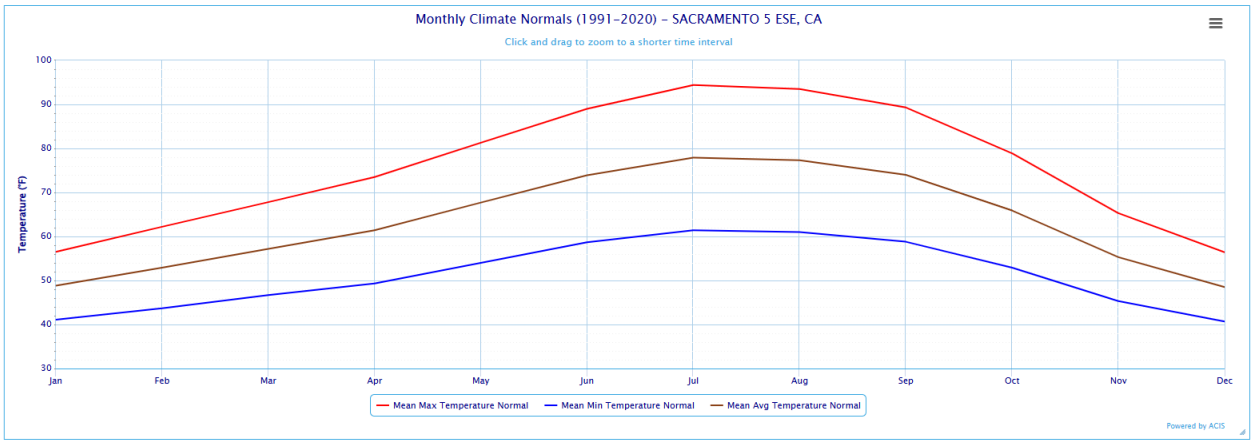
Month	Record High	Date	Month	Record High	Date
January	74°	1/31/1976	July	114°	7/17/1925
February	80°	2/18/1899	August	111°	8/13/1933
March	90°	3/31/1966	September	109°	9/1/1950
April	98°	4/26/2004	October	102°	10/2/1952
May	107°	5/28/1984	November	86°	11/1/1966
June	112°	6/30/1934	December	72°	12/15/1958

Source: Western Regional Climate Center. Retrieved 12/17/2025.

Sacramento County – NWS Sacramento 5 ESE Weather Station, Period of Record 1877 to 2025

According to the NWS, monthly average maximum temperatures in the warmest months (June through September) range from the upper-80s to low-90s. The highest recorded daily extreme was 116°F on September 6, 2022. Figure 4-30 shows the average daily high temperatures and extremes for the County. Table 4-30 shows the record high temperatures for the County.

Figure 4-30 Sacramento County – Sacramento 5 ESE Station (NWS) Daily Temperature Averages and Extremes, 1991-2020



Month	Mean Max Temperature Normal (°F)	Mean Min Temperature Normal (°F)	Mean Avg Temperature Normal (°F)
January	56.5	41.1	48.8
February	62.2	43.7	52.9
March	67.8	46.7	57.2
April	73.5	49.3	61.4
May	81.3	54.0	67.7
June	89.0	58.7	73.9
July	94.4	61.4	77.9
August	93.5	61.0	77.3
September	89.3	58.8	74.0
October	78.9	52.9	65.9
November	65.3	45.3	55.3
December	56.4	40.7	48.5
Annual	75.7	51.1	63.4

Source: National Weather Service XMAC site. Retrieved 12/3/2025.

Table 4-30 Sacramento County – Sacramento 5 ESE Station (NWS) Record High Temperatures 1877 to 2025

Temperature	Date
116.0°	9/6/2022
114.0°	7/17/1925
113.0°	7/11/2024
113.0°	7/6/2024
113.0°	9/8/2022
113.0°	9/5/2022
113.0°	7/10/2021
113.0°	7/14/1972
112.0°	8/16/2020
112.0°	7/10/2002

Source: National Weather Service XMAC site. Retrieved 12/3/2025.

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 take the lives of vulnerable populations. Heat waves do not generally cause damage or elicit the immediate response of floods, fires, earthquakes, or other more "typical" disaster scenarios. While heat waves are obviously less dramatic, they are potentially deadlier. According to the 2018/2023 California State Hazard Mitigation Plan, the worst single heat wave event in California occurred in Southern California in 1955, when an eight-day heat wave resulted in 946 deaths.

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 Table 4-31.

Table 4-31 National Weather Service HeatRisk Categories

Category	Level	Meaning
Green	0	No Elevated Risk
Yellow	1	Low Risk for those extremely sensitive to heat, especially those without effective cooling and/or adequate hydration
Orange	2	Moderate Risk for those who are sensitive to heat, especially those without effective cooling and/or adequate hydration
Red	3	High Risk for much of the population, especially those who are heat sensitive and those without effective cooling and/or adequate hydration
Magenta	4	Very High Risk for entire population due to long duration heat, with little to no relief overnight

Source: National Weather Service

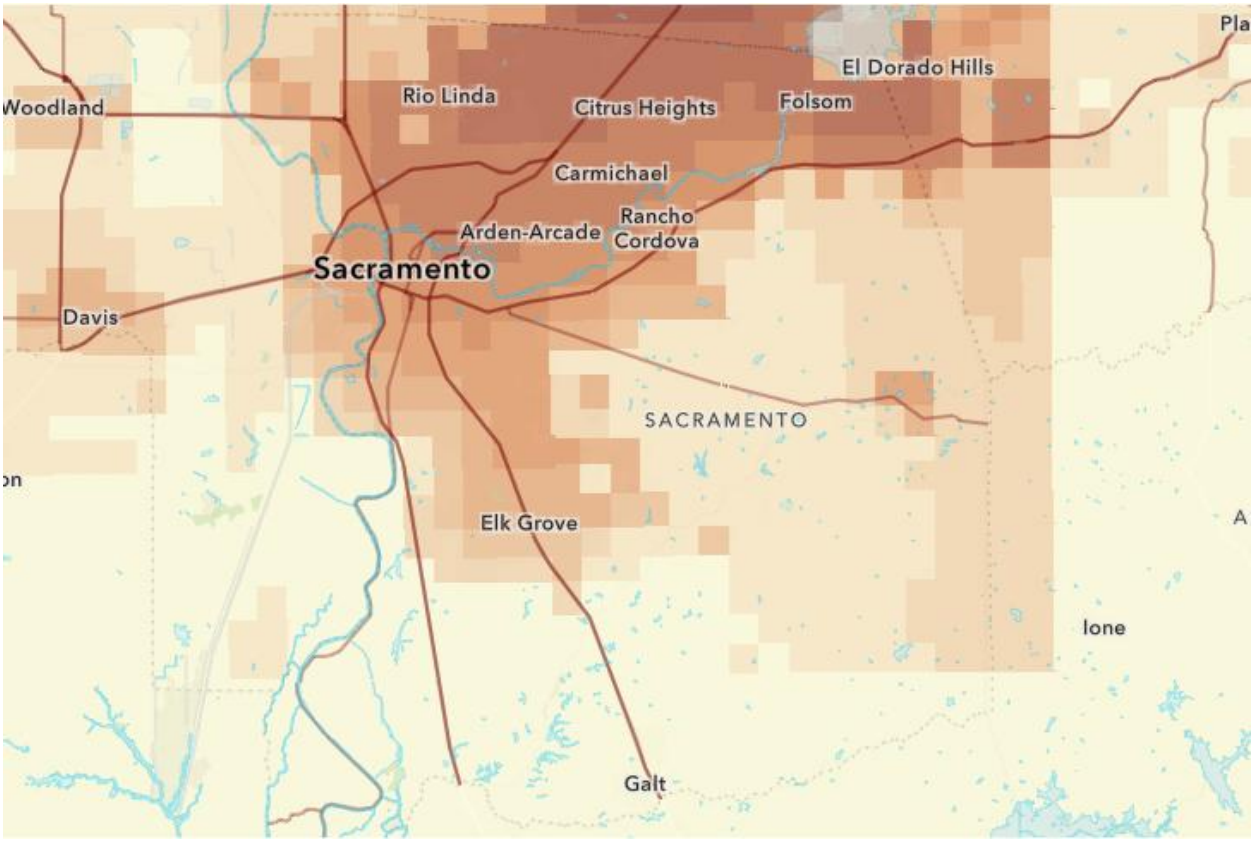
The NWS office in Sacramento can issue the following heat-related advisory as conditions warrant.

- **Heat Advisories** are issued during events where the HeatRisk is on the Orange/Red threshold (Orange will not always trigger an advisory).
- **Excessive Heat Watches/Warnings** are issued during events where the HeatRisk is in the Red/Magenta output.

Urban Heat Island

Portions of the County lies in an urban heat island. Large, urbanized areas can experience higher temperatures, greater pollution and more negative health impacts during hot summer months when compared to more rural communities. This phenomenon is known as an urban heat island. Heat islands are created by a combination of heat-absorptive surfaces (such as dark pavement and roofing), heat-generating activities (such as engines and generators) and the absence of vegetation (which provides evaporative cooling). According to the U.S. Environmental Protection Agency, daytime temperatures in urban areas are on average 1-6°F higher than in rural areas, while nighttime temperatures can be as much as 22°F higher as the heat is gradually released from buildings and pavement. The Urban Heat Island Index, developed by the California Environmental Protection Agency, quantifies the extent and severity of urban heat islands for individual cities, including urban heat island interactive maps that show the urban heat island effect for each census tract in and around most urban areas throughout the State. This is shown on Figure 4-31. Though there is no legend to the map, the darker colors indicate areas with greater effect.

Figure 4-31 Sacramento County Planning Area – Urban Heat Island



Source: Capital Region Urban Heat Island Mitigation Project. Map retrieved 5/19/2026.

Past Occurrences

Disaster Declaration History

There have been no FEMA or Cal OES disasters related to extreme heat, as shown in Table 4-4.

NCDC Events

The NCDC data shows 68 extreme heat incidents for Sacramento County since 1993. Information for these events are shown in Table 4-32.

*Table 4-32 NCDC Extreme Heat Events in Sacramento County 1993 to 1/1/2026**

Event Type	Number of Events	Deaths	Deaths (indirect)	Injuries	Injuries (indirect)	Property Damage	Crop Damage
Excessive Heat	26	12	2	2	0	$0	$0
Heat	42	0	1	30	1	$0	$0
Total	**68**	**12**	**3**	**32**	**1**	**$ 0**	**$ 0**

Source: NCDC

*Deaths, injuries, and damages are for the entire event, and may not be exclusive to the County.

Hazard Mitigation Planning Committee Events

The HMPC noted some extreme heat events in Sacramento County. 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 HMPC noted the following events that have occurred since the previous LHMP.

June through August 2025: Hottest day reached 103°F (one of few triple-digit days early in summer). Some heat waves occurred, but overall cooler than 2024 (e.g., fewer 100°F+ days in June/July). Heat Advisories were issued periodically.

June–July 2024: The hottest 20-day stretch on record (June 23–mid-July), averaging 103.8°F—surpassing the previous record (102.5°F from 1984). Multiple heat waves, with highs frequently >100°F (some >110°F in nearby areas like Redding at 119°F). California's hottest summer on record overall. Cooling centers, Heat Advisories/Warnings, and public health responses were widespread. During this heat, the Agricultural Commissioner noted that livestock ($22.4M in 2024), dairy cattle (Market Milk: $51.2M in 2024), and poultry operations in Sacramento County ($32.5M in 2024) were subject to acute heat mortality risk. These sectors require active cooling and ventilation management during extreme heat periods. These operations saw increased cooling costs during this time period.

July 2023: Record daily high of 109°F on July 16 (surpassing prior July 16 records since 1935). Triple-digit heat wave affected the region, with health impacts noted in reports.

September 2022 Heat Wave: A 10-day extreme event pushed Downtown Sacramento to 116°F on September 6, 2022—breaking the all-time record set in 1925 (110°F). This was California's deadliest recent heat wave, with ~395 estimated heat-related deaths statewide. Sacramento saw prolonged highs >110°F, power conservation requests, and grid strain (CAISO alerts). Cooling centers and emergency measures were activated. While the California Independent System Operator (CAISO) issued emergency alerts and utilities like PG&E faced potential shutoffs, Sacramento Municipal Utility District (SMUD) managed to avoid blackouts by relying on customer conservation efforts and its own contingency plans.

During that period, SMUD experienced several unplanned, localized outages due to equipment failures and weather, rather than planned load shedding:

- **September 6, 2022**: Approximately 2,100 customers near Cosumnes River College lost power due to an unplanned outage, which was restored within an hour. Earlier that day, a tree fall caused a temporary outage for nearly 16,000 customers, with power restored within about 90 minutes.
- **September 8, 2022**: A downed power line caused an outage affecting 1,500 customers in eastern Sacramento and the Arden Arcade area; most were restored within an hour and a half.
- **September 15, 2022**: Over 5,000 SMUD customers in South Natomas were without power due to an unplanned outage, with service restored by the evening.

SMUD officials stated that while contingency plans existed to turn off power to maintain grid capacity during shortages, no rolling blackouts were necessary because residents heeded conservation warnings.

The utility also confirmed it had no planned public safety power shutoffs for wildfire risk in its territory at that time, as its service area was not considered high-risk for wildfires compared to PG&E's territory in the Delta region.

The Agricultural Commissioner noted that wine grape quality can be impacted by sunburn and dehydration during extreme heat events. As indicated in the County's 2022 Crop Report, wine grape yield declined from 9.2 tons/acre in 2021 to 7.3 tons/acre in 2022, a multi-factor decline in which heat stress may have played a contributing role. Cherry production declined sharply from $20.6M in 2021 to $9.7M in 2022, with heat during fruit-set and harvest windows a possible contributing cause.

July 2021 Heat Wave: Sacramento hit 113°F (second-highest on record at the time), with multiple triple-digit days. This was part of a broader West Coast heat dome, prompting cooling center activations and health advisories.

June 2021: Heat waves coincided with the peak of the multi-year drought, compounding irrigation demand with heat-stress effects. NOAA documented multiple consecutive days above 110°F in the Sacramento Valley during the June 2021 heat dome event. Agricultural workers in Sacramento County were subject to California Occupational Safety and Health Administration (Cal/OSHA) heat illness prevention requirements; the Agricultural Commissioner's Office coordinated with growers on compliance.

Events before 2021

- **August/September 2020**: Extreme heat struck the County. Cooling centers were opened in 8 locations in the County. 4 deaths occurred from the extreme heat conditions. As the heat event ended, multiple wildfires around northern California were ignited by dry lightning. Sacramento County received smoke into the valley that was not pushed out by light winds. The cities of Folsom and Sacramento converted their cooling centers to cleaner air spaces to serve the public unable to get into an indoor space to escape the smoke.
- **July/August 2020**: Extreme heat struck the County. Multiple cooling centers were opened in locations throughout the County.
- **June 2017**: Extreme heat began on the 13th and lasted through the 23rd. On June 19th, Mercy Folsom Hospital reported a power failure at 10:59 pm and closed to all ambulance traffic. Power was restored at approximately 5:30 am the next morning and the hospital was back to normal operations. Two days later, the hospital lost power again. Initial evacuation planning was conducted along with a regional bed poll in the event of an evacuation. Power was restored by SMUD at 11:45 pm and the hospital anticipated reopening at 2:00 am or once the temperature was low enough to open. The same day, Eskaton Village in Carmichael lost power and air conditioning affecting 200 units, 250 people and 20-30 pets. Briarwood Post Acute contacted and stated their facility has lost partial air conditioning in their patient care areas and were considering a partial evacuation, but evacuations were canceled later that day. . Cooling centers were opened in the County during this time. 6 deaths were attributed to this heat wave in the County.
- **January 2014**: January was an abnormally dry and warm month for interior Northern California. Many record high temperatures were broken, and a state-wide drought was declared on January 17th.
- **July 1-4, 2013** : A strong high pressure ridge built over Northern California, keeping max temperatures in the Central Valley above 100 for at least 7 days. Overnight temperatures failed to recover, reaching

generally down to the mid-60s to 90. The heat wave felt warmer due to the moisture in the air from the previous rainfall on June 26th, as well as from the intrusion of subtropical moisture from the south.

- **June 28-30, again July 1, 2013:** over 100°F for 7 days
- **June 7 & 8 2013**: 100°-112°F

Likelihood of Future Occurrence

Highly Likely—Temperature extremes are likely to continue to occur annually in the Sacramento County Planning Area. Temperatures at or above 90°F are common most summer days in the County. More information on climate change and extreme heat can be found in the next section. More information on future impacts can be found in the Future Conditions/Future Development section of the Vulnerability Assessment below.

Climate Change and Extreme Heat

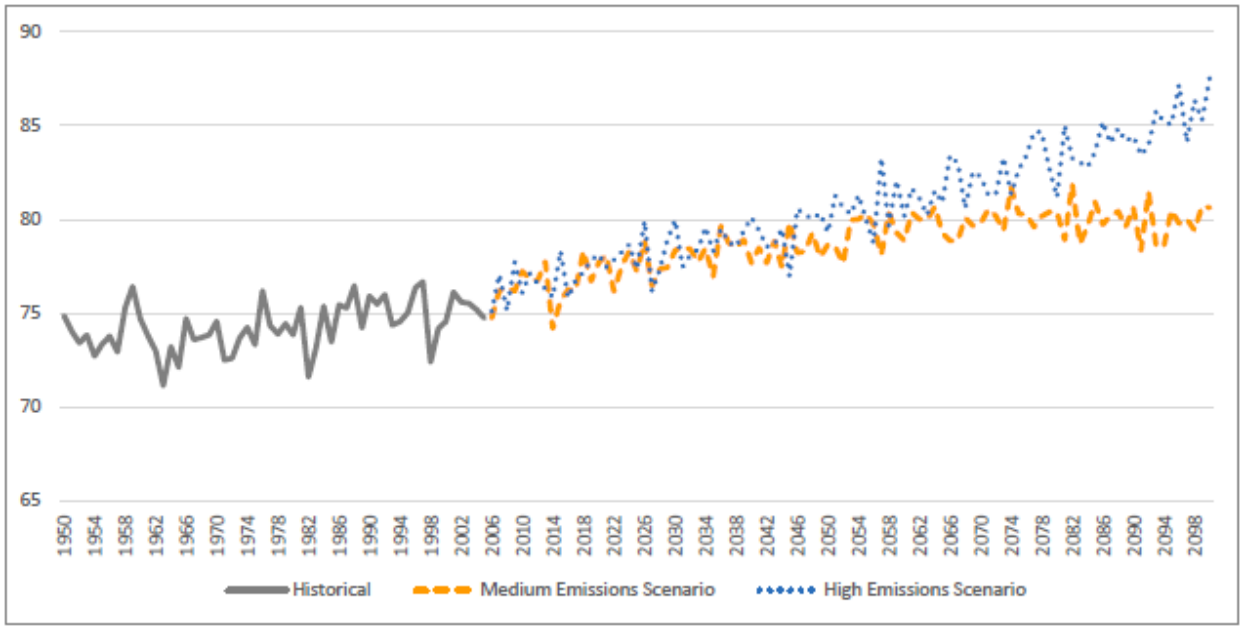
Climate change and its effect on extreme heat in the County has been discussed in the following sources:

- 2024 Sacramento County Climate Action Plan
- 2024 Climate Adaptation Study
- 2026 American, Bear, and Cosumnes Watersheds Resilience Plan
- Climate Change and Health Profile Report –Sacramento County
- Cal-Adapt

2024 Sacramento County CAP

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. Figure 4-32 displays a time series of historic and future projected annual average maximum temperature in the County. Increased temperatures will also lead to a significant increase in extreme heat events. For the City of Sacramento, which serves as a proxy for the County, an extreme heat day is defined as a day when the maximum temperature is above the extreme heat threshold of 103.8 °F. Heat waves refer to a period of four or more consecutive extreme heat days. The average annual number of extreme heat days and heat waves are both projected to rise through the end of the century. Figure 4-33 displays historical data and future projections for increased temperatures and extreme heat in the County, organized by defined timescales and future GHG emissions scenarios.

Figure 4-32 Sacramento County – Historical and Projected Annual Average Maximum Temperatures



Source: 2024 County of Sacramento CAP

Figure 4-33 Sacramento County – Changes in Annual Maximum (and Minimum) Temperatures Under Medium and High Emissions Scenarios

Annual Averages	Historic (1961-1990)	Medium Emissions Scenario		High Emissions Scenario	
		Mid-Century (2035-2064)	Late Century (2070-2099)	Mid-Century (2035-2064)	Late Century (2070-2099)
Temperature					
Maximum Temperature (°F)	74.0	78.3	79.8	79.4	82.7
Minimum Temperature (°F)	48.4	52.2	53.4	53.2	56.8
Extreme Heat					
Extreme Heat Days[1] (#)	4	17	24	22	40
Heat Waves[2] (#)	NA	1.9	2.8	2.6	5.8

Notes: # = number; °F = degrees Fahrenheit; NA = not applicable.

[1] The threshold for an extreme heat day for the City of Sacramento, which serves as a proxy for the county, is 103.8 °F.

[2] Heat waves are defined by Cal-Adapt as four or more consecutive extreme heat days.

Source: **CEC 2020a, 2020b.**

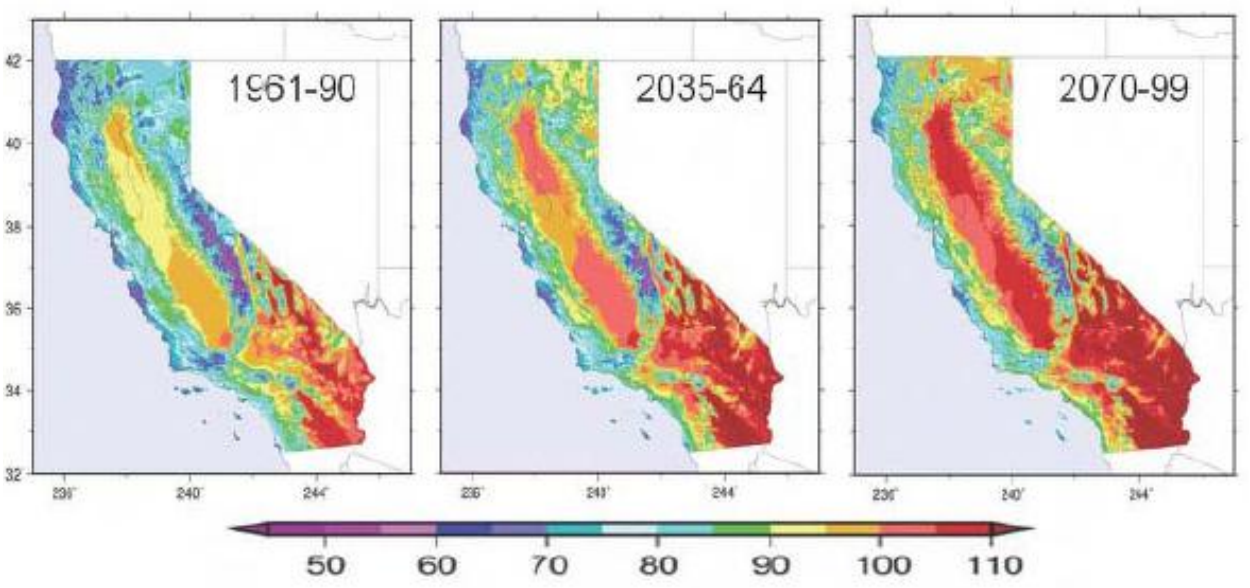
Source: 2024 County of Sacramento CAP

In addition, research published by California Environmental Protection Agency suggests that heat impacts are felt disproportionately in the northern portions of Sacramento County and the surrounding areas, due to prevailing wind patterns. This phenomenon will likely be exacerbated by climate change.

2024 Climate Adaptation Strategy

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 shown in Figure 4-34.

Figure 4-34 California Historical and Projected Temperature Increases – 1961 to 2099



Source: California Climate Adaptation Strategy

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 illnesses and deaths related to extreme heat in Sacramento County.

2026 American, Bear, and Cosumnes Watersheds Resilience Plan

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 extreme heat. 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 extreme heat is the most widespread hazard, with more than 99% of residents projected to experience 30 or more additional days above 95°F, and one-third of the population falling into the highest heat-sensitivity category.

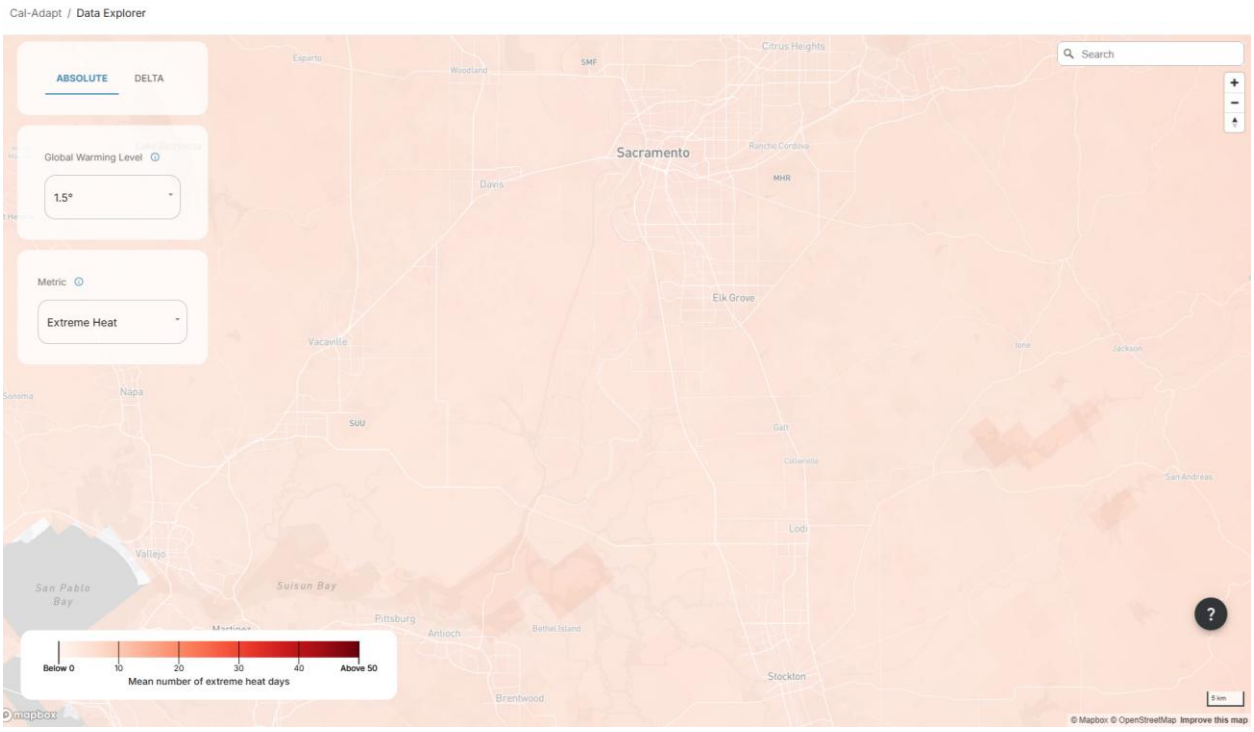
Climate Change and Health Profile Report – Sacramento County

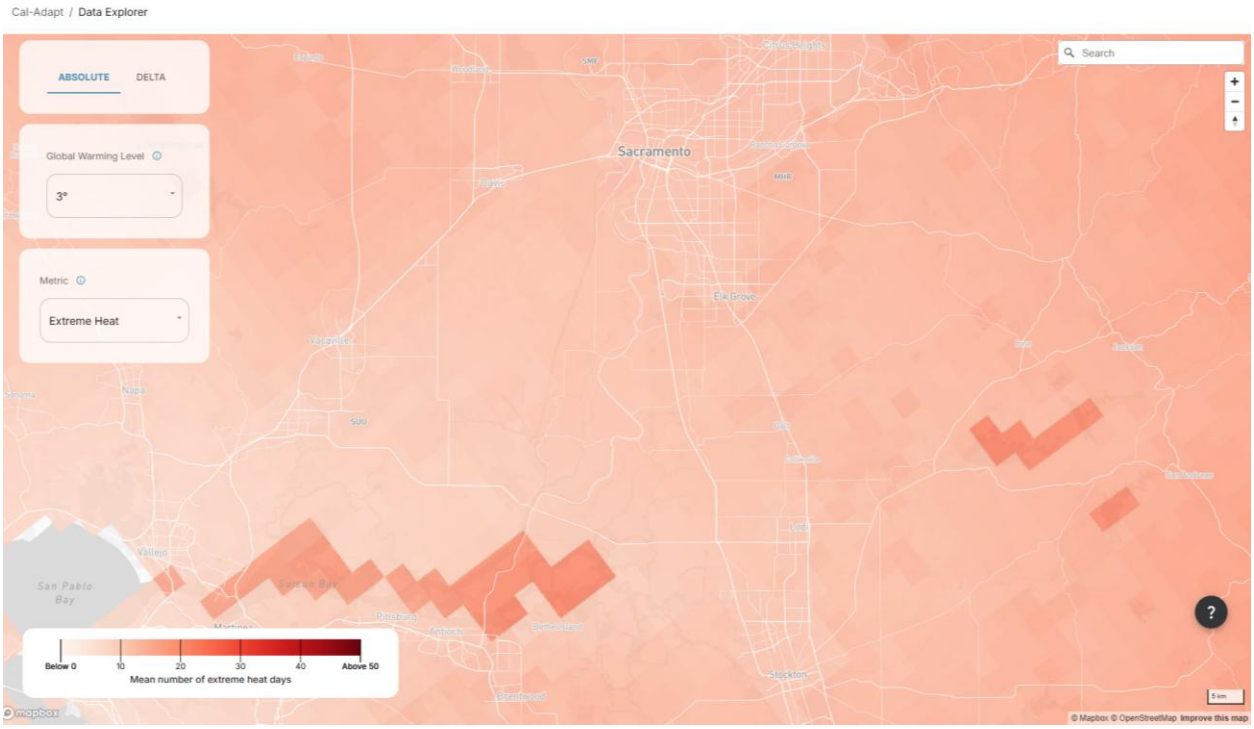
The Climate Change and Health Profile Report (CCHPR) noted for Sacramento County that increased temperatures manifested as heat waves and sustained high heat days directly harm human health through heat-related illnesses (mild heat stress to fatal heat stroke) and the exacerbation of pre-existing conditions in the medically fragile, chronically ill, and vulnerable. Increased heat also intensifies the photochemical reactions that produce smog and ground level ozone and fine particulates (PM2.5), which contribute to and exacerbate respiratory disease in children and adults. Increased heat and carbon dioxide enhance the growth of plants that produce pollen, which are associated with allergies. Increased temperatures also add to the heat load of buildings in urban areas and exacerbate existing urban heat islands adding to the risk of high ambient temperatures.

Cal-Adapt

Cal Adapt also noted that overall temperatures are expected to rise throughout this century, which may have different potential effects to the state's ecosystem health, agricultural production, water use and availability, and energy demand. Future temperature estimates from Cal-Adapt for the Sacramento County Planning Area are shown in Figure 4-35. These images show the average expected value for the chosen metric and at the selected Global Warming Level (GWL). The upper image shows the mean number of extreme heat days under the 1.5°F GWL, while the lower images shows the 3.0°F GWL. The darker red colors on the map show areas where more extreme heat days are expected.

Figure 4-35 Sacramento County – Mean Number of Extreme Heat Day Estimates in 1.5°F and 3.0°F GWL Scenarios





Source: Cal-Adapt – Mean Number of Extreme Heat Days by Year. Retrieved 12/29/2025.

Vulnerability Assessment

Vulnerability—High

Extreme heat happens in Sacramento County each year. Extreme heat may overload demands for electricity to run air conditioners and other utilities in homes and businesses during prolonged periods of exposure and presents health concerns to individuals outside in the temperatures. Extreme heat may also be a secondary effect of droughts or may cause drought-like conditions in a temporary setting. For example, several weeks of extreme heat increases evapotranspiration and reduces moisture content in vegetation, leading to higher wildfire vulnerability for that time period even if the rest of the season is relatively moist. Extreme heat, when combined with wind, can also lead to PSPS events in the County. Extreme heat also contributes to poor air quality during extended events.

An assessment of a community's vulnerability to this hazard begins with an understanding of local exposure to unincorporated Sacramento County and the Sacramento County Planning Area. This is included in the Local Concerns section below. After that, vulnerability is discussed in multiple sections that detail how this hazard can affect both the entire Sacramento County Planning Area as well as the unincorporated portions of Sacramento County. How the hazard affects the other participating jurisdictions can be found in their respective annexes to this LHMP Update. These sections below include assets at risk, impacts, and how future development may affect the vulnerability of the County to this hazard.

Local Concerns (unincorporated Sacramento County)

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

General Concerns

The County noted that extreme heat can cause crop damages. These can be substantial if extreme heat occurs during periods of plant susceptibility to heat. Extreme heat contributes to PSPS and wildfire issues in the County. Heat domes have settled over the County in the past, which has caused the County to open cooling centers. The County is also worried about the effects on vulnerable populations. It was also noted that extreme heat contributes to unhealthy air quality. The County noted that critical facilities and infrastructure are at risk during extreme heat events, and that it is seeking to increase infrastructure resilience and reliability to reduce the frequency of power outages that can interrupt the functions of business and residences. The County is seeking to use cool pavement technology, increase parking lot shading, and encourage the installation of cool roof technologies, passive solar home design, green roofs and rooftop gardens.

Existing and older residential buildings may increase vulnerability to extreme heat where they have limited insulation, poor ventilation, inefficient building systems, or inadequate access to effective cooling. These conditions can contribute to dangerously high indoor temperatures and increased household energy burden, particularly for lower-income households, and become especially significant during power outages.

Urban Heat Concerns

The Sacramento Air Quality Management District noted that Urban Heat Island (UHI) effect is a prominent issue in Sacramento County. The District uses UHI data to determine mitigation by heat pockets (e.g., land use, cool roofs, pavements, albedo of walls, tree cover and maintenance). Other related concerns with UHI include infill development and sustainable farming practices. It was also noted by the District that ozone is tied to extreme heat affecting air quality in the County. When the District monitors ozone, temperature and wind speed data are reviewed. Something unique in the Sacramento County area during high temperatures is the occurrence of temperature inversions. This happens when hot air is trapped under cooler air higher in the atmosphere. This can cause temperatures to be hotter than initially forecasted.

Trees in urban areas help reduce the UHI and provide aesthetic and environmental benefits to residential and commercial areas. Trees enhance a community's livability by softening street noise and enhancing pedestrian use. Urban trees provide stormwater quality benefits by intercepting small, more frequent rain and compensating, to some extent, the impact of paved areas. Trees also provide a cool green canopy of shade to reduce the heating effects of summer sun and consequently reduced energy consumption to cool buildings.

Agriculture Concerns

The Agricultural Commissioner noted the following local concerns from extreme heat:

- **Agricultural worker heat illness**: Sacramento County has a substantial seasonal and permanent agricultural workforce. Cal/OSHA Heat Illness Prevention Standard compliance monitoring is a core Agricultural Commissioner function. Extreme heat events increase the risk of worker heat illness and require active field-level response.
- **Irrigation demand surge**: Extreme heat dramatically increases crop evapotranspiration, often causing actual irrigation demand to exceed water delivery capacity for producers already on constrained Central Valley Project (CVP)/State Water Project (SWP) allocations. This compounds drought-year water supply stress.
- **Fruit and nut quality damage**: Sunburn on wine grapes, cherries, pears, and almonds, all key Sacramento County commodities, causes direct revenue loss and reduced pack-out rates. Heat events during fruit set can reduce yields for the current and following seasons.

Local concerns for each of the jurisdictions can be found under the Local Concerns heading in each respective jurisdictional annex to this LHMP Update.

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 for both the Sacramento County Planning Area and unincorporated Sacramento County.

Additionally, for each hazard in the FEMA National Risk Index in Sacramento County, the relevant portions of the hazard analysis done by FEMA is presented below. This includes the Hazard Risk Index Rating,

Expected Annual Loss Values, Exposure Values, and the Historic Loss Ratio Rating. These are presented for the Sacramento County Planning Area as a whole.

People and Populations

All populations within the Sacramento County Planning Area are vulnerable to extreme heat, but it generally affects people spending large amounts of time outside or without means of cooling indoor structures. 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 increase. Extreme heat is a significant concern to vulnerable populations. People experiencing homelessness; 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 heat related impacts. In addition to vulnerable populations, pets and livestock are at risk to extreme heat conditions.

Structures

Extreme heat does not typically cause direct structural damage; however, building characteristics can substantially affect occupant exposure. Buildings without adequate insulation, ventilation, effective cooling, or reliable power may experience dangerously high indoor temperatures during prolonged heat events. In the Sacramento County Planning Area, extreme heat has caused interruptions to power in the past. Also depending on the structure, sensitive contents such as IT equipment can be impacted, especially if a power outage occurs.

Critical Facilities and Infrastructure

Depending on their type and function, critical facilities and infrastructure can also be affected by extreme heat. Interruptions in power caused by extreme heat can lead to system failures. Schools without air conditioning may have to close or operate on a reduced schedule.

Natural, Historic, and Cultural Resources

Park areas and natural resource assets in the Sacramento County Planning Area may be vulnerable during periods of extreme heat. These include turfed areas; landscapes, trees, wildlife and habitat areas, and wetlands and marsh lands. Recently, trees were lost in areas of Sacramento County 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.

FEMA NRI Hazard Vulnerability Assessment

The FEMA NRI was queried for additional specific data on Sacramento County's vulnerability to Extreme Heat. The NRI contains data and analysis for 18 separate natural hazards. The NRI hazard related to Sacramento County's Extreme Heat is a heat wave. According to the NRI, there have been 37 events on

record between the years 2005-2021, with an average of 2.3 events per year. As shown in Table 4-33, heatwaves could cause a total of $104,969,015in expected annual losses, with a historic loss rating of relatively high. Heat wave has a relatively high rating for both social vulnerability and community resilience, with a risk index score of 99.2 out of 100.

Table 4-33 Sacramento County Planning Area – Heat Wave Vulnerability Ratings from FEMA NRI

NRI Hazard	Hazard Risk Index Rating*	Expected Annual Loss Values (total)**	Exposure Value (total)***	Historic Loss Ratio Rating
Heat Wave	99.2	$104,969,015	$18,646,183,819,448	Very Low

Source: FEMA NRI Report, retrieved 12/15/2025.

*Hazard Risk Index is calculated using data for only a single hazard type, and reflect a communities expected annual loss value, community risk factors, and the adjustment factor used to calculate the risk value.

**Expected annual loss represents the average economic loss in dollars resulting from natural hazards each year.

***Exposure is a natural hazard consequence factor that is the representative value of buildings, populations, or agriculture potentially exposed to a natural hazard occurrence.

Additional information on the FEMA NRI can be found in Section 4.2 and Appendix G.

Impacts from Severe Weather: Extreme Heat

The County experiences temperatures in excess of 100°F during the summer and fall months. The temperature moves to 105-110°F in rather extreme situations. Health issues are the primary concern with this hazard with vulnerable populations at greater risk, although economic impacts can also be an issue. Air quality can also be an issue during extreme heat.

During these times, drought conditions may worsen, and the Planning Area may see an increase in dry fuels contributing to wildfires. For example, several weeks of extreme heat increases evapotranspiration and reduces moisture content in vegetation, leading to higher wildfire vulnerability for that time period even if the rest of the season is relatively moist. Also, power outage and PSPS events may occur during these times as well. Drought is discussed further in Section 4.3.9 and wildfire in Section 4.3.17.

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

- Climate change is likely to exacerbate future extreme heat conditions and associated impacts and vulnerability of the County. 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 County. There are 129 areas where the unincorporated County is expected development to occur in the next 5 years. Population is expected to increase for Sacramento County and, as such, the vulnerability to this hazard may increase, specifically affecting growing vulnerable populations as the senior citizen population continues to reside in and age within the communities of the County. Along with this, low income and the unsheltered 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 County 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. There are 129 areas where the unincorporated County is expected development to occur in the next 5 years. County 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 County to this hazard.

Future Development

Future development in the County will take extreme heat into account. Backup generators are currently in use at many County facilities, and additional generators and backup power sources are being considered for other locations. One way to reduce the negative impacts of an extreme heat event is to develop a comprehensive heat response plan that combines individual strategies into an integrated approach. The County has an Extreme Heat Emergency Hazard Annex to the County Emergency Operations Plan, and it is discussed in the Capability Assessment in Section 4.4.1. Components of such a plan might include forecasting and monitoring, education and awareness, and heat wave preparedness and response.

In addition to a comprehensive heat response plan, local officials can help areas adapt to extreme heat in the short-term by improving the resilience of infrastructure. Transportation planners can protect or modify roads, bridges, and other structures—for example, by using materials that are more resilient and heat tolerant—to help these systems withstand higher temperatures and reduce service disruptions. They can also implement energy efficiency and conservation efforts to reduce stress on electricity systems during heat waves and help avoid power outages.

The Air Quality Management District uses UHI data to determine mitigation by heat pockets (e.g., land use, cool roofs, pavements, albedo of walls, tree cover and maintenance). This mitigation will be used to inform future development in the County.

Future development considerations should be ongoing and proactive. Site and building design, tree canopy and shade, cool/reflective materials, and other heat-mitigation measures can reduce exposure as development and redevelopment occur. 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 County are considered can help make for a more disaster resilient community.

4.3.4. Severe Weather: Heavy Rains and Storm

Hazard Profile

This hazard profile contains multiple sections that detail how this hazard can affect the Sacramento County Planning Area. These sections include a hazard/problem description; description of location and extent; past occurrences of this hazard; likelihood of future occurrences; and how climate change can affect or influence this hazard.

Hazard/Problem Description

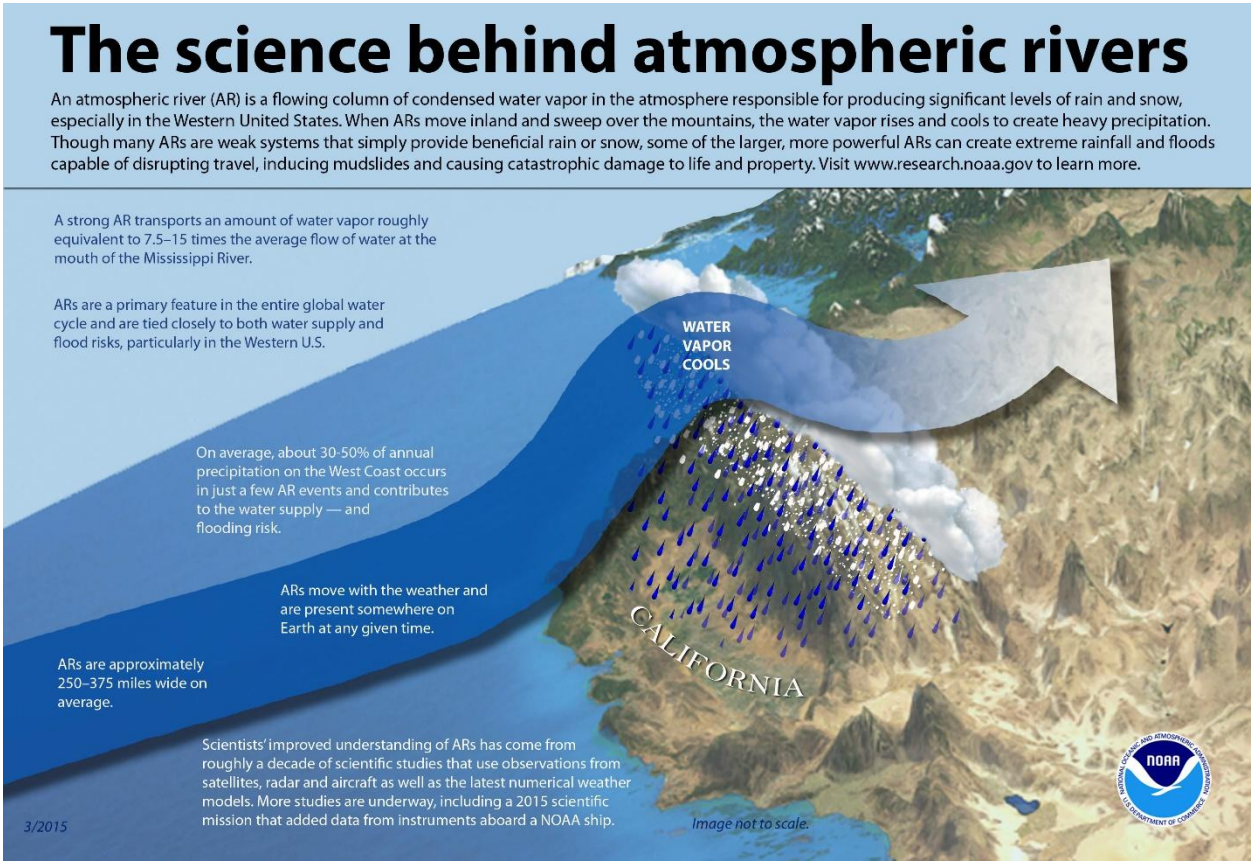
Storms in Sacramento County occur throughout the Planning Area and are generally characterized by heavy rain often accompanied by strong winds and sometimes lightning and hail. Approximately 10 percent of the thunderstorms that occur each year in the United States are classified as severe. A thunderstorm 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 Sacramento County area falls mainly in the fall, winter, and spring months.

Heavy Rain and Storms

The NWS reports that storms and thunderstorms result from the rapid upward movement of warm, moist air. They can occur inside warm, moist air masses and at fronts. As the warm, moist air moves upward, it cools, condenses, and forms cumulonimbus clouds that can reach heights of greater than 35,000 ft. As the rising air reaches its dew point, water droplets and ice form and begin falling the long distance through the clouds towards earth's surface. As the droplets fall, they collide with other droplets and become larger. The falling droplets create a downdraft of air that spreads out at Earth's surface and causes strong winds associated with thunderstorms.

The County and the rest of California can also be affected by a phenomenon known as an atmospheric river. According to the NOAA, atmospheric rivers are relatively long, narrow regions in the atmosphere – like rivers in the sky – that transport most of the water vapor outside of the tropics. These columns of vapor move with the weather, carrying an amount of water vapor roughly equivalent to the average flow of water at the mouth of the Mississippi River. When the atmospheric rivers make landfall, they often release this water vapor in the form of rain or snow. This can be seen in Figure 4-36.

Figure 4-36 Atmospheric Rivers



Source: NOAA

Although atmospheric rivers come in many shapes and sizes, those that contain the largest amounts of water vapor and the strongest winds can create extreme rainfall and floods, often by stalling over watersheds vulnerable to flooding. These events can disrupt travel, induce mudslides and cause catastrophic damage to life and property. A well-known example is the "Pineapple Express," a strong atmospheric river that is capable of bringing moisture from the tropics near Hawaii over to the U.S. West Coast.

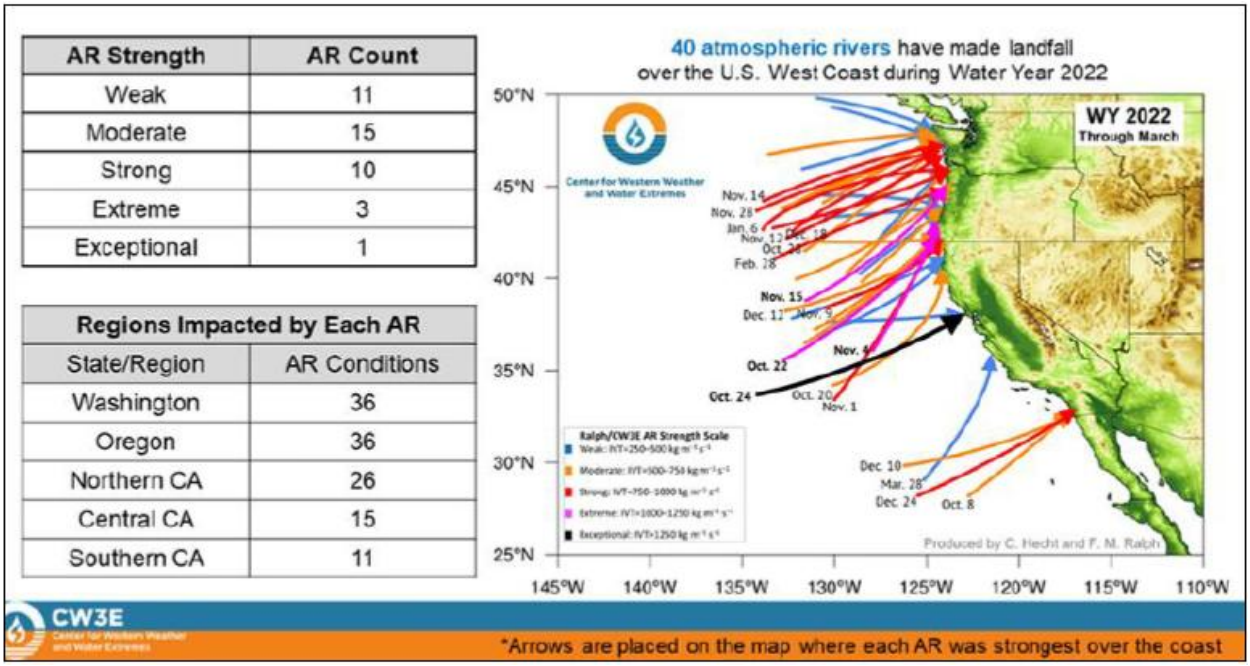
Not all atmospheric rivers cause damage; most are weak systems that often provide beneficial rain or snow that is crucial to the water supply. Atmospheric rivers are a key feature in the global water cycle and are closely tied to both water supply and flood risks — particularly in the western United States.

While atmospheric rivers are responsible for great quantities of rain that can produce flooding, they also contribute to beneficial increases in snowpack. A series of atmospheric rivers fueled the strong winter storms that battered the U.S. West Coast from western Washington to southern California from Dec. 10–22, 2010, producing 11 to 25 inches of rain in certain areas. These rivers also contributed to the snowpack in the Sierras, which received 75 percent of its annual snow by Dec. 22, the first full day of winter. Another example of this happened in 2022. Multiple atmospheric river storms occurred in the County and the rest of California. This can be seen in Figure 4-37. This also happened in the 2023, 2024, and 2025 which can be seen in Figure 4-38 through Figure 4-40.

Figure 4-37 2022 Atmospheric River Events

AR Strength	AR Count
Weak	11
Moderate	15
Strong	10
Extreme	3
Exceptional	1

Regions Impacted by Each AR	
State/Region	AR Conditions
Washington	36
Oregon	36
Northern CA	26
Central CA	15
Southern CA	11

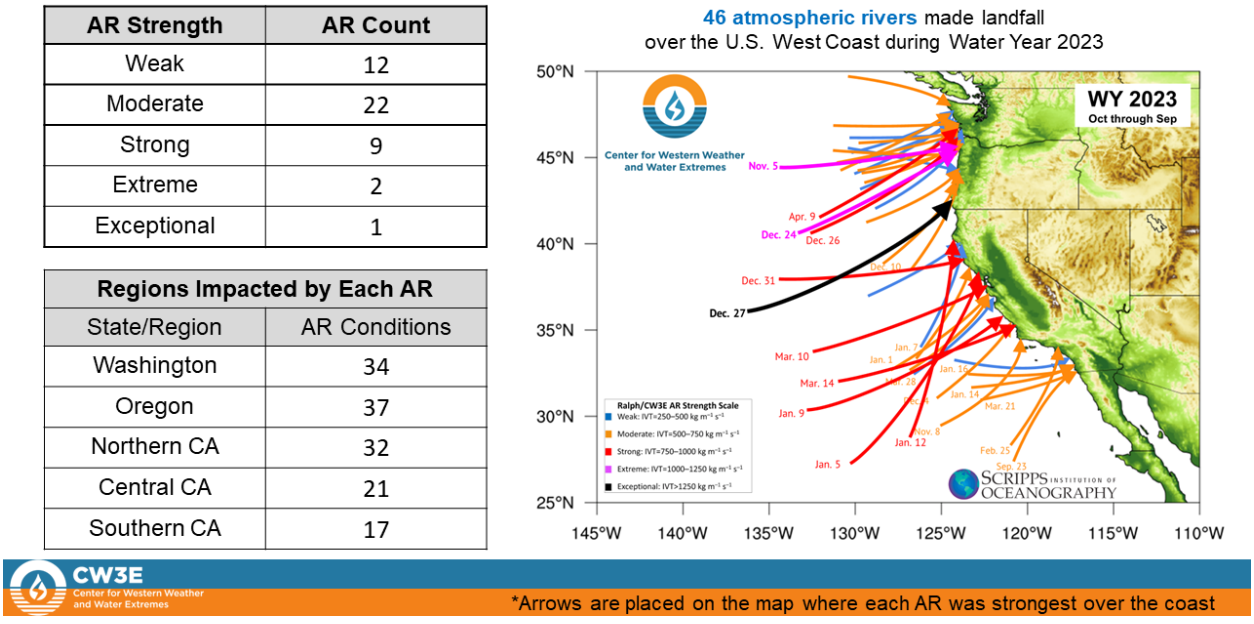


Source: Center for Western Weather and Water Extremes. Retrieved 12/29/2025.

Figure 4-38 2023 Atmospheric River Events

AR Strength	AR Count
Weak	12
Moderate	22
Strong	9
Extreme	2
Exceptional	1

Regions Impacted by Each AR	
State/Region	AR Conditions
Washington	34
Oregon	37
Northern CA	32
Central CA	21
Southern CA	17

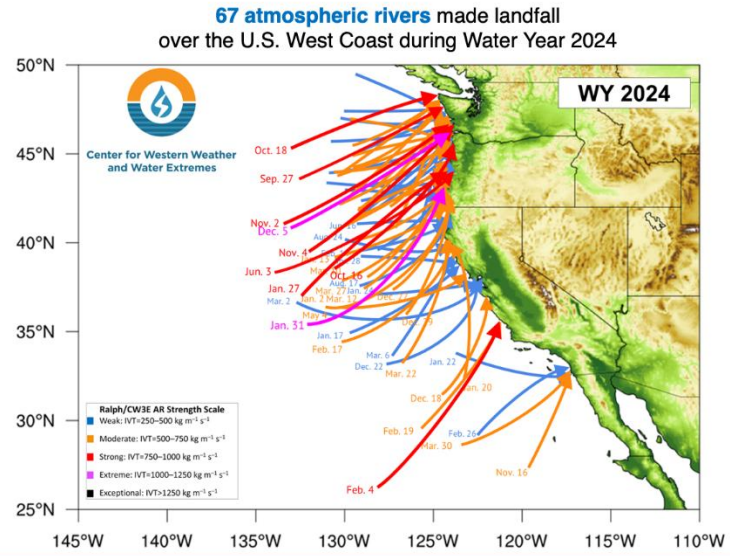


Source: Center for Western Weather and Water Extremes. Retrieved 12/29/2025.

Figure 4-39 2024 Atmospheric River Events

AR Strength	AR Count
Weak	26
Moderate	31
Strong	8
Extreme	2
Exceptional	0

Regions Impacted by Each AR	
State/Region	ARs
Washington	52
Oregon	59
Northern CA	53
Central CA	28
Southern CA	17

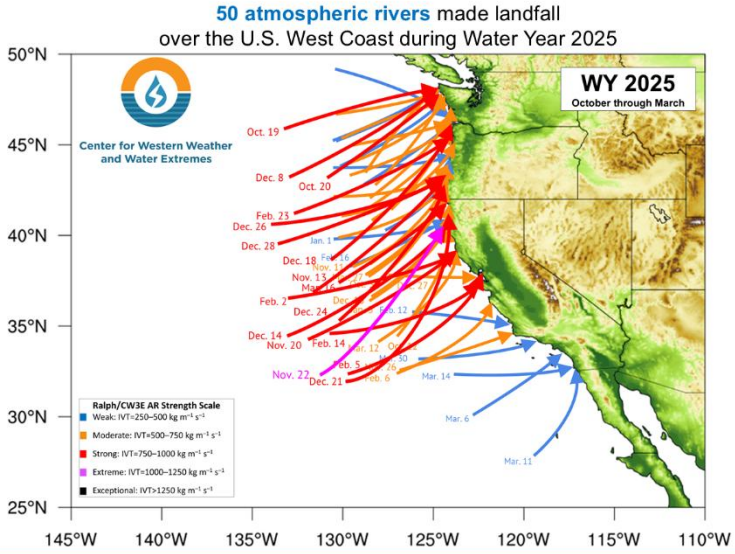


Source: Center for Western Weather and Water Extremes. Retrieved 12/29/2025.

Figure 4-40 2025 Atmospheric River Events

AR Strength	AR Count
Weak	14
Moderate	25
Strong	16
Extreme	1
Exceptional	0

Regions Impacted by Each AR	
State/Region	ARs
Washington	37
Oregon	42
Northern CA	38
Central CA	22
Southern CA	11



Source: Center for Western Weather and Water Extremes. Retrieved 12/29/2025.

Short-term, heavy storms can cause both widespread flooding as well as extensive localized drainage issues. In addition to the flooding that often occurs during these storms, strong winds, when combined with saturated ground conditions, can down very mature trees.

Location and Extent of Heavy Rains and Storms

Heavy rain events occur on a regional basis. Rains and storms can occur in any location of the County. All portions of the County are at risk to heavy rains and storms. Most of these rains occur during the fall, winter, and spring months, as discussed below.

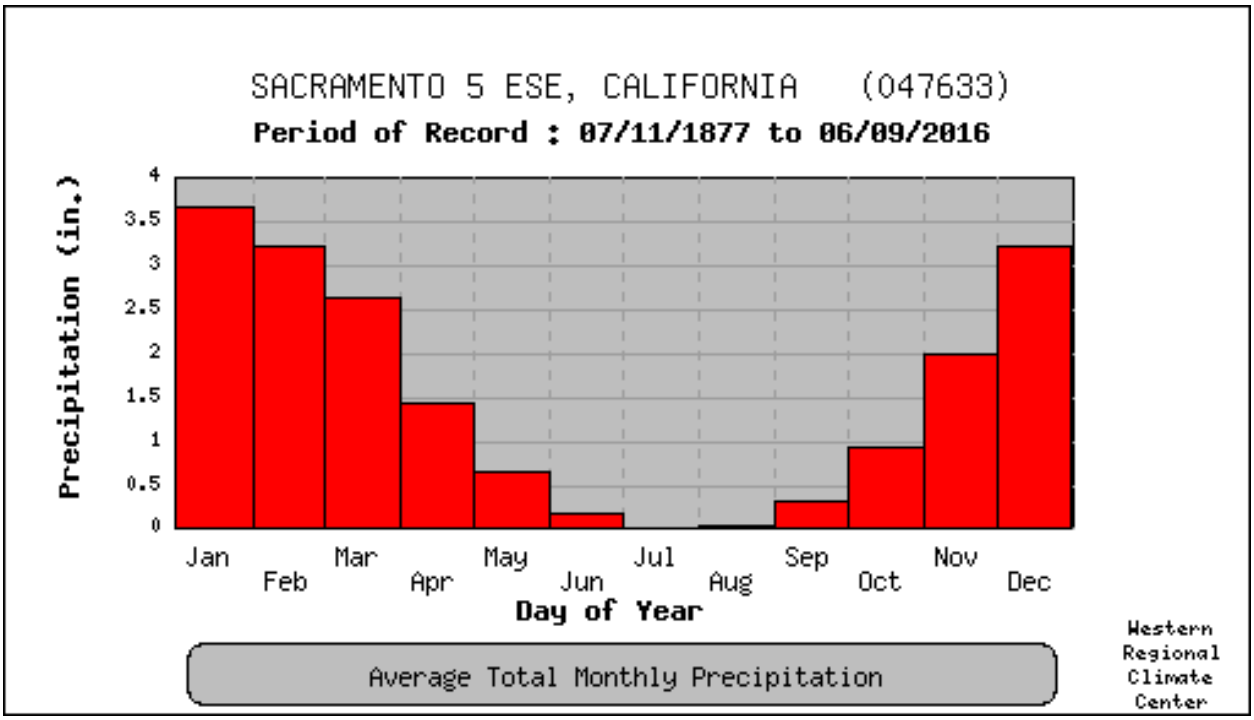
There is no scale by which heavy rains are measured – usually it is measured in terms of rainfall amounts. Magnitude of storms is measured often in rainfall and damages. The speed of onset of heavy rains can be short, but accurate weather prediction mechanisms often let the public know of upcoming events. Duration of thunderstorms in California is often short, ranging from minutes to hours. This can cause localized flooding, which is discussed in more detail in Section 4.3.12.

The WRCC and NWS maintain data on weather normal and extremes in the western United States. Each of these data sources maintain data in slightly different ways. Data from the WRCC stopped being collected in April of 2016. NWS covers the entire time period to present. Therefore, both data sets are shown below. WRCC and NWS data for both the County is summarized below.

Sacramento County—Sacramento 5 ESE Station (WRCC), Period of Record 1877 to 2016

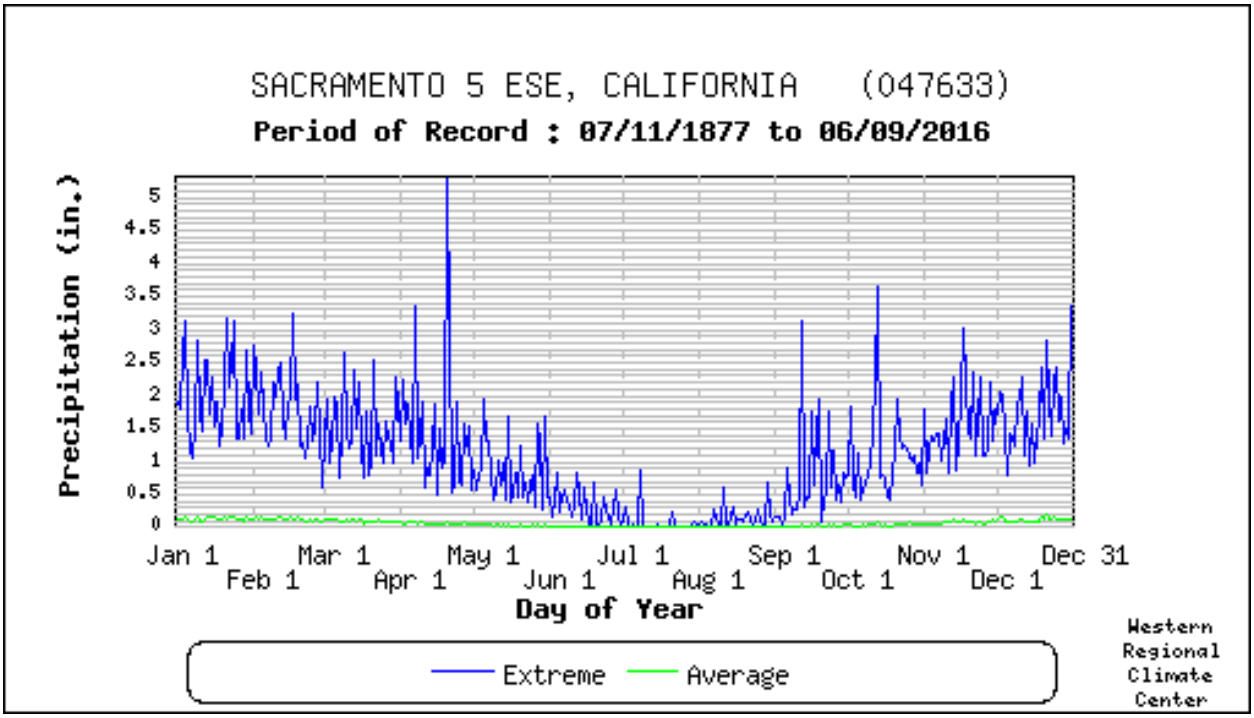
According to the WRCC, average annual precipitation in the County is 18.15 inches per year. The highest recorded annual precipitation is 37.62 inches in 1983; the highest recorded precipitation for a 24-hour period is 5.28 inches on April 20, 1962. The lowest recorded annual precipitation was 11.76 inches in 1976. Average monthly precipitation for Sacramento County is shown in in Figure 4-41. Daily average and extreme precipitations are shown in Figure 4-42.

Figure 4-41 Sacramento County – Sacramento 5 ESE Station (WRCC) Monthly Average Total Precipitation 1877 to 2016



Source: Western Regional Climate Center. Retrieved 12/15/2025.

Figure 4-42 Sacramento County – Sacramento 5 ESE Station (WRCC) Daily Average and Extreme Precipitation 1877 to 2016

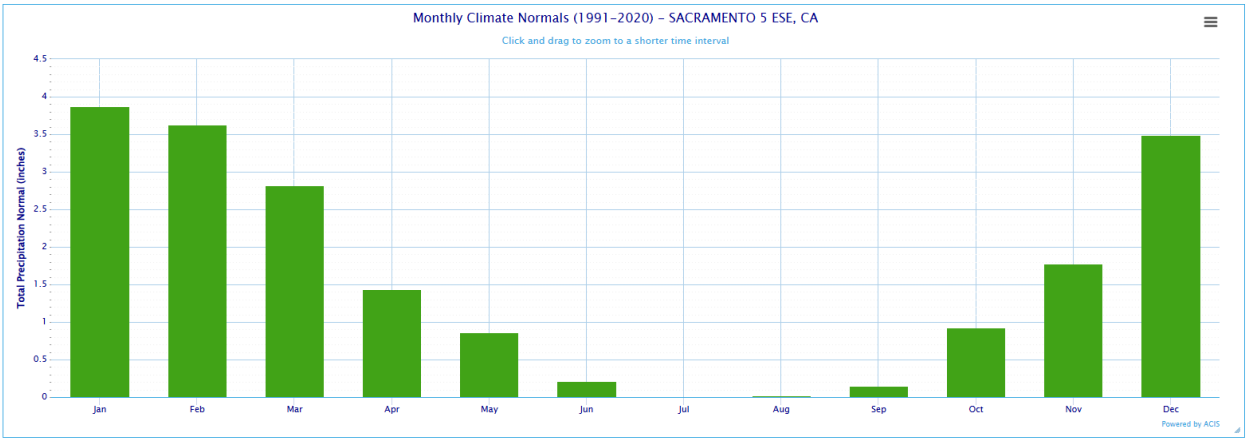


Source: Western Regional Climate Center. Retrieved 12/15/2025.

Sacramento County—Sacramento 5 ESE Station (NWS), Period of Record 1877 to 2025

According to the NWS, average annual precipitation in Sacramento County is 19.2 inches per year. Average monthly precipitation for Sacramento County is shown in Figure 4-43. The highest recorded precipitation for a 24-hour period is 5.62 inches on March 18, 2012. One day extreme precipitations are shown on Table 4-34.

Figure 4-43 Sacramento County— Sacramento 5 ESE Station (NWS) Monthly Average Total Precipitation 1991 to 2020



Source: National Weather Service XMAC site. Retrieved 12/15/2025.

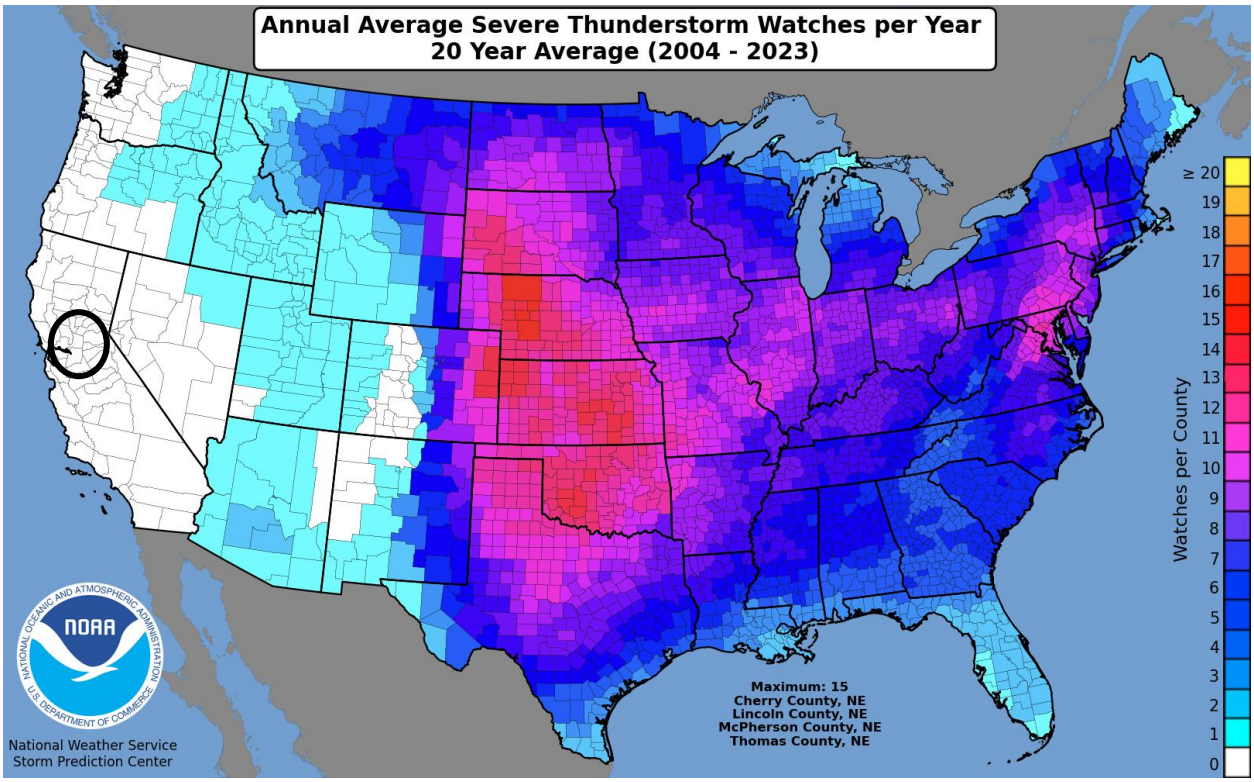
Table 4-34 Sacramento County— Sacramento 5 ESE Station (NWS) 24 Hour Rainfall Extremes from 1877 to 2025

Rainfall in Inches	Date
5.44	10/24/2021
5.28	4/20/1880
3.63	10/13/1962
3.35	4/7/1935
3.34	12/31/1890
3.21	2/17/1986
3.14	1/21/1943
3.13	9/12/1918
3.11	1/24/2000
3.10	1/4/1982

Source: National Weather Service XMAC site. Retrieved 12/15/2025.

The NOAA Storm Prediction Center tracks thunderstorm watches on a county basis. Figure 4-44 shows thunderstorm watches in Sacramento County and the United States for a 20-year period between 2004 and 2023 (the most recent data available as of the writing of this LHMP Update).

Figure 4-44 Sacramento County – Average Thunderstorm Watches per Year (2004 to 2023)



Source: NOAA Storm Prediction Center. Retrieved 12/15/2025.

Hail

Hail can occur throughout the Planning Area during storm events, though it is rare in the County. Hail is formed when water droplets freeze and thaw as they are thrown high into the upper atmosphere by the violent internal forces of thunderstorms. Hail is sometimes associated with severe storms within the Sacramento County Planning Area. Hailstones are usually less than two inches in diameter and can fall at speeds of 120 miles per hour (mph). Severe hailstorms can be quite destructive, causing damage to roofs, buildings, automobiles, vegetation, and crops.

The NWS classifies hail by diameter size, and corresponding everyday objects to help relay scope and severity to the population. Table 4-35 indicates the hailstone measurements utilized by the NWS.

Table 4-35 Hailstone Measurements

Average Diameter	Corresponding Household Object
.25 inch	Pea
.5 inch	Marble/Mothball
.75 inch	Dime/Penny
.875 inch	Nickel
1.0 inch	Quarter
1.5 inch	Ping-pong ball

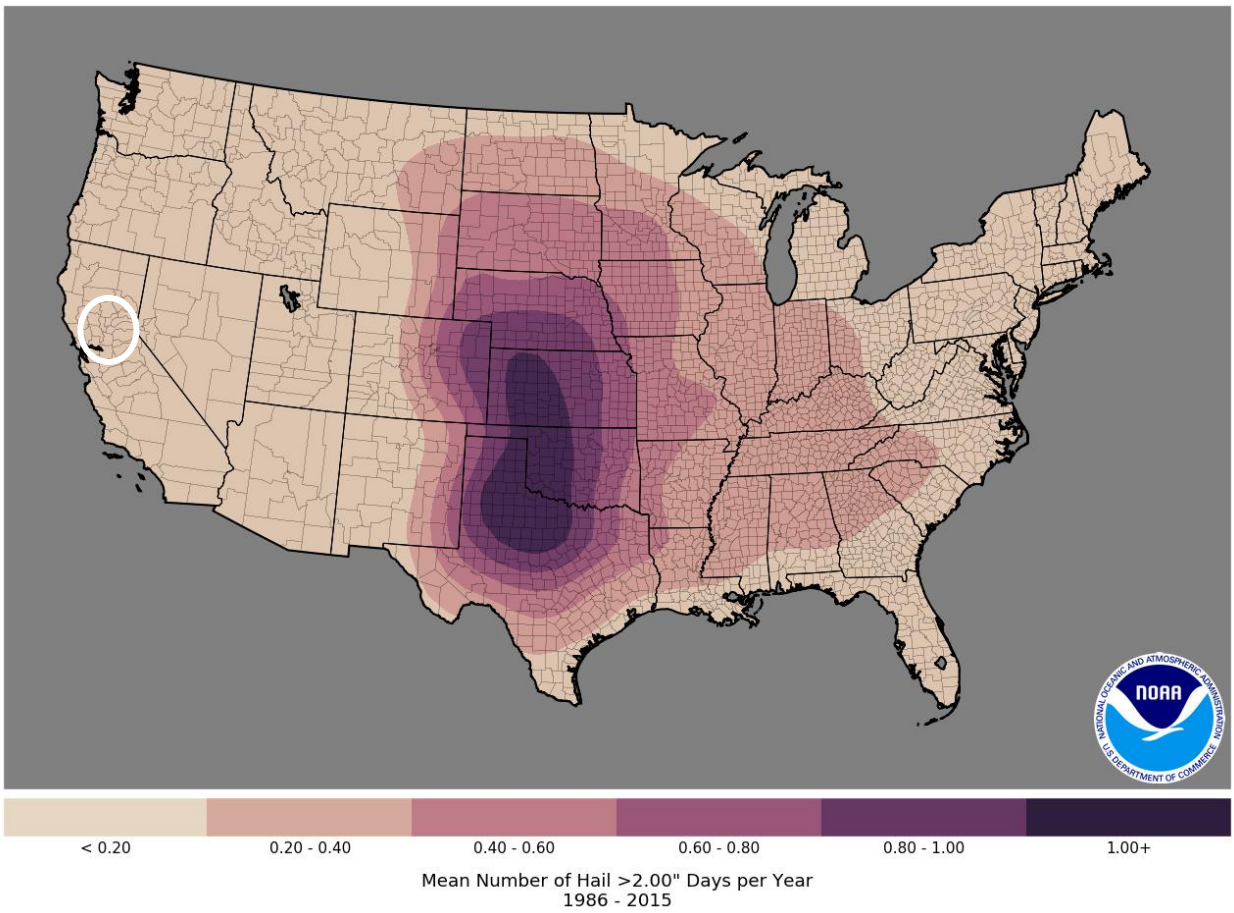
Average Diameter	Corresponding Household Object
1.75 inch	Golf-Ball
2.0 inch	Hen Egg
2.5 inch	Tennis Ball
2.75 inch	Baseball
3.00 inch	Teacup
4.00 inch	Grapefruit
4.5 inch	Softball

Source: National Weather Service

Location and Extent of Hail

Hail events can occur in any location of the County. All portions of the County are at risk to hail. Hail tends to be rare in California. There is no scale in which to measure hail, other than hail stone size as detailed above. The speed of onset of hail can be short, but accurate weather prediction mechanisms often let the public know of upcoming events. Duration of thunderstorms that can cause hail in California is often short, ranging from minutes to hours. Hail events last shorter than the duration of the total thunderstorm. The NWS tracks hail events. Figure 4-45 shows the average days each year where hail of greater than 1" in diameter occurred during a 20-year period from 1986 to 2015 (the most recent data available).

Figure 4-45 Sacramento County – Average Hail Days per Year (1986 to 2015)



Source: National Weather Service. Retrieved 12/15/2025.

Lightning

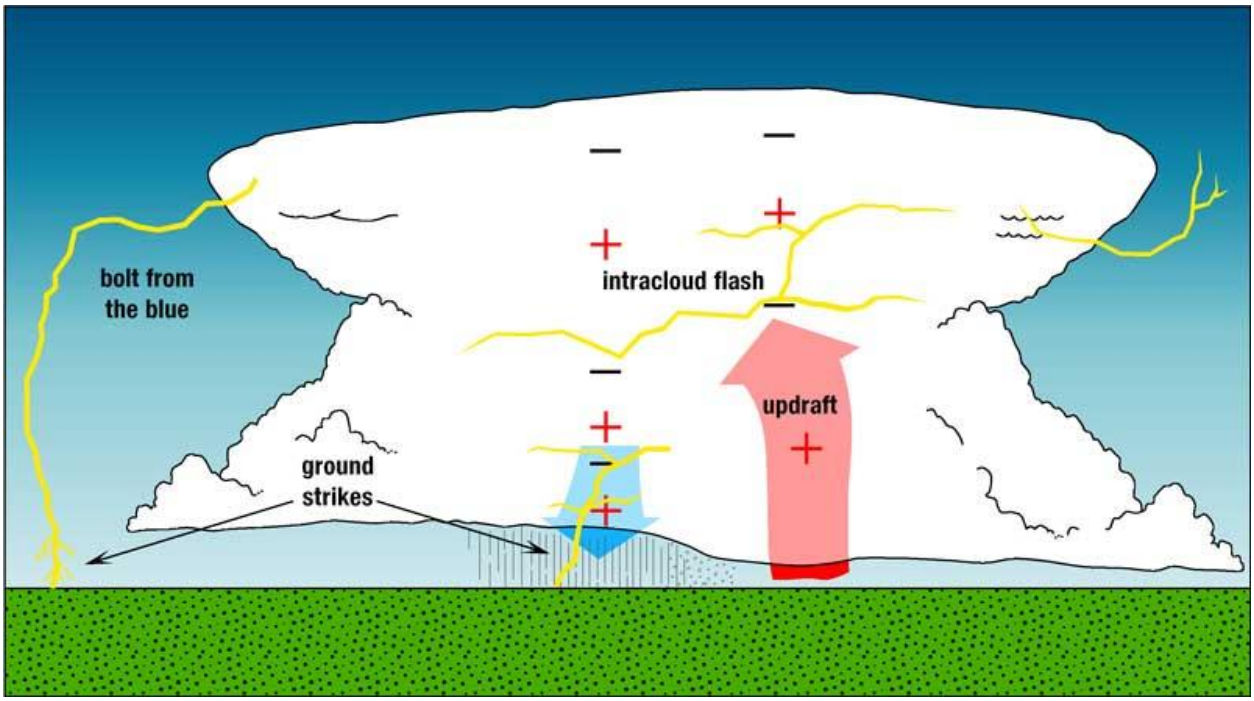
Lightning can occur throughout the County during storm events. Lightning is defined by the NWS as any and all of the various forms of visible electrical discharge caused by thunderstorms. Thunderstorms and lightning are usually (but not always) accompanied by rain. Cloud-to-ground lightning can kill or injure people by direct or indirect means. Objects can be struck directly, which may result in an explosion, burn, or total destruction. Or, damage may be indirect, when the current passes through or near an object, which generally results in less damage.

Intra-cloud lightning is the most common type of discharge. This occurs between oppositely charged centers within the same cloud. Usually it takes place inside the cloud and looks from the outside of the cloud like a diffuse brightening that flickers. However, the flash may exit the boundary of the cloud, and a bright channel, similar to a cloud-to-ground flash, can be visible for many miles.

Cloud-to-ground lightning is the most damaging and dangerous type of lightning, though it is also less common. Most flashes originate near the lower-negative charge center and deliver negative charge to earth. However, a large minority of flashes carry positive charge to earth. These positive flashes often occur during the dissipating stage of a thunderstorm's life. Positive flashes are also more common as a percentage

of total ground strikes during the winter months. This type of lightning is particularly dangerous for several reasons. It frequently strikes away from the rain core, either ahead or behind the thunderstorm. It can strike as far as 5 or 10 miles from the storm in areas that most people do not consider to be a threat (see Figure 4-46). Positive lightning also has a longer duration, so fires are more easily ignited. And, when positive lightning strikes, it usually carries a high peak electrical current, potentially resulting in greater damage.

Figure 4-46 Cloud to Ground Lightning



Source: National Weather Service

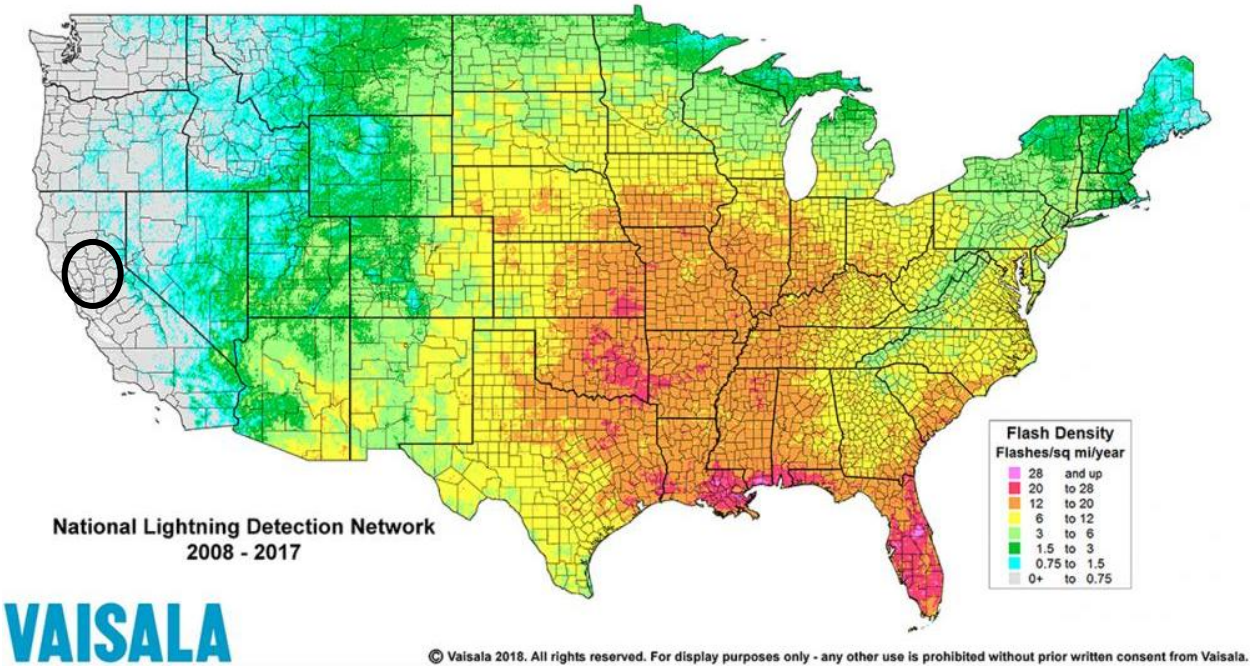
Lightning in the County is also a concern due to the number of fires that are started by lightning strikes. Wildfire is discussed in more detail in Section 4.3.17.

Location and Extent of Lightning

Lightning events can occur in any location of the County and are often associated with thunderstorms. All portions of the County are at risk to lightning. Lightning tends to be somewhat infrequent in the County, with more lightning events occurring in the higher elevations of the County, as discussed in the extent section below.

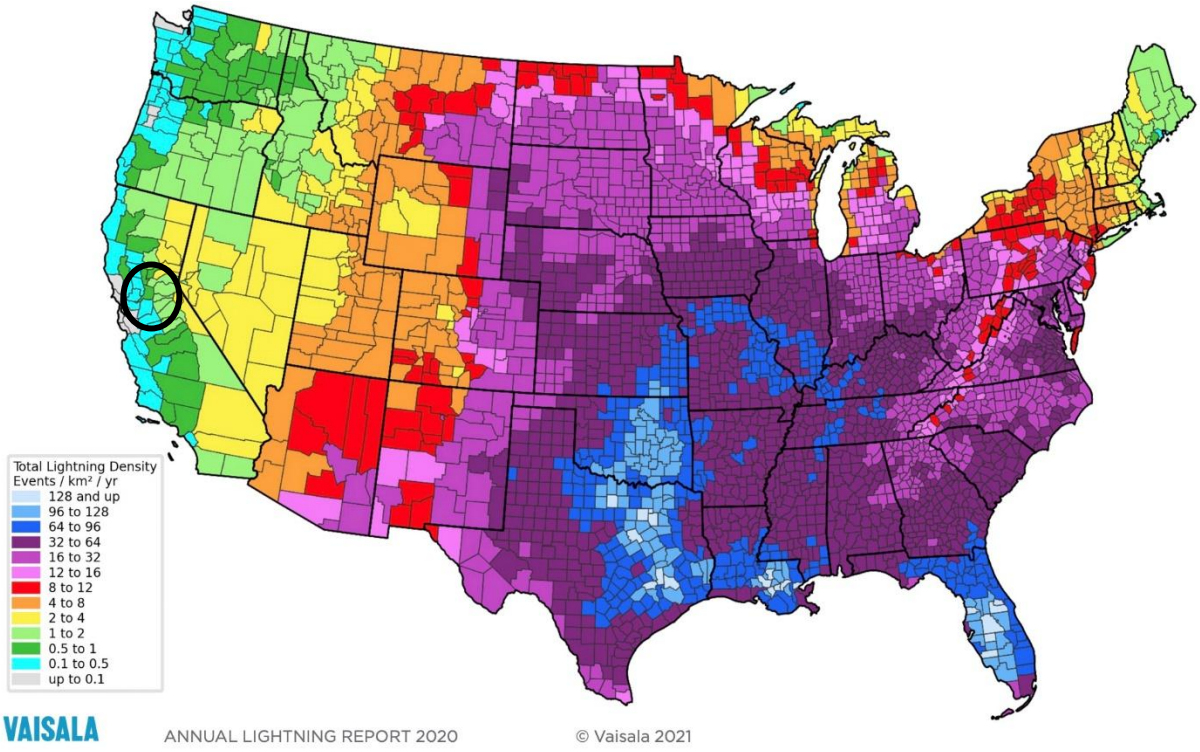
Lightning in the County can occur during thunderstorms. The speed of onset of thunderstorms that can cause lightning can be short, but accurate weather prediction mechanisms often let the public know of upcoming events. Duration of thunderstorms in California is often short, ranging from minutes to hours. Thunderstorms and lightning are rare in the County. Lightning can also occur in the County outside of a thunderstorm event. Vaisala maintains the National Lightning Detection Network. It tracks cloud to ground lightning incidences in the United States. Figure 4-47 shows lightning incidences in the County and the rest of the United States from 2008 to 2017 (the most recent long term tracking map available). Figure 4-48 shows a more recent lightning density by county map.

Figure 4-47 Sacramento County – Lightning Incidence Map 2008 to 2017



Source: Vaisala National Lightning Detection Network. Retrieved 12/15/2025.

Figure 4-48 Sacramento County – Average US Total Lightning Density per County 2015-2019



Source: Vaisala National Lightning Detection Network. Retrieved 12/15/2025.

Past Occurrences

Disaster Declaration History

A search of FEMA and Cal OES disaster declarations turned up multiple events. Heavy rains and storms have caused flooding in the County. Events where flooding and heavy rains and storms resulted in a state or federal disaster declaration are shown in Table 4-36.

Table 4-36 Sacramento County – Disaster Declarations from 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: FEMA, Cal OES

In addition, there have been USDA Secretarial Disaster Declarations in Sacramento County. As shown in Table 4-6, there have been 4 excessive rain/high winds/cold temperatures/ hail declarations. None of these declarations have occurred since 2021.

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. A summary of these events is shown in Table 4-37.

*Table 4-37 NCDC Severe Weather Events in Sacramento County 1950-1/1/2026**

Event Type	Number of Events	Deaths	Deaths (indirect)	Injuries	Injuries (indirect)	Property Damage	Crop Damage
Hail	9	0	0	0	0	$111,030	$0
Heavy Rain	29	0	0	1	0	$365,000	$50,000
Lightning	1	0	0	0	0	$150,000	$0
Winter Storm	2	0	0	0	0	$0	$0
Total	**41**	**0**	**0**	**1**	**0**	**$626,030**	**$50,000**

Source: NCDC

*Note: Losses reflect totals for all impacted areas, some of which fell outside of Sacramento County

Hazard Mitigation Planning Committee 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 HMPC noted multiple events since the previous LHMP. It was noted that many of these events were also flood events that are discussed in the Past Occurrences in Section 4.3.11.

February 2026: Multiple Pacific storms, including atmospheric rivers, have heightened flooding concerns. Examples:

- February 19–20, 2026: Widespread rain (quarter- to half-inch in the valley, up to 1 inch in foothills), low snow levels, and bands of moderate/heavy rain causing soaked conditions in eastern Sacramento County and along routes like Jackson Highway.
- Late February 2026: Additional systems with 1–3 inches of rain in Northern California, including the I-5 corridor and Sacramento area, on already saturated ground—leading to higher flooding risks, potential urban/localized flooding, and watches/warnings.
- These have included cold systems with valley rain, wind gusts, power outage risks, and concerns for small streams/creeks.

Late December 2025 – Early January 2026: Back-to-back atmospheric rivers (including a strong one around New Year's) brought heavy rain and a soggy start to 2026. Sacramento County saw localized flooding, road closures (e.g., Sorento Road), water rescues, and urban ponding from repeated 1–several inch rain events.

December 2022 – March 2023 (2022–2023 California floods): A prolonged series of 9+ atmospheric rivers hammered Northern California, including Sacramento County, which was one of the hardest-hit areas statewide. Key impacts included:

- Heavy rain totals (e.g., Sacramento area saw accumulations contributing to saturated soils and repeated events).
- Localized flooding, road inundations (e.g., near the Sacramento River and low-lying areas), evacuations, and infrastructure strain.
- Five deaths reported in Sacramento County from the December–January portion alone (the highest county total in the state).
- Federal disaster declarations covered Sacramento County, with property damage and power outages widespread.
- This was described as a "dramatic flood year" with back-to-back storms overwhelming drainage in urban and more rural parts of the County.

During this event, in January of 2023, there were a total of three drownings that occurred in Sacramento County during/following the New Years flood of Jan 1-4, 2023. There were two drownings adjacent to Hwy 99 near Dillard Road Jan 1-4, and another one on Wed. Jan 4 on New Hope Road west of Orr Road between Galt and Thornton. There were dozens of vehicles stranded on Hwy 99 and Dillard Rd. with 150 vehicles requiring towing after being stranded. The third body was found in a vehicle that was submerged in water near New Hope and Orr roads in the Galt area.

October 23–27, 2021: A powerful category 5 atmospheric river delivered historic rainfall. Downtown Sacramento recorded 5.44 inches in a single day (October 24), shattering a one-day record from 1880. This caused widespread flooding, power outages, road closures, ash/debris flows from burn scars, and a flood advisory across the valley. It was one of the most intense single-day events in modern records for the area.

Late January 2021: An atmospheric river brought heavy precipitation to parts of Northern and Central California, with drenching rains and some flooding risks in the broader region. Sacramento saw notable rain, contributing to ponding and minor urban issues.

The HMPC noted some events of heavy rain and storm that caused agricultural impacts. The HMPC also noted that Sacramento County experiences localized heavy rains yearly. This creates potential flooding in localized areas within the County. Additionally, the County noted many of these past events are discussed in the Section 4.3.11 Flood: 1%/0.2% Annual Chance and Section 4.3.12 Flood: Localized Stormwater Flooding.

Events before 2021

April 4 to 5, 2020: The event was a 2-year event or less for most locations, with a few isolated locations with higher intensity. Total 2-day rainfall countywide was 0.8" - 3.0". Peak 24-hour rainfall countywide was 0.7" to 2.9". The 2-hour duration caused the greatest recurrence intervals, while the 6-hour duration gave the greatest recurrence intervals of the longer durations. Recurrence interval for the peak 6-hour duration was 0.3 to 13.9 years. Recurrence interval for the peak 2-hour duration was 0.4 to 44.3 years. Locations with greater recurrence intervals included Arcade Creek, the D-05 watershed, and part of the South Sacramento Streams Group watershed. Arcade Creek at ARC hit flood stage. Cosumnes River at Michigan Bar hit monitor stage. BOS District 3 saw the most service request calls with 93. Most calls were for street flooding and plugged culverts. There were a few reports of garage and home flooding.

February 25 to 27, 2019: The event was forecast to be an intense event but rainfall ended up being more gradual. Total 2-day rainfall countywide was 0.4" to 4.4". The 2-day duration caused the greatest recurrence intervals. Recurrence interval for the peak 2-day duration was 0.2 to 17.3 years. Areas within the urban part of the County saw the greatest recurrence intervals, above 5-years. Areas in the south and southeast part of the County saw recurrence intervals below 5-year. Arcade Creek at ARC hit flood stage. Dry Creek at Elkhorn hit flood stage.

December 16, 2018: Downtown Sacramento set a daily record for rainfall, 1.17 inches of rain, breaking the old record of 0.95 inches set in 2002.

January 8 and 9, 2018: The event was greater than a 2-year event, with many locations in the 10-year to 25-year range. Urban watersheds received 2 to 4 inches of rain, equating to annual recurrence of 20 to 80 years. Peak 24-hour rainfall countywide was 2.0" to 3.8". The 24-hour duration caused the greatest recurrence intervals. Recurrence interval for the peak 24-hour duration was 1.7 to 47.4 years. Shorter durations saw recurrence intervals generally less than a 10-year event. Locations with greater recurrence intervals included Arcade Creek, the D-05 watershed, and the lower portion of the South Sacramento Streams Group watershed. Arcade Creek at ARC hit flood stage.

February 2017 sequence of storms 2/2/2017 - 2/11/2017: A series of rainfall events occurred in early February 2017. Average rainfall countywide for the 10-day period was approximately 4.5". Based on rainfall, the overall recurrence interval within the County for the 10-day period was about a 2-year event. For shorter durations (less than 2-day), average recurrence intervals were in the 3-year to 11-year range. However, rainfall outside of the County in the Cosumnes River watershed caused the Cosumnes River at

Michigan Bar to approach or exceed flood stage three times during the event, on February 7th, 8th, and 10th. Michigan Bar had a peak flow on Feb. 10th of 49,700-cfs which correlates to an approximate 25-year event. Similar to the January event, impacted areas were in the North Delta, Point Pleasant, and Dry Creek. Locations that exceeded flood stage included Cosumnes River at Michigan Bar, Mokelumne River at Benson's Ferry, and Lambert Road at Snodgrass Slough. Dry Creek at Elkhorn exceeded monitor stage twice during the event. Lambert Road was over-topped. Structure flooding damage in the North Delta and Dry Creek areas was estimated at approximately $270,000.

January 2017 sequence of storms; 1/2/2017 - 1/12/2017 – A series of rainfall events occurred in early January 2017. Average rainfall countywide for the 10-day period was approximately 4.7". Based on rainfall, the overall recurrence interval within the County for the 10-day period was about a 2-year event. For shorter durations (less than 24-hrs.), average recurrence intervals were in the 5-year to 9-year range. However, rainfall and snow melt outside of the County in the Cosumnes River watershed caused the Cosumnes River at Michigan Bar to exceed monitor stage on January 4th, followed by flood stage twice (January 9th and 10th respectively) during the 10-day period. Peak flow at Michigan Bar on January 11th was 31,600-cfs, which correlates to an approximate 9-year event. Impacted areas included the North Delta, Point Pleasant, Wilton, and Dry Creek. Locations that exceeded flood stage included Cosumnes River at Michigan Bar, Mokelumne River at Benson's Ferry, Lambert Road at Snodgrass Slough, and Dry Creek at Elkhorn Blvd. Lambert Road was over-topped, causing flooding in the Point Pleasant area. RD 800 flood fought a boil near Wilton Road. Service requests exceeded 360 during the sequence of storms. Structure flooding damage in the North Delta and Dry Creek areas was estimated at approximately $300,000.

December 15, 2016: The event was an approximately 12-hour event that took place during the latter half of the day. Peak 12-hour rainfall countywide was 0.7" to 2.4". Peak 6-hour rainfall countywide was 0.6" to 2.1". The 6-hour duration caused the greatest recurrence intervals. Most locations reflected recurrence intervals between a 2-year and 10-year event, with some locations experiencing a greater recurrence interval. Recurrence interval for the peak 6-hour duration was 0.3 to 35.8 years. The lower South Sacramento Streams Group area saw the highest recurrence intervals of 8.2 - 35.8 year, followed by the D-05 watershed with recurrence intervals of 7.4 - 14.4 year. Arcade Creek at ARC hit flood stage.

October 14 to 16, 2016: 3-day rainfall depth countywide was 0.7" to 4.1". There was a 3-hour intense downpour on 10/16/2016 at about 11:00AM. The 3-hour downpour caused the greatest recurrence intervals. The recurrence interval in most places was a 5-year or less event. In a few locations, the recurrence interval ranged from a 9.6 to 48.3-year event. The most intense areas were near the American River corridor. Arcade Creek at ARC hit flood stage. There were 94 service requests calls consisting mostly of plugged inlets and street flooding. There was one report of residential flood damage.

December 21 and 22, 2015: Countywide rainfall totaled approximately 0.1 inch to 0.95 inches, and the rainfall intensity was less than a 2-yr event. The Department of Water Resources received 12 drainage service requests. No structure flooding was reported at this time. Cosumnes River hit monitor stage at Michigan Bar and is receding. The Natomas East Main Drain Canal hit monitor stage at pump station D15. Deer Creek hit monitor stage at Scott Road.

February 5 to 9, 2015: Countywide rainfall totaled approximately 1 inch to 3 inches and the rainfall intensity was equivalent to the 3-year storm event or less. The Department of Water Resources received

47 drainage service requests. The majority of calls were for localized street flooding and plugged drain inlets. No structure flooding was reported at this time. Three self-service sandbag sites were opened for the storm event; however, no sandbags were distributed. Arcade Creek hit monitor stage at Winding Way near the American River College, Cosumnes River hit monitor stage at Michigan Bar (stages in the river are still raising but are not expected to reach flood stage), and the Natomas East Main Drain Canal hit monitor stage at pump station D15. Deer Creek hit flood stage at Scott Road.

February 7-9, 2014: A large storm occurred in the County. Rainfall totals of up to 3.5" occurred. Upstream of Folsom Dam, 5" fell in the City of Auburn in Placer County. 73 calls were handled by the County for service requests.

May 5-6, 2013: Redevelopment of thunderstorms that were producing torrential rainfall over the urban areas of Sacramento caused several instances of roadway flooding across the area. Law enforcement reported roadway flooding at Exposition Blvd and Heritage Lane with a vehicle stuck in the roadway, two vehicles stuck in water near Arden and Hwy 160, roadway flooding near Watt Ave and Marconi Ave, as well as roadway flooding at H Street and 37th Street.

December 2, 2012: A series of consecutive heavy rainfall events caused creeks and streams to rise rapidly due to ground saturation. Reports of a trailer park flooded on Sunday due to rising creek levels along Arcade Creek. Winding Way (road) was reported as flooded in low lying areas as well. Damages included:

- 12 homes (6 homes confirmed, 6 homes high probability)
- 15 garages (8 garages confirmed, 5 garages high probability)
- 4 duplexes (eight residences)
- 29 apartments (2 within Auburn Villa MHP)
- 4 mobile/manufactured homes within Auburn Villa MHP
- 16 RVs within Auburn Villa MHP
- 30 vehicles

March 2011: Rain fell continually throughout the week, but the significant storm event began on the 24th. Rainfall totals only reached approximately 1" to 1.5" countywide on the 24th, but fell with high intensities at times on saturated watersheds which exacerbated impacts on stream levels. High winds helped dislodge debris to clog drain inlets. There were a total of 90 service request calls between 11 am on the 24th to 11 am on the 25th. Most calls were for plugged storm drains. There was one report of a flooded structure, but that was not confirmed.

1982-1983: The most rainfall ever recorded in one season in Sacramento was 37.62 inches, set during the 1982-83 rainy season, under the influence of a strong El Niño. This followed the wet season of 1981-82 (32.65 inches), making it the wettest two-year period on record in Sacramento. The most recent El Niño outbreak to saturate the Sacramento area was the 1997-98 water year, which received a whopping 32.25 inches of precipitation. Since rainfall records began in 1849-50, only eight other water years have received more.

1935: The record maximum one-hour rainfall was 1.65 inches, which fell during the evening of **April 7, 1935**. Thunderstorms in the area were responsible for the downpour with considerable street flooding reported. (Note: Hourly rainfall records are only available after 1903).

April 19 -20, 1880: The HMPC noted that the all-time record for rainfall during any 24-hour period in Sacramento was 7.24 inches on April 19-20, 1880. Streets were described as "having the appearance of miniature rivers." The rainstorm was also reported (colorfully) in such terms as "steady and business-like", "a perfect torrent", and "more like a cataract than an April shower."

January 1862: with 15.04 inches, was the wettest month on record. This took place before official government observations began. Precipitation records at that time were kept by two physicians, Dr. F.M. Hatch, a retired Army Surgeon, and his associate, Dr. T.M. Logan. Their records are believed to be reliable.

Likelihood of Future Occurrence

Highly Likely – Based on NCDC data and HMPC input, 41 heavy rain and storm incidents over a 75-year period (1950-2024) equates to a severe storm event almost every year. As noted, this database likely does not capture all heavy rain, hail, and lightning events. Severe weather is a well-documented seasonal occurrence that will continue to occur often in the Sacramento County Planning Area.

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

Climate Change and Heavy Rains and Storms

Climate change and its effect on extreme heat in the County has been discussed in the following sources:

- 2024 Sacramento County Climate Action Plan
- 2024 Climate Adaptation Study
- Cal-Adapt

2024 Sacramento County Climate Action 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 Figure 4-49, 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.

Figure 4-49 Sacramento County – Changes in Annual Average Precipitation and Extreme Precipitation

Annual Averages	Historic (1961-1990)	Medium Emissions Scenario		High Emissions Scenario	
		Mid-Century (2035-2064)	Late Century (2070-2099)	Mid-Century (2035-2064)	Late Century (2070-2099)
Precipitation (inches)	18.3	20.3	20.3	20.5	22.1
Extreme Precipitation Events[1] (#)	4	5	6	6	7

Note: # = number.

[1] The threshold for an extreme precipitation event in Sacramento County is 0.73 inches of precipitation over a two-day period.

Source: CEC 2020a, 2024.

Source: 2024 Sacramento County CAP

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. Noting this, the County may experience changes in the frequency and/or intensity of flood events, though the exact frequency, intensity, and duration of these events will vary annually.

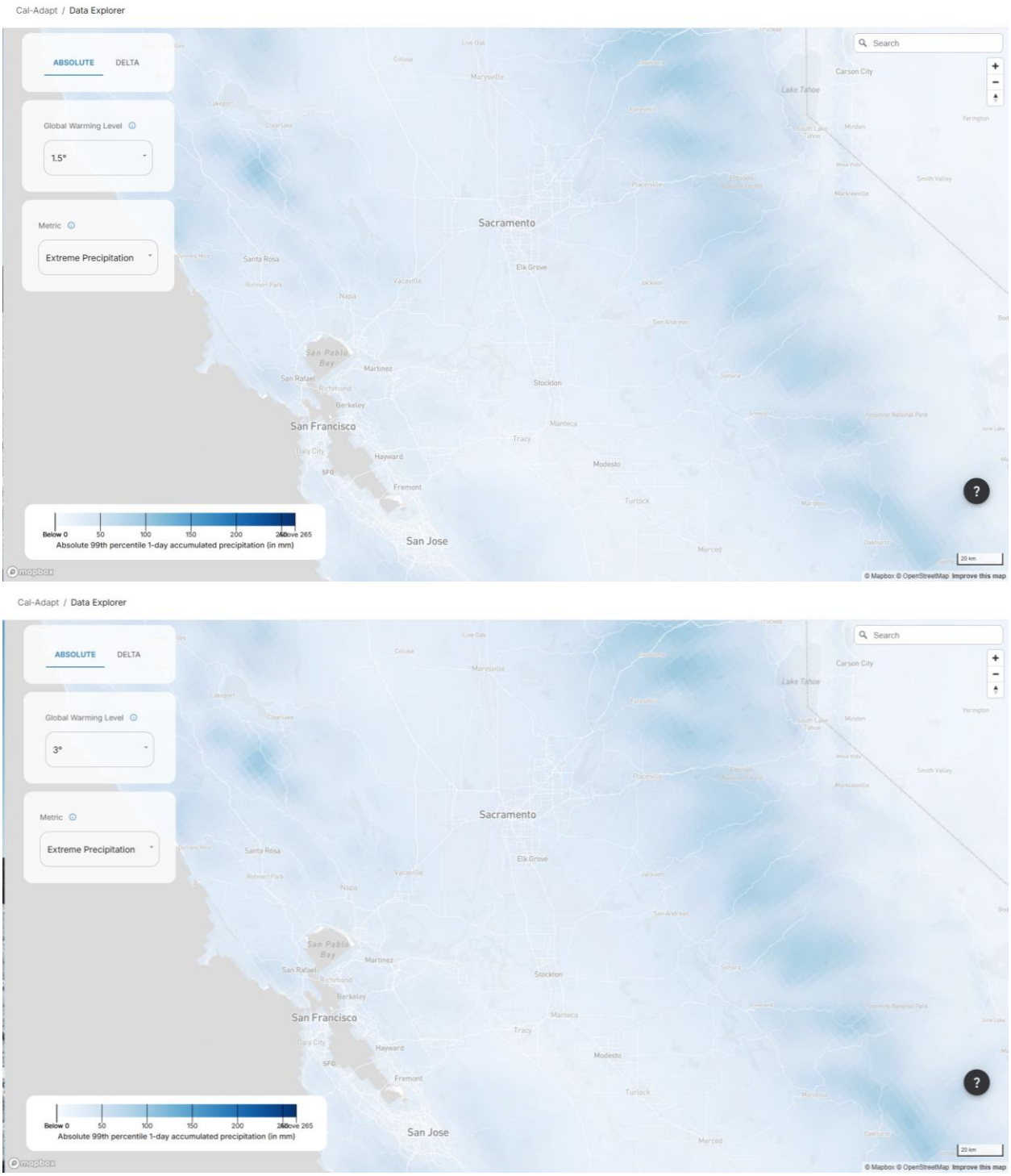
2024 Climate Adaptation Study

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 the County. The amount of lightning is not projected to change.

Cal Adapt

Cal-Adapt noted that, on average, the projections show little change in total annual precipitation in California. However, even modest changes would have a significant impact because California ecosystems are conditioned to historical precipitation levels and water resources are nearly fully utilized. Future heavy rain estimates from Cal-Adapt for the Sacramento County Planning are shown in Figure 4-50. These images show the average expected value for the chosen metric and at the selected Global Warming Level (GWL). The upper image shows the absolute 99th percentile 1-day accumulated precipitation under the 1.5°F GWL, while the lower images shows the 3.0°F GWL. The darker blue colors on the map show areas on increased additional precipitation.

Figure 4-50 Sacramento County– Absolute 99th Percentile 1-day Accumulated Precipitation (in mm) for 1.5°F and 3.0°F Scenarios



Source: Cal-Adapt – Precipitation: Decadal Averages Map. Retrieved 12/29/2025.

Vulnerability Assessment

Vulnerability—Medium

According to historical hazard data, heavy rains and storms, including hail and lightning, are an annual occurrence in the Sacramento County Planning Area. Heavy rains can cause both localized flooding and flooding in the floodplains. Atmospheric river storms, which have been more frequent in recent years, are of great concern as they can dump large amounts of water in single storms, or in back-to-back storms.

An assessment of a community's vulnerability to this hazard begins with an understanding of local exposure to unincorporated Sacramento County. This is included in the Local Concerns section below. After that, vulnerability is discussed in multiple sections that detail how this hazard can affect both the entire Sacramento County Planning Area as well as the unincorporated portions of Sacramento County. How the hazard affects the other participating jurisdictions can be found in their respective annexes to this LHMP Update. These sections below include assets at risk, impacts, and how future development may affect the vulnerability of the County to this hazard.

Local Concerns (unincorporated Sacramento County)

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

General Concerns

One of the primary concerns of the County to heavy rains and storms is the resulting flooding that occurs during extreme storm events. These include large flood events as detailed in the Flood: 1%/0.2% annual chance flood hazard section and the localized flooding that occurs following these storms. Heavy rains and atmospheric river storms can create both large scale and localized flooding in unincorporated Sacramento County, placing added pressure on aging drainage systems. Agricultural regions may experience access limitations for inspections and emergency response, as well as challenges managing livestock during significant storm events. These rural issues are most common in the southern portion of the County and Delta areas, where flooding impacts have been documented over multiple seasons. Localized flood problem areas in the unincorporated County are shown in Table 4-105. With the increased growth of the area, the lack of adequate drainage systems has become an increasingly important issue.

Agriculture Concerns

The Agricultural Commissioner noted the following local concerns from heavy rains and storms:

- **Recurrence flooding risk to the Cosumnes River corridor**: The January 2023 event demonstrated that the current levee system provides insufficient protection for agricultural lands in the Wilton, Galt, and Delta-fringe farming communities. The absence of upstream dam storage on the Cosumnes River means that large rain events translate rapidly into flood risk with limited warning time.
- **Sediment burial and long-term soil rehabilitation**: Sand and debris deposits from levee breaches require costly remediation and may render prime agricultural land unproductive for multiple seasons.

- **Agricultural inspection and emergency services access**: Road closures during and after storm events impair the Agricultural Commissioner's ability to conduct time-sensitive pest detection, pesticide use enforcement, and emergency crop assessment activities.
- **Livestock and animal evacuation**: Agricultural producers with large livestock operations require advance coordination and road access to move animals safely. The Ag Pass Program helps address this issue, but ongoing training of agricultural producers and coordination are needed, as well as pre-planned evacuation sites.

Local concerns for each of the other participating jurisdictions can be found under the Local Concerns heading in each respective jurisdictional annex to this LHMP Update.

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 for the Sacramento County Planning Area and unincorporated Sacramento County.

Additionally, for each hazard in the FEMA National Risk Index in Sacramento County, the relevant portions of the hazard analysis done by FEMA is presented below. This includes the Hazard Risk Index Rating, Expected Annual Loss Values, Exposure Values, and the Historic Loss Ratio Rating. These are presented for the Sacramento County Planning Area as a whole.

People and Populations

All populations in the Sacramento County Planning Area 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, that 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 in Section 4.3.11) and those who live in and near localized flooding areas floodplains (discussed in further detail in the Flood: Localized Stormwater Flooding in Section 4.3.12).

Structures

Structures in the Sacramento County Planning Area have some risk to heavy rains and storms. Structures built to modern building codes are built to withstand heavy rains and storms (including thunderstorm 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, and community lifelines 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 can impact operations. Local roads, streets, and bridges can be impacted resulting in closures restricting traffic flow in the Planning Area. 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 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 storm and flood events.

FEMA NRI Hazard Vulnerability Assessment

The FEMA NRI was queried for additional specific data on Sacramento County's vulnerability to Heavy Rains and Storms. The NRI contains data and analysis for 18 separate natural hazards. The NRI hazard related to Sacramento County's Heavy Rains and Storms are: hail and lightning. According to the NRI, there have been 3 hail events between the years 1986-2021 with an average of 0.1 events per year and 21 lightning events on record between the years 1991-2012, with an average of 0.9 events per year. As shown in Table 4-38, hail could cause a total of $17,250 in expected annual losses, with a historic loss rating of very low. Lightning could cause a total of $41,782 in expected annual losses with a historic loss ratio rating of very low. Hail and lighting, have a very low rating for both social vulnerability and community resilience, with a risk index score of 17.8 out of 100 for hail and 27 out of 100 for lightning.

Table 4-38 Sacramento County Planning Area – Hail and Lightning Vulnerability Ratings from FEMA NRI

NRI Hazard	Hazard Risk Index Rating*	Expected Annual Loss Values (total)**	Exposure Value (total)***	Historic Loss Ratio Rating
Hail	17.8	$17,250	$18,646,183,819,449	Very Low
Lightning	27	$41,782	$744,034,861,428	Very Low

Source: FEMA NRI Report, retrieved 12/15/2025.

*Hazard Risk Index is calculated using data for only a single hazard type, and reflect a communities expected annual loss value, community risk factors, and the adjustment factor used to calculate the risk value.

**Expected annual loss represents the average economic loss in dollars resulting from natural hazards each year.

***Exposure is a natural hazard consequence factor that is the representative value of buildings, populations, or agriculture potentially exposed to a natural hazard occurrence.

Additional information on the FEMA NRI can be found in Section 4.2 and Appendix G.

Impacts from Heavy Rains 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 lightning strikes to critical infrastructure and people. Lightning can also cause wildfires and urban fires to occur. Landslides 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 have had the greatest impact on the Planning Area. The risk and vulnerability associated with these secondary hazards are discussed in other sections of this Plan (Section 4.3.11 Flood: 100/500-year, Section 4.3.12 Flood: Localized Stormwater – specifically in the localized flood areas shown on Table 4-105, Section 4.3.8 Dam Failure, and Section 4.3.13 Landslide).

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

- Climate change is likely to exacerbate future heavy rain and storm conditions and associated impacts and vulnerability of the County to flooding. This was discussed in greater detail in the Climate Change and Heavy Rains and Storms 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 County. There are 129 areas where the unincorporated County is expected development to occur in the next 5 years. Population is expected to increase for Sacramento County; however, the vulnerability may change depending on changes to the makeup of more vulnerable populations. Certain vulnerable populations, such as the unsheltered, outdoor workers, and others could experience disproportional effects from this hazard. and should be addressed as the County continues to grow. Thus, changes in population and population patterns may or may not increase the impacts and vulnerability of the County 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. 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 County. There are 129 areas where the

unincorporated County is expected development to occur in the next 5 years. Building codes in the County ensure that new development is built to current building standards, which should reduce the risk to future development in the County from heavy rains and storms. Land-use planning and development review can reduce future vulnerability through appropriate site planning and application of applicable drainage, stormwater-management, and development standards. New critical facilities such as communications towers and others should be built to withstand hail damage, lightning, and thunderstorm winds. With adherence to development standards, changes in land use and development will not likely increase the impacts and associated vulnerabilities of the County to this hazard.

Future Development

Future development considerations should be ongoing and proactive. Ensuring that comprehensive land use planning is conducted, regulatory requirements, such as building codes, are followed, and varying needs for different demographic groups with intersecting identities that reside within the County are considered can help make for a more resilient community.

4.3.5. Severe Weather: High Winds and Tornadoes

Hazard Profile

This hazard profile contains multiple sections that detail how this hazard can affect the Sacramento County Planning Area. These sections include a hazard/problem description; description of location and extent; past occurrences of this hazard; likelihood of future occurrences; and how climate change can affect or influence this hazard.

Hazard/Problem Description

High Winds

High winds, often accompanying severe storms and thunderstorms, can cause significant property and crop damage, threaten public safety, and have adverse economic impacts from business closures and power loss. 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. These winds may occur as part of a seasonal climate pattern or in relation to other severe weather events such as thunderstorms.

Straight-line winds may also exacerbate existing weather conditions by increasing the effect on temperature and decreasing visibility due to the movement of particulate matters through the air, as in dust and snowstorms. The winds may also exacerbate fire conditions by drying out the ground cover, propelling fuel around the region, and increasing the ferocity of exiting fires. These winds may damage crops, push automobiles off roads, damage roofs and structures, and cause secondary damage due to flying debris.

Location and Extent

The entire Planning Area is subject to significant, non-tornadic (straight-line), winds. Each area of the County 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 measure that relates wind speed to observed conditions at sea or on land. Its full name is the Beaufort wind force scale. Figure 4-51 shows the Beaufort wind scale.

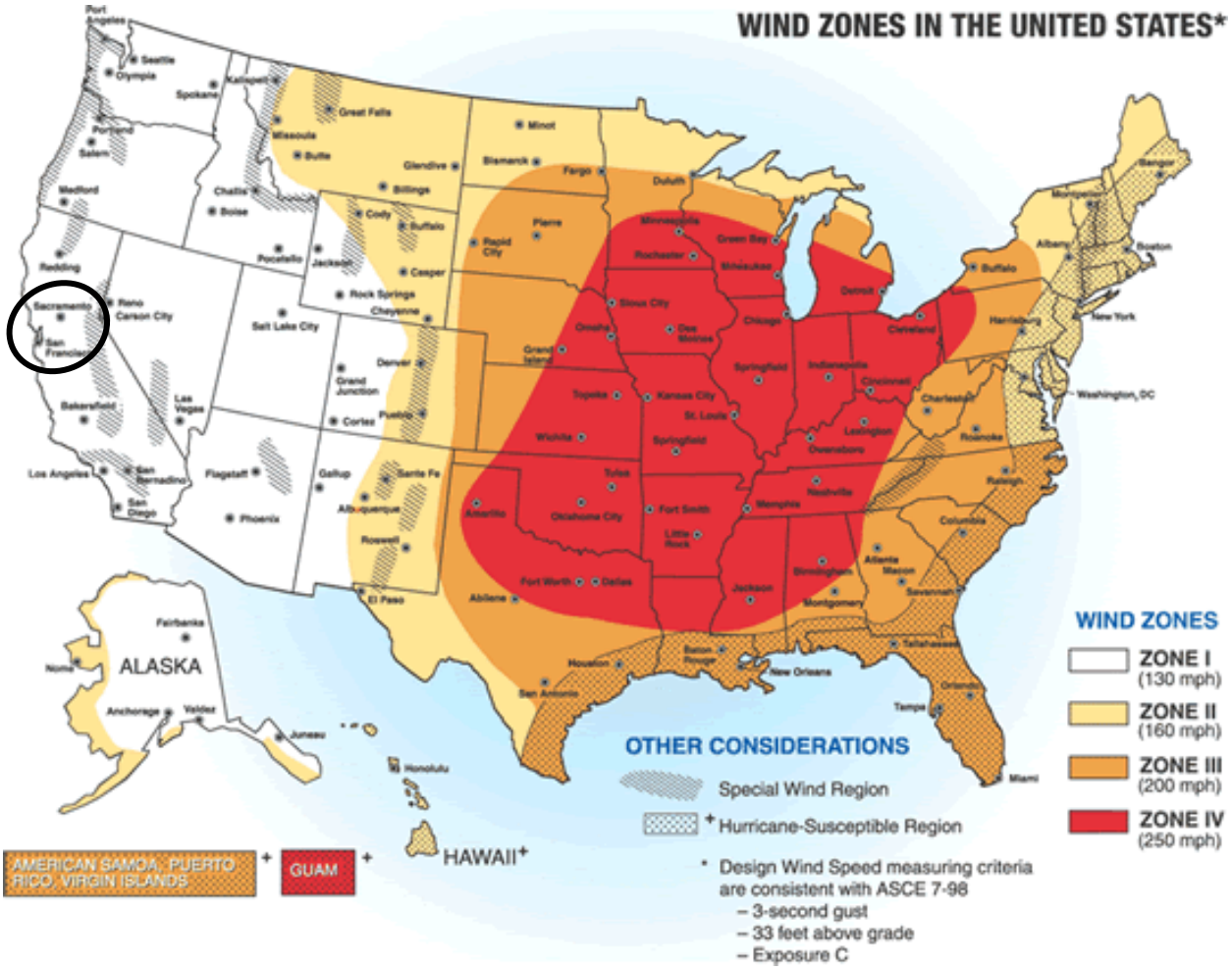
Figure 4-51 Beaufort Wind Scale

Beaufort Number	Wind Speed (miles/hour)	Wind Speed (km/hour)	Wind Speed (knots)	Description	Wind Effects on Land
0	< 1	< 1	< 1	Calm	Calm. Smoke rises vertically.
1	1-3	1-5	1-3	Light Air	Wind motion visible in smoke.
2	4-7	6-11	4-6	Light Breeze	Wind felt on exposed skin. Leaves rustle.
3	8-12	12-19	7-12	Gentle Breeze	Leaves and smaller twigs in constant motion.
4	13-18	20-28	11-16	Moderate Breeze	Dust and loose paper are raised. Small branches begin to move.
5	19-24	29-38	17-21	Fresh Breeze	Small trees begin to sway.
6	25-31	39-49	22-27	Strong Breeze	Large branches are in motion. Whistling is heard in overhead wires. Umbrella use is difficult.
7	32-38	50-61	28-33	Near Gale	Whole trees in motion. Some difficulty experienced walking into the wind.
8	39-46	62-74	34-40	Gale	Twigs and small branches break from trees. Cars veer on road.
9	47-54	75-88	41-47	Strong Gale	Larger branches break from trees. Light structural damage.
10	55-63	89-102	48-55	Storm	Trees broken and uprooted. Considerable structural damage.
11	64-72	103-117	56-63	Violent Storm	Widespread damage to structures and vegetation.
12	> 73	> 117	> 64	Hurricane	Considerable and widespread damage to structures and vegetation. Violence.

Source: National Weather Service

Figure 4-52 depicts wind zones for the United States. The map denotes that Sacramento County falls into Zone I, which is characterized by high winds of up to 130 mph.

Figure 4-52 Wind Zones in the United States

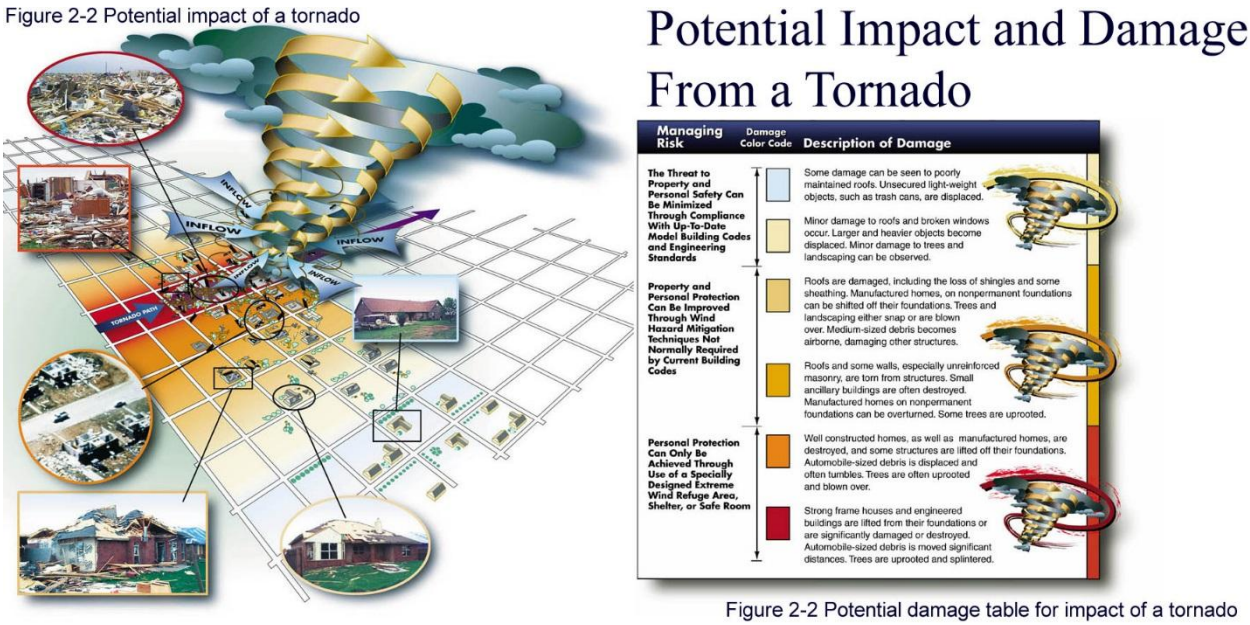


Source: FEMA

Tornadoes

Tornadoes and funnel clouds can also occur during these types of severe storms. Tornadoes are another severe weather hazard that, though rare, can affect anywhere within the Sacramento County Planning Area, but most often in the lower elevations, and primarily occur during the storm season in the late fall and early spring. Tornadoes form when cool, dry air sits on top of warm, moist air. 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 are the most powerful storms that exist. They can have the same pressure differential across a path only 300 yards wide or less as 300-mile-wide hurricanes. Figure 4-53 illustrates the potential impact and damage from a tornado.

Figure 4-53 Potential Impact and Damage from a Tornado



Source: FEMA: Building Performance Assessment: Oklahoma and Kansas Tornadoes

Location and Extent

Tornadoes, while rare, can occur at any location in the County. All areas of the County are at risk to tornadoes.

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 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. Table 4-39 shows the wind speeds associated with the original Fujita scale ratings and the damage that could result at different levels of intensity. Table 4-40 shows the wind speeds associated with the Enhanced Fujita Scale ratings.

Table 4-39 Original Fujita Scale

Fujita (F) Scale	Fujita Scale Wind Estimate (mph)	Typical Damage
F0	< 73	Light damage. Some damage to chimneys; branches broken off trees; shallow-rooted trees pushed over; sign boards damaged.
F1	73-112	Moderate damage. Peels surface off roofs; mobile homes pushed off foundations or overturned; moving autos blown off roads.
F2	113-157	Considerable damage. Roofs torn off frame houses; mobile homes demolished; boxcars overturned; large trees snapped or uprooted; light-object missiles generated; cars lifted off ground.

Fujita (F) Scale	Fujita Scale Wind Estimate (mph)	Typical Damage
F3	158-206	Severe damage. Roofs and some walls torn off well-constructed houses; trains overturned; most trees in forest uprooted; heavy cars lifted off the ground and thrown.
F4	207-260	Devastating damage. Well-constructed houses leveled; structures with weak foundations blown away some distance; cars thrown, and large missiles generated.
F5	261-318	Incredible damage. Strong frame houses leveled off foundations and swept away; automobile-sized missiles fly through the air in excess of 100 meters (109 yards); trees debarked; incredible phenomena will occur.

Source: National Oceanic and Atmospheric Administration Storm Prediction Center, www.spc.noaa.gov/faq/tornado/f-scale.html

Table 4-40 Enhanced Fujita Scale

Enhanced Fujita (EF) Scale	Enhanced Fujita Scale Wind Estimate (mph)
EF0	65-85
EF1	86-110
EF2	111-135
EF3	136-165
EF4	166-200
EF5	Over 200

Source: National Oceanic and Atmospheric Administration Storm Prediction Center, www.spc.noaa.gov/faq/tornado/ef-scale.html

It is difficult to predict a tornado or the conditions that preclude a tornado far in advance. Tornadoes can strike quickly with very little warning. In California it is rare for tornadoes to exceed EF3 magnitude. Most tornadoes that touch down are not long lived.

Past Occurrences

Disaster Declaration History

There have been no past federal or state disaster declarations due to high winds or tornadoes, according to Table 4-4.

NCDC Events

The NCDC data recorded 109 high wind, 7 funnel cloud, and 15 tornado incidents for Sacramento County since 1950. Of the tornado events, 1 was an F2, 3 were EF1 or F1, and 11 were EF0 or F0. A summary of these events is shown in Table 4-41.

*Table 4-41 NCDC High Wind and Tornado Events in Sacramento County 1950-1/11/2025**

Event Type	Number of Events	Deaths	Deaths (indirect)	Injuries	Injuries (indirect)	Property Damage	Crop Damage
Funnel Cloud	7	0	0	0	0	$0	$0
High Wind	55	3	0	0	0	$9,530,000	$39,000

Event Type	Number of Events	Deaths	Deaths (indirect)	Injuries	Injuries (indirect)	Property Damage	Crop Damage
Strong Wind	44	4	2	2	1	$3,827,000	$0
Thunderstorm Winds	10	0	0	0	0	$70,000	$5,000
Tornado	15	0	0	0	0	$1,505,000	$0
Total	**131**	**7**	**2**	**2**	**1**	**$14,932,000**	**$44,000**

Source: NCDC

Hazard Mitigation Planning Committee 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 HMPC noted the following events that have occurred since the previous LHMP.

Mid-February 2026: A series of cold Pacific storms (including the "coldest of the season") delivered widespread rain/snow with southerly winds gusting 35–55 mph (up to 45–50 mph in the valley, higher in foothills/mountains). Wind advisories were in effect (e.g., Monday through Wednesday/Thursday in mid-February), with risks of downed limbs, power outages, blowing snow in higher areas, and exacerbated road/flood conditions. Gusts around 45 mph were common, with some reports of 45–55 mph peaks. Thunderstorms added brief stronger gusts. As of late February, active patterns continue with wind contributing to ongoing hazards.

Late December 2025 – Early January 2026: Atmospheric rivers brought soggy conditions with gusty winds (30–50 mph peaks), contributing to power outages, tree hazards, and combined rain/wind flooding risks.

September 2, 2025: A localized high-wind/downburst event struck eastern Sacramento County (e.g., Carmichael area). Winds reached up to 70 mph in a narrow swath (about 2.5 miles long), toppling trees, damaging homes/fences, knocking down power lines, and causing outages for over 11,000 SMUD customers at peak. Lightning accompanied, worsening impacts.

February 4–5, 2024: A major winter storm brought heavy rain and strong winds. Sacramento International Airport recorded a gust of 64 mph, with sustained winds around 43 mph and gusts to 59 mph at nearby sites like McClellan Airfield. This caused property damage (around $400,000 reported), downed trees/power lines, and outages across the region.

Late February – March 2023: Additional atmospheric rivers brought gusts of 40–60 mph (over 80 mph in hills), causing widespread tree/power line damage, outages, and flooding amplification. The Agricultural Commissioner noted structural impacts to temporary farm structures and agricultural shade cloth. Wind damage to orchards and vineyards causes broken branches, canes, and stakes. This kind of damage requires labor-intensive structural repair during dormant pruning windows. NOAA National Centers for Environmental Information (NCEI) Storm Events Database documents numerous high wind events

affecting Sacramento County during this period. A confirmed EF-0 (weakest on the Enhanced Fujita scale) tornado was documented in the Sacramento region in March 2023 during the atmospheric river sequence, though direct agricultural damage was not formally reported to the Agricultural Commissioner's Office from this specific event. Sacramento County Regional Parks noted downed trees, trail damage, and the Gibson Ranch Stable that collapsed during these events.

Late December 2022 – **Early January 2023** (2022–2023 California floods series): Multiple "bomb cyclone"-like atmospheric rivers brought strong winds (gusts 50–70 mph in some reports, up to 80–100 mph in hills/mountains). Sacramento County experienced power outages, tree damage, and evacuations tied to combined rain/wind impacts. Winds in the 50–60 mph range were noted during peaks, contributing to five deaths in the County (mostly flood-related but wind played a role in hazards). Sacramento County Regional Parks noted that there was trail damage and flooding in many of the lower lying park areas. Many trees in and around the County were downed, with many on or near levees on the Lower American River. These can be seen on Figure 4-54. Many of these were mature trees. When some of these trees were downed, the root ball was removed, leaving large holes in the levee that needed to be filled to maintain levee integrity.

Figure 4-54 January 2023 Storm Damage on Levees and Other Areas



Source: Sacramento County Public Works, American River Flood Control District

October 23–25, 2021: An exceptional early-season atmospheric river (Category 5) delivered heavy rain alongside strong winds. Sacramento Valley saw gusts up to 40–50 mph (higher in hills/foothills, 50–80 mph), leading to downed trees, power outages, urban flooding, and debris flows from burn scars. It set rainfall records but winds added to infrastructure strain.

January 26–29, 2021: A strong atmospheric river brought gusty winds across Northern California, with valley gusts contributing to widespread power outages (over 100,000 affected in the broader Sacramento region via SMUD/PG&E). Tree falls and debris caused damage; this was part of a multi-day storm sequence with high winds exacerbating flooding risks.

Events before 2021

The 2020 Planning Team for the County noted the following events for the previous LHMP:

- **January 19th, 2016:** Part of a tree fell onto Saverien Drive, blocking the right turn lane. This was a result of rainfall and 40 mph winds.
- **December 2015:** there was a tornado that formed over Folsom Lake and impacted El Dorado County
- **Dec 30th, 2014:** High winds occurred, causing a power outage to about 344,000 people.
- **Dec 11th, 2014:** Heavy rainfall & winds of about 50-60 mph.
- **March 29, 2014**: A Pacific front moved through interior Northern California March 28-30th which brought rain and heavy snow to the area. A supercell strengthened in the Central Sacramento Valley that afternoon that eventually produced an EF0 tornado near Nord, CA that evening.
- **Oct 3rd & 27th 2013:** High winds occurred. Gusts of 35 – 50 mph.
- **April 8th and 9th 2013:** A strong trough that had brought rain and snow to interior northern California, had moved eastward of the area on Monday, April 8th. This brought strong, gusty northerly winds in its wake across the area, mainly the Central Valley, ridge tops, and wind prone mountain canyons. The strongest periods of winds were on Monday, April 8th from late morning into mid-afternoon. Breezy conditions occurred again on Tuesday, April 9th, though winds were not quite as strong. Sustained winds on Monday reached 25-35 mph with gusts as high as around 50 mph. Sustained winds on Tuesday were 20-30 mph with gusts as high as around 40 mph. Over 20,000 people were reported to have lost power due to falling trees and wind (though not all in Sacramento County).
- **October 22nd @ 3:45 2012:** A tornado occurred in Elk Grove, which caused winds of 90-100 mph.

Likelihood of Future Occurrence

Highly Likely/Occasional – Based on NCDC data and HMPC input, 129 wind and tornado incidents over a 74-year period (1950-2024) equates to a severe wind/tornado event every year. High winds are a well-documented seasonal occurrence that will continue to occur annually in the Sacramento County Planning Area. Tornadoes tend to be rare in the County and warrant a likelihood of future occurrence rating of occasional.

Climate change may increase the chance of future occurrence as well as future impacts. More information on climate change and high winds and tornadoes can be found in the next section. More information on future impacts can be found in the Future Conditions/Future Development section of the Vulnerability Assessment below.

Climate Change and High Winds

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. The 2024 Sacramento County CAP did not include information on climate change and high winds.

Vulnerability Assessment

Vulnerability—Medium

The Sacramento County Planning Area 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 Planning Area has some measure of vulnerability to high winds and tornadoes. An assessment of a community's vulnerability to this hazard begins with an understanding of local exposure to unincorporated Sacramento County. This is included in the Local Concerns section below. After that, vulnerability is discussed in multiple sections that detail how this hazard can affect both the entire Sacramento County Planning Area as well as the unincorporated portions of Sacramento County. How the hazard affects the other participating jurisdictions can be found in their respective annexes to this LHMP Update. These sections below include assets at risk, impacts, and how future development may affect the vulnerability of the County to this hazard.

Local Concerns (unincorporated Sacramento County)

The unincorporated County has specific concerns 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 County noted that while there has been some scattered record keeping describing the impacts of windstorms, there is little information to indicate that straight-line winds are a major problem. Trees may be downed in the County. As detailed in the wildfire discussion, one of the most significant concerns in the County is the effect of high winds in fueling wildfires. Even before a wildfire starts, high winds can cause local utilities to put PSPS events into effect.

Agriculture Concerns

The Agricultural Commissioner noted the following local concerns from high winds and tornadoes:

- **Orchard and vineyard structural damage**: High winds cause canopy damage, broken trellis systems, and fallen trees in Sacramento County's extensive wine grape and pear acreage. Structural repairs are labor-intensive and costly during compressed dormant-season windows.

- **Debris damage to farm equipment and temporary structures**: High-tunnel greenhouses, shade cloth systems, and portable equipment used in nursery and specialty crop operations are vulnerable to wind damage.
- **Tornado risk is historically low but not negligible**: NOAA documents occasional tornado touchdowns in the Sacramento Valley, primarily associated with atmospheric river cold frontal passages. While EF-0 to EF-1 events are most common, even brief tornadoes can cause concentrated destruction to irrigation infrastructure, outbuildings, and crop canopies.

Local concerns for each of the jurisdictions can be found under the Local Concerns heading in each respective jurisdictional annex to this LHMP Update.

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 for the Sacramento County Planning Area and unincorporated Sacramento County.

Additionally, for each hazard in the FEMA National Risk Index in Sacramento County, the relevant portions of the hazard analysis done by FEMA is presented below. This includes the Hazard Risk Index Rating, Expected Annual Loss Values, Exposure Values, and the Historic Loss Ratio Rating. These are presented for the Sacramento County Planning Area as a whole.

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, residents who live in mobile homes, residents who live in older buildings not built to withstand high winds and that may not have areas to shelter, such as below ground floors, and those working or caught outdoors during a wind or tornado event.

Structures

All structures in the Sacramento County Planning Area have some measure of risk from high wind and tornadoes. Though most structures are built to withstand winds, high wind speeds can still cause damages in the Planning Area. 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 Planning Area can be damaged causing power outages and falling trees can cause damage to nearby structures. High winds are also a cause for PSPS events to be declared, causing power outages to occur. 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 California.

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 Sacramento County Planning Area. Though rare, a tornado could cause damage to virtually all facilities in the tornado touchdown path. Winds can cause 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 cause levee and streambank erosion and 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.

FEMA NRI Hazard Vulnerability Assessment

The FEMA NRI was queried for additional specific data on Sacramento County's vulnerability to High Winds and Tornadoes. The NRI contains data and analysis for 18 separate natural hazards. The NRI hazard related to Sacramento County's High Winds and Tornadoes are: strong winds and tornadoes. According to the NRI, there have been 1 wind events of record between the years of 1986-2021, with an average of 0 events per year and 14 tornado events on record between the years 1950-2021, with an average of 0.1 events per year. As shown in Table 4-42, strong winds could cause a total of $3,567 in expected annual losses with a historic loss ration rating of very low. Tornadoes could cause a total of $11,918,373 in expected annual losses with a historic loss ratio rating of very low. Strong winds have a very low rating, and tornadoes have a relatively low rating for both social vulnerability and community resilience, with a risk index score of 1.7 out of 100 for strong winds and 69.6 out of 100 for tornadoes.

Table 4-42 Sacramento County Planning Area – Strong Wind and Tornado Vulnerability Ratings from FEMA NRI

NRI Hazard	Hazard Risk Index Rating*	Expected Annual Loss Values (total)**	Exposure Value (total)***	Historic Loss Ratio Rating
Strong Wind	1.7	$3,567	$18,646,183,819,449	Very Low
Tornado	69.6	$1,918,373	$18,646,183,819,449	Very Low

Source: FEMA NRI Report, retrieved 12/15/2025.

*Hazard Risk Index is calculated using data for only a single hazard type, and reflect a communities expected annual loss value, community risk factors, and the adjustment factor used to calculate the risk value.

**Expected annual loss represents the average economic loss in dollars resulting from natural hazards each year.

***Exposure is a natural hazard consequence factor that is the representative value of buildings, populations, or agriculture potentially exposed to a natural hazard occurrence.

Additional information on the FEMA NRI can be found in Section 4.2 and Appendix G.

Impacts from Severe Weather: High Winds and Tornadoes

High wind can cause damage to property and loss of life. 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 can also cause waves during periods of high water contributing to erosion that can affect the levees in the County.

Tornadoes, while typically more limited in area affected than high wind events, can cause significant 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, broken gas lines, broken sewer and water mains, and the outbreak of fires. Agricultural crops and industries may also be damaged or destroyed. Access roads and streets may be blocked by debris, delaying necessary emergency response.

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

- Climate change is likely to exacerbate future wind conditions and associated impacts and vulnerability of the County. Climate change is not likely to affect future tornado conditions. This was discussed in greater detail in the Climate Change and High Winds and Tornadoes 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 County. There are 129 areas where the unincorporated County is expected development to occur in the next 5 years. Population growth in Sacramento County is expected to continue slowly. Vulnerable populations could experience disproportional effects from this hazard and should be planned for as development of the County continues. Changes in population and population patterns may or may not increase the impacts and vulnerability of the County 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. There are 129 areas where the unincorporated County is expected development to occur in the next 5 years. Building codes in the

County ensure that new development is built to current building standards to withstand high winds, which should reduce the risk to future development in the County 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 County increase the number of buildings at risk to high winds and tornadoes.

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 County are considered can help make for a more resilient community. Utilities at risk to high winds should be undergrounded as new facilities are improved or added. Whether high winds and tornadoes will occur, where, when, and of what intensity are all factors that evolve over the days and hours before they form and after they do. Improved weather forecasts coupled with new information technologies, including social media, has resulted in an increasingly large volume of risk information that is available to people when tornadoes and high winds threaten.

4.3.6. Aquatic Nuisance Species (plant/animal)

Hazard Profile

This hazard profile contains multiple sections that detail how this hazard can affect the Sacramento County Planning Area. These sections include a hazard/problem description; description of location and extent; past occurrences of this hazard; likelihood of future occurrences; and how climate change can affect or influence this hazard.

Hazard/Problem Description

Aquatic nuisance species are organisms that can 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.

This hazard addresses both aquatic invasive and nuisance species (collectively referred to as aquatic nuisance species). Aquatic 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 invasive and nuisance species into California's marine, estuarine, and freshwater environments can cause significant economic, human health, and ecological impacts.

According to the 2023 California State Hazard Mitigation Plan, the following are aquatic species in California that have harmful impacts on people, property or the environment:

- Species with impacts on other aquatic species
  - ✓ Cyanobacteria
  - ✓ Egeria
  - ✓ Hydrilla
  - ✓ New Zealand mudsnail
  - ✓ Nutria
  - ✓ Quagga Mussel
  - ✓ Zebra Mussel
- Species with impacts on infrastructure
  - ✓ Nutria
  - ✓ Quagga Mussel
  - ✓ Zebra Mussel
- Species with impacts on human health
  - ✓ Cyanobacteria
- Invasive plant species
  - ✓ Primrose
  - ✓ Hyacinth

Nonindigenous species are introduced into aquatic habitats through multiple pathways, including aquaculture, aquarium trade, commercial shipping, live bait, live seafood trade/commercial fishing, marine debris, and recreational vessels. Maritime transportation is the primary vector moving species around the globe. Vessels transport organisms through two primary mechanisms: ballast water and biofouling. Ballast water is taken on and later discharged by a vessel during cargo loading and unloading operations to maintain the vessel's trim and stability. Biofouling refers to the organisms or community of organisms that are directly attached to, or associated with, wetted hard surfaces of the vessel, such as the hull.

Sacramento County Planning Area: Currently Occurring or Established Species

Several aquatic nuisance species have been identified as currently occurring or established species in Sacramento County. These species shown in Table 4-43 are confirmed as present in Sacramento County waterways, particularly in the Delta portions and rivers.

Table 4-43 Sacramento County – Aquatic Invasive and Nuisance Species Currently Occurring or with Established Populations

Species	Type	Status in Sacramento County	Impacts	Sources/Management
Water Hyacinth (*Eichhornia crassipes*)	Floating plant	Widespread in Delta channels and sloughs	Forms dense mats, blocks navigation, reduces oxygen, displaces natives	DBW annual herbicide treatments

Species	Type	Status in Sacramento County	Impacts	Sources/Management
Brazilian Waterweed/Egeria Densa (*Egeria densa*)	Submersed plant	Common in Delta and slower river sections	Dense growth clogs waterways, harms fish habitat	DBW lead control agency
South American Spongeplant (*Limnobium laevigatum*)	Floating plant	Present in Delta	Similar to water hyacinth; rapid spread	DBW treatments
Uruguay Water Primrose (*Ludwigia hexapetala*)	Floating/emergent plant	In Delta and river edges	Mats block water flow, increases flooding risk	DBW control program
Alligator Weed (*Alternanthera philoxeroides*)	Floating/emergent plant	Known in Delta	Dense clusters, hard to eradicate	Targeted by DBW
Nutria (*Myocastor coypus*)	Semi-aquatic rodent	Detected on Sherman Island (Delta); ongoing removals (dozens captured)	Burrows damage levees, eats marsh vegetation, threatens wetlands	CDFW eradication program with traps and detection dogs
Golden Mussel (*Limnoperna fortunei*)	Freshwater bivalve	Recently detected in Delta (e.g., Port of Stockton area, spreading)	Biofouling of infrastructure, alters water quality, outcompetes natives	CDFW rapid response; first in North America (2024)
Curlyleaf Pondweed (*Potamogeton crispus*), Eurasian Watermilfoil (*Myriophyllum spicatum*), others	Submersed plants	Likely in slower waters	Clog intakes, reduce recreation	DBW monitoring and treatment
Red Sesbania (*Sesbania punicea*)	Woody shrub	Common in many areas	The species grows aggressively in riparian corridors, forming dense monocultures that reduce channel capacity, increase localized flood risk, and displace native willows and cottonwoods critical to riparian habitat.	Coordinated eradication efforts along Dry Creek, Robla Creek, Magpie Creek, Steelhead Creek, and the American River Parkway had achieved significant reductions in infestation extent, but persistent re-sprouting and upstream seed sources continue to require active management. Infestation sites of ongoing concern include the Dry Creek watershed (Sacramento/Placer Counties) and Arden Bar pond.

Source: California Department of Fish and Wildlife, Department of Boating and Waterways

Sacramento County Planning Area: Species at High Risk of Occurrence or Spread

Several aquatic nuisance species have also been identified as a high risk of occurrence or spread in Sacramento County. These species shown in Table 4-44 are not yet widespread in Sacramento County but are major concerns due to proximity (e.g., established elsewhere in California) and pathways like boating or flooding.

Table 4-44 Sacramento County – Aquatic Nuisance Species at High Risk of Occurrence or Spread

Species	Type	Risk Level	Reasons/Status Nearby	Prevention Notes
Quagga Mussel (*Dreissena rostriformis bugensis*) & Zebra Mussel (*Dreissena polymorpha*)	Freshwater bivalves	Very High	Infest many CA reservoirs/lakes; not yet established in core Delta but constant threat via boats	Mandatory boat inspections; "Clean, Drain, Dry" protocol; mussel fee sticker required
New Zealand Mudsnail (*Potamopyrgus antipodarum*)	Small snail	Moderate	Found in some CA waters; could spread via gear	High reproduction rate
Invasive aquarium fish (e.g., Pacu, Piranha relatives)	Fish	Occasional introductions	Dumped pets occasionally caught in county creeks/rivers	Illegal release; disrupts native fish

Source: California Department of Fish and Wildlife, Department of Boating and Waterways

Location and Extent

All of the waterways in the County are at risk to aquatic nuisance species. There is no scientific scale to measure aquatic nuisance species. The speed of onset can be quite short once an aquatic nuisance species is introduced into a river or water body. The duration of the aquatic 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 nuisance species, according to Table 4-4. There have also been no USDA disaster declarations from nuisance species.

NCDC Events

The NCDC does not track aquatic nuisance species.

Hazard Mitigation Planning Committee Events

Since some of the past events have been ongoing events, this section is not divided by events that have occurred since the 2021 LHMP. It was noted that there have been ongoing annual infestations of aquatic

nuisance plants and animals in the Sacramento County Planning Area. These are shown on Table 4-45 and Table 4-46, respectively.

Table 4-45 Sacramento County – Past Occurrences of Aquatic Nuisance Species

Species	Key Past Occurrences and Timeline	Details
Water Hyacinth (*Eichhornia crassipes*)	Since at least the 1980s; ongoing annual infestations	DBW designated lead control agency in 1982; treatments in Delta channels (e.g., Stockton area, Old River, Middle River) every year since, with thousands of acres treated (e.g., 2,617 acres in 2014, ongoing through 2025). Widespread in sloughs and slower waters.
Brazilian Waterweed/Egeria Densa (*Egeria densa*)	Since at least the 1990s; treatments began 2001	Egeria Densa Control Program authorized 1997; annual herbicide treatments in Delta since 2001 (e.g., monitoring reports 2015–2018). Dense mats in slower river sections and Delta.
South American Spongeplant (*Limnobium laevigatum*)	Since early 2000s; concurrent with hyacinth	Treated alongside water hyacinth since mid-2010s; mechanical harvesting and herbicides in high-infestation areas (e.g., 2016–2025 seasons).
Uruguay Water Primrose (*Ludwigia hexapetala*)	Since 2000s; ongoing	Included in annual DBW treatments (e.g., 2018–2025); forms mats on river edges and Delta channels.
Alligator Weed (*Alternanthera philoxeroides*)	Known since at least 2010s	Targeted in DBW programs (e.g., treatments 2022–2025); present in Delta clusters.
Curlyleaf Pondweed (*Potamogeton crispus*) & Eurasian Watermilfoil (*Myriophyllum spicatum*)	Since 2000s	Submersed; annual treatments and monitoring (e.g., 2016–2018 reports). Likely in slower waters.

Source: CDFW Invasive Species Program

Table 4-46 Sacramento County – Past Occurrences of Aquatic Nuisance Animals

Species	Key Past Occurrences and Timeline	Details
Nutria (*Myocastor coypus*)	Rediscovered 2017; detections ongoing	Statewide rediscovery in Central Valley/Delta 2017; specific detections and removals on Sherman Island (Sacramento County portion of Delta) since then (dozens captured); over 5,100 removed statewide by 2024. CDFW eradication efforts with traps and dogs.

Species	Key Past Occurrences and Timeline	Details
Golden Mussel (*Limnoperna fortunei*)	First detected October 2024; spreading 2024–2025	First North American detection near Port of Stockton (San Joaquin County, adjacent Delta); rapid spread into multiple Delta locations (including areas affecting Sacramento County waterways); veligers and adults found in surveys through 2025. Intercepted on boats in upstream areas.
Quagga Mussel (*Dreissena rostriformis bugensis*) & Zebra Mussel (*Dreissena polymorpha*)	No established populations in core Delta/Sacramento County rivers	High risk via boat transport; infestations in other CA reservoirs since 2007–2008, but not confirmed established in Sacramento County waterways or main Delta channels as of 2025. Constant monitoring and prevention (e.g., boat inspections).

Source: CDFW Invasive Species Program

On June 16, 2026, the Sacramento County Board of Supervisors proclaimed a local emergency in response to the growing threat posed by the invasive Golden Mussel. These freshwater species have rapidly spread throughout California waterways and threaten regional water infrastructure, the environment and the local economy. This proclamation allows the County to work more closely with regional, state and federal partners to address the threat posed by the Golden Mussel and help safeguard vital water resources

Likelihood of Future Occurrence

Highly Likely—With numerous waterways located in and around the Sacramento County Planning Area, aquatic nuisance species continue to be an ongoing concern to the Sacramento County Planning Area.

It is likely that climate change will increase the chance of future occurrence as well as future impacts. More information on climate change and aquatic nuisance hazards can be found in the next section. More information on future impacts can be found in the Future Conditions/Future Development section of the Vulnerability Assessment below.

Climate Change and Aquatic Nuisance Species

Climate change and its effect on aquatic nuisance species in the County has been discussed in the following sources:

- 2024 Sacramento County Climate Action Plan
- 2024 Climate Adaptation Study
- 2023 California State Hazard Mitigation Plan

2024 Sacramento County Climate Action Plan

The 2024 Sacramento County CAP noted no specific climate change impacts to aquatic nuisance species.

2024 Climate Adaptation Strategy

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 nuisance species.

2023 California State Hazard Mitigation Plan

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 Assessment

Vulnerability—Medium

According to historical hazard data, aquatic nuisance species are an annual occurrence in the Sacramento County Planning Area. If left unchecked, 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 this hazard begins with an understanding of local exposure to unincorporated Sacramento County. This is included in the Local Concerns section below. After that, vulnerability is discussed in multiple sections that detail how this hazard can affect both the entire Sacramento County Planning Area as well as the unincorporated portions of Sacramento County. How the hazard affects the other participating jurisdictions can be found in their respective annexes to this LHMP Update. These sections below include assets at risk, impacts, and how future development may affect the vulnerability of the County to this hazard.

Local Concerns (unincorporated Sacramento County)

The unincorporated County has certain specific concerns regarding this hazard. These concerns form a portion of the basis for the mitigation strategy and mitigation actions that seek to reduce vulnerabilities to this hazard.

Sacramento County includes major waterways like the Sacramento River, American River, and parts of the Sacramento-San Joaquin Delta. These areas are highly vulnerable to aquatic nuisance species due to boating, flooding, and connectivity to the Delta—one of the most invaded estuaries in the world, with over 185 non-native species. The primary threats come from invasive and nuisance aquatic plants that choke waterways and invasive animals that damage ecosystems and infrastructure. Management involves the CDFW Division of Boating and Waterways (DBW), and local efforts. Below are listed either species that are currently in the County, or that are not yet detected but are a threat to the County if they establish a population.

Sacramento County has documented infestations of several aquatic nuisance species across its river parkway system, urban ponds, and drainage channels. The following sections identify key issues of concern associated with these species in the Sacramento County Planning Area.

General Concerns

The HMPC noted some general concerns and expected impacts from aquatic nuisance species:

- Water Hyacinth – Forms dense mats, blocks navigation, reduces oxygen, displaces natives
- Brazilian Waterweed/Egeria Densa – Dense growth clogs waterways, harms fish habitat
- South American Spongeplant – Similar to water hyacinth; rapid spread
- Uruguay Water Primrose – Mats block water flow, increases flooding risk
- Alligator Weed – Dense clusters, hard to eradicate
- Nutria – Burrows damage levees, eats marsh vegetation, threatens wetlands
- Golden Mussel – Biofouling of infrastructure, alters water quality, outcompetes natives
- Curlyleaf Pondweed – Clog intakes, reduce recreation
- Red Sesbania – The species grows aggressively in riparian corridors, forming dense monocultures that reduce channel capacity, increase localized flood risk, and displace native willows and cottonwoods critical to riparian habitat.

Agricultural Concerns

The Agricultural Commissioner's Office, in cooperation with the Sacramento County Weed Management Area (WMA), has tracked and managed infestations. Concerns about these species include:

- **Agricultural Irrigation System Clogging**: Dense floating aquatic weeds such as Spongeplant and Alligatorweed present a direct operational risk to irrigation diversions and pump intakes. Sacramento County's agricultural areas in the southern and eastern portions of the County draw irrigation water from the Cosumnes River, Delta channels, and local drainage systems. Weed mat intrusion into pump screens and diversion structures increases maintenance costs, causes service interruptions during critical irrigation windows, and risks crop loss on high-value perennial crops including wine grapes

(the County's highest-valued commodity at $167.9 million gross production value in 2024), which require consistent water delivery.

- **Flood Risk Amplification**: Red Sesbania's tendency to establish dense woody growth in channel banks and floodplain areas reduces effective channel cross-sections. In a county where Cosumnes River levee segments are already rated for only 10-year flood protection, further channel capacity reductions compound flood risk to agricultural lands, farm structures, and rural residences.
- **Spread via Flood Events**: A key local concern is that atmospheric river events, which Sacramento County experienced severely in 2023 and continue into 2026, mobilize aquatic weed propagules (seeds, stem fragments) across large areas during inundation events, spreading infestations to new locations that are then difficult to access and treat. Post-flood weed dispersal has been observed along the Cosumnes River corridor following the January 2023 levee failures.
- **Interagency Coordination Demands**: Effective management requires sustained coordination across Sacramento County Regional Parks, the Agricultural Commissioner's Office, Department of Water Resources, California State Parks Division of Boating and Waterways, California Department of Food and Agriculture (CDFA), United States Department of Agriculture Animal and Plant Health Inspection Service (USDA APHIS), and private landowners. Gaps in any one partner's funding or capacity result in rapid reinfestation that offsets prior investments.
- **Funding Continuity**: Treatment gaps arising from funding lapses allow rapid regrowth and re-establishment, particularly for Red Sesbania, which resprouts vigorously from root crowns and seeds prolifically. Sustained, multi-year funding commitments are essential to achieving lasting control.

Local concerns for each of the participating jurisdictions can be found under the Local Concerns heading in each respective jurisdictional annex to this LHMP Update.

Assets at Risk

Assets at risk from aquatic invasive and nuisance species include people and populations; structures; critical facilities and infrastructure; and natural, historic, and cultural resources. These are discussed in the following sections for the Sacramento County Planning Area and unincorporated Sacramento County.

Additionally, for each hazard in the FEMA National Risk Index in Sacramento County, the relevant portions of the hazard analysis done by FEMA is presented below. This includes the Hazard Risk Index Rating, Expected Annual Loss Values, Exposure Values, and the Historic Loss Ratio Rating. These are presented for the Sacramento County Planning Area as a whole.

People and Populations

Aquatic nuisance species have a minimal effect on people and populations in Sacramento County, including vulnerable populations. However, damage to crops from invasive and nuisance species can cause significant increases in food prices and food insecurity among low-income communities. Damage from aquatic invasive and nuisance 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 County. In addition, those species contributing to increased flooding conditions in the County may also affect populations in flood prone areas. Also to note, nuisance animal species, such as Nutria, can cause damage to area levees further increasing the flood potential.

Structures

Structures in Sacramento County 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 Sacramento County 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;
- Reduced livestock grazing capacity;
- Increased soil erosion and topsoil loss;
- Diminished water quality and fish habitat.

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

FEMA NRI Hazard Vulnerability Assessment

Aquatic nuisance species are not an NRI hazard, therefore no data is presented.

Impacts from Aquatic Nuisance Species

According to the California Invasive Plants Council. California annually suffers over $3 billion in agricultural losses due to 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 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 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 County 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 Sacramento County include the following:

- Climate change is likely to exacerbate future conditions that may impact the waterways in Sacramento County. 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 County. There are 129 areas where the unincorporated County is expected development to occur in the next 5 years. Population growth in Sacramento County is expected to increase. Population changes are unlikely to affect the vulnerability of the County 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 County 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. Land-use planning and development review can help avoid or minimize impacts to waterways, wetlands, riparian areas, and other sensitive aquatic resources through applicable General Plan policies, development standards, environmental review, and resource-protection requirements. There are 129 areas where the unincorporated County is expected development to occur in the next 5 years. The extent to which future development could affect aquatic nuisance species establishment or spread depends on the location and type of development and its interaction with waterways and aquatic habitat. Because of this, it is not know if there will be an increase or decrease to the impacts and associated vulnerabilities of the County to this hazard.

Future Development

County land-use and environmental review processes provide mechanisms to address potential impacts to waterways and sensitive aquatic resources associated with development. The County is expected to

continue to grow. With additional development in the County, there may be additional competition for water resources.

4.3.7. Climate Change

Hazard Profile

This hazard profile contains multiple sections that detail how this hazard can affect the Sacramento County Planning Area. These sections include a hazard/problem description; description of location and extent; past occurrences of this hazard; likelihood of future occurrence; and how climate change can affect or influence this hazard.

Hazard/Problem Description

Climate change is the distinct change in measures of weather patterns over a long period of time, ranging from decades to millions of years. More specifically, it may be a change in average weather conditions such as temperature, rainfall, snow, ocean and atmospheric circulation, or in the distribution of weather around the average. While the Earth's climate has cycled over its 4.5-billion-year age, these natural cycles have taken place gradually over millennia, and the Holocene, the most recent epoch in which human civilization developed, has been characterized by a highly stable climate – until recently.

This LHMP Update is concerned with human-induced climate change that has been rapidly warming the Earth at rates unprecedented in the last 1,000 years. Since industrialization began in the 19th century, the burning of fossil fuels (coal, oil, and natural gas) at escalating quantities has released vast amounts of carbon dioxide and other greenhouse gases responsible for trapping heat in the atmosphere, increasing the average temperature of the Earth.

Through changes to oceanic and atmospheric circulation cycles and increasing heat, climate change affects weather systems around the world. Climate change increases the likelihood and exacerbates the severity of extreme weather – more frequent or intense storms, floods, droughts, and heat waves. Consequences for human society include loss of life and injury, damaged infrastructure, long-term health effects, loss of agricultural crops, disrupted transport and freight, and more. Climate change is not a discrete event but a long-term hazard, the effects of which communities are already experiencing.

Climate change adaptation is a key priority of the State of California. The 2023 State of California Multi-Hazard Mitigation Plan stated that climate change is already 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.

In Sacramento County, the HMPC noted that each year it seems to get a bit warmer. California's Adaptation Planning Guide (APG): Understanding Regional Characteristics has divided California into 11 different

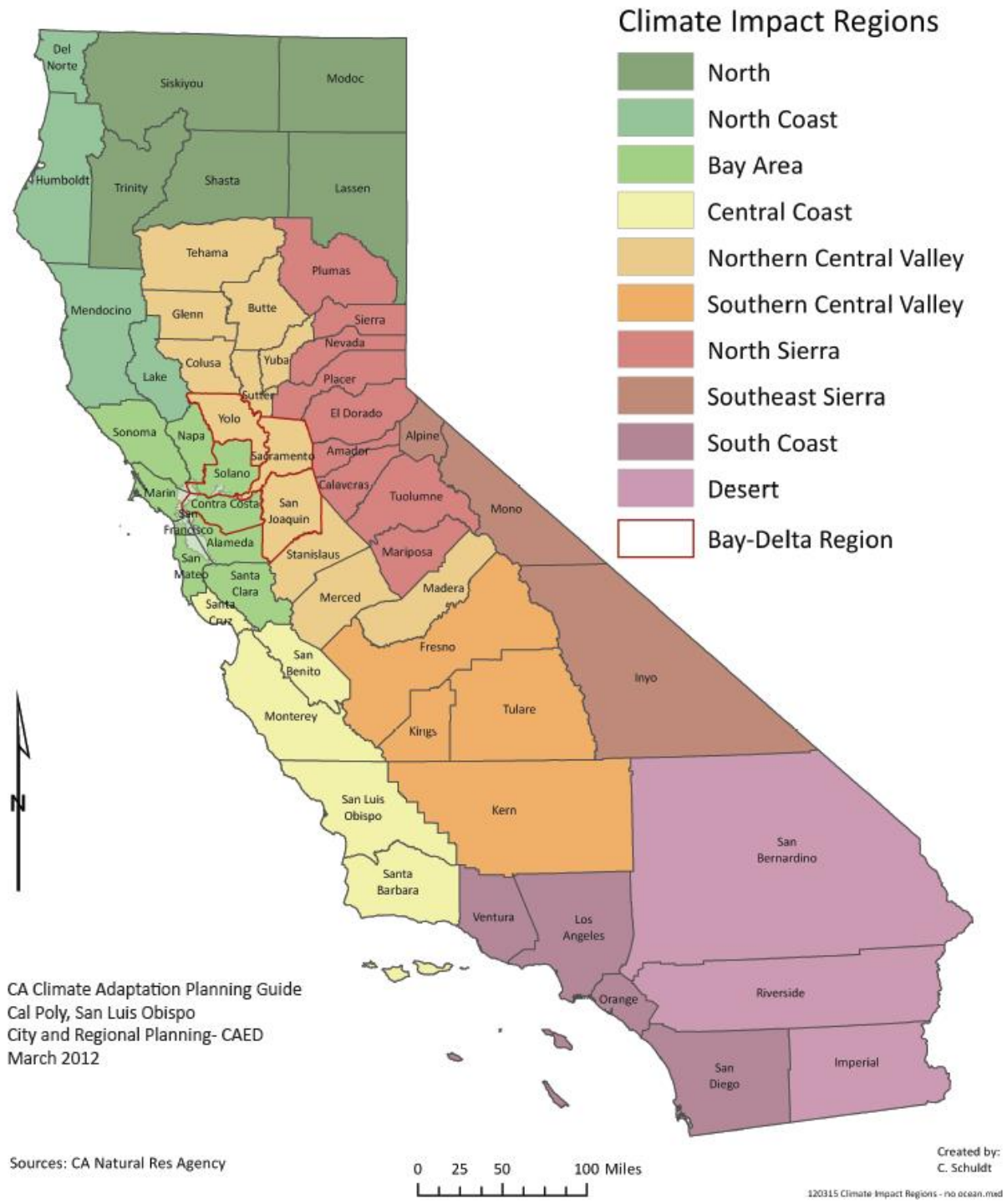
regions based on political boundaries, projected climate impacts, existing environmental setting, socioeconomic factors and regional designations. Sacramento County falls within the North Central Valley Region characterized as an agricultural, inland region with over 3.7 million people, with substantial cities, the largest being the state capitol, Sacramento. Agriculture is the predominant economic activity. The agricultural operations in this region include rice, dairy, and nut trees (almond and walnut). The region's agricultural activity is one of the most productive in the nation. Table 4-47 provides a summary of Cal-Adapt Climate Projections for the North Central Valley Region.

Table 4-47 Sacramento County Planning Area – North Central Valley Region– Cal Adapt Climate Projections

Effect	Ranges
Temperature Change, 1990-2100	January increase in average temperature of 4°F to 6°F and between 8°F and 12°F by 2100. July increase in average temperature of 6°F to 7°F in 2050 and 12°F to 15°F by 2100. (Modeled average temperatures; high emissions scenario)
Precipitation	Annual precipitation is projected to decline by approximately one to two inches by 2050 and three to six inches by 2100. (Community Climate System Model Version 3 (CCSM3) climate model; high carbon emissions scenario)
Heat wave	Heat wave is defined as five days over 102°F to 105°F, except in the mountainous areas to the east. Two to three more heat waves per year are expected by 2050 with five to eight more by 2100.
Wildfire	By 2085, the north and eastern portions of the region will experience an increase in wildfire risk, more than 4 times current levels in some areas. (Geophysical Fluid Dynamics Laboratory (GFDL) climate model; high carbon emissions scenario)

Source: Cal-Adapt 2017/2023.

Figure 4-55 Sacramento County – Climate Impact Regions



Source: Cal-Adapt 2017/2023

Location and Extent

Climate change is a global phenomenon. It is expected to affect the whole of the County. There is no scale to measure the extent of climate change. Climate change exacerbates other hazard, such as drought, extreme

heat, flooding, wildfire, and others. The speed of onset of climate change is very slow. The duration of climate change is not yet known but is feared to be tens to hundreds of years.

Past Occurrences

Disaster Declaration History

Climate change has never been directly linked to any declared disasters, as shown in Table 4-4.

NCDC Events

The NCDC does not track climate change events.

Hazard Mitigation Planning Committee Events

The HMPC noted some events related to climate change in Sacramento County. 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

HMPC members noted that the strength of storms (especially atmospheric rivers) does seem to be increasing and the temperatures seem to be getting hotter. Rain storms also seem to be growing in intensity. The HMPC also noted that the winter rains of **2022/2023** and **2023/2024** were more intense.

Events before 2021

On **December 17, 2020**, the Sacramento County Board of Supervisors adopted a resolution declaring a climate emergency and identifying the County's efforts to mobilize and contribute towards a safe climate. The resolution declared climate change an emergency requiring urgent action to achieve carbon neutrality by 2030. The resolution also states the County will establish, within 60 days of approval, a permanent Climate Emergency Mobilization Task Force. The task force will be composed of climate experts, including representatives of the scientific and academic communities, to oversee the development and implementation of a climate emergency response plan.

The HMPC also noted that the winter rains of **2017** and **2019** were more intense.

Likelihood of Future Occurrence

Highly Likely – Climate change is virtually certain to continue without immediate and effective global action. According to NASA, 2024 was one of the hottest years on record as was 2025. Without significant global action to reduce greenhouse gas emissions, the United Nations Intergovernmental Panel on Climate Change (IPCC) concludes in its Sixth Assessment Synthesis Report (2022) that average global temperatures are likely to exceed 1.5°C by the end of the 21st century, with consequences for people, assets, economies and ecosystems, including risks from heat stress, storms and extreme precipitation, inland and coastal flooding, landslides, air pollution, drought, water scarcity, sea level rise and storm surges.

Climate Scenarios

The United Nations IPCC developed several greenhouse gas (GHG) emissions scenarios based on differing sets of assumptions about future economic growth, population growth, fossil fuel use, and other factors. The emissions scenarios range from "business-as-usual" (i.e., minimal change in the current emissions trends) to more progressive (i.e., international leaders implement aggressive emissions reductions policies). Each of these scenarios lead to a corresponding GHG concentration, which is then used in climate models to examine how the climate may react to varying levels of GHGs. Climate researchers use many global climate models to assess the potential changes in climate due to increased GHGs.

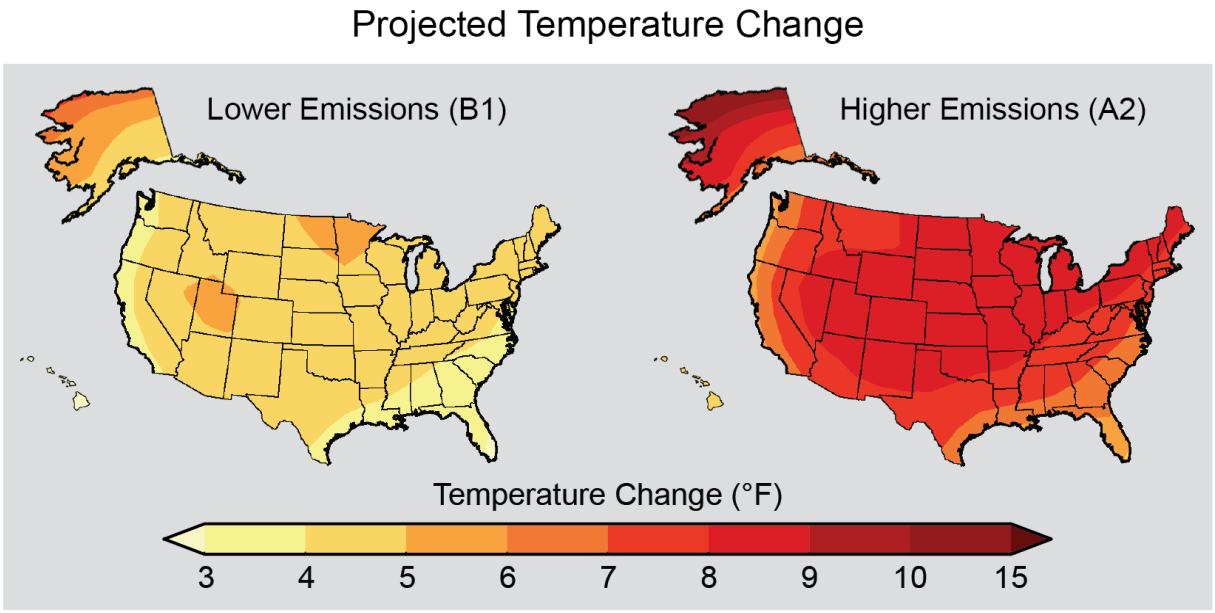
Key Uncertainties Associated with Climate Projections

- Climate projections and impacts, like other types of research about future conditions, are characterized by uncertainty. Climate projection uncertainties include but are not limited to:
  - ✓ Levels of future greenhouse gas concentrations and other radiatively important gases and aerosols,
  - ✓ Sensitivity of the climate system to greenhouse gas concentrations and other radiatively important gases and aerosols,
  - ✓ Inherent climate variability, and
  - ✓ Changes in local physical processes (such as afternoon sea breezes) that are not captured by global climate models.

Even though precise quantitative climate projections at the local scale are characterized by uncertainties, the information provided can help identify the potential risks associated with climate variability/climate change and support long term mitigation and adaptation planning.

Maps show projected change in average surface air temperature in the later part of this century (2071-2099) relative to the later part of the last century (1970-1999) under a scenario that assumes substantial reductions in heat trapping gases and a higher emissions scenario that assumes continued increases in global emissions. These are shown in Figure 4-56.

Figure 4-56 Projected Temperature Change – Lower and Higher Emissions Scenario



Source: National Climate Assessment

According to the California Natural Resource Agency (CNRA), climate change is already affecting California and is projected to continue to do so well into the foreseeable future. Current and projected changes include increased temperatures, sea level rise, a reduced winter snowpack altered precipitation patterns, and more frequent storm events. Over the long term, reducing greenhouse gases can help make these changes less severe, but the changes cannot be avoided entirely. Unavoidable climate impacts can result in a variety of secondary consequences including detrimental impacts on human health and safety, economic continuity, ecosystem integrity and provision of basic services.

The CNRA's 2024 CAS delineated how climate change may impact and exacerbate natural hazards in the future, including wildfires, extreme heat, floods, and drought:

- Climate change is expected to lead to increases in the frequency, intensity, and duration of extreme heat events and heat waves in Sacramento County and the rest of California, which are likely to increase the risk of mortality and morbidity due to heat-related illness and exacerbation of existing chronic health conditions. Those most at risk and vulnerable to climate-related illness are the elderly, individuals with chronic conditions such as heart and lung disease, diabetes, and mental illnesses, infants, the socially or economically disadvantaged, and those who work outdoors.
- Higher temperatures will melt the Sierra snowpack earlier and drive the snowline higher, resulting in less snowpack to supply water to California users.
- Droughts are likely to become more frequent and persistent in the 21st century.
- Intense rainfall events, periodically ones with larger than historical runoff, will continue to affect California with more frequent and/or more extensive flooding.
- Storms and snowmelt may coincide and produce higher winter runoff from the landward side, while accelerating sea level rise will produce higher storm surges during coastal storms. Together, these

changes may increase the probability of floods and levee and dam failures, along with creating issues related to saltwater intrusion.

- Warmer weather, reduced snowpack, and earlier snowmelt can be expected to increase wildfire through fuel hazards and ignition risks. These changes can also increase plant moisture stress and insect populations, both of which affect forest health and reduce forest resilience to wildfires. An increase in wildfire intensity and extent will increase public safety risks, property damage, fire suppression and emergency response costs to government, watershed and water quality impacts, vegetation conversions and habitat fragmentation.

The 2024 Sacramento County CAP contained information on multiple hazards (such as extreme temperatures, droughts, wildfires, etc.) that are exacerbated by climate change issues. Those are discussed in their respective hazard profiles in each section of this Plan Update.

Vulnerability to Climate Change

Vulnerability—Medium

Climate change adaptation is a key priority of the State of California. The 2023 State of California Multi-Hazard Mitigation Plan stated that climate change is already 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.

The whole of the County is at some measure of vulnerability to climate change. An assessment of a community's vulnerability to this hazard begins with an understanding of local exposure to unincorporated Sacramento County. This is included in the Local Concerns section below. After that, vulnerability is discussed in multiple sections that detail how this hazard can affect both the entire Sacramento County Planning Area as well as the unincorporated portions of Sacramento County. How the hazard affects the other participating jurisdictions can be found in their respective annexes to this LHMP Update. These sections below include assets at risk, impacts, and how future development may affect the vulnerability of the County to this hazard.

Local Concerns (unincorporated Sacramento County)

The unincorporated County has specific concerns 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.

Concerns from Climate Action Plan

During the creation of both the 2017 Climate Change Vulnerability Assessment for the Sacramento County Climate Action Plan: Communitywide Greenhouse Gas Reduction and Climate Change Adaptation

(Communitywide CAP) and 2024 Sacramento County Climate Action Plan (CAP), an analysis scale to measure the extent and impacts of climate change was assembled.

In the 2017 Vulnerability Assessment (and CAP), an analysis was done on risk of climate change. For the purposes of this analysis, risk was determined by a combination of the estimated certainty of the science projecting the climate change impact and the certainty of the sector sensitivity. Certainty rankings were based on percent probability of global models created by the IPCC. The timeframe in which the impact is most likely to occur (based on risk) can be categorized as:

- Current: Impacts currently or imminently occurring
- Near-term: 2020-2040
- Mid-term: 2040-2070
- Long-term: 2070-2100

Risk certainty has been provided based on the certainty of exposures estimated in Table 4-48 below. Onset designations have also been assigned.

Table 4-48 Risk and Onset for Sacramento County Climate Change Impacts

Impact	Risk Certainty Rating	Onset Timeframe
Increased Temperature	High	Current
Increased Frequency of Extreme Heat Days	High	Near-term
Increased Frequency in Heat Waves	High	Near-term
Sea level Rise	High	Long-term
Changes to Precipitation Patterns	Medium	Current
Increased Wildfire Risk	Medium	Mid-term
Increased Flooding	High	Current

Source: 2017 Vulnerability Assessment (and CAP)

In the 2024 CAP, a vulnerability assessment was done. There were five climate change effects evaluated to which the County is exposed, including flooding, increased temperatures and extreme heat, sea level rise, wildfire, and drought. If left unaddressed, each of these climate change effects will adversely impact populations, community functions, and structures across the unincorporated county in various ways. However, the County, partner agencies, and other organizations within the County have already taken steps to build adaptive capacity and protect sensitive populations, community functions, and structures from the effects of climate change. Figure 4-57 below shows how both potential impacts and adaptive capacity are scored on a qualitative scale of Low, Medium, and High (along with a description of each), in accordance with the APG.

Figure 4-57 Potential Impacts and Adaptive Capacity Scoring Rubric

Score	Potential Impact Scoring Description	Adaptive Capacity Scoring Description
Low	Impact is unlikely based on projected exposure; would result in minor consequences to public health, safety, and/or other metrics of concern.	The unincorporated county lacks capacity to manage climate change effect; major changes would be required.
Medium	Impact is somewhat likely based on projected exposure; would result in some consequences to public health, safety, and/or other metrics of concern.	The unincorporated county has some capacity to manage climate change effect; some changes would be required.
High	Impact is highly likely based on projected exposure; would result in substantial consequences to public health, safety, and/or other metrics of concern.	The unincorporated county has high capacity to manage climate change effect; minimal to no changes are required.

Source: 2024 Sacramento County Climate Action Plan

Once the scoring for potential impacts and adaptive capacity has been determined, the final step in the VA process is to characterize the unincorporated county's vulnerability to each climate change effect, which is assessed on the magnitude of risk to and potential impacts on populations, community functions, and structures while considering the current adaptive capacity in place to mitigate these impacts. Each climate change effect is assigned an overall numerical vulnerability score based on associated scores for potential impacts and adaptive capacity. Vulnerability scoring can help the County understand which climate hazards it should prioritize in future planning efforts. Figure 4-58 presents the rubric used to determine overall vulnerability scores based on the ratings for potential impacts and adaptive capacity, in accordance with the APG.

Figure 4-58 Vulnerability Scoring Rubric

Vulnerability Score				
Adaptive Capacity	Low	3	4	5
	Medium	2	3	4
	High	1	2	3
		Low	Medium	High
		Potential Impacts		

Source: 2024 Sacramento County Climate Action Plan

The unincorporated County's vulnerability score for each identified climate change effect— flooding, increased temperatures and extreme heat, sea level rise, wildfire, and drought—is included in Figure 4-59 below, along with the qualitative potential impact and adaptive capacity scores. The table shows flooding as the most pressing vulnerability within the County with a score of 4/5, indicating that it should be a high priority for the County in its climate adaptation planning efforts. Increased temperatures and extreme heat, along with sea level rise both have the next highest vulnerability score of 4, indicating that the County should also consider these high priorities. These climate change effects could have significant impacts on the County's populations, community functions, and structures in both the near-term and long-term. Although a variety of adaptive efforts related to each climate change effect are already in place, the magnitude of risks posed by these effects contributes to higher vulnerability in the unincorporated county. Wildfire and drought are both characterized as having a vulnerability score of 3. While this vulnerability

score is lower than the other climate change effects, additional adaptation efforts will be required in the future to mitigate potential impacts and protect the unincorporated County.

Figure 4-59 Potential Impact, Adaptive Capacity, and Vulnerability Scores

Climate Change Effect	Potential Impacts	Adaptive Capacity	Vulnerability Score
Flooding	High	Low/Medium	4/5
Increased Temperatures and Extreme Heat	High	Medium	4
Sea Level Rise	High	Medium	4
Wildfire	Medium	Medium	3
Drought	Medium	Medium	3

Source: 2024 Sacramento County Climate Action Plan

Sacramento County OES Concerns

Anthropogenic and other greenhouse gasses will continue to cause more extreme climate change conditions unless steps are taken to minimize greenhouse gases and carbon footprints. The County's roadways, infrastructure in flood zones, disadvantaged communities, agriculture sector and sensitives species habitat are among the most vulnerable to climate change impacts.

Climate change threatens the food security and economic viability of agriculture in Sacramento County. Drought, flood, and severe weather are all poised to intensify as climate change continues to impact California. Agricultural practices need updating to become resilient and can be part of the solution to climate change in the region.

Sacramento County Public Health Concerns

Sacramento County Public Health noted the chief public health concerns related to climate change are numerous and significant. Some of the most pressing issues include:

- **Respiratory and Cardiovascular Diseases**: Increased air pollution and allergens can exacerbate conditions like asthma and heart disease.
- **Extreme Weather Events**: This can lead to injuries, illnesses, and deaths.
- **Infectious Diseases**: Changes in temperature and precipitation patterns can alter the distribution of disease vectors.
- **Food and Waterborne Illnesses**: Changes in precipitation and temperature can affect food and water safety.
- **Mental Health**: The stress and trauma from experiencing extreme weather events and displacement can lead to mental health issues like anxiety and depression.
- **Vulnerable Populations**: Certain groups, such as the elderly, unhoused, children, and those with pre-existing health conditions, are more susceptible to the health impacts of climate change.

Wildfire Concerns

Wildfires pose several significant public health concerns. Primary concerns include:

- **Respiratory Issues**: Wildfire smoke contains fine particulate matter (PM2.5) that can penetrate deep into the lungs and even enter the bloodstream, exacerbating conditions like asthma, bronchitis, and chronic obstructive pulmonary disease (COPD).
- **Cardiovascular Problems**: Exposure to wildfire smoke can increase the risk of heart attacks, arrhythmias, and other cardiovascular issues.
- **Vulnerable Populations**: Certain groups, such as children, the unsheltered, the elderly, pregnant women, and those with pre-existing health conditions, are more susceptible to the health impacts of wildfire smoke.
- **Mental Health**: The stress and trauma from experiencing wildfires and displacement can lead to mental health issues like anxiety, depression, and post-traumatic stress disorder (PTSD).
- **Long-term Health Effects**: Prolonged exposure to wildfire smoke can have lasting health impacts, including increased rates of respiratory infections and other chronic conditions.
- **Emergency Room Visits and Hospitalizations**: Increased air pollution from wildfires can lead to a rise in emergency room visits and hospitalizations for respiratory and cardiovascular issues which could overcome our small rural hospital's ability to care for patients.

Assets at Risk

Assets at risk from climate change include people and populations; structures; critical infrastructure and vulnerable uses (with community lifelines); natural, historic, and cultural resources; and economic assets and community activities of value. These are discussed in the following sections for the Sacramento County Planning Area and unincorporated Sacramento County.

Additionally, for each hazard in the FEMA National Risk Index in Sacramento County, the relevant portions of the hazard analysis done by FEMA is presented below. This includes the Hazard Risk Index Rating, Expected Annual Loss Values, Exposure Values, and the Historic Loss Ratio Rating. These are presented for the Sacramento County Planning Area as a whole.

People and Populations

Climate change affects people and populations within a community, especially those climate change issues related to increases in temperature over time. Sacramento County Public Health noted the chief public health concerns related to climate change are numerous and significant. These were discussed in the Local Concerns section above. While all populations can be affected by temperature extremes, populations particularly vulnerable include the very old and very young, medically fragile people, people without means of shelter (and air conditioning) or transportation, people who are socially isolated and other socially vulnerable or underserved populations (as shown in Special Populations discussion in Section 4.2.1). Acclimatization to heat may help reduce risks from heat waves in the healthy general population but may not be sufficient to protect those with underlying issues and lack of resources.

Structures

Climate change, on its own, does not generally impact structures. However, structures in areas of increased wildfire, drought, extreme heat, or flood areas exacerbated by the effects of climate change would be at increased risk, as described throughout this LHMP. Due to the slow onset of climate change, many

structures in the County are expected to undergo improvements and adapt over time to a new climate normal.

Critical Infrastructure and Infrastructure

As with structures, critical and vulnerable facilities in areas of increased wildfire, flood areas, or in other hazard areas exacerbated by climate change, would be at increased risk. Climate change is expected to increase the general vulnerability of critical and vulnerable facilities to natural hazards. Due to the slow onset of climate change, critical and vulnerable facilities and community lifelines in the County are expected to undergo improvements and adapt over time to a new climate normal.

Natural, Historic, and Cultural Resources

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

FEMA NRI Hazard Vulnerability Assessment

Climate change is not an NRI hazard, therefore no data is presented.

Impacts from Climate Change

Impacts to the County from climate change are discussed in multiple sources. These are delineated below.

2017 California Adaptation Planning Guide

The 2017 California Adaptation Planning Guide (APG) identified the following impacts specific to the North Central Valley region in which the Sacramento County Planning Area is part of:

- Temperature increases – particularly nighttime temperature
- Reduced precipitation
- Flooding – increase flows, snowmelt, levee failure in the Delta
- Reduced agricultural productivity (e.g., nut trees, dairy)
- Reduced water supply
- Wildfire in the Sierra foothills
- Public health and heat
- Reduced tourism

Secondary impacts include changes in precipitation patterns, the global water cycle, melting glaciers and ice caps, and rising sea levels. According to the IPCC, climate change will "increase the likelihood of severe, pervasive and irreversible impacts for people and ecosystems" if unchecked.

Through changes to oceanic and atmospheric circulation cycles and increasing heat, climate change affects weather systems around the world. Climate change increases the likelihood and exacerbates the severity of extreme weather – more frequent or intense storms, floods, droughts, and heat waves. The 2023 State of California Hazard Mitigation Plan noted that there are direct and secondary impacts:

- Direct Impacts
  - ✓ Increase in average temperature
  - ✓ Changes in annual precipitation
- Secondary Impacts
  - ✓ Increased frequency, intensity, and duration of extreme heat days and heat waves/events
  - ✓ Increased flooding
  - ✓ Increased wildfire
  - ✓ Loss of snowpack and decreased water supplies

Consequences for human society include loss of life and injury, damaged infrastructure, long-term health effects, loss of agricultural crops, disrupted transport and freight, and more. Climate change is not a discrete event but a long-term hazard, the effects of which communities are already experiencing.

2023 State of California Hazard Mitigation Plan

In addition to these sources, the 2023 State of California Hazard Mitigation Plan noted that according to California's Fourth Climate Change 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 likely 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 by 2100 due to reduced snowfall and faster snowmelt.
- Marine layer clouds are projected to decrease.
- Extreme wildfires (i.e., fires larger than 24,710 acres) would occur 50 percent more frequently. The maximum area burned statewide may increase 178 percent by the end of the century.
- Sea level rise is expected to continue to increase beach, cliff, and bluff erosion.

2024 Sacramento County Climate Action Plan

The 2024 Sacramento County Climate Action Plan noted that five climate change effects were evaluated to which the County is exposed, including flooding, increased temperatures and extreme heat, sea level rise, wildfire, and drought. Each of these effects was analyzed in the CAP for potential impacts, adaptive capacity, and overall vulnerability. Flooding is identified as the most pressing vulnerability, with a score

of 4/5, due to risks such as water contamination, infrastructure damage, and disruption of transportation networks. Increased temperatures and extreme heat, along with sea level rise, also have high vulnerability scores of 4, indicating significant risks to public health, infrastructure, and ecosystems. Wildfire and drought are assigned a vulnerability score of 3, reflecting moderate risks that still require attention. Those impacts are discussed in their respective hazard sections of this LHMP Update.

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

- As climate change continues to accelerate over time, climate related impacts to the County will continue to increase.
- Climate change can influence population growth in the County over time. While the County is expected to see slow and steady growth, the County 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. While there are currently no formal studies of specific migration patterns expected to impact the County region, climate-induced migration was recognized within the UNFCCC Conference of Parties Paris Agreement of 2015 and is expected to be the focus of future studies. So, while changes in population and population patterns are not expected to increase the impacts associated with this hazard, climate change may instead influence future population growth in the County.
- Land use planning should be proactive to address future hazard conditions. The increasing severity and frequency of storms and other weather events due to the changing climate should be taken into account while considering land use planning for the County. Ensuring that regulatory requirements, such as building codes, are updated and followed will help reduce future impacts to this hazard. the location, type, and design of future development can influence exposure and vulnerability to climate-related hazards, and that General Plan policies, land-use planning, development standards, building codes, infrastructure planning, and implementation of the County's climate adaptation measures collectively provide opportunities to reduce future vulnerability. Due to adherence to the above, changes in land use and development will likely not increase the impacts and associated vulnerabilities of the County to this hazard.

Future Development

Future development considerations should be ongoing and proactive. Ensuring that comprehensive land use planning is conducted, regulatory requirements, such as building codes, are followed, and varying needs for different demographic groups with intersecting identities that reside within the County are considered can help to make for a more disaster resilient community.

4.3.8. Dam Failure

Hazard Profile

This hazard profile contains multiple sections that detail how this hazard can affect the Sacramento County Planning Area. These sections include a hazard/problem description; description of location and extent; past occurrences of this hazard; and how climate change can affect or influence this hazard.

Hazard/Problem Description

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 one 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

In general, there are three types of dams: concrete arch or hydraulic fill, earth and rockfill, and concrete gravity. Each type of dam has different failure characteristics. A concrete arch or hydraulic fill dam can fail almost instantaneously; the flood wave builds up rapidly to a peak then gradually declines. An earth-rockfill dam fails gradually due to erosion of the breach; a flood wave will build gradually to a peak and then decline until the reservoir is empty. A concrete gravity dam can fail instantaneously or gradually with a corresponding buildup and decline of the flood wave.

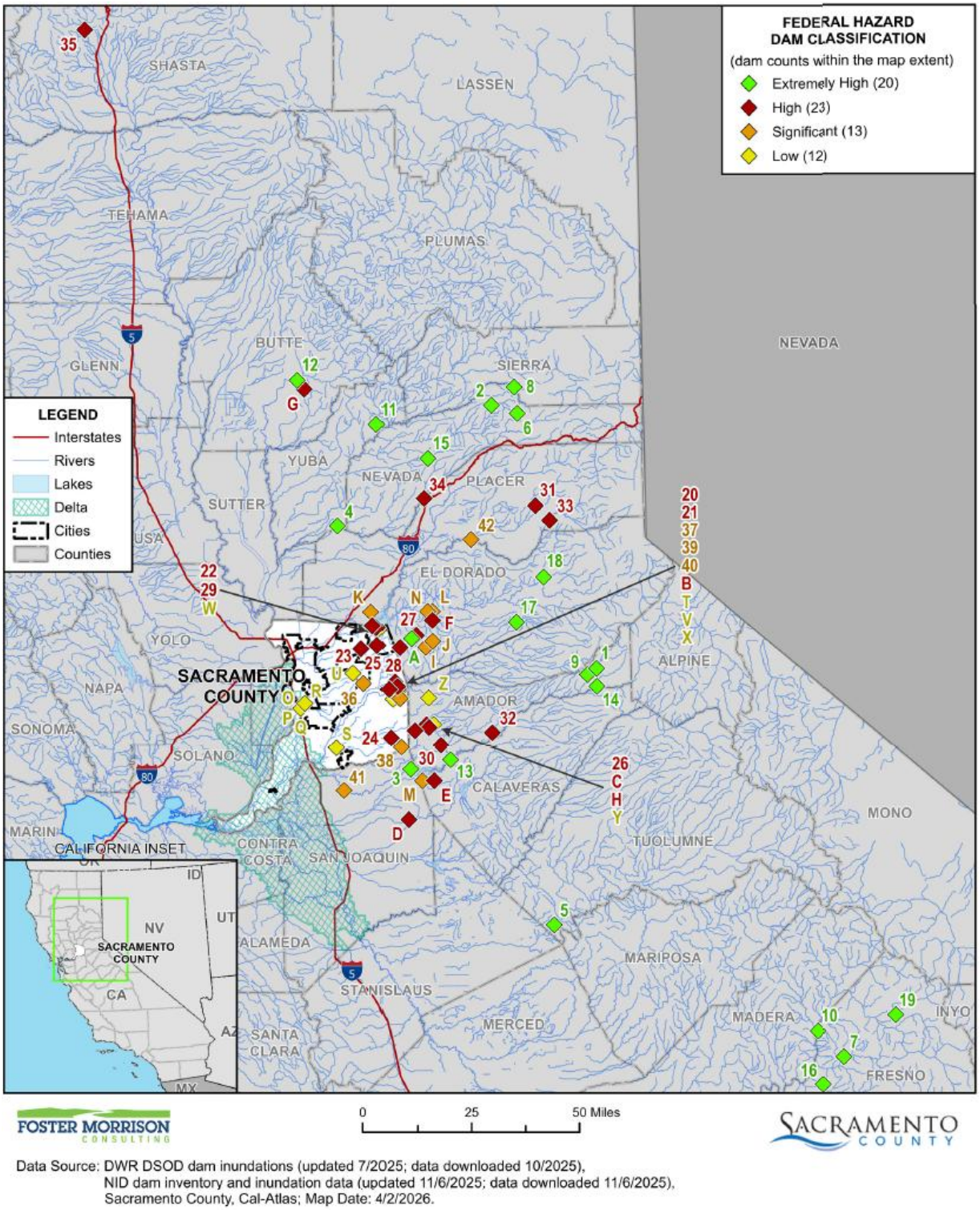
The CA DWR Division of Safety of Dams (DSOD) has jurisdiction over impoundments that meet certain capacity and height criteria. Embankments that are less than six feet high and impoundments that can store less than 15 acre-feet are non-jurisdictional. Additionally, dams that are less than 25 feet high can impound up to 50 acre-feet without being jurisdictional. FEMA and CA DWR 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:

- **Extremely High Hazard** – Expected to cause considerable loss of human life or would result in an inundation area with a population of 1,000 or more.
- **High Hazard** – Expected to cause loss of at least one human life.
- **Significant Hazard** – No probable loss of human life but can cause economic loss, environmental damage, impacts to critical facilities, or other significant impacts.
- **Low Hazard** – No probable loss of human life and low economic and environmental losses. Losses are expected to be principally limited to the owner's property.

Location and Extent

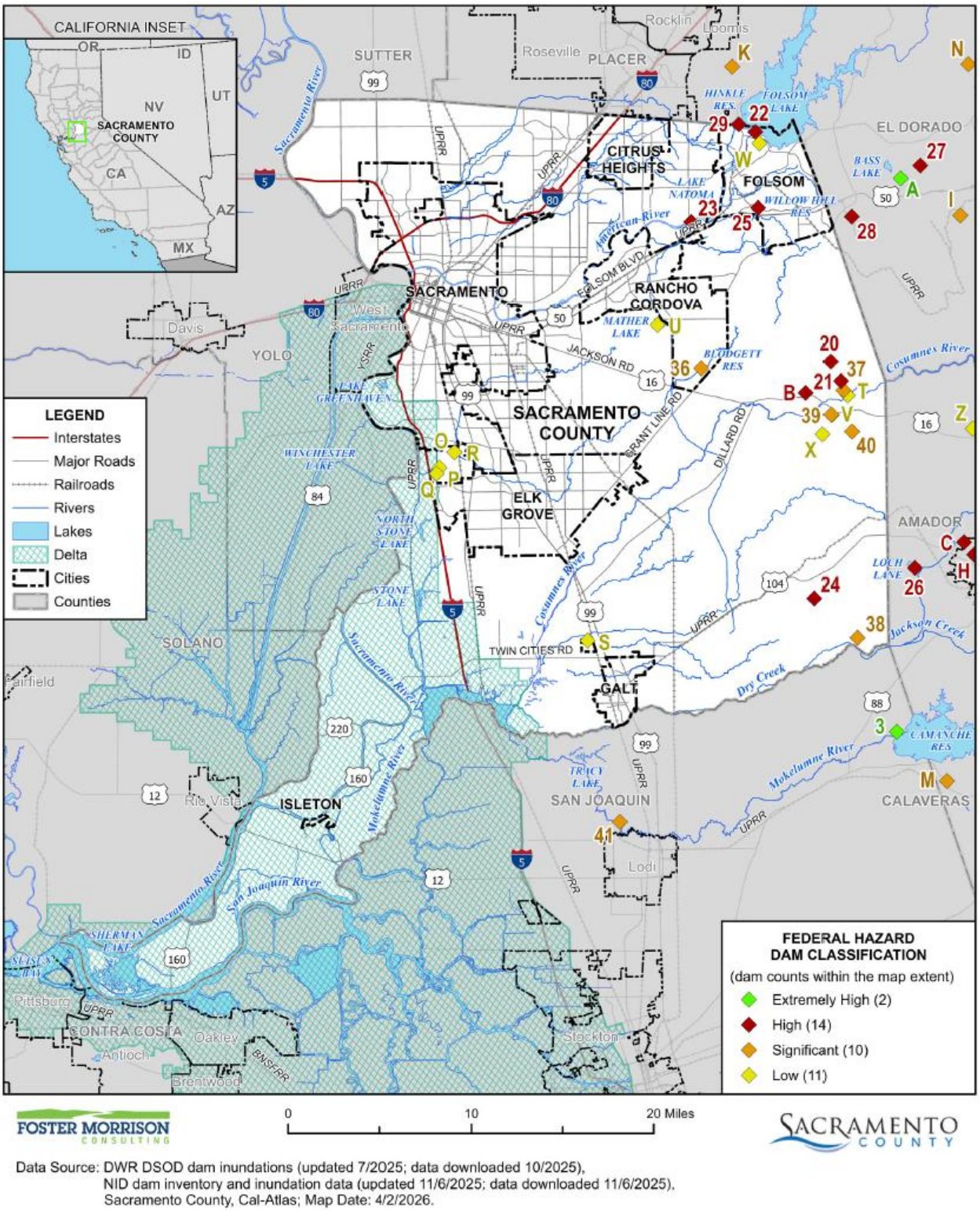
According to data provided by Cal DWR DSOD and National Inventory of Dams (NID) data, there are 22 dams in Sacramento County constructed for flood control, storage, electrical generation, and recreational purposes. Of these, 0 are rated as Extremely High hazard, 7 rated as High Hazard, 5 as Significant Hazard, and 10 as Low Hazard. In addition to those dams located within Sacramento County, there are 37 other dams (19 Extremely High Hazard, 12 High Hazard, 6 Significant Hazard, and 0 Low Hazard) outside the County (located in Amador, Butte, Calaveras, El Dorado, Fresno, Madera, Nevada, Placer, San Joaquin, Shasta, Tuolumne, and Yuba Counties) with the potential to affect people and property in Sacramento County. While an inventory of Significant and Low Hazard dams was conducted for this LHMP Update, no inundation analyses were conducted on these dams. Figure 4-60 provides a regional dam inventory of dams with the potential to affect the Sacramento County Planning Area. Figure 4-61 provides a dam inventory of the dams located inside the County (and within the zoomed in map extent.) Figure 4-62 is a legend for the maps shown on Figure 4-60 and Figure 4-61. Table 4-49 gives information on each of the dams in the County (for both figures), and the dams outside the County that could affect areas in Sacramento County.

Figure 4-60 Sacramento County Regional Dam Inventory (Including Dams from Outside the County)



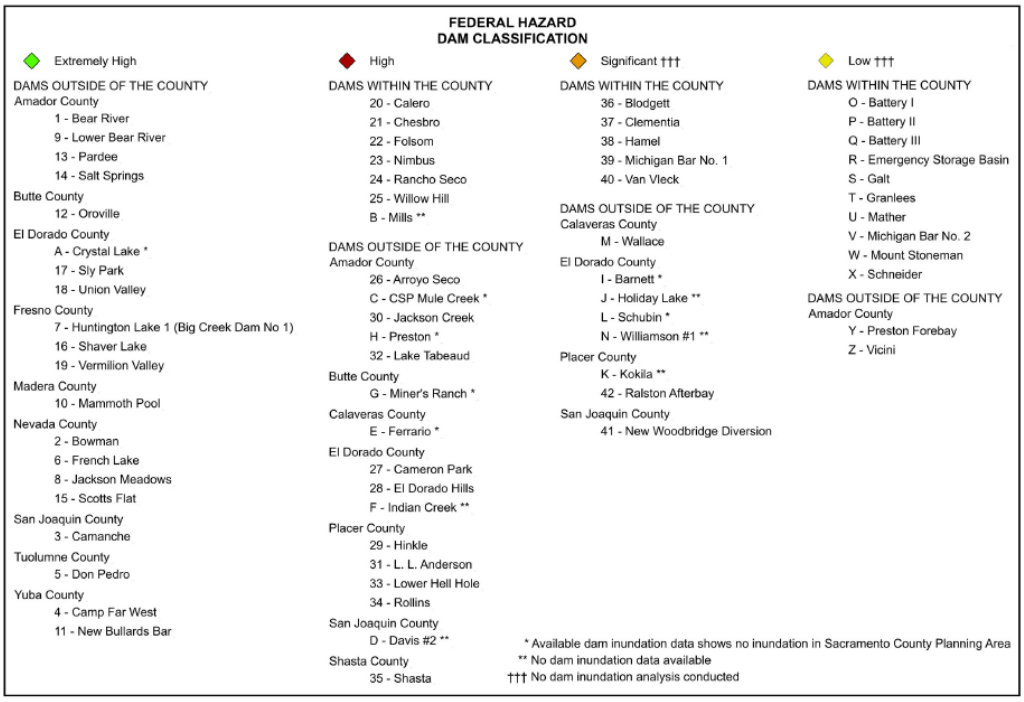
Data Source: DWR DSOD dam inundations (updated 7/2025; data downloaded 10/2025), NID dam inventory and inundation data (updated 11/6/2025; data downloaded 11/6/2025), Sacramento County, Cal-Atlas; Map Date: 4/2/2026.

Figure 4-61 Sacramento County Dam Inventory (Including Dams from Outside the 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.

Figure 4-62 Sacramento County Dam Inventory Map Legend



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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: 4/7/2026.

Table 4-49 Sacramento County – Regional Dam Inventory (both Inside and Outside the County)

Map ID	Dam Name	Hazard Classification	River	Source County	Owner	Structural Height (ft)/ Max Storage (acre-ft)*	Inundation Mapped/ Analyzed
1	Bear River	Extremely High	Bear River	Amador County	PG&E	83 / 6,818	YES
2	Bowman	Extremely High	Canyon Creek	Nevada County	Nevada Irrigation District	178 / 64,000	YES
3	Camanche	Extremely High	Mokelumne River	San Joaquin County	East Bay Municipal Utility District	171 / 417,120	YES
4	Camp Far West	Extremely High	Bear River	Yuba County	South Sutter Water District	185 / 104,500	YES
5	Don Pedro	Extremely High	Tuolumne River	Tuolumne County	Turlock Irrigation District	568 / 2,030,000	YES

Map ID	Dam Name	Hazard Classification	River	Source County	Owner	Structural Height (ft)/ Max Storage (acre-ft)*	Inundation Mapped/ Analyzed
6	French Lake	Extremely High	Canyon Creek	Nevada County	Nevada Irrigation District	100 / 13,800	YES
7	Huntington Lake 1 (Big Creek Dam No 1)	Extremely High	Big Creek	Fresno County	Southern California Edison	170 / 88,834	YES
8	Jackson Meadows	Extremely High	Middle Yuba River	Nevada County	Nevada Irrigation District	195 / 52,500	YES
9	Lower Bear River	Extremely High	Bear River	Amador County	PG&E	193 / 22,000	YES
10	Mammoth Pool	Extremely High	San Joaquin River	Madera County	South California Edison	413 / 120,044	YES
11	New Bullards Bar	Extremely High	North Yuba River	Yuba County	Yuba County Water Agency	635 / 969,600	YES
12	Oroville	Extremely High	Feather River	Butte County	CA DWR	770 / 3,553,405	YES
13	Pardee	Extremely High	Mokelumne River	Amador/Calaveras County	East Bay Municipal Utility District	345 / 197,950	YES
14	Salt Springs	Extremely High	North Fork Mokelumne River	Amador County	PG&E	331 / 141,900	YES
15	Scotts Flat	Extremely High	Deer Creek	Nevada County	Nevada Irrigation District	175 / 49,000	YES
16	Shaver Lake	Extremely High	Stevenson Creek	Fresno County	Southern California Edison	180 / 135,283	YES
17	Sly Park	Extremely High	Stevenson Creek	El Dorado County	El Dorado Irrigation District	182 / 14,000	YES
18	Union Valley	Extremely High	Big Silver Creek	El Dorado County	Sacramento Municipal Utility District	453 / 271,000	YES
19	Vermilion Valley	Extremely High	Mono Creek	Fresno County	Southern California Edison	167 / 125,000	YES
–	Crystal Lake	Extremely High	Tr Deer Creek	El Dorado County	Private	32 / 225	NO

Map ID	Dam Name	Hazard Classification	River	Source County	Owner	Structural Height (ft)/ Max Storage (acre-ft)*	Inundation Mapped/ Analyzed
20	Calero	High	Crevis Creek	Sacramento County	Privatebro	55 / 3,375	YES
21	Chesbro	High	Consumnes River	Sacramento County	Private	79 / 1,500	YES
22	Folsom	High	American River	Sacramento County	Department of Interior	340 / 1,120,000	Pending
–	Folsom Dike 7	High	Green Valley	Sacramento County	Department of Interior	25 / 1,120,000	Pending
–	Folsom Dike 8	High	Green Valley	Sacramento County	Department of Interior	15 / 1,120,000	Pending
–	Folsom Left Wing	High	American River	Sacramento County	Department of Interior	145 / 1,120,000	Pending
–	Folsom Mormon Island Auxiliary Dam	High	Blue Ravine	Sacramento County	Department of Interior	110 / 1,120,000	Pending
–	Folsom Right Wing	High	American River	Sacramento County	Department of Interior	145 / 1,120,000	Pending
23	Nimbus	High	American River	Sacramento County	Department of Interior	87 / 8,800	YES
24	Rancho Seco	High	Hadselville River	Sacramento County	Sacramento Municipal Utilities	58 / 4,350	YES
25	Willow Hill	High	American River	Sacramento County	City of Folsom	24 / 175	YES
26	Arroyo Seco	High	Tr Deer Creek	Amador County	Private	67 / 2,433	YES
27	Cameron Park	High	Deer Creek	El Dorado County	Cameron Park CSD	29 / 480	YES
28	El Dorado Hills	High	Offstream	El Dorado County	El Dorado Irrigation District	31 / 215	YES
29	Hinkle	High	Tr American River	Placer County	San Juan Water District	20 / 200	YES
30	Jackson Creek	High	Jackson Creek	Amador County	Jackson Valley Irrigation District	193 / 22,000	YES
31	L. L. Anderson	High	Middle Fork American River	Placer County	Placer County Water Agency	231 / 155,500	YES

Map ID	Dam Name	Hazard Classification	River	Source County	Owner	Structural Height (ft)/ Max Storage (acre-ft)*	Inundation Mapped/ Analyzed
32	Lake Tabeaud	High	Mokelumne River	Amador County	PG&E	123 / 1,170	YES
33	Lower Hell Hole	High	Rubicon River	Placer County	Placer County Water Agency	412 / 208,400	YES
34	Rollins	High	Bear River	Placer County	Nevada Irrigation District	228 / 66,000	YES
35	Shasta	High	Shasta River	Shasta County	Bureau of Reclamation	602 / 65,350,000	YES
–	Mills	High	Consumnes River	Sacramento County	Private	23 / 315	NO
–	CSP Mule Creek	High	Offstream	Amador County	California Department of Corrections & Rehabilitation	51 / 535	NO
–	Davis #2	High	Tr Calaveras	San Joaquin County	Private	26 / 1,400	NO
–	Ferrario	High	Tr Bear Creek	Calaveras County	Private	25 / 250	NO
–	Indian Creek	High	Indian Creek	El Dorado County	Private	36 / 457	NO
–	Miner's Ranch	High	West Fork of North Fork Honcut	Butte County	South Feather Water and Power Agency	55 / 895	NO
–	Preston	High	Tr Mule Creek	Amador County	Amador Regional Sanitation Authority	40 / 268	NO
36	Blodgett	Significant	Laguna Creek	Sacramento County	Private	24 / 599	YES
37	Clementia	Significant	Tributary of Consumnes River	Sacramento County	Private	33 / 1,510	YES
38	Hamel	Significant	Morrison Creek	Sacramento County	Private	26 / 350	YES
39	Michigan Bar No. 1	Significant	Tributary of Consumnes River	Sacramento County	Private	17 / 897	YES

Map ID	Dam Name	Hazard Classification	River	Source County	Owner	Structural Height (ft)/ Max Storage (acre-ft)*	Inundation Mapped/ Analyzed
40	Van Vleck	Significant	Arkansas Creek	Sacramento County	Private	30 / 2,600	YES
41	New Woodbridge Diversion	Significant	Mokelumne River	San Joaquin County	Woodbridge Irrigation District	31 / 1,583	YES
–	Barnett	Significant	Barnett Creek	El Dorado County	Private	18 / 115	NO
–	Holiday Lake	Significant	Sawmill Creek	El Dorado County	Holiday Lake Community Services District	39 / 150	NO
–	Kokila	Significant	Tr Miners Ravine	Placer County	Private	19 / 54	NO
–	Schubin	Significant	Tr Webber Creek	El Dorado County	Private	55 / 225	NO
–	Wallace	Significant	Tr Bear Creek	Calaveras County	Wallace Community Services District Operations and Maintenance	29 / 410	NO
–	Williamson #1	Significant	Tr Webber Creek	El Dorado County	Private	42 / 117	NO
–	Battery I	Low	Unnamed	Sacramento County	Sacramento Regional County Sanitation District	– / –	NO
–	Battery II	Low	Unnamed	Sacramento County	Sacramento Regional County Sanitation District	15 / 315	NO
–	Battery III	Low	Unnamed	Sacramento County	Sacramento Regional County Sanitation District	12 / 847	NO
–	Emergency Storage Basin	Low	Laguna Creek	Sacramento County	Sacramento Regional County Sanitation District	13 / 629	NO
–	Galt	Low	Consumnes River	Sacramento County	City of Galt	16 / 115	NO

Map ID	Dam Name	Hazard Classification	River	Source County	Owner	Structural Height (ft)/ Max Storage (acre-ft)*	Inundation Mapped/ Analyzed
–	Granlees	Low	Tributary of Dry Creek	Sacramento County	Consumnes Irrigation Association	17 / 75	NO
–	Mather	Low	Tributary of Consumnes River	Sacramento County	USAF	– / –	NO
–	Michigan Bar No. 2	Low	Consumnes River	Sacramento County	Private	36 / 56	NO
–	Mount Stoneman	Low	Tributary of American River	Sacramento County	Folsom Prison	73 / 40	NO
–	Schneider	Low	Tributary of Arkansas Creek	Sacramento County	Private	22 / 226	NO
–	Preston Forebay	Low	Offstream	Amador County	Amador Regional Sanitation Authority	40 / 30	NO
–	Vicini	Low	Tr Willow Creek	Amador County	Private	19 / 150	NO

Source: DSOD/NID Dam Status 1/25, National Performance of Dams Program
*One Acre Foot=326,000 gallons

Once a list of dams was established, dam inundation layers were obtained from DSOD and NID in GIS. There were overlayed on the County and city boundaries to determine which dams affect which jurisdiction. This can be seen in Table 4-50. Only Extremely High and High Hazard dams were analyzed for this LHMP due to the potential for these dams to cause loss of life and/or property damage in the Sacramento County Planning Area should a dam failure occur.

Note: The Folsom Dam, a High Hazard Dam located within the Sacramento County Planning Areas as shown on the Inventory Map (Figure 4-61) is owned and operated by the US Bureau of Reclamation (USBOR). In recent years, Folsom Dam has been undergoing a series of improvements, including the Folsom Dam Raise Project, intended to help further reduce flood risk in the Greater Sacramento Area. With respect to the High Hazard dams with an inundation in the Sacramento County Planning Area, it should be noted that a dam inundation layer was not available for use from the USBOR for the High Hazard Folsom Dam. Given its location in the Sacramento County Planning Area, and relying on inundation data from previous Sacramento County LHMPs, the Folsom Dam still poses a threat of flooding to downstream communities should a dam incident occur. This may include both uncontrolled and controlled releases resulting from extreme precipitation events as well as other hazard events contributing to a dam failure such as a significant regional earthquake event.

Table 4-50 Sacramento County Planning Area – Dam Inundation Areas by Hazard Classification and Jurisdiction

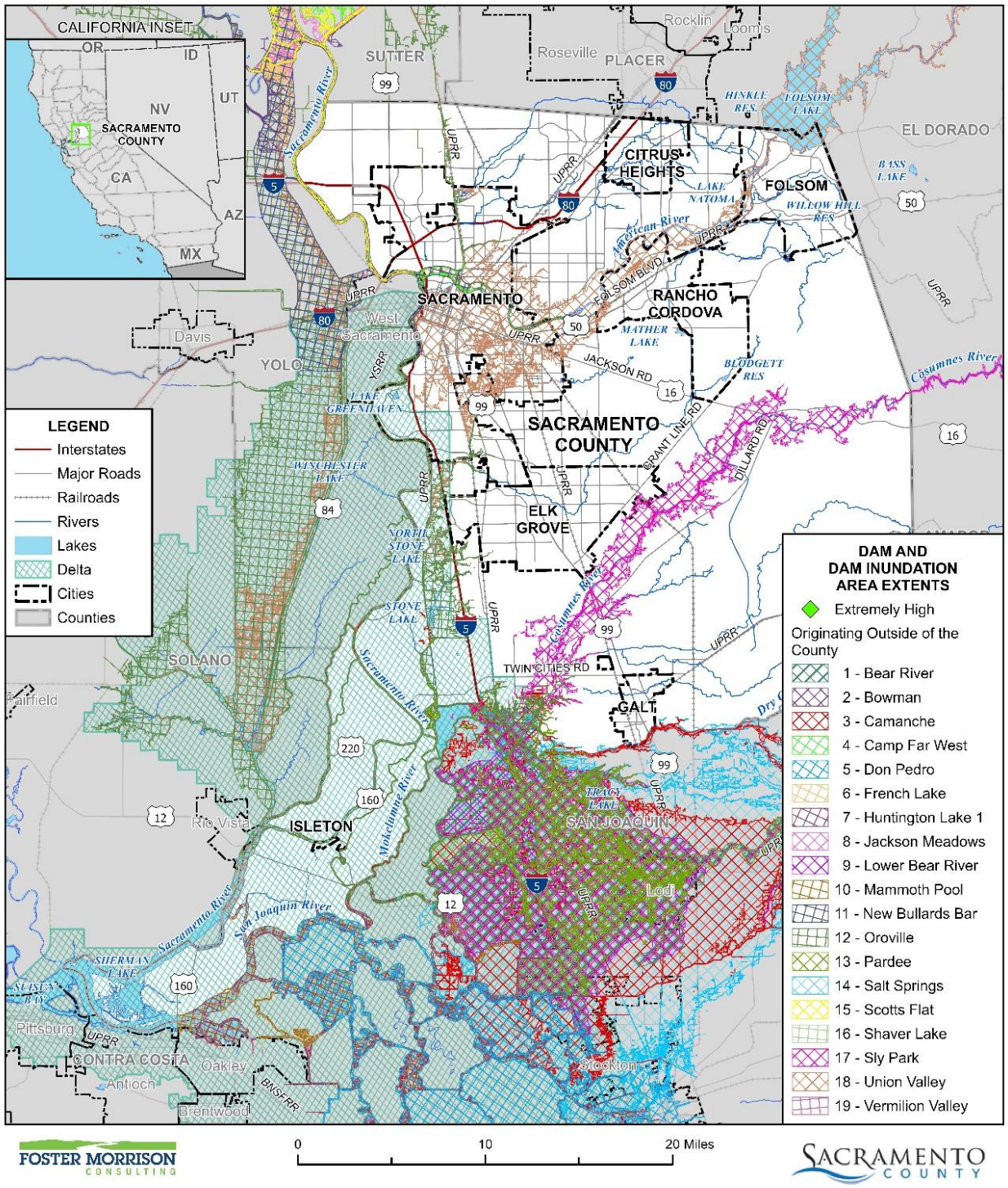
Dam Location / Dam Hazard Class / Dam Inundation Area	Elk Grove	Folsom	Galt	Isleton	Rancho Cordova	City of Sacramento	Unincorporated Sacramento County
Outside of the County							
Extremely High							
Bear River							X
Bowman						X	X
Camanche			X	X			X
Camp Far West						X	X
Don Pedro							X
French Lake						X	X
Huntington Lake 1							X
Jackson Meadows						X	X
Lower Bear River							X
Mammoth Pool							X
New Bullards Bar						X	X
Oroville	X			X		X	X
Pardee			X				X
Salt Springs			X				X
Scotts Flat						X	X
Shaver Lake							X
Sly Park	X						X
Union Valley		X		X	X	X	X
Vermilion Valley							X
High							
Arroyo Seco			X				X
Cameron Park							X
El Dorado Hills							X
Hinkle		X					
Jackson Creek			X				X
L. L. Anderson		X					
Lake Tabeaud			X				X
Lower Hell Hole		X					
Rollins						X	X
Shasta							X

Dam Location / Dam Hazard Class / Dam Inundation Area	Elk Grove	Folsom	Galt	Isleton	Rancho Cordova	City of Sacramento	Unincorporated Sacramento County
Within the County							
High							
Calero	X						X
Chesbro	X						X
Nimbus	X			X	X	X	X
Rancho Seco			X				X
Willow Hill Reservoir		X					X

Source: DSOD/NID

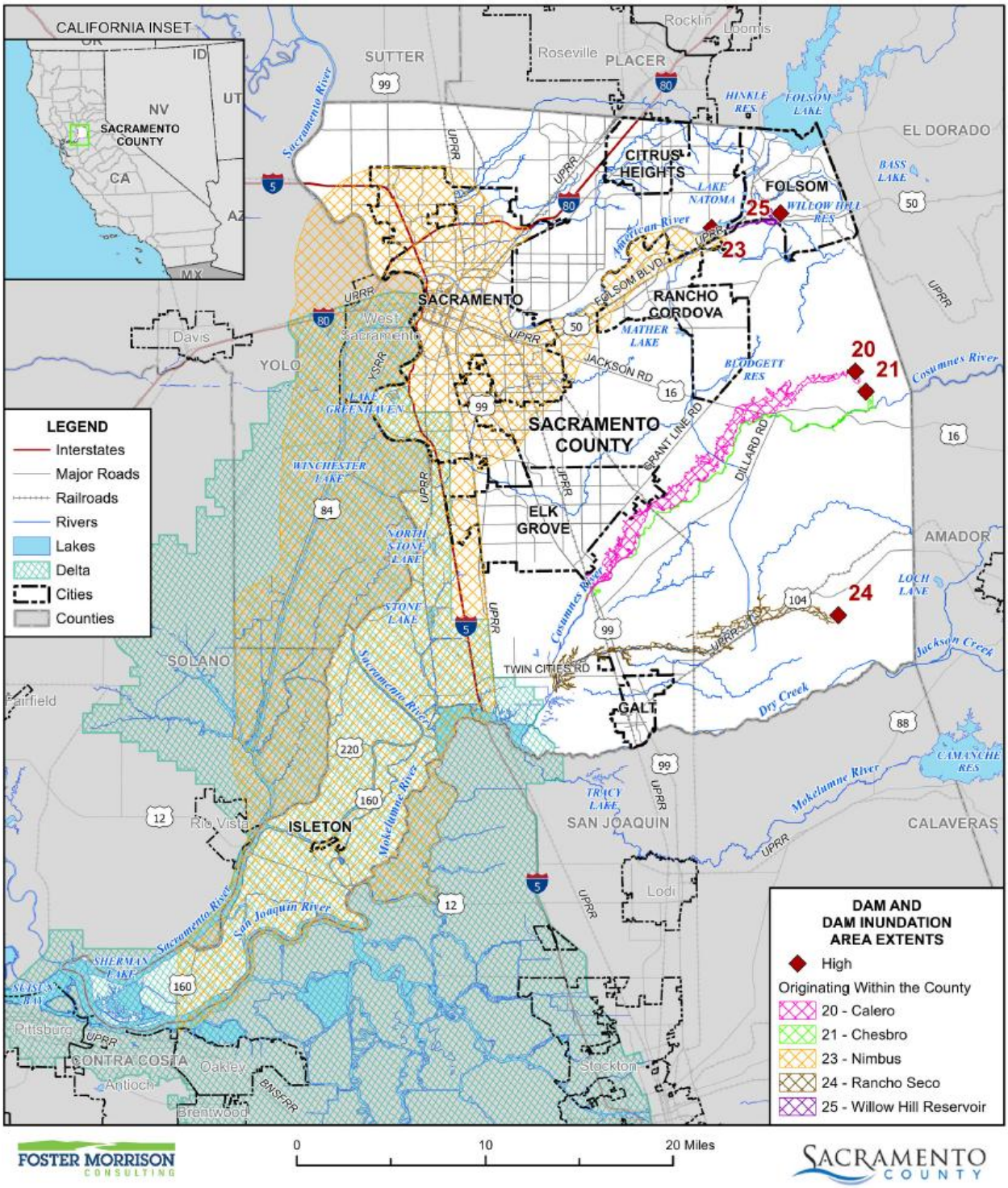
Extremely High Hazard dams with an inundation area in the Sacramento County Planning Area are shown on Figure 4-63. Figure 4-64 shows the inundation areas for High Hazard dams inside the County, while Figure 4-65 shows the High Hazard dams outside the County. Geographic flood extents as shown on the dam inundation maps are detailed by dam in Table 4-51 for both Extremely High and High Hazard dams for the Sacramento County Planning Area, as well as in Table 4-52 for both Extremely High and High Hazard dams for unincorporated Sacramento County only. Information on the Extremely High and High Hazard dam extents by jurisdiction can be found in their respective annexes to this Plan.

Figure 4-63 Sacramento County Planning Area – Extremely High Hazard Dam (Outside the County) Inundation Areas



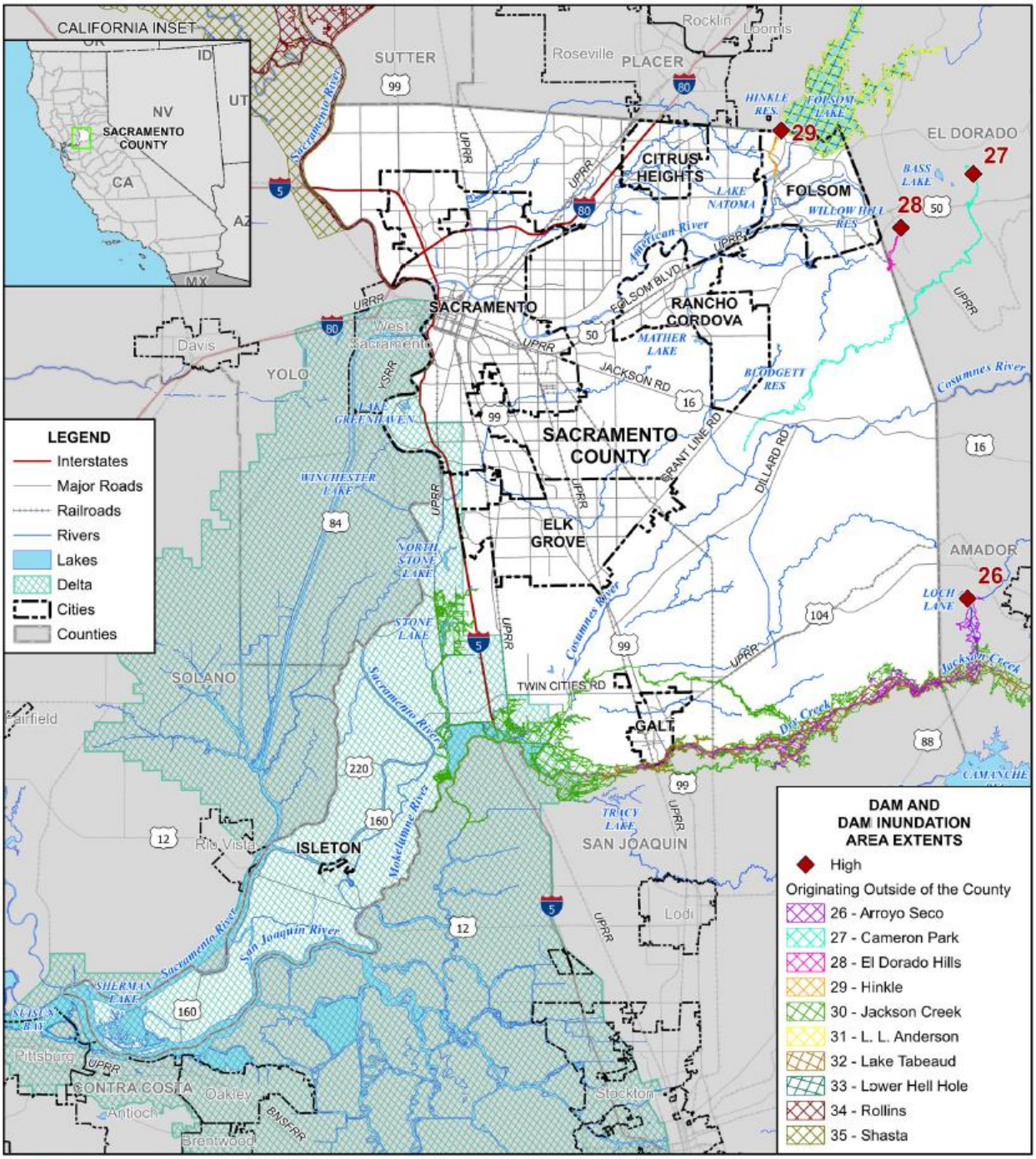
Data Source: DWR DSOD dam inventory and inundations (updated 7/2025; data downloaded 10/2025), Sacramento County, Cal-Atlas; Map Date: 10/2/2026.

Figure 4-64 Sacramento County Planning Area – 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: 4/2/2026.

Figure 4-65 Sacramento County Planning Area – High Hazard Dam (Outside the County) Inundation Areas from Dams



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: 4/2/2026.

Table 4-51 Sacramento County Planning Area – Geographical Dam Inundation Extents by Dam Hazard Classification and Dam

Jurisdiction	Total Acres	% of Total Acres	Improved Acres	% of Total Improved Acres	Unimproved Acres	% of Total Unimproved Acres
Extremely High Hazard Dams (Outside the County)						
Bear River	1,429	0.2%	824	0.3%	605	0.2%
Bowman	294	0.05%	147	0.05%	147	0.1%
Camanche	5,249	1%	1,543	0.5%	3,706	1%
Camp Far West	127	0.02%	12	0.004%	115	0.04%
Don Pedro	81	0.01%	3	0.001%	77	0.03%
French Lake	248	0.04%	122	0.04%	126	0.04%
Huntington Lake 1	136	0.02%	23	0.01%	113	0.04%
Jackson Meadows	52	0.01%	21	0.01%	31	0.01%
Lower Bear River	1,168	0.2%	642	0.2%	526	0.2%
Mammoth Pool	154	0.03%	26	0.01%	128	0.05%
New Bullards Bar	1,284	0.2%	186	0.1%	1,098	0.4%
Oroville	12,613	2%	2,949	1%	9,664	3%
Pardee	11,977	2%	4,562	1%	7,415	3%
Salt Springs	4,422	1%	2,933	1%	1,489	1%
Scotts Flat	31	0.01%	11	0.003%	21	0.01%
Shaver Lake	154	0.03%	26	0.01%	128	0.05%
Sly Park	24,291	4%	14,214	5%	10,078	4%
Union Valley	27,441	5%	13,986	4%	13,455	5%
Vermilion Valley	186	0.03%	31	0.01%	155	0.1%
High Hazard Dams (Inside the County)						
Calero	6,589	1%	5,561	2%	1,028	0.4%
Chesbro	856	0.1%	529	0.2%	327	0.1%
Nimbus	165,274	28%	93,459	30%	71,815	26%
Rancho Seco	3,632	1%	2,555	1%	1,077	0.4%
Willow Hill Reservoir	351	0.1%	152	0.05%	199	0.1%
High Hazard Dams (Outside the County)						
Arroyo Seco	915	0.2%	661	0.2%	254	0.1%
Cameron Park	451	0.1%	119	0.04%	332	0.1%

Jurisdiction	Total Acres	% of Total Acres	Improved Acres	% of Total Improved Acres	Unimproved Acres	% of Total Unimproved Acres
El Dorado Hills	10	0.002%	10	0.003%	-	0%
Hinkle	101	0.02%	69	0.02%	32	0.01%
Jackson Creek	12,826	2%	7,175	2%	5,651	2%
L. L. Anderson	41	0.01%	-	0%	41	0.0%
Lake Tabeaud	2,135	0.4%	1,669	1%	467	0.2%
Lower Hell Hole	52	0.01%	-	0%	52	0.02%
Rollins	35	0.01%	12	0.004%	23	0.01%
Shasta	337	0.1%	75	0.02%	262	0.1%

Source: DSOD/NID Dam Status 01/25

Table 4-52 Unincorporated Sacramento County– Geographical Dam Inundation Extents by Dam Hazard Classification and Dam

Jurisdiction / Dam Inundation Area	Total Acres	% of Total Acres	Improved Acres	% of Total Improved Acres	Unimproved Acres	% of Total Unimproved Acres
Extremely High Hazard Dams (Outside the County)						
Bear River	1,429	0.2%	824	0.3%	605	0.2%
Bowman	269	0.05%	143	0.05%	126	0.05%
Camanche	5,205	1%	1,542	0.5%	3,663	1%
Camp Far West	24	0.004%	10	0.003%	14	0.005%
Don Pedro	81	0.01%	3	0.001%	77	0.03%
French Lake	224	0.04%	118	0.04%	106	0.04%
Huntington Lake 1	136	0.02%	23	0.01%	113	0.04%
Jackson Meadows	43	0.01%	20	0.01%	22	0.01%
Lower Bear River	1,168	0.2%	642	0.2%	526	0.2%
Mammoth Pool	154	0.03%	26	0.01%	128	0.05%
New Bullards Bar	315	0.1%	172	0.1%	143	0.1%
Oroville	11,089	2%	2,921	1%	8,168	3%
Pardee	11,888	2%	4,559	1%	7,328	3%
Salt Springs	4,245	1%	2,926	1%	1,319	0.5%
Scotts Flat	24	0.004%	10	0.003%	13	0.005%
Shaver Lake	154	0.03%	26	0.01%	128	0.05%

Jurisdiction / Dam Inundation Area	Total Acres	% of Total Acres	Improved Acres	% of Total Improved Acres	Unimproved Acres	% of Total Unimproved Acres
Sly Park	24,202	4%	14,130	5%	10,071	4%
Union Valley	9,836	2%	4,795	2%	5,041	2%
Vermilion Valley	186	0.03%	31	0.01%	155	0.06%
High Hazard Dams (Inside the County)						
Calero	6,569	1%	5,542	2%	1,027	0.4%
Chesbro	855	0.1%	529	0.2%	326	0.1%
Nimbus	112,319	19%	60,407	19%	51,912	19%
Rancho Seco	3,620	1%	2,555	1%	1,065	0.4%
Willow Hill Reservoir	78	0.01%	0	0%	78	0.03%
High Hazard Dams (Outside the County)						
Arroyo Seco	840	0.1%	660	0.2%	181	0.1%
Cameron Park	451	0.1%	119	0.04%	332	0.1%
El Dorado Hills	10	0.002%	10	0.003%	0	0%
Jackson Creek	12,717	2%	7,169	2.3%	5,548	2.0%
Lake Tabeaud	2,043	0.3%	1,663	0.5%	380	0.1%
Rollins	27	0.005%	12	0.0%	16	0.0%
Shasta	337	0.06%	75	0.02%	262	0.1%

Source: DSOD/NID Dam Status 01/25

There is no scale with which to measure dam failure, only a scale to measure dam failure vulnerability based on size of dam and proximity to development. Dam failure may range from a small breach to a total failure. While a dam may fill slowly with runoff from winter storms, a dam break can have a very quick speed of onset. The duration of dam failure is 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 event). The Sacramento County Planning Area would be affected for as long as the flood waters from the dam failure takes to drain downstream.

Past Occurrences

Disaster Declaration History

There have been no disaster declarations related to dam failure in Sacramento County, as shown in Table 4-4.

NCDC Events

There have been no NCDC dam failure events in Sacramento County.

National Performance of Dams Program Events

A search of the National Performance of Dams Program database data shows two dam failure incidents for Sacramento County since 1994, both related to the Folsom Dam. However, these incidents were not actually dam failures, were quite limited in scope, and since the incidents occurred, improvements to the Folsom Dam system have been made and are continuing. These two events are further described below:

May 15, 1997 – Cavitation damage to river outlet works occurred at Folsom Dam. Damage was discovered just downstream of gate #3. The damage consisted of a hole in the floor of the conduit measuring approximately 42 feet long, 15 feet wide, and 6 feet deep. Subsequent inspections of the other conduits revealed similar damage downstream of gate #4. Also, the beginning of cavitation damage was found downstream of gate #2. Minor damage was found in the other five conduits. No flooding was associated with this damage.

July 17, 1995 – At the Folsom Dam, a spillway gate (gate #3 – see Figure 4-66) of Folsom Dam failed, increasing flows into the American River significantly. The spillway was repaired and the U.S. Bureau of Reclamation carried out an investigation of the water flow patterns around the spillway using numerical modeling. No flooding occurred as a result of the partial failure, but due to the location of the dam in proximity to the City of Folsom, possible flooding was a major concern.

Figure 4-66 July 1995 Folsom Dam Incident



Source: US Bureau of Reclamation

Hazard Mitigation Planning Committee Events

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

Events since 2021 LHMP

No major dam failures have occurred in Sacramento County or directly impacting the County since the 2021 LHMP. Sacramento County's primary flood protection relies on Folsom Dam (on the American River) and its associated infrastructure, plus levees along the Sacramento and American Rivers. The main Folsom Dam and its new auxiliary spillway have been used during high-water events (e.g., in 2023 and during 2025–2026 winter storms) for controlled releases. No structural failure or uncontrolled breach occurred. A minor construction flaw in the auxiliary spillway was identified and required about $16 million in repairs (reported around 2023), but this was addressed without impacting operations or causing a failure.

During the heavy **2022–2023** storms, Folsom Dam managed large inflows with controlled outflows, avoiding any dam failure risk. Releases were coordinated to protect downstream Sacramento areas.

Events before 2021

2017 Oroville Spillway Incident, February 7-12, 2017: In February2017, Cal DWR took action to investigate concrete erosion and structural integrity of the bottom half of the spillway. This involved temporarily suspending flows from the Oroville Dam spillway, followed by releasing up to 20,000 cubic feet per second (cfs) of water, and then ramping down the flows to assess any further damage to the eroded spillway. Cal DWR and a host of collaborating agencies continued to monitor Lake Oroville spillway flows through the night and next several days. As expected, the overnight flow rate of 20,000 cubic feet per second (cfs) caused additional lower spillway erosion. Investigations continued as a light flow of water began washing into Lake Oroville's emergency spillway over the next few days. Eventually, the lake exceeded the elevation of 901 feet above sea level, at which point water slowly began to flow over the concrete weir of the auxiliary spillway, down a hillside, and into the Feather River. On Feb. 12, the Lake Oroville Dam emergency spillway structure suffered potentially catastrophic damage as a result of erosion secondary to water flow. Cal DWR 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, Cal OES 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. In Sacramento County, the County prepared for high water levels and the possible collapse of the dam. There was worry about levee erosions from high water flows. Ultimately, the dam held and no damages occurred in Sacramento County.

Likelihood of Future Occurrence

Occasional—No dam failure events have occurred in the County. Thus, based on historical data and input from the HMPC, it is occasional that major dam failure event will occur in Sacramento County.

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

Climate Change and Dam Failure

The 2023 California State Hazard Mitigation Plan noted that modeling described in California's Fourth Climate Change Assessment projects less frequent but more extreme daily precipitation. 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 extreme precipitation may increase. Climate model projections show a tendency for the northern part of the State to become wetter. Increases in both precipitation and heat causing snow melt in areas upstream of dams could increase the potential for dam failure and uncontrolled (and controlled) releases in Sacramento County.

The 2024 Sacramento 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.

Vulnerability Assessment

Vulnerability—Extremely High

Dam failure flooding can occur as the result of a partial or complete collapse of an impoundment. Dam failures often result from prolonged rainfall and flooding. An earthquake event can also contribute to dam failure. 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 this hazard begins with an understanding of local exposure to unincorporated Sacramento County. This is included in the Local Concerns section below. After that, vulnerability is discussed in multiple sections that detail how this hazard can affect both the entire Sacramento County Planning Area as well as the unincorporated portions of Sacramento County. How the hazard affects the other participating jurisdictions can be found in their respective annexes to this LHMP Update. These sections below include assets at risk, impacts, and how future development may affect the vulnerability of the County to this hazard.

Local Concerns (unincorporated Sacramento County)

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

Sacramento County continues to monitor dam related flood risks, particularly those associated with ongoing improvements and reservoir operations at Folsom Dam. High volume emergency releases, while controlled and coordinated, can temporarily increase flows downstream and place added demand on levees and local waterways during major storm events. The region's geography and limited evacuation corridors highlight the value of ongoing mitigation efforts and strong coordination with state and federal partners.

The County noted that per DSOD/Cal OES Inundation Maps – there are multiple dams both inside the County, as well as outside the County, which could affect residents and structures in the County. These are discussed in the Assets at Risk section below. A catastrophic dam failure could challenge local response capabilities and require evacuations to save lives. Impacts to life safety will depend on the warning time and the resources available to notify and evacuate the public. Major loss of life could result as well as potentially catastrophic effects to roads, bridges, and homes.

Alder Creek drains from the City of Folsom through Aerojet and into Lake Natomas. It is a drainage area that was heavily gold mined in the late 1800s into mid-1900s. Now, there are land development interests. On the creek is a circa 1890 miner's debris dam that is in poor shape.

Sacramento's unique geography and riverine systems make evacuation difficult and constrained by bridges and other elements.

Local concerns for each of the jurisdictions can be found under the Local Concerns heading in each respective jurisdictional annex to this LHMP Update.

Assets at Risk from Dam Failure

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 for the Sacramento County Planning Area and unincorporated Sacramento County.

Additionally, for each hazard in the FEMA National Risk Index in Sacramento County, the relevant portions of the hazard analysis done by FEMA is presented below. This includes the Hazard Risk Index Rating, Expected Annual Loss Values, Exposure Values, and the Historic Loss Ratio Rating. These are presented for the Sacramento County Planning Area as a whole.

Methodology (Parcels and Structures)

In order to analyze people and populations, structures, and critical facilities at risk in dam inundation areas, GIS was used to quantify those values. The 2025 Sacramento County Parcel/Assessor Data was provided by Sacramento County and was used as the basis for the inventory of assessed values for both improved and unimproved parcels within the Sacramento County Planning Area. The dam inundation areas, obtained from DSOD/Cal OES, were then overlaid on the parcel layer. For the purposes of this analysis, if the dam inundation layer intersected any portion of a parcel polygon, the entire parcel was considered to be in the dam inundation area (this does not imply that the entire parcel, structure, or estimated population would necessarily experience inundation). The parcels were segregated and analyzed in this fashion for the entire Planning Area. This analysis was performed on Extremely High and High Hazard dam inundation areas only. No Significant or Low Hazard dam analysis was performed. It should also be noted that this is a planning level of analysis, rather than a site specific determination of inundation risk.

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.

Sacramento County 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 large dam failure events. To further evaluate the impact to the Sacramento County Planning Area's residential populations located in these hazard areas, a separate analysis was performed to determine

residential populations in the dam inundation areas. The DSOD/Cal OES dam inundation areas were overlayed on the parcel layer and linked to the Assessor Data. Those residential parcel centroids that intersect the dam inundation areas were counted and multiplied by the Census Bureau average household factors for each jurisdiction. This is shown in Table 4-53 for Extremely High Hazard dams, on Table 4-54 for the High Hazard dams inside the County, an on Table 4-55 for High Hazard dams from outside the County.

Table 4-53 Sacramento County Planning Area – Improved Residential Parcels and Populations by Extremely High Hazard (Outside the County) Dam Inundation Area and Jurisdiction

Extremely High Hazard (Outside the County) Dam Name/Jurisdiction	Improved Residential Parcels	Population at Risk
Bear River		
Unincorporated Sacramento County	0	0
Bowman		
Sacramento	28	
Unincorporated Sacramento County	175	481
Camanche		
Galt	1	3
Isleton	0	0
Unincorporated Sacramento County	85	234
Camp Far West		
Sacramento	4	73
Unincorporated Sacramento County	161	443
Don Pedro		
Unincorporated Sacramento County	22	60
French Lake		
Sacramento	28	73
Unincorporated Sacramento County	175	481
Huntington Lake 1 (Big Creek Dam No. 1)		
Unincorporated Sacramento County	9	25
Jackson Meadows		
Sacramento	22	57
Unincorporated Sacramento County	171	470
Lower Bear River		
Unincorporated Sacramento County	0	0
Mammoth Pool		
Unincorporated Sacramento County	12	33

Extremely High Hazard (Outside the County) Dam Name/Jurisdiction	Improved Residential Parcels	Population at Risk
New Bullards Bar		
Sacramento	30	78
Unincorporated Sacramento County	175	481
Oroville		
Elk Grove	0	0
Isleton	9	29
Sacramento	206	534
Unincorporated Sacramento County	440	1,210
Pardee		
Unincorporated Sacramento County	31	85
Salt Springs		
Galt	0	0
Unincorporated Sacramento County	14	39
Scotts Flat		
Sacramento	3	8
Unincorporated Sacramento County	165	454
Shaver Lake		
Unincorporated Sacramento County	12	33
Sly Park		
Elk Grove	46	147
Unincorporated Sacramento County	625	1,719
Union Valley		
Folsom	36	95
Isleton	9	29
Rancho Cordova	5,400	15,552
Sacramento	44,218	114,525
Unincorporated Sacramento County	20,271	55,745
Vermillion Valley		
Unincorporated Sacramento County	14	39

Source: DSOD Dam Inundations 01/25, 2025 Sacramento County Parcel/Assessor Data, 2020 US Census Bureau Average Household Size – City of Citrus Heights (2.56); City of Elk Grove (3.2); City of Folsom (2.64); City of Galt (3.07); City of Isleton (3.18); City of Rancho Cordova (2.88); City of Sacramento (2.59): Unincorporated Sacramento County (2.75).

Table 4-54 Sacramento County Planning Area – Improved Residential Parcels and Populations by High Hazard Dam (Inside the County) Inundation Area and Jurisdiction

High Hazard (Inside County) Dam Name/Jurisdiction	Improved Residential Parcels	Population at Risk
Calero		
Elk Grove	13	42
Unincorporated Sacramento County	15	41
Chesboro		
Elk Grove	0	0
Unincorporated Sacramento County	19	52
Nimbus		
Elk Grove	6,142	19,654
Isleton	249	792
Rancho Cordova	9,018	25,972
Sacramento	129,371	335,071
Unincorporated Sacramento County	28,651	78,790
Rancho Seco		
Galt	0	0
Unincorporated Sacramento County	24	66
Willow Hill Reservoir		
Folsom	1	3
Unincorporated Sacramento County	0	0

Source: DSOD/Cal OES Dam Inundations 01/25, 2025 Sacramento County Parcel/Assessor Data, 2020 US Census Bureau Average Household Size – City of Citrus Heights (2.56); City of Elk Grove (3.2); City of Folsom (2.64); City of Galt (3.07); City of Isleton (3.18); City of Rancho Cordova (2.88); City of Sacramento (2.59): Unincorporated Sacramento County (2.75).

Table 4-55 Sacramento County Planning Area – Improved Residential Parcels and Populations by High Hazard Dam (Outside the County) Inundation Area and Jurisdiction

High Hazard (Outside County) Dam Name/Jurisdiction	Improved Residential Parcels	Population at Risk
Arroyo Seco		
City of Galt	0	0
Unincorporated Sacramento County	8	22
Cameron Park		
Unincorporated Sacramento County	0	0
El Dorado Hills		
Unincorporated Sacramento County	0	0

High Hazard (Outside County) Dam Name/Jurisdiction	Improved Residential Parcels	Population at Risk
Hinkle		
Folsom	94	248
Jackson Creek		
Galt	3	9
Unincorporated Sacramento County	66	182
LL Anderson		
Folsom	0	0
Lake Tabeaud		
Galt	0	0
Unincorporated Sacramento County	14	39
Lower Hell Hole		
Folsom	0	0
Rollins		
Sacramento	4	10
Unincorporated Sacramento County	165	454
Shasta		
Unincorporated Sacramento County	73	201

Source: DSOD/Cal OES Dam Inundations 01/25, 2025 Sacramento County Parcel/Assessor Data, 2020 US Census Bureau Average Household Size – City of Citrus Heights (2.56); City of Elk Grove (3.2); City of Folsom (2.64); City of Galt (3.07); City of Isleton (3.18); City of Rancho Cordova (2.88); City of Sacramento (2.59): Unincorporated Sacramento County (2.75).

Structures

Many structures in the Sacramento County Planning Area have some measure of risk to dam failure. Dam failure flooding can affect the built environment of many locations in the Sacramento County Planning Area. Structures in dam inundation areas are at risk and depending on flood depths, can range from slight damage to total inundation. To further evaluate the impact to the Sacramento County Planning Area's structures located in these hazard areas, a separate analysis was performed to determine the number and property use of structures in the dam inundation areas. The DSOD/Cal OES dam inundation areas were overlayed on the parcel layer and linked to the Assessor Data. Analysis of structures affected by Extremely High Hazard dam and High Hazard dam inundation (both inside and outside the County) follows.

Extremely High Hazard Dam Analysis

Parcel counts, land, and improved values (i.e., those with a structure improvement on the parcel), estimated content replacement values, and total values that fall within each Extremely High Hazard dam inundation areas in the Planning Area are presented below by dam. Analysis is presented in the following tables.

- Table 4-56 shows the summary counts and values of parcels in all Extremely High Hazard dam inundation areas in the Sacramento County Planning Area.

- Table 4-57 shows the count and value of parcels in the Extremely High Hazard dam inundation areas detailed by property use for the unincorporated County.

Additional information on dam failure inundation areas that affect the jurisdictions in Sacramento County can be found in their respective annexes to this Plan.

Table 4-56 Sacramento County Planning Area– Summary Counts and Values of Parcels and Structures in Extremely High Hazard (Outside the County) Dam Inundation Areas

Dam Inundation Areas	Total Parcel Count	Improved Parcel Count	Total Land Value	Structure Value	Estimated Contents Value	Total Value
Bear River	27	5	$8,847,182	$10,724,801	$10,724,801	$30,296,784
Bowman	371	211	$86,954,830	$136,659,618	$71,688,080	$295,302,528
Camanche	531	293	$136,789,294	$165,020,360	$148,348,841	$450,158,495
Camp Far West	382	174	$78,227,130	$132,349,801	$74,658,490	$285,235,421
Don Pedro	57	28	$8,863,050	$6,989,838	$4,364,960	$20,217,848
French Lake	371	211	$86,954,830	$136,659,618	$71,688,080	$295,302,528
Huntington Lake 1 (Big Creek Dam No 1)	111	35	$29,157,261	$16,677,061	$15,420,439	$61,254,761
Jackson Meadows	359	201	$84,263,838	$131,523,614	$69,120,078	$284,907,530
Lower Bear River	27	4	$6,883,188	$7,549,105	$7,549,105	$21,981,398
Mammoth Pool	123	38	$30,829,920	$19,154,277	$17,113,342	$67,097,539
New Bullards Bar	588	221	$108,984,480	$207,293,064	$138,914,345	$455,191,889
Oroville	2,167	1,065	$398,752,880	$593,220,196	$468,533,660	$1,460,506,736
Pardee	273	135	$55,764,701	$102,281,781	$91,958,923	$250,005,405
Salt Springs	119	56	$34,888,309	$46,553,144	$45,027,694	$126,469,147
Scotts Flat	321	176	$74,223,620	$119,505,565	$63,111,053	$256,840,238
Shaver Lake	122	39	$30,897,474	$19,490,304	$17,449,369	$67,837,147
Sly Park	1,365	887	$327,118,861	$532,581,154	$405,940,254	$1,265,640,269
Union Valley	80,702	74,476	$13,671,446,710	$34,897,954,431	$23,145,645,284	$71,715,046,425
Vermilion Valley	134	44	$32,817,906	$20,637,734	$18,185,469	$71,641,109

Source: DSOD Dam Inundations 01/25, 2025 Amador County Parcel/Assessor Data

Table 4-57 Unincorporated Sacramento County – Count and Value of Parcels and Structures in Extremely High Hazard Dam (Outside the County) Inundation Areas 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
Bear River							
Agricultural	13	5	$8,588,365	$10,724,801	$19,313,166	$10,724,801	$30,037,967
Miscellaneous	6	0	$258,807	$0	$258,807	$0	$258,807
Public / Utilities	3	0	$0	$0	$0	$0	$0
Vacant	5	0	$10	$0	$10	$0	$10
Unincorporated Sacramento County Total	**27**	**5**	**$8,847,182**	**$10,724,801**	**$19,571,983**	**$10,724,801**	**$30,296,784**
Bowman							
Agricultural	2	0	$20	$0	$20	$0	$20
Miscellaneous	13	1	$45,655	$48,999	$94,654	$48,999	$143,653
Public / Utilities	70	0	$18	$0	$18	$0	$18
Recreational	5	2	$602,006	$351,118	$953,124	$351,118	$1,304,242
Residential	179	175	$60,612,020	$114,087,089	$174,699,109	$57,043,545	$231,742,654
Vacant	48	2	$13,933,670	$42,916	$13,976,586	$0	$13,976,586
Unincorporated Sacramento County Total	**317**	**180**	**$75,193,389**	**$114,530,122**	**$189,723,511**	**$57,443,662**	**$247,167,173**
Camanche							
Agricultural	246	174	$90,759,568	$122,409,733	$213,169,301	$122,409,733	$335,579,034
Industrial	2	2	$404,912	$285,452	$690,364	$428,178	$1,118,542
Miscellaneous	55	0	$294,843	$0	$294,843	$0	$294,843
Office	2	2	$307,228	$194,740	$501,968	$194,740	$696,708
Public / Utilities	17	0	$10	$0	$10	$0	$10
Recreational	30	15	$4,771,896	$7,010,184	$11,782,080	$7,010,184	$18,792,264
Residential	100	85	$30,972,097	$32,816,416	$63,788,513	$16,408,208	$80,196,721
Retail / Commercial	9	8	$1,071,098	$1,527,798	$2,598,896	$1,527,798	$4,126,694
Vacant	60	6	$4,367,500	$406,037	$4,773,537	$0	$4,773,537
Unincorporated Sacramento County Total	**521**	**292**	**$132,949,152**	**$164,650,360**	**$297,599,512**	**$147,978,841**	**$445,578,353**
Camp Far West							
Agricultural	2	0	$20	$0	$20	$0	$20

Dam Inundation Area / Property Use	Total Parcel Count	Improved Parcel Count	Total Land Value	Structure Value	Total Value	Estimated Contents Value	Total Value
Miscellaneous	11	1	$45,645	$48,999	$94,644	$48,999	$143,643
Public / Utilities	68	0	$18	$0	$18	$0	$18
Recreational	4	1	$306,471	$232,908	$539,379	$232,908	$772,287
Residential	165	161	$57,410,267	$108,187,477	$165,597,744	$54,093,739	$219,691,483
Vacant	44	2	$12,282,922	$42,916	$12,325,838	$0	$12,325,838
Unincorporated Sacramento County Total	**294**	**165**	**$70,045,343**	**$108,512,300**	**$178,557,643**	**$54,375,646**	**$232,933,289**
Don Pedro							
Agricultural	1	0	$0	$0	$0	$0	$0
Miscellaneous	1	0	$10	$0	$10	$0	$10
Public / Utilities	8	0	$9	$0	$9	$0	$9
Recreational	11	5	$2,023,295	$1,751,235	$3,774,530	$1,751,235	$5,525,765
Residential	23	22	$4,862,314	$5,227,450	$10,089,764	$2,613,725	$12,703,489
Vacant	13	1	$1,977,422	$11,153	$1,988,575	$0	$1,988,575
Unincorporated Sacramento County Total	**57**	**28**	**$8,863,050**	**$6,989,838**	**$15,852,888**	**$4,364,960**	**$20,217,848**
French Lake							
Agricultural	2	0	$20	$0	$20	$0	$20
Miscellaneous	13	1	$45,655	$48,999	$94,654	$48,999	$143,653
Public / Utilities	70	0	$18	$0	$18	$0	$18
Recreational	5	2	$602,006	$351,118	$953,124	$351,118	$1,304,242
Residential	179	175	$60,612,020	$114,087,089	$174,699,109	$57,043,545	$231,742,654
Vacant	48	2	$13,933,670	$42,916	$13,976,586	$0	$13,976,586
Unincorporated Sacramento County Total	**317**	**180**	**$75,193,389**	**$114,530,122**	**$189,723,511**	**$57,443,662**	**$247,167,173**
Huntington Lake 1 (Big Creek Dam No 1)							
Agricultural	27	11	$15,632,049	$3,333,322	$18,965,371	$3,333,322	$22,298,693
Miscellaneous	6	0	$6,115	$0	$6,115	$0	$6,115
Public / Utilities	21	0	$18	$0	$18	$0	$18
Recreational	21	13	$7,787,036	$10,772,029	$18,559,065	$10,772,029	$29,331,094
Residential	9	9	$3,345,681	$2,511,109	$5,856,790	$1,255,555	$7,112,345
Retail / Commercial	1	1	$378,850	$59,533	$438,383	$59,533	$497,916
Vacant	26	1	$2,007,512	$1,068	$2,008,580	$0	$2,008,580

Dam Inundation Area / Property Use	Total Parcel Count	Improved Parcel Count	Total Land Value	Structure Value	Total Value	Estimated Contents Value	Total Value
Unincorporated Sacramento County Total	**111**	**35**	**$29,157,261**	**$16,677,061**	**$45,834,322**	**$15,420,439**	**$61,254,761**
Jackson Meadows							
Agricultural	2	0	$20	$0	$20	$0	$20
Miscellaneous	13	1	$45,655	$48,999	$94,654	$48,999	$143,653
Public / Utilities	69	0	$18	$0	$18	$0	$18
Recreational	5	2	$602,006	$351,118	$953,124	$351,118	$1,304,242
Residential	175	171	$59,749,509	$112,134,766	$171,884,275	$56,067,383	$227,951,658
Vacant	48	2	$13,933,670	$42,916	$13,976,586	$0	$13,976,586
Unincorporated Sacramento County Total	**312**	**176**	**$74,330,878**	**$112,577,799**	**$186,908,677**	**$56,467,500**	**$243,376,177**
Lower Bear River							
Agricultural	12	4	$6,622,883	$7,549,105	$14,171,988	$7,549,105	$21,721,093
Miscellaneous	7	0	$260,295	$0	$260,295	$0	$260,295
Public / Utilities	3	0	$0	$0	$0	$0	$0
Vacant	5	0	$10	$0	$10	$0	$10
Unincorporated Sacramento County Total	**27**	**4**	**$6,883,188**	**$7,549,105**	**$14,432,293**	**$7,549,105**	**$21,981,398**
Mammoth Pool							
Agricultural	29	12	$15,674,683	$3,933,712	$19,608,395	$3,933,712	$23,542,107
Miscellaneous	8	0	$7,551	$0	$7,551	$0	$7,551
Public / Utilities	21	0	$18	$0	$18	$0	$18
Recreational	22	14	$7,869,732	$11,138,695	$19,008,427	$11,138,695	$30,147,122
Residential	12	12	$5,032,608	$4,081,870	$9,114,478	$2,040,935	$11,155,413
Vacant	31	0	$2,245,328	$0	$2,245,328	$0	$2,245,328
Unincorporated Sacramento County Total	**123**	**38**	**$30,829,920**	**$19,154,277**	**$49,984,197**	**$17,113,342**	**$67,097,539**
New Bullards Bar							
Agricultural	7	0	$48	$0	$48	$0	$48
Miscellaneous	39	1	$53,748	$48,999	$102,747	$48,999	$151,746
Public / Utilities	71	0	$18	$0	$18	$0	$18
Recreational	5	2	$602,006	$351,118	$953,124	$351,118	$1,304,242
Residential	179	175	$60,612,020	$114,087,089	$174,699,109	$57,043,545	$231,742,654

Dam Inundation Area / Property Use	Total Parcel Count	Improved Parcel Count	Total Land Value	Structure Value	Total Value	Estimated Contents Value	Total Value
Vacant	53	2	$13,933,713	$42,916	$13,976,629	$0	$13,976,629
Unincorporated Sacramento County Total	**354**	**180**	**$75,201,553**	**$114,530,122**	**$189,731,675**	**$57,443,662**	**$247,175,337**
Oroville							
Agricultural	455	337	$152,720,538	$230,339,632	$383,060,170	$230,339,632	$613,399,802
Industrial	11	7	$3,986,581	$8,541,539	$12,528,120	$12,812,309	$25,340,429
Miscellaneous	192	2	$452,998	$55,274	$508,272	$55,274	$563,546
Office	3	3	$557,302	$347,788	$905,090	$347,788	$1,252,878
Public / Utilities	112	0	$28	$0	$28	$0	$28
Recreational	50	24	$7,121,063	$8,499,900	$15,620,963	$8,499,900	$24,120,863
Residential	479	440	$145,151,695	$196,884,895	$342,036,590	$98,442,448	$440,479,038
Retail / Commercial	15	14	$2,564,865	$12,485,841	$15,050,706	$12,485,841	$27,536,547
Vacant	201	11	$27,502,616	$515,859	$28,018,475	$0	$28,018,475
Unincorporated Sacramento County Total	**1,518**	**838**	**$340,057,686**	**$457,670,728**	**$797,728,414**	**$362,983,191**	**$1,160,711,605**
Pardee							
Agricultural	137	95	$42,915,041	$80,731,330	$123,646,371	$80,731,330	$204,377,701
Industrial	1	1	$212,241	$42,448	$254,689	$63,672	$318,361
Miscellaneous	45	0	$21,416	$0	$21,416	$0	$21,416
Office	1	1	$182,070	$119,646	$301,716	$119,646	$421,362
Public / Utilities	8	0	$10	$0	$10	$0	$10
Recreational	6	0	$20,899	$0	$20,899	$0	$20,899
Residential	33	31	$11,193,319	$20,469,681	$31,663,000	$10,234,841	$41,897,841
Retail / Commercial	7	6	$610,418	$809,434	$1,419,852	$809,434	$2,229,286
Vacant	35	1	$609,287	$109,242	$718,529	$0	$718,529
Unincorporated Sacramento County Total	**273**	**135**	**$55,764,701**	**$102,281,781**	**$158,046,482**	**$91,958,923**	**$250,005,405**
Salt Springs							
Agricultural	56	38	$23,420,933	$43,177,333	$66,598,266	$43,177,333	$109,775,599
Miscellaneous	10	0	$5,334	$0	$5,334	$0	$5,334
Public / Utilities	6	0	$10	$0	$10	$0	$10
Recreational	1	0	$370,000	$0	$370,000	$0	$370,000

Dam Inundation Area / Property Use	Total Parcel Count	Improved Parcel Count	Total Land Value	Structure Value	Total Value	Estimated Contents Value	Total Value
Residential	14	14	$3,319,707	$2,960,721	$6,280,428	$1,480,361	$7,760,789
Vacant	20	3	$1,563,877	$45,090	$1,608,967	$0	$1,608,967
Unincorporated Sacramento County Total	**107**	**55**	**$28,679,861**	**$46,183,144**	**$74,863,005**	**$44,657,694**	**$119,520,699**
Scotts Flat							
Agricultural	2	0	$20	$0	$20	$0	$20
Miscellaneous	13	1	$45,655	$48,999	$94,654	$48,999	$143,653
Public / Utilities	68	0	$18	$0	$18	$0	$18
Recreational	5	2	$602,006	$351,118	$953,124	$351,118	$1,304,242
Residential	169	165	$58,102,425	$109,493,879	$167,596,304	$54,746,940	$222,343,244
Vacant	44	2	$12,282,922	$42,916	$12,325,838	$0	$12,325,838
Unincorporated Sacramento County Total	**301**	**170**	**$71,033,046**	**$109,936,912**	**$180,969,958**	**$55,147,057**	**$236,117,015**
Shaver Lake							
Agricultural	29	12	$15,674,683	$3,933,712	$19,608,395	$3,933,712	$23,542,107
Miscellaneous	7	0	$7,551	$0	$7,551	$0	$7,551
Public / Utilities	21	0	$18	$0	$18	$0	$18
Recreational	23	15	$7,937,286	$11,474,722	$19,412,008	$11,474,722	$30,886,730
Residential	12	12	$5,032,608	$4,081,870	$9,114,478	$2,040,935	$11,155,413
Vacant	30	0	$2,245,328	$0	$2,245,328	$0	$2,245,328
Unincorporated Sacramento County Total	**122**	**39**	**$30,897,474**	**$19,490,304**	**$50,387,778**	**$17,449,369**	**$67,837,147**
Sly Park							
Agricultural	313	182	$152,327,850	$196,191,514	$348,519,364	$196,191,514	$544,710,878
Care / Health	1	0	$177	$0	$177	$0	$177
Church / Welfare	2	1	$344,299	$4,091,246	$4,435,545	$4,091,246	$8,526,791
Industrial	8	5	$3,502,688	$14,190,239	$17,692,927	$21,285,359	$38,978,286
Miscellaneous	81	0	$41,185	$0	$41,185	$0	$41,185
Office	2	2	$1,353,662	$4,292,588	$5,646,250	$4,292,588	$9,938,838
Public / Utilities	17	0	$10	$0	$10	$0	$10
Recreational	13	6	$8,798,835	$15,175,897	$23,974,732	$15,175,897	$39,150,629
Residential	721	625	$114,509,123	$238,204,297	$352,713,420	$119,102,149	$471,815,569

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	11	11	$11,809,393	$32,020,099	$43,829,492	$32,020,099	$75,849,591
Vacant	141	9	$21,230,807	$852,469	$22,083,276	$0	$22,083,276
Unincorporated Sacramento County Total	**1,310**	**841**	**$313,918,029**	**$505,018,349**	**$818,936,378**	**$392,158,851**	**$1,211,095,229**
Union Valley							
Agricultural	311	259	$98,758,936	$161,782,003	$260,540,939	$161,782,003	$422,322,942
Care / Health	23	21	$20,635,772	$159,988,588	$180,624,360	$159,988,588	$340,612,948
Church / Welfare	47	38	$32,235,576	$152,102,172	$184,337,748	$152,102,172	$336,439,920
Industrial	69	58	$44,001,819	$103,299,160	$147,300,979	$154,948,740	$302,249,719
Miscellaneous	579	3	$1,905,119	$101,008	$2,006,127	$101,008	$2,107,135
Office	237	210	$177,089,602	$481,790,034	$658,879,636	$481,790,034	$1,140,669,670
Public / Utilities	155	0	$27	$0	$27	$0	$27
Recreational	57	24	$17,290,020	$16,684,427	$33,974,447	$16,684,427	$50,658,874
Residential	20,569	20,271	$2,831,601,058	$7,182,061,757	$10,013,662,815	$3,591,030,879	$13,604,693,694
Retail / Commercial	363	341	$289,805,469	$608,060,330	$897,865,799	$608,060,330	$1,505,926,129
Unknown	118	0	$0	$0	$0	$0	$0
Vacant	396	23	$87,430,389	$1,735,908	$89,166,297	$0	$89,166,297
Unincorporated Sacramento County Total	**22,924**	**21,248**	**$3,600,753,787**	**$8,867,605,387**	**$12,468,359,174**	**$5,326,488,181**	**$17,794,847,355**
Vermilion Valley							
Agricultural	31	13	$16,279,059	$4,200,016	$20,479,075	$4,200,016	$24,679,091
Miscellaneous	8	0	$7,551	$0	$7,551	$0	$7,551
Public / Utilities	21	0	$18	$0	$18	$0	$18
Recreational	23	15	$7,937,286	$11,474,722	$19,412,008	$11,474,722	$30,886,730
Residential	14	14	$5,485,957	$4,902,395	$10,388,352	$2,451,198	$12,839,550
Retail / Commercial	1	1	$378,850	$59,533	$438,383	$59,533	$497,916
Vacant	36	1	$2,729,185	$1,068	$2,730,253	$0	$2,730,253
Unincorporated Sacramento County Total	**134**	**44**	**$32,817,906**	**$20,637,734**	**$53,455,640**	**$18,185,469**	**$71,641,109**

Source: DSOD Dam Inundations 01/25, 2025 Sacramento County Parcel/Assessor Data

High Hazard Dam Analysis

Parcel counts, land, and improved values (i.e., those with a structure improvement on the parcel), estimated content replacement values, and total values that fall within each high hazard dam inundation areas in the Planning Area are presented below for dams inside the County and outside the County. The results are presented for both the Sacramento County Planning Area and unincorporated Sacramento County in the tables below. Counts and values of parcels in each High Hazard dam inundation area by property use in each jurisdiction can be found in their respective annexes to this LHMP Update.

- Table 4-58 shows the shows the summary counts and values of parcels in all High Hazard dam inundation areas (from dams originating inside the County) in the Sacramento County Planning Area.
- Table 4-59 shows the count and value of parcels in the High Hazard dam (inside the County) inundation areas detailed by property use for the unincorporated County.
- Table 4-60 shows the shows the summary counts and values of parcels in all High Hazard dam inundation areas (from dams originating outside the County) in the Sacramento County Planning Area.
- Table 4-61 shows the count and value of parcels in the High Hazard dam (outside the County) inundation areas detailed by property use for the unincorporated County.

Table 4-58 Sacramento County Planning Area– Summary Counts and Values of Parcels and Structures in High Hazard Dam (Inside the County) Inundation Areas

Dam Inundation Areas	Total Parcel Count	Improved Parcel Count	Total Land Value	Structure Value	Estimated Contents Value	Total Value
Calero	177	116	$92,636,782	$107,453,048	$101,031,592	$301,121,422
Chesbro	171	105	$93,496,563	$106,673,985	$102,969,805	$303,140,353
Nimbus	198,330	182,023	$26,503,285,214	$70,474,040,959	$46,372,709,123	$143,350,035,296
Rancho Seco	164	95	$51,067,837	$68,536,581	$65,395,602	$185,000,020
Willow Hill Reservoir	40	18	$47,117,920	$490,177,498	$457,623,062	$994,918,480

Source: DSOD/Cal OES Dam Inundations 01/25, 2025 Sacramento County Parcel/Assessor Data

Table 4-59 Unincorporated Sacramento County – Count and Value of Parcels and Structures in High Hazard (Inside the County) Dam 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
Calero						
Agricultural	115	85	$83,904,297	$93,601,449	$93,601,449	$271,107,195
Care / Health	1	0	$177	$0	$0	$177
Miscellaneous	8	0	$13,144	$0	$0	$13,144
Public / Utilities	3	0	$0	$0	$0	$0
Recreational	1	1	$551,930	$367,944	$367,944	$1,287,818
Residential	17	15	$3,009,638	$5,689,407	$2,844,704	$11,543,749

Dam Inundation Area / Property Use	Total Parcel Count	Improved Parcel Count	Total Land Value	Structure Value	Estimated Contents Value	Total Value
Retail / Commercial	2	2	$75,689	$640,742	$640,742	$1,357,173
Vacant	14	0	$1,398,349	$0	$0	$1,398,349
Unincorporated Sacramento County Total	**161**	**103**	**$88,953,224**	**$100,299,542**	**$97,454,839**	**$286,707,605**
Chesbro						
Agricultural	112	81	$80,191,382	$96,270,806	$96,270,806	$272,732,994
Miscellaneous	11	0	$1,312	$0	$0	$1,312
Public / Utilities	3	0	$0	$0	$0	$0
Recreational	5	2	$4,823,762	$3,340,467	$3,340,467	$11,504,696
Residential	22	19	$4,399,435	$6,717,063	$3,358,532	$14,475,030
Vacant	16	3	$4,080,672	$345,649	$0	$4,426,321
Unincorporated Sacramento County Total	**169**	**105**	**$93,496,563**	**$106,673,985**	**$102,969,805**	**$303,140,353**
Nimbus						
Agricultural	885	558	$338,126,330	$342,274,955	$342,274,955	$1,022,676,240
Care / Health	32	26	$9,499,318	$61,674,022	$61,674,022	$132,847,362
Church / Welfare	117	103	$43,493,458	$180,059,301	$180,059,301	$403,612,060
Industrial	590	533	$384,719,357	$1,377,134,191	$2,065,701,287	$3,827,554,835
Miscellaneous	853	7	$9,425,405	$125,348	$125,348	$9,676,101
Office	203	182	$139,648,269	$467,950,522	$467,950,522	$1,075,549,313
Public / Utilities	194	0	$18	$0	$0	$18
Recreational	115	58	$27,995,715	$35,733,795	$35,733,795	$99,463,305
Residential	29,022	28,651	$2,494,108,652	$7,058,145,783	$3,529,072,892	$13,081,327,327
Retail / Commercial	599	551	$346,722,308	$600,168,800	$600,168,800	$1,547,059,908
Unknown	93	0	$0	$0	$0	$0
Vacant	1,251	59	$321,022,079	$2,478,049	$0	$323,500,128
Unincorporated Sacramento County Total	**33,954**	**30,728**	**$4,114,760,909**	**$10,125,744,766**	**$7,282,760,921**	**$21,523,266,596**
Rancho Seco						
Agricultural	92	70	$45,168,800	$62,353,977	$62,353,977	$169,876,754
Industrial	1	0	$0	$0	$0	$0
Miscellaneous	17	0	$1,527	$0	$0	$1,527
Public / Utilities	4	0	$0	$0	$0	$0

Dam Inundation Area / Property Use	Total Parcel Count	Improved Parcel Count	Total Land Value	Structure Value	Estimated Contents Value	Total Value
Residential	24	24	$4,833,695	$6,083,250	$3,041,625	$13,958,570
Vacant	25	1	$1,063,815	$99,354	$0	$1,163,169
Unincorporated Sacramento County Total	**163**	**95**	**$51,067,837**	**$68,536,581**	**$65,395,602**	**$185,000,020**
Willow Hill Reservoir						
Miscellaneous	2	0	$6,032	$0	$0	$6,032
Public / Utilities	1	0	$0	$0	$0	$0
Vacant	2	0	$181,215	$0	$0	$181,215
Unincorporated Sacramento County Total	**5**	**0**	**$187,247**	**$0**	**$0**	**$187,247**

Source: DSOD/Cal OES Dam Inundations 01/25, 2025 Sacramento County Parcel/Assessor Data

Table 4-60 Sacramento County Planning Area– Summary Counts and Values of Parcels and Structures in High Hazard Dam (Outside the County) Inundation Areas

Dam Inundation Areas	Total Parcel Count	Improved Parcel Count	Total Land Value	Structure Value	Estimated Contents Value	Total Value
Arroyo Seco	65	40	$29,428,806	$30,865,684	$29,878,829	$90,173,319
Cameron Park	51	17	$22,872,720	$10,902,947	$10,902,947	$44,678,614
El Dorado Hills	1	1	$96,800	$19,693	$19,693	$136,186
Hinkle	123	99	$49,952,273	$95,925,728	$53,413,731	$199,291,732
Jackson Creek	440	230	$125,146,730	$155,366,941	$143,310,981	$423,824,652
L. L. Anderson	5	0	$0	$0	$0	$0
Lake Tabeaud	91	56	$36,424,866	$33,572,327	$32,046,877	$102,044,070
Lower Hell Hole	5	0	$0	$0	$0	$0
Rollins	322	177	$74,877,667	$119,957,139	$63,336,840	$258,171,646
Shasta	220	76	$29,935,913	$47,904,813	$24,124,715	$101,965,441

Source: DSOD/Cal OES Dam Inundations 01/25, 2025 Sacramento County Parcel/Assessor Data

Table 4-61 Unincorporated Sacramento County – 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
Arroyo Seco						
Agricultural	39	29	$20,244,989	$28,532,930	$28,532,930	$77,310,849
Miscellaneous	1	0	$3,836	$0	$0	$3,836
Public / Utilities	1	0	$0	$0	$0	$0
Recreational	1	0	$370,000	$0	$0	$370,000
Residential	8	8	$1,804,652	$1,951,797	$975,899	$4,732,348
Vacant	5	2	$796,899	$10,957	$0	$807,856
Unincorporated Sacramento County Total	**55**	**39**	**$23,220,376**	**$30,495,684**	**$29,508,829**	**$83,224,889**
Cameron Park						
Agricultural	39	15	$21,460,366	$10,262,205	$10,262,205	$41,984,776
Industrial	1	0	$1,313,512	$0	$0	$1,313,512
Miscellaneous	2	0	$60	$0	$0	$60
Retail / Commercial	2	2	$75,689	$640,742	$640,742	$1,357,173
Vacant	7	0	$23,093	$0	$0	$23,093
Unincorporated Sacramento County Total	**51**	**17**	**$22,872,720**	**$10,902,947**	**$10,902,947**	**$44,678,614**
El Dorado Hills						
Agricultural	1	1	$96,800	$19,693	$19,693	$136,186
Unincorporated Sacramento County Total	**1**	**1**	**$96,800**	**$19,693**	**$19,693**	**$136,186**
Jackson Creek						
Agricultural	225	150	$95,152,070	$128,421,784	$128,421,784	$351,995,638
Miscellaneous	58	0	$26,884	$0	$0	$26,884
Public / Utilities	13	0	$10	$0	$0	$10
Recreational	4	2	$493,234	$83,218	$83,218	$659,670
Residential	67	66	$17,727,706	$22,098,821	$11,049,411	$50,875,938
Retail / Commercial	1	0	$85,352	$0	$0	$85,352
Vacant	52	7	$4,522,680	$271,982	$0	$4,794,662
Unincorporated Sacramento County Total	**420**	**225**	**$118,007,936**	**$150,875,805**	**$139,554,413**	**$408,438,154**

Dam Inundation Area / Property Use	Total Parcel Count	Improved Parcel Count	Total Land Value	Structure Value	Estimated Contents Value	Total Value
Lake Tabeaud						
Agricultural	51	38	$24,371,394	$30,196,516	$30,196,516	$84,764,426
Miscellaneous	1	0	$3,836	$0	$0	$3,836
Public / Utilities	1	0	$0	$0	$0	$0
Recreational	1	0	$370,000	$0	$0	$370,000
Residential	14	14	$3,319,707	$2,960,721	$1,480,361	$7,760,789
Vacant	10	3	$1,563,858	$45,090	$0	$1,608,948
Unincorporated Sacramento County Total	**78**	**55**	**$29,628,795**	**$33,202,327**	**$31,676,877**	**$94,507,999**
Rollins						
Agricultural	2	0	$20	$0	$0	$20
Miscellaneous	12	1	$45,655	$48,999	$48,999	$143,653
Public / Utilities	68	0	$18	$0	$0	$18
Recreational	5	2	$602,006	$351,118	$351,118	$1,304,242
Residential	169	165	$58,171,368	$109,763,631	$54,881,816	$222,816,815
Vacant	45	2	$12,676,632	$42,916	$0	$12,719,548
Unincorporated Sacramento County Total	**301**	**170**	**$71,495,699**	**$110,206,664**	**$55,281,933**	**$236,984,296**
Shasta						
Agricultural	15	0	$77	$0	$0	$77
Miscellaneous	25	0	$35,549	$0	$0	$35,549
Public / Utilities	73	0	$18	$0	$0	$18
Recreational	4	2	$601,996	$351,118	$351,118	$1,304,232
Residential	75	73	$25,063,352	$47,547,193	$23,773,597	$96,384,142
Vacant	28	1	$4,234,921	$6,502	$0	$4,241,423
Unincorporated Sacramento County Total	**220**	**76**	**$29,935,913**	**$47,904,813**	**$24,124,715**	**$101,965,441**

Source: DSOD/Cal OES Dam Inundations 01/25, 2025 Sacramento County Parcel/Assessor Data

Critical Facilities and Infrastructure

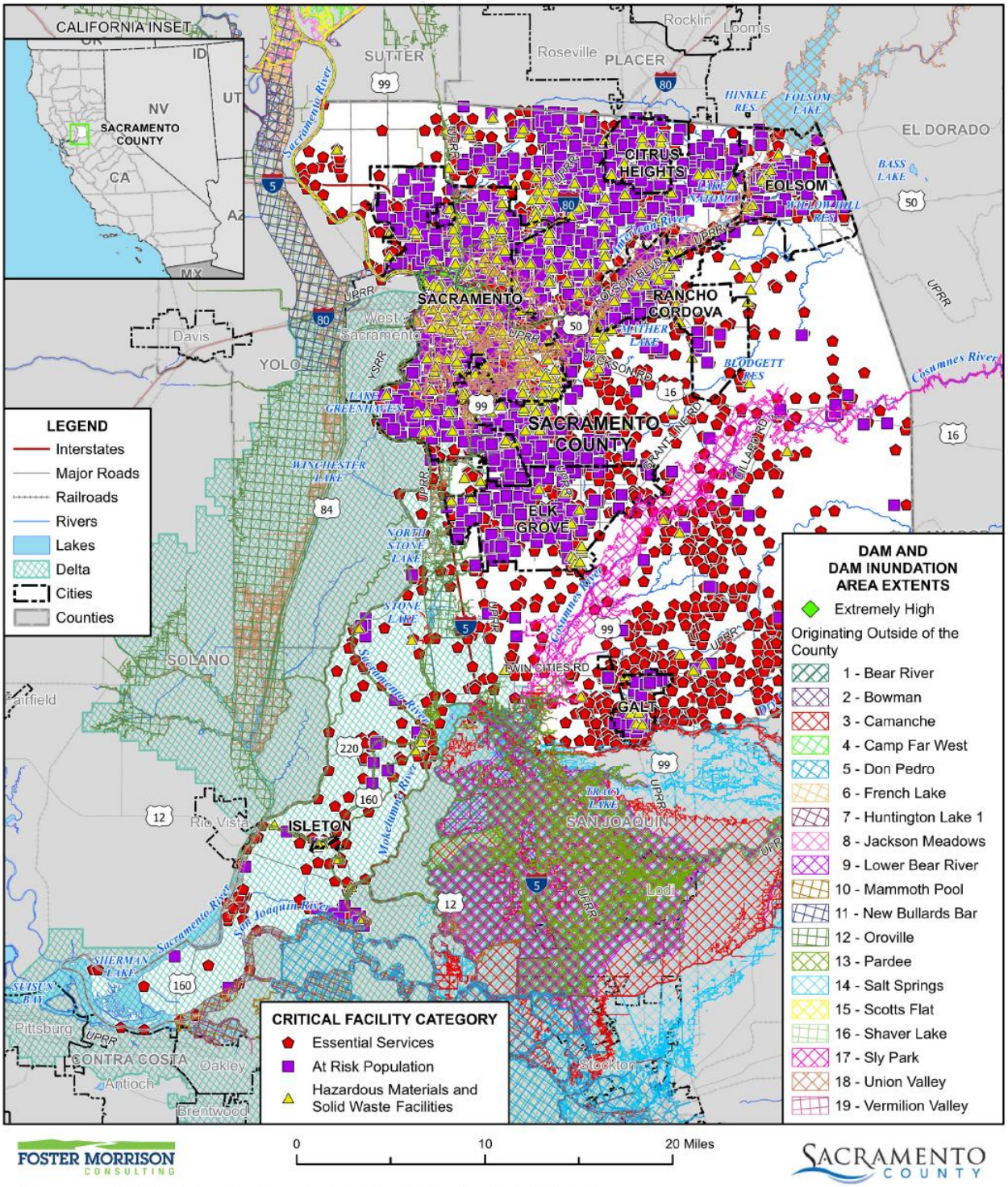
Dam failure presents a threat to critical facilities and infrastructure. For example, transportation routes, including bridges and highways, are vulnerable to dam inundation and have the potential to be unpassable and even destroyed, creating isolation and supply chain issues. Those critical facilities that are most vulnerable are those that are already in poor condition and would not be able to withstand a large water

surge. The following GIS analysis identifies critical facilities and infrastructure at risk to dam inundation flooding, separated out by Extremely High Hazard and High Hazard dams.

Extremely High Hazard Dam Inundation Analysis

The following analysis discusses critical facilities and infrastructure that fall within dam inundation areas. A separate analysis was performed on the critical facility inventory in the Sacramento County Planning Area to determine critical facilities in Extremely High Hazard dam inundation areas. Using GIS, the DSOD extremely High Hazard dam inundation areas were overlayed on the critical facility GIS layer. Figure 4-67 shows critical facilities, as well as the Extremely High Hazard dam inundation areas. Table 4-62 details critical facilities by Extremely High Hazard dam inundation areas by facility type and count for the Planning Area. As shown, critical facilities that fall in the Extremely High Hazard dam inundation areas are located in many of the cities and in the unincorporated County.

Figure 4-67 Sacramento County Planning Area – 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: 4/16/2026.

Table 4-62 Sacramento County Planning Area – Critical Facilities in Extremely High Hazard Dam (Outside the County) Inundation Zones by Jurisdiction and Category

Jurisdiction / Critical Facility Category	Facility Count
Folsom	
Essential Services Facilities	5
At Risk Population Facilities	1
Folsom Total	**6**
Galt	
Essential Services Facilities	1
Galt Total	**1**
Isleton	
Essential Services Facilities	1
Isleton Total	**1**
Rancho Cordova	
Essential Services Facilities	19
At Risk Population Facilities	21
Hazardous Materials and Solid Waste Facilities	3
Rancho Cordova Total	**43**
Sacramento	
Essential Services Facilities	514
At Risk Population Facilities	331
Hazardous Materials and Solid Waste Facilities	131
Sacramento Total	**976**
Unincorporated Sacramento County	
Essential Services Facilities	217
At Risk Population Facilities	89
Hazardous Materials and Solid Waste Facilities	18
Unincorporated Sacramento County Total	**324**
Grand Total	**1,351**

Source: DSOD Dam Inundations 01/25; Sacramento County GIS

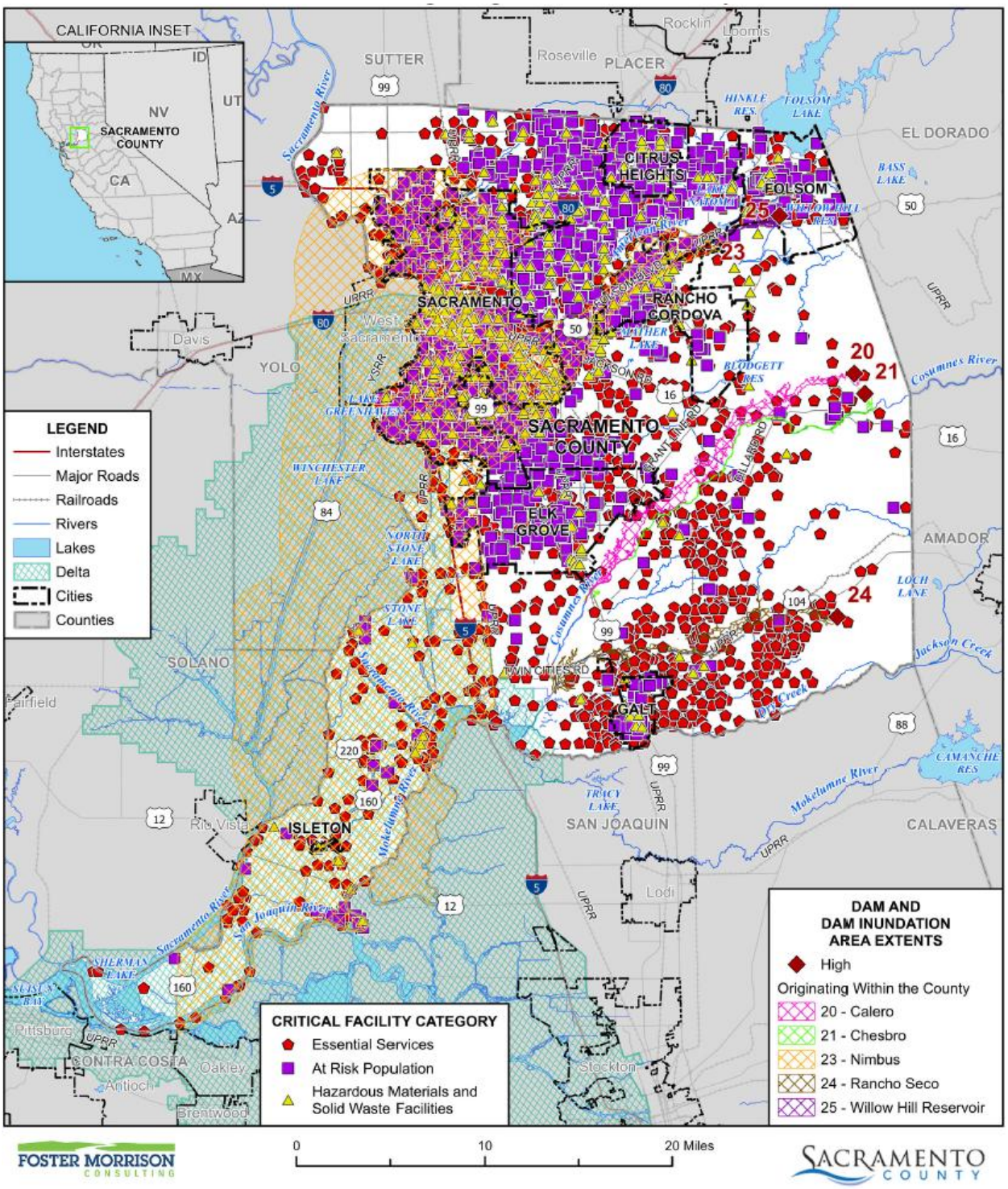
High Hazard Dam Inundation Analysis

Dam failure present 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 Sacramento County Planning Area to determine critical facilities in High Hazard dam inundation areas from both dams inside the County and those outside the County. Using GIS, the DSOD High Hazard dam inundation areas were overlayed on the critical facility GIS layer.

- For High Hazard dams inside the County, Figure 4-68 shows critical facilities, as well as the High Hazard dam inundation areas. Table 4-63 details critical facilities by High Hazard dam (inside the County) inundation areas by facility type and count for the Planning Area.
- For High Hazard dams outside the County, Figure 4-70 shows critical facilities, as well as the high hazard dam inundation areas. Table 4-67 details critical facilities by High Hazard dam (outside the County) inundation areas by facility type and count for the Planning Area.

As shown, critical facilities that fall in the High Hazard dam (from both inside and outside the County) inundation areas are located in many of the cities and in the unincorporated County.

Figure 4-68 Sacramento County Planning Area – Critical Facilities in High Hazard Dam (Inside the County) Inundation Areas



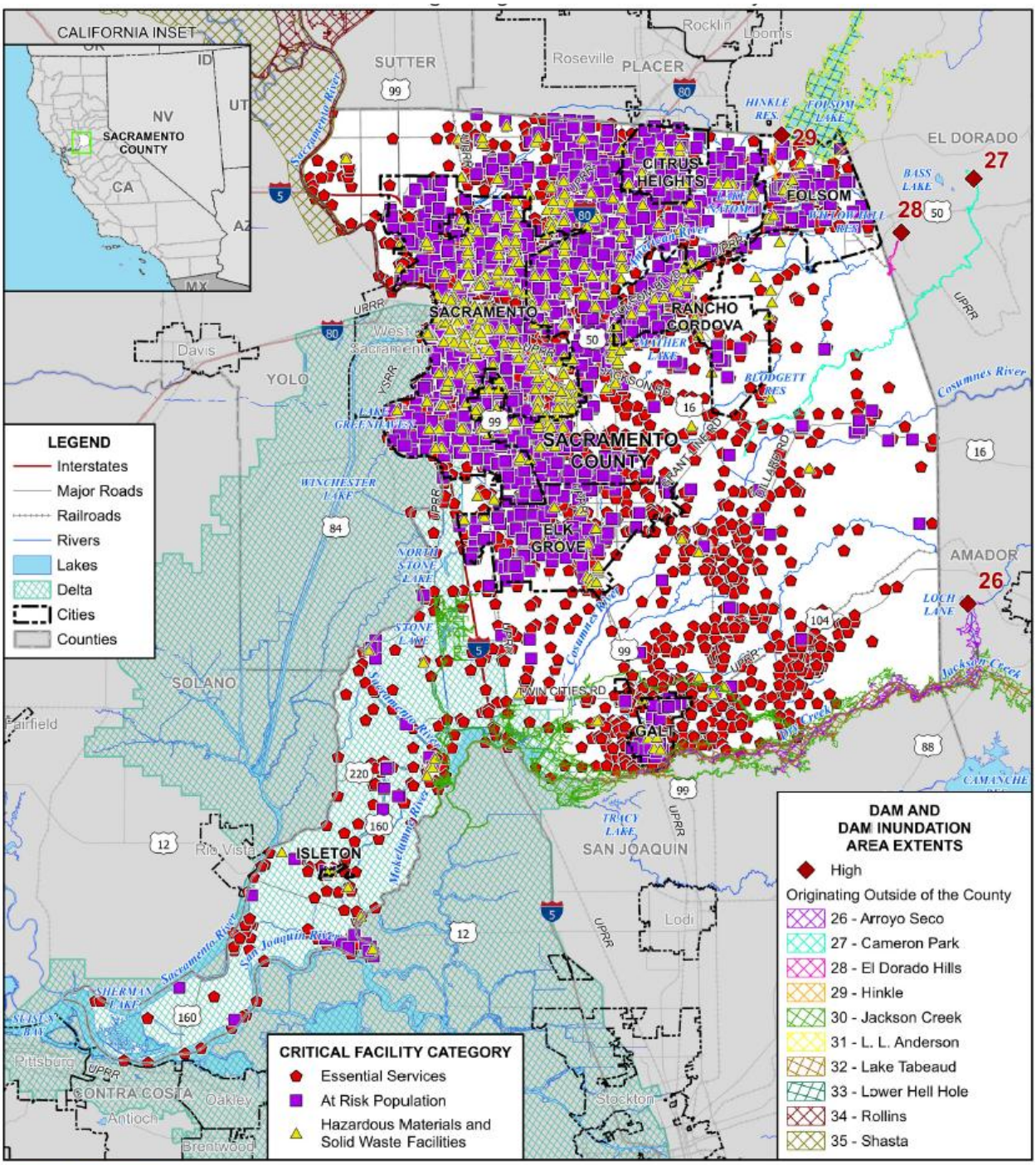
Data Source: DWR DSOD dam inundations (updated 7/2025; data downloaded 10/2025), NID dam inventory and inundation data (updated 11/6/2025; data downloaded 11/6/2025), CalOES CIP dam inundation data (3/2017), Sacramento County, Cal-Atlas; Map Date: 4/16/2026.

Table 4-63 Sacramento County Planning Area – Critical Facilities in High Hazard Dam (Inside the County) Inundation Zones by Jurisdiction and Category

Jurisdiction / Critical Facility Category	Facility Count
Elk Grove	
Essential Services Facilities	19
At Risk Population Facilities	22
Hazardous Materials and Solid Waste Facilities	2
Elk Grove Total	**43**
Folsom	
Essential Services Facilities	2
At Risk Population Facilities	1
Folsom Total	**3**
Isleton	
Essential Services Facilities	9
At Risk Population Facilities	4
Hazardous Materials and Solid Waste Facilities	3
Isleton Total	**16**
Rancho Cordova	
Essential Services Facilities	74
At Risk Population Facilities	82
Hazardous Materials and Solid Waste Facilities	8
Rancho Cordova Total	**164**
Sacramento	
Essential Services Facilities	1,173
At Risk Population Facilities	791
Hazardous Materials and Solid Waste Facilities	242
Sacramento Total	**2,206**
Unincorporated Sacramento County	
Essential Services Facilities	734
At Risk Population Facilities	223
Hazardous Materials and Solid Waste Facilities	55
Unincorporated Sacramento County Total	**1,012**
Grand Total	**3,444**

Source: DSOD/Cal OES Dam Inundations 01/25; Sacramento County GIS

Figure 4-69 Sacramento County Planning Area – 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), CalOES CIP dam inundation data (3/2017), Sacramento County, Cal-Atlas; Map Date: 4/16/2026.

Table 4-64 Sacramento County Planning Area – Critical Facilities in High Hazard Dam (Outside the County) Inundation Zones by Jurisdiction and Category

Jurisdiction / Critical Facility Category	Facility Count
Folsom	
Essential Services Facilities	4
At Risk Population Facilities	2
Folsom Total	**6**
Galt	
Essential Services Facilities	1
Galt Total	**1**
Isleton	
Essential Services Facilities	1
Isleton Total	**1**
Rancho Cordova	
Essential Services Facilities	19
At Risk Population Facilities	21
Hazardous Materials and Solid Waste Facilities	3
Rancho Cordova Total	**43**
Sacramento	
Essential Services Facilities	455
At Risk Population Facilities	323
Hazardous Materials and Solid Waste Facilities	128
Sacramento Total	**906**
Unincorporated Sacramento County	
Essential Services Facilities	162
At Risk Population Facilities	55
Hazardous Materials and Solid Waste Facilities	8
Unincorporated Sacramento County Total	**225**
Grand Total	**1,182**

Source: DSOD/Cal OES Dam Inundations 01/25; Sacramento County GIS

Natural, Historic, and Cultural Resources

A major dam failure event and associated flooding could have a devastating impact on the Amador County Planning Area. 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 structures and cultural resources may also be significantly affected and even destroyed. Generally, the impacts are associated with damage to these structures within the inundated areas 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.

FEMA NRI Hazard Vulnerability Assessment

Dam failure is not an NRI hazard and thus has no data to present.

Impacts from Dam Failure

Impacts to the Sacramento County Planning Area 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 County 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 Sacramento County include the following:

- Climate change is likely to exacerbate future rain and storm conditions and associated impacts and vulnerability of the County to dam failure. This was discussed in greater detail in the Climate Change and Dam Failure section of the Hazard Profile above
- Population growth in Sacramento County is expected to continue. There are 129 areas where the unincorporated County is expected development to occur in the next 5 years. Additional growth within

the dam inundation areas of the County would place additional populations at risk to dam failure. Additional population growth would likely bring continued diversity to the County. Vulnerable population groups could face disproportionate effects from a dam failure and should be planned for. Changes in population and population patterns may or may not increase the impacts and vulnerability of the County 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. There are 129 areas where the unincorporated County is expected development to occur in the next 5 years. Locating new development, structures, and critical facilities and infrastructure within or near areas of dam failure risk may put additional development at risk. However, County building codes are in effect to partially reduce this risk and should be updated as necessary to continue to address future dam failure conditions. Thus, 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 County to this hazard.

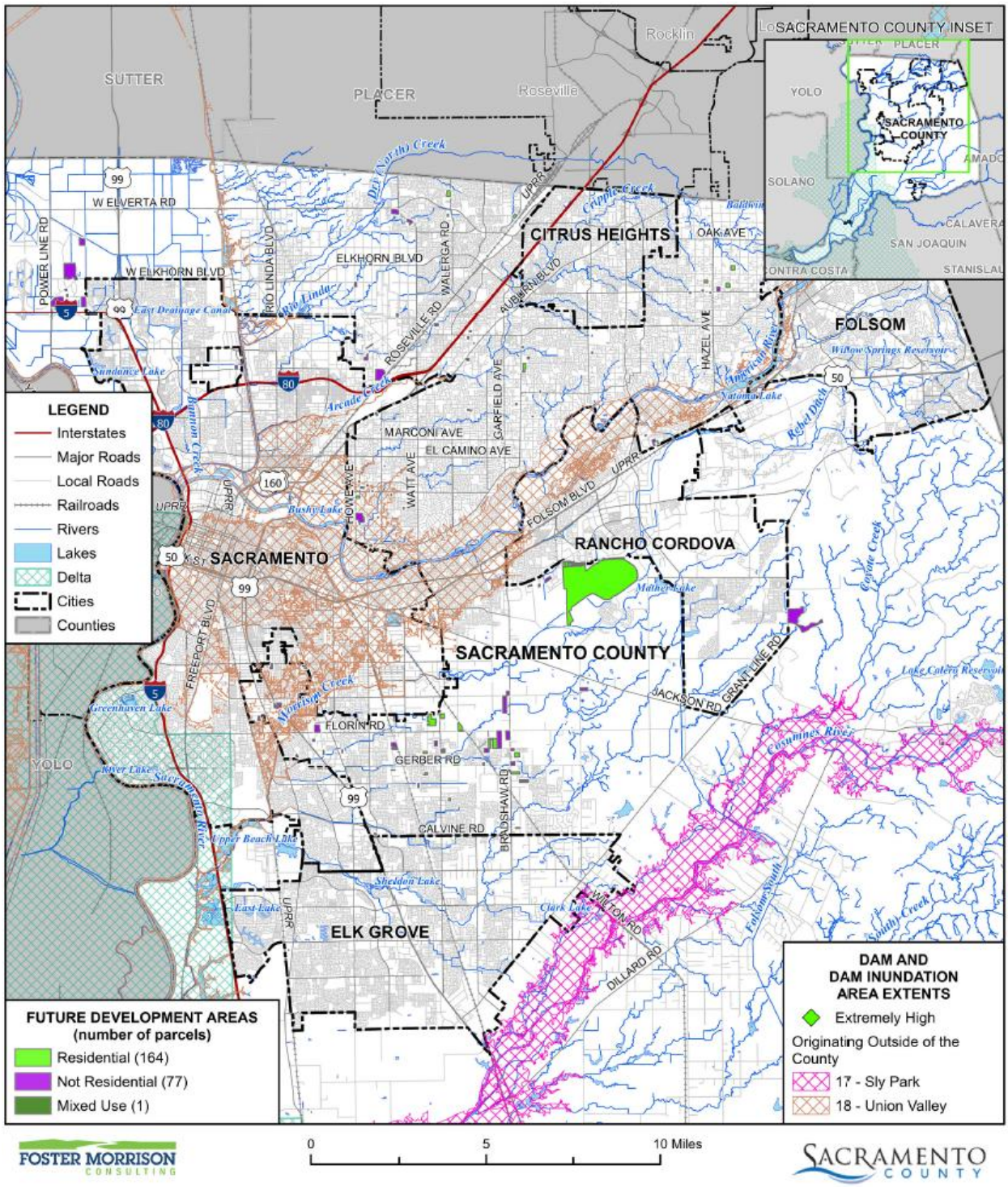
Future Development

Future development considerations should be ongoing and proactive. Ensuring that comprehensive land use planning is conducted, regulatory requirements, such as building codes, are followed, and varying needs for different demographic groups with intersecting identities that reside within the County are considered can help to make for a more resilient community. Although new growth and development corridors would fall in the area flooded by a dam failure, given the limited potential of total dam failure and the large area that a dam failure would affect, development in the dam inundation area will continue to occur.

GIS Analysis

Sacramento County provided 129 future development areas which were used as the basis for the inventory of future development for the unincorporated County. These were mapped in GIS. Future development areas in Extremely High Hazard (outside the County) dam inundation areas are shown on Figure 4-70 and detailed in Table 4-65. As shown, 1 future development area falls in the Sly Park inundation area, and 15 fall in the Union Valley inundation area. Future development areas in High Hazard (inside the County) dam inundation areas are shown on Figure 4-71 and detailed in Table 4-66. As shown, 31 future development areas falls in the Nimbus inundation area.

Figure 4-70 Unincorporated Sacramento County – Future Development Areas in Extremely High Hazard (Outside the County) Dam Inundation Areas



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

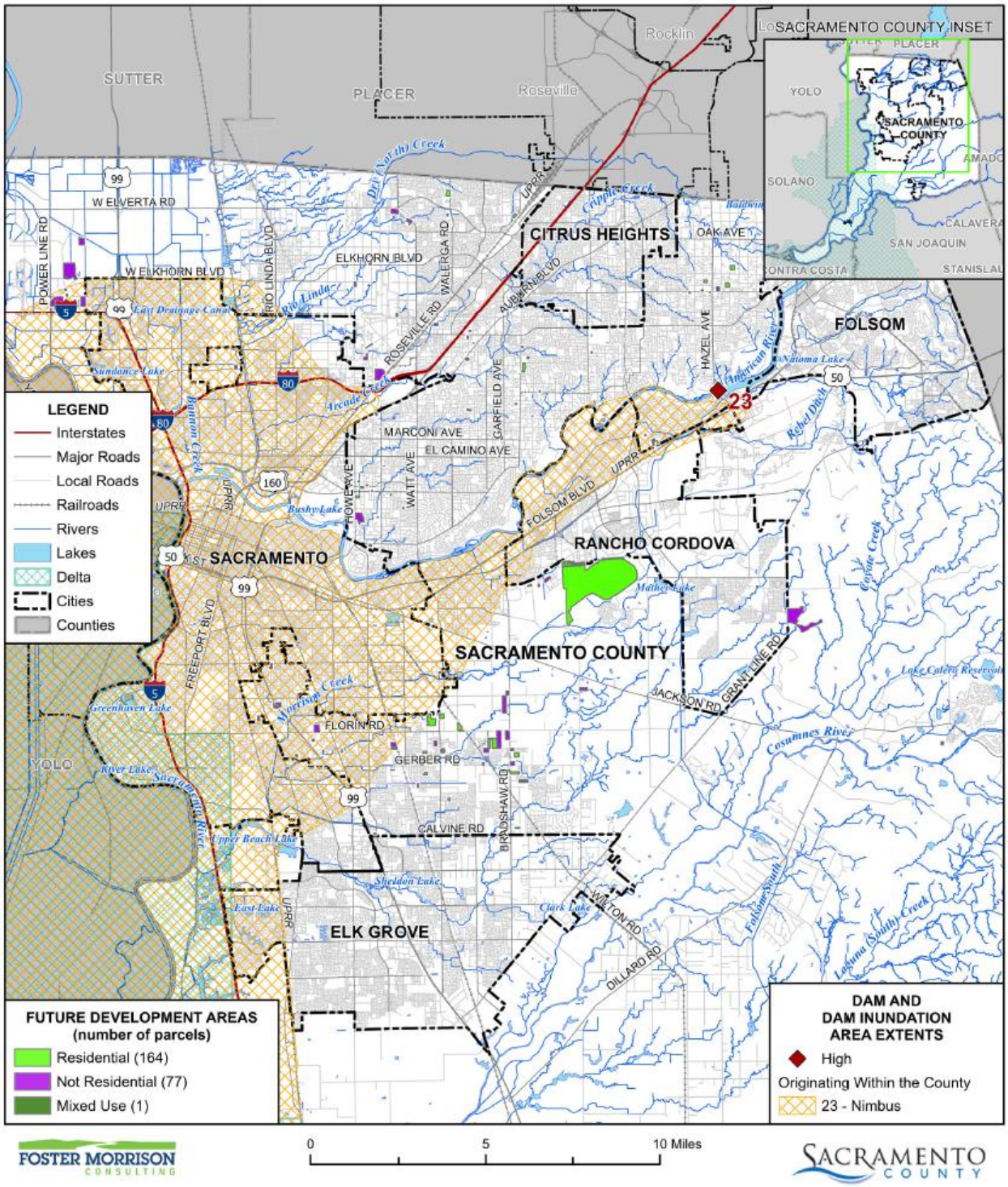
Table 4-65 Unincorporated Sacramento County – Future Development in Extremely High Hazard (Outside the County) Dam Inundation Areas

Dam Hazard Inundation Areas / Future Development Type and Status	Site/Location Name	Total Parcel Count	Improved Parcel Count	Unimproved Parcel Count	Total Acres	Total Improved Acres	Total Unimproved Acres
Sly Park							
Not Residential							
Closed	RMCC Church Addition (DRSmajor)	1	1	0	3.3	3.3	0.0
	Closed Total	**1**	**1**	**0**	**3.3**	**3.3**	**0.0**
Not Residential Total		**1**	**1**	**0**	**3.3**	**3.3**	**0.0**
Sly Park Total		**1**	**1**	**0**	**3.3**	**3.3**	**0.0**
Union Valley							
Residential							
Complete	1530 Howe Avenue Apartments (UPPamendSPP amendUPMDRS)	1	1	0	4.5	4.5	0.0
	Complete Total	**1**	**1**	**0**	**4.5**	**4.5**	**0.0**
Closed	2511 Larkspur Lane Townhomes (DRSmjPRC)	1	1	0	0.4	0.4	0.0
	2856 Arden Way MultiFamily Development (DRSmjPRC)	1	1	0	0.1	0.1	0.0
	2862 Arden Way MultiFamily Development (DRSmjPRC)	1	1	0	0.3	0.3	0.0
	Markston Apartments (DRSmjPRC)	1	0	1	1.1	0.0	1.1
	San Juan Apartments Phase 2 (DRSmjPRC)	1	0	1	1.3	0.0	1.3
	Summer Trace Apartments (DRSmjPRC)	1	1	0	2.6	2.6	0.0
	Closed Total	**6**	**4**	**2**	**5.8**	**3.5**	**2.4**
Residential Total		**7**	**5**	**2**	**10.4**	**8.0**	**2.4**
Not Residential							

Dam Hazard Inundation Areas / Future Development Type and Status	Site/Location Name	Total Parcel Count	Improved Parcel Count	Unimproved Parcel Count	Total Acres	Total Improved Acres	Total Unimproved Acres
Complete	Rising South Point Parcel Map (PMRDRS)	1	1	0	3.9	3.9	0.0
	Complete Total	**1**	**1**	**0**	**3.9**	**3.9**	**0.0**
Closed	1100 Howe Ave Fitness Building (DRSmajor)	1	1	0	32.0	32.0	0.0
	2227 Wyda Way Minor Auto Repair Facility (DRSmjPRC)	1	0	1	1.0	0.0	1.0
	Bowling Green Park Improvement Project (DRSmajor)	1	0	1	4.9	0.0	4.9
	Crown Sacramento Phase 2 (DRSmjPRC)	1	0	1	4.0	0.0	4.0
	Fruitridge Community Center & Park Restoration (DRSMjr)	1	0	1	4.6	0.0	4.6
	Rio Del Oro Plaza Parcel Map (PMRDRS)	1	1	0	1.7	1.7	0.0
	UHaul at 47th Ave (DRS Mjr PRC)	1	0	1	5.0	0.0	5.0
	Closed Total	**7**	**2**	**5**	**53.1**	**33.7**	**19.4**
Not Residential Total		**8**	**3**	**5**	**57.0**	**37.6**	**19.4**
Union Valley Total		**15**	**8**	**7**	**67.4**	**45.6**	**21.8**

Source: DSOD/Cal OES, Sacramento County GIS

Figure 4-71 Unincorporated Sacramento County – Future Development Areas in High Hazard (Inside the County) Dam Inundation Areas



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

Table 4-66 Unincorporated Sacramento County – Future Development Areas by Type and Status in High Hazard Dam (Inside the County) Inundation Areas with Parcels and Acres

Dam Hazard Inundation Areas / Future Development Type and Status	Site/Location Name	Total Parcel Count	Improved Parcel Count	Unimproved Parcel Count	Total Acres	Total Improved Acres	Total Unimproved Acres
Nimbus							
Residential							
Complete	6809 Fleming Tentative Parcel Map (PMRSPZDRS)	1	1	0	1.5	1.5	0.0
	Complete Total	**1**	**1**	**0**	**1.5**	**1.5**	**0.0**
Closed	San Juan Apartments Phase 2 (DRSmjPRC)	1	0	1	1.3	0.0	1.3
	Closed Total	**1**	**0**	**1**	**1.3**	**0.0**	**1.3**
Residential Total		**2**	**1**	**1**	**2.8**	**1.5**	**1.3**
Not Residential							
Complete	AlFarooq Mosque (UPPDRS)	1	1	0	2.4	2.4	0.0
	Echo Hotel at Florin Towne Centre (UPPDRS)	1	1	0	19.6	19.6	0.0
	Florin Towne Centre Tentative Parcel Map (PMRDRS)	1	1	0	19.6	19.6	0.0
	Metro Air Park West Commercial (PMRDRS)	1	0	1	16.5	0.0	16.5
	Rising South Point Parcel Map (PMRDRS)	1	1	0	3.9	3.9	0.0
	Complete Total	**5**	**4**	**1**	**62.1**	**45.6**	**16.5**

Dam Hazard Inundation Areas / Future Development Type and Status	Site/Location Name	Total Parcel Count	Improved Parcel Count	Unimproved Parcel Count	Total Acres	Total Improved Acres	Total Unimproved Acres
Closed	11363 Pyrites Way Design Review	1	1	0	1.2	1.2	0.0
	2322 Gold River Rd Storage Building (DRSmjr)	1	1	0	0.5	0.5	0.0
	7325 Reese Road Metal Building	1	1	0	8.5	8.5	0.0
	American Tower Data Center (DRSmjPRC)	1	1	0	3.6	3.6	0.0
	ARCO Metro Air Park (UPB-DRS)	1	0	1	1.4	0.0	1.4
	Bowling Green Park Improvement Project (DRSmajor)	1	0	1	4.9	0.0	4.9
	Cambria Suites MAP (SPPDRSmajor)	1	0	1	1.5	0.0	1.5
	Crown Sacramento Phase 2 (DRSmjPRC)	1	0	1	4.0	0.0	4.0
	Filipino Community Center (DRSmajor)	1	0	1	1.9	0.0	1.9
	Frasinetti Winery Tasting Room (DRSmajor)	1	1	0	3.6	3.6	0.0
	Fruitridge Community Center & Park Restoration (DRSMjr)	1	0	1	4.6	0.0	4.6

Dam Hazard Inundation Areas / Future Development Type and Status	Site/Location Name	Total Parcel Count	Improved Parcel Count	Unimproved Parcel Count	Total Acres	Total Improved Acres	Total Unimproved Acres
	Hoa Dam Temple (DRS Mjr)	1	0	1	0.5	0.0	0.5
	Jack N. Sheldon Park and Florin Creek Trail Improvements	1	0	1	2.3	0.0	2.3
	JATC Training Center Expansion (DRSmjPRC)	1	1	0	2.0	2.0	0.0
	Logisticenter at Metro Air Park Design Review	1	0	1	20.7	0.0	20.7
	MAP Commerce Center Building A (DRSmajor)	1	0	1	13.7	0.0	13.7
	MAP Commerce Center Building B (DRSmajor)	1	0	1	49.5	0.0	49.5
	MAP Commerce Center Building C (DRSmajor)	1	0	1	49.5	0.0	49.5
	MAP Commerce Center Building D (DRSmajor)	1	0	1	49.5	0.0	49.5
	MAP Commerce Center Building E (DRSmajor)	1	0	1	49.5	0.0	49.5
	MAP Commerce Center Building F (DRSmajor)	1	0	1	49.5	0.0	49.5
	MAP Commerce Center Building G (DRSmajor)	1	0	1	49.5	0.0	49.5

Dam Hazard Inundation Areas / Future Development Type and Status	Site/Location Name	Total Parcel Count	Improved Parcel Count	Unimproved Parcel Count	Total Acres	Total Improved Acres	Total Unimproved Acres
	UHaul at 47th Ave (DRS Mjr PRC)	1	0	1	5.0	0.0	5.0
	UHaul at Pyrites Way (DRS Major PRC)	1	1	0	6.9	6.9	0.0
	Closed Total	**24**	**7**	**17**	**383.7**	**26.3**	**357.4**
Not Residential Total		**29**	**11**	**18**	**445.8**	**71.8**	**374.0**
Nimbus Total		**31**	**12**	**19**	**448.5**	**73.3**	**375.3**
Grand Total		**31**	**12**	**19**	**448.5**	**73.3**	**375.3**

Source: DSOD/Cal OES, Sacramento County GIS

4.3.9. Drought and Water Shortage (w/Tree Mortality)

Hazard Profile

This hazard profile contains multiple sections that detail how this hazard can affect the Sacramento County Planning Area. These sections include a hazard/problem description; description of location and extent; past occurrences of this hazard; likelihood of future occurrences; and how climate change can affect or influence this hazard.

Hazard/Problem Description

Drought

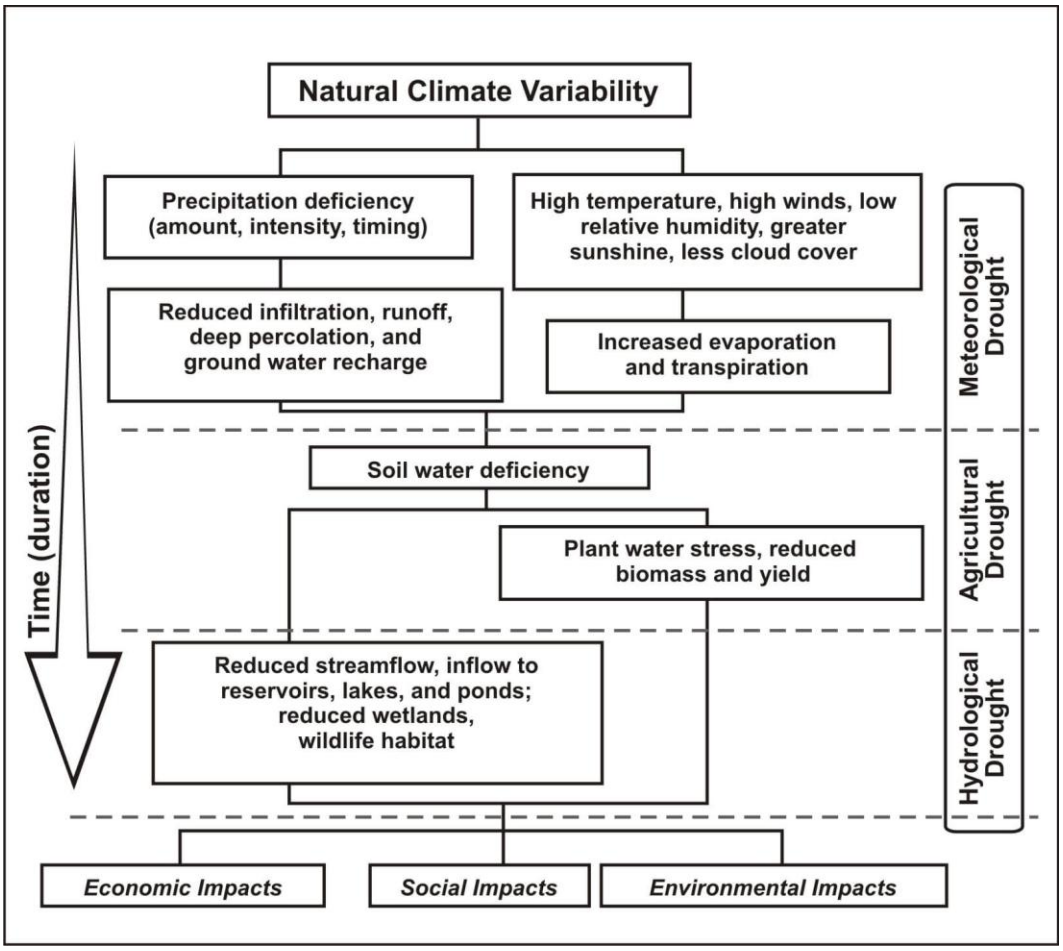
Drought is a gradual phenomenon. Although droughts are sometimes characterized as emergencies, they differ from typical emergency events. Most natural disasters, such as floods or forest fires, occur relatively rapidly and afford little time for preparing for disaster response. Droughts occur slowly, over a multi-year period, and it is often not obvious or easy to quantify when a drought begins and ends.

Drought is a complex issue involving (see Figure 4-72) many factors—it occurs when a normal amount of precipitation and snow is not available to satisfy an area's usual water-consuming activities. Drought can often be defined regionally based on its effects:

- **Meteorological drought** is usually defined by a period of below average water supply.
- **Agricultural drought** occurs when there is an inadequate water supply to meet the needs of the state's crops and other agricultural operations such as livestock.

- **Hydrological drought** is defined as deficiencies in surface and subsurface water supplies. It is generally measured as streamflow, snowpack, and as lake, reservoir, and groundwater levels.
- **Socioeconomic drought** occurs when a drought impacts health, well-being, and quality of life, or when a drought starts to have an adverse economic impact on a region.

Figure 4-72 Causes and Impacts of Drought



Source: National Drought Mitigation Center (NDMC)

Tree Mortality and Drought

Also a factor of drought is the degree of tree mortality occurring in a community. Drought can weaken trees, making them less resistant to bark beetles and other pests and diseases. These types of infestations attack trees, weaken them, and can kill them. These trees then become fuel for wildfires. The tree mortality and dieback problem are a high priority because of the issue of hazardous trees and increased wildfire hazard in the wildfire prone areas and the potential for worsening conditions and expansion into other wildland areas in future years. Fuel loading and fire potential are greater in stands as compared to healthy stands due to the higher proportion of dead and dying material. Removal of dead and dying trees near structures, powerlines, and roadways is also a high priority because of the immediate falling hazard.

University of California, Berkeley's Department of Environmental Science, Policy, and Management (ESPM) was commissioned in 2021 to investigate the symptoms and possible causes of the dieback. Preliminary results show that the dieback is driven mostly by environmental stressors, including but not limited to drought, predisposing trees to disease caused by opportunistic pathogens. The report includes best management practices to limit the spread of pathogens. It is important to continue investigating the causes of tree mortality and dieback to help Planning Area jurisdictional staff track changes over time, recognize where other areas may potentially be susceptible to tree mortality, and apply appropriate best management practices.

Under current drought conditions, competition for resources within forested areas will likely continue to intensify with greater stress increasing tree susceptibility to insect damage and disease, and ultimately increase mortality. In all vegetation types, drought extends the length of the fire season because of its effect on live and dead fuel moisture, with critical low fuel moisture levels occurring early in spring or summer and extending at least through the first significant rains that typically come in late fall.

Recent aerial mapping indicates the County has very little incidence of tree mortality. However with continued drought conditions in California, tree mortality could become more of an issue in the County. Tree mortality in Sacramento County is not currently a severe, widespread crisis compared to California's Sierra Nevada forests or other drought-impacted regions, but it remains a notable concern, particularly in urban and riparian areas. The County's three issues tie into broader state trends driven by drought, climate change, pests, and urban stressors, though recent wet years have helped stabilize conditions.

The Agricultural Commissioner's Office does not maintain a formal countywide tree-mortality inventory as part of its routine data collection. However, there is documented scientific and observational evidence of drought-related tree stress and mortality within Sacramento County, with the following specific concerns:

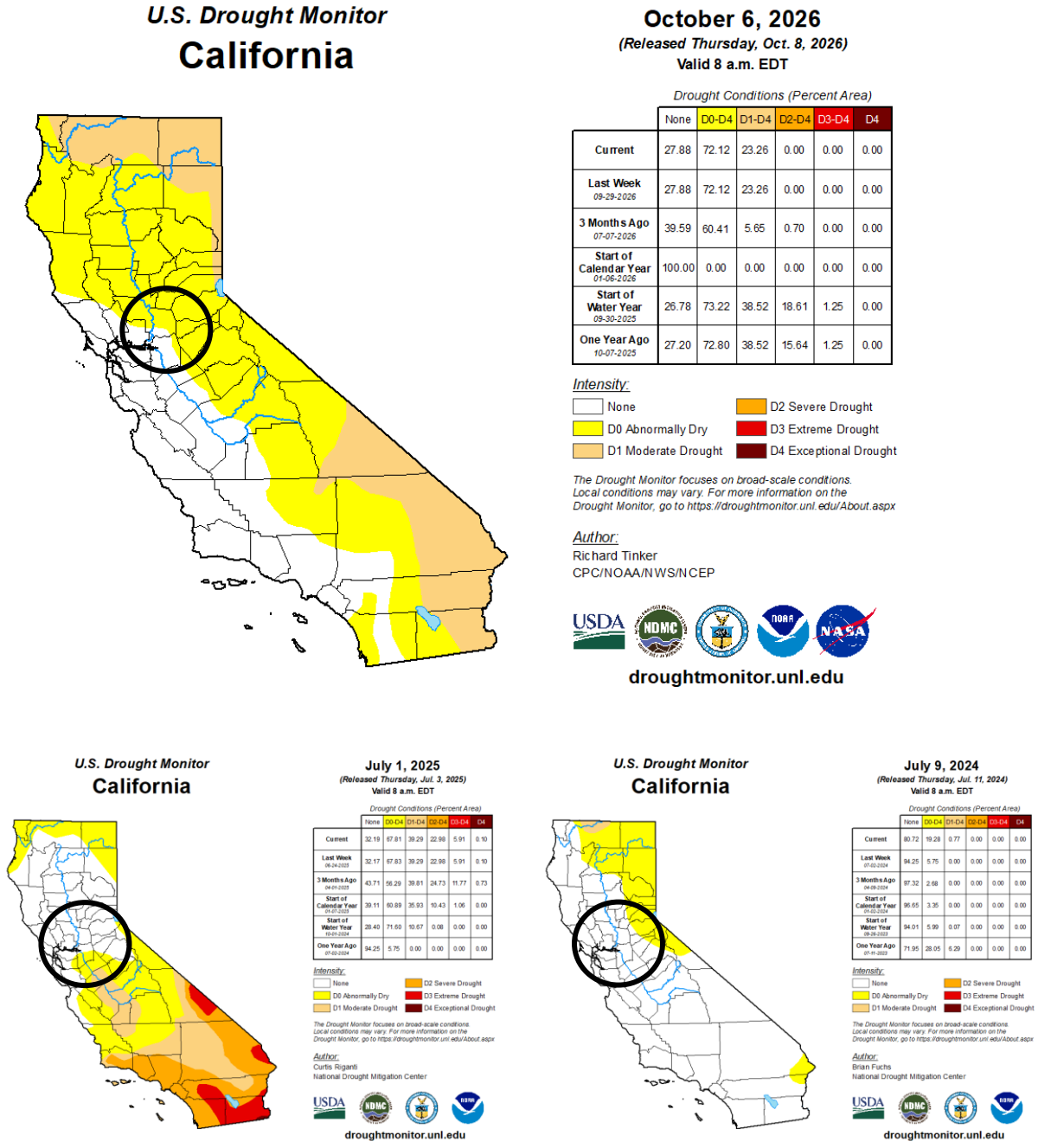
- **Mediterranean Oak Borer (MOB) and Invasive Shot Hole Borer (ISHB)**: These invasive wood-boring pests have been documented as co-contributors to oak tree mortality in Sacramento County. Drought-stressed oaks are significantly more vulnerable to beetle attack, as reduced resin flow impairs the tree's natural defense mechanisms. The Agricultural Commissioner's Office Pest Detection and Pest Exclusion programs have documented ISHB detections in Sacramento County, and the CDFA has listed Sacramento County in the ISHB-affected zone.
- **Riparian Tree Loss**: Prolonged drought reduces soil moisture in riparian areas, stressing native cottonwoods, willows, and valley oaks along the Sacramento River, American River, and Cosumnes River corridors. These trees are critical to the agricultural landscape, providing wind protection, habitat, and soil stability for adjacent farmland.

Location and Extent of Drought

Drought is a regional phenomenon that affects the entire Sacramento County Planning Area. Drought in the United States is monitored by the National Integrated Drought Information System (NIDIS). A major component of this portal is the U.S. Drought Monitor. The Drought Monitor concept was developed jointly by the NOAA's Climate Prediction Center, the NDMC, and the USDA's Joint Agricultural Weather Facility in the late 1990s as a process that synthesizes multiple indices, outlooks and local impacts, into an assessment that best represents current drought conditions. The final outcome of each Drought Monitor is

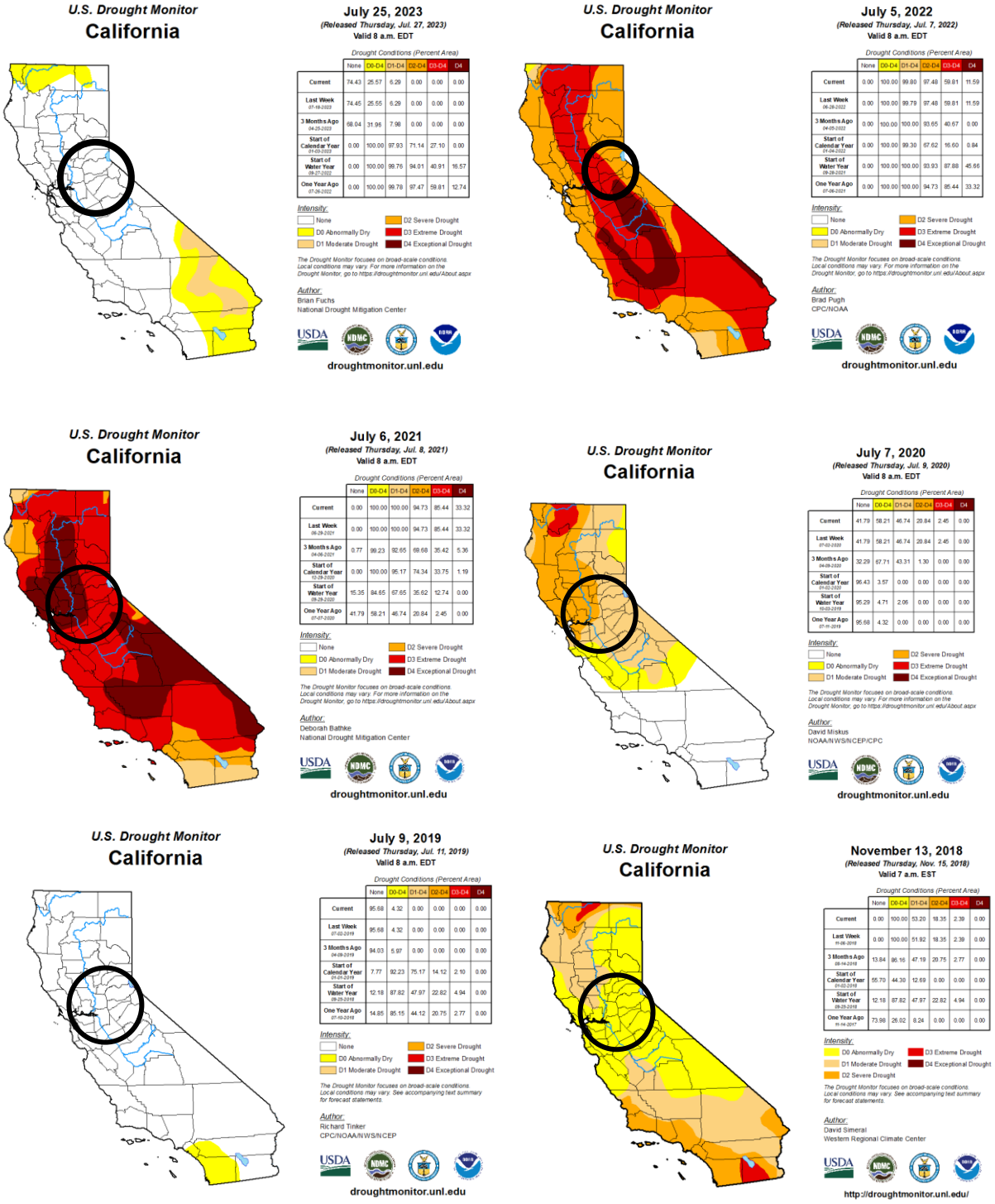
a consensus of federal, state, and academic scientists who are intimately familiar with the conditions in their respective regions. A snapshot of the current 2026 (and 2024 and 2025) drought conditions in California and the Sacramento County Planning Area can be found in Figure 4-73. Snapshots from 2014 to 2023 are shown in Figure 4-74 and Figure 4-75. As seen in these figures and related data, the Planning Area has been in and out of drought over the past ten years since the most recent drought that started in 2014.

Figure 4-73 Sacramento County Planning Area – Current (2026) and 2024 and 2025 Drought Status



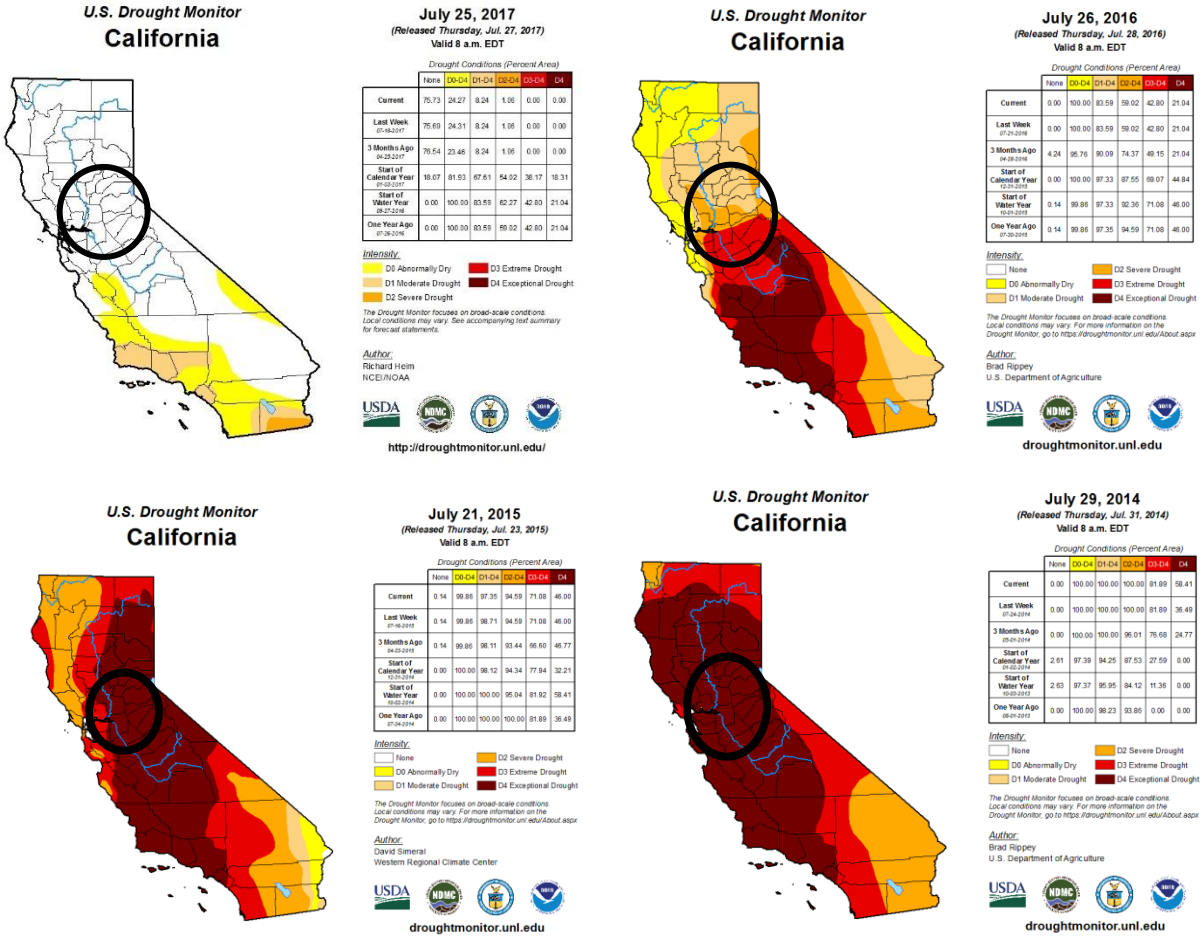
Source: US Drought Monitor

Figure 4-74 Previous Drought Status in Sacramento County (2018-2023)



Source: US Drought Monitor

Figure 4-75 Previous Drought Status in Sacramento County (2014-2017)



Source: US Drought Monitor

Cal DWR says the following about drought:

> ***One dry year does not normally constitute a drought in California. California's extensive system of water supply infrastructure—its reservoirs, groundwater basins, and inter-regional conveyance facilities—mitigates the effect of short-term dry periods for most water users. Defining when a drought begins is a function of drought impacts to water users. Hydrologic conditions constituting a drought for water users in one location may not constitute a drought for water users elsewhere, or for water users having a different water supply. Individual water suppliers may use criteria such as rainfall/runoff, amount of water in storage, or expected supply from a water wholesaler to define their water supply conditions.***

The drought issue in California is further compounded by water rights. Water is a commodity possessed under a variety of legal doctrines. The prioritization of water rights between domestic uses, farming and federally protected fish habitats in California further contributes to this issue.

As shown on the previous figures, drought is tracked by the US Drought Monitor. The Drought Monitor includes a scale to measure drought intensity:

- None
- D0 (Abnormally Dry)
- D1 (Moderate Drought)
- D2 (Severe Drought)
- D3 (Extreme Drought)
- D4 (Exceptional Drought)

Drought has a slow onset and long duration. Drought is not initially recognized as a problem because it normally originates in what is considered good weather, which typically includes a dry late spring and summer in Mediterranean climates, such as in California. This is particularly true in Northern California where drought impacts are delayed for most of the population by the wealth of stored surface and ground water. The drought complications normally appear more than a year after a drought begins. The most direct and likely most difficult drought impact to quantify is to local economies, especially agricultural economies. Drought has the potential to affect the entire Sacramento County Planning Area.

Water Shortage

Sacramento County's general water supply is generally reliable and diverse, supported by a mix of local surface water, groundwater, and regional imports. The County benefits from its location in the Sacramento Valley, with abundant access to the Sacramento River and its tributaries, making it less vulnerable to severe shortages compared to drier parts of California (e.g., Southern California or the San Joaquin Valley). Snowmelt originating from the Sierra Nevada Mountains is a key source of surface water for the Sacramento Planning Area. The Sacramento, American, Cosumnes, and Mokelumne rivers provide municipal, agricultural, and recreational uses to Sacramento County and depend on the spring and summer snowmelt in the Sierra Nevada for their flows. The network of dams constructed in Northern California to support the State Water Project and the Central Valley Project help provide California and Sacramento with water security during droughts. In addition to surface water, Sacramento County also sits over the north central portion of the California's Great Valley Groundwater Basin, which provides approximately 50 percent of all municipal and agricultural water supply in the County. Groundwater recharge occurs primarily from the American and Cosumnes rivers, with additional recharge from the Sacramento River and local streams. Groundwater stores are directly linked to surface water in the County and snowmelt in the Sierra Nevada. Finally, recycled water and conservation programs supplement supplies, especially for non-potable uses.

It was noted that in terms of overall reliability that reliability is high in normal/wet years. In the 2025 Annual Water Supply and Demand Assessment (statewide), suppliers in the Sacramento River hydrologic region (including Sacramento County) reported no projected shortages and sufficient supplies. Many urban suppliers showed surpluses (e.g., Sacramento City at 173%, Sacramento Suburban Water District at 215%).

Thus, Sacramento County generally has sufficient groundwater and surface water supplies to mitigate even the severest droughts of the past century. Sacramento County has a limited reliance on distant imports (e.g., State Water Project allocations), but the region participates in the Water Forum (a long-term agreement balancing supply reliability with American River protection through 2050). Updates like the draft Water Forum 2050 Agreement emphasize conservation, recharge, and dry-year storage. Many other areas of the

State, however, also place demands on these water resources during severe drought. For example, Northern California agencies, including those from Sacramento County, were major participants in the Governor's Drought Water Bank of 1991, 1992 and 1994.

Regarding agricultural water, Sacramento County agriculture relies on a blend of surface water, groundwater, and, increasingly, recycled water to meet current and future irrigation needs. Across the County's diverse agricultural regions, growers use water from the Sacramento River, American River, Cosumnes River, and Sacramento–San Joaquin Delta channels, supplemented by groundwater from the Sacramento Valley Groundwater Basin during dry years. Because surface water availability varies significantly by watershed and by year, the County's agricultural sector is highly exposed to changes in river flows, reservoir storage, regulatory curtailments, and groundwater management requirements.

Extended droughts, declining Sierra Nevada snowpack, and reduced surface water allocations have intensified concerns about water reliability, prompting greater reliance on groundwater in many districts. However, implementation of the Sustainable Groundwater Management Act (SGMA) impacts the ability to use groundwater as a drought buffer, increasing vulnerability for crops that depend on stable and predictable supplies. To improve long term reliability, Sacramento County agriculture is also supported by the region's large scale recycled water initiative known as Harvest Water, a project that delivers highly treated recycled water to farms in southern Sacramento County. Harvest Water is designed to reduce reliance on groundwater pumping, bolster soil moisture, improve drought resilience, and help stabilize the regional water balance over time.

Location and Extent of Water Shortage

Since water shortage generally happens on a regional scale, the entirety of the Sacramento County Planning Area is at risk. There is no established scientific scale to measure water shortage. The speed of onset of water shortage tends to be lengthy. The duration of water shortage can vary, depending on the severity of the drought that accompanies it and the status of the water sources going into the drought. The extent of the drought considers several factors, including the nature, source, and reliability of water. While drought conditions persist, the Planning Area has generally sufficient water supplies, which lessens the extent of water shortage impacts in the Planning Area.

Past Occurrences

Disaster Declaration History

There have been three state and one federal disaster declarations for Sacramento County. These are shown on Table 4-67.

Table 4-67 Sacramento County – Federal and State Drought Disaster Declarations 1950-2025

Disaster Type	State Declarations		Federal Declarations	
	Count	Years	Count	Years
Drought	3	2008, 2014, 2021	1	1977

Source: Cal OES, FEMA

In addition to these, there have been past USDA disaster declarations. As shown in Table 4-6, there have been 26 drought declarations for the County since 2012, with 3 drought declarations having occurred since 2021.

NCDC Events

There have been 83 NCDC drought events in Sacramento County. This is shown on Table 4-68.

*Table 4-68 NCDC Drought Events for Sacramento County 1993-7/31/2024**

Event Type	Number of Events	Deaths	Deaths (indirect)	Injuries	Injuries (indirect)	Property Damage	Crop Damage
Drought	83	0	0	0	0	$0	$0

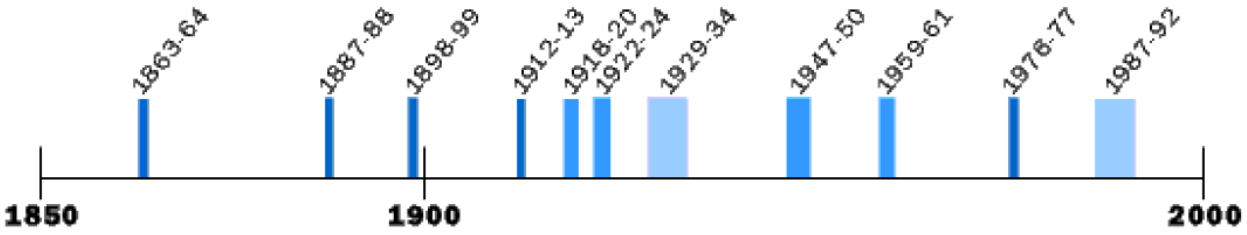
Source: NCDC

*Note: Losses reflect totals for all impacted areas, some of which fell outside of Sacramento County

CA DWR Events (with Hazard Mitigation Planning Committee Input)

Historically, California has experienced multiple severe droughts. According to the DWR, droughts exceeding three years are relatively rare in Northern California, the source of much of the State's developed water supply. Figure 4-76 depicts California's Multi-Year Historical Dry Periods, 1850-2000. The 1929-34 drought established the criteria commonly used in designing storage capacity and yield of large northern California reservoirs. Figure 4-77 compares the 1929-34 drought to the 1976-77, 1987-92, 2007-09, and 2012-2016 droughts, the latter which is still ongoing is some areas.

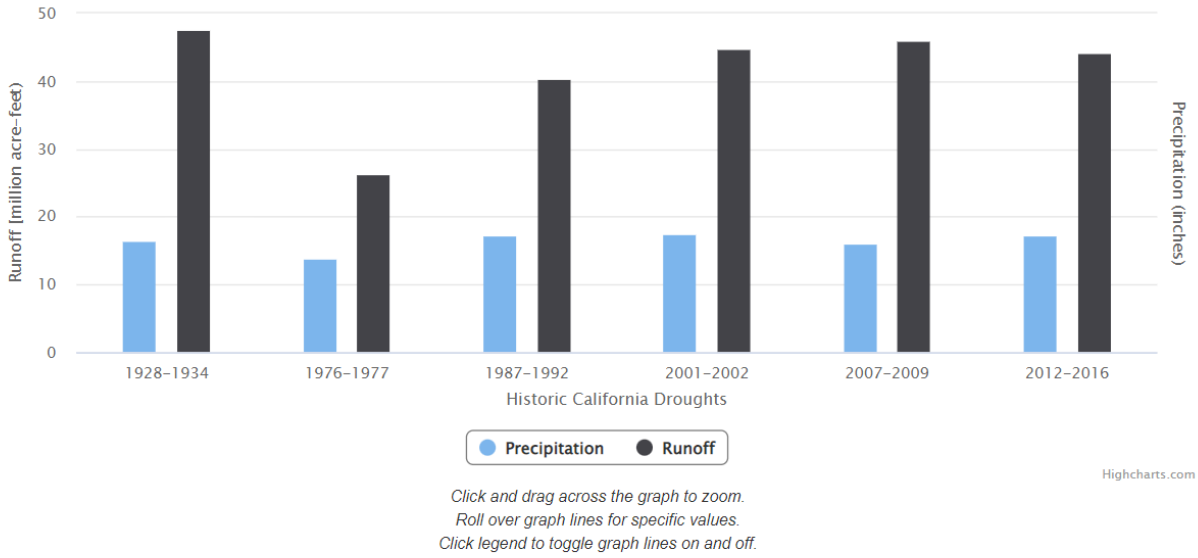
Figure 4-76 California's Multi-Year Historical Dry Periods, 1850-2000



Source: Cal DWR. Date retrieved 1/7/2026.

Notes: Dry periods prior to 1900 estimated from limited data; covers dry periods of statewide or major regional extent

Figure 4-77 Average Annual Runoff and Precipitation for Historic Droughts

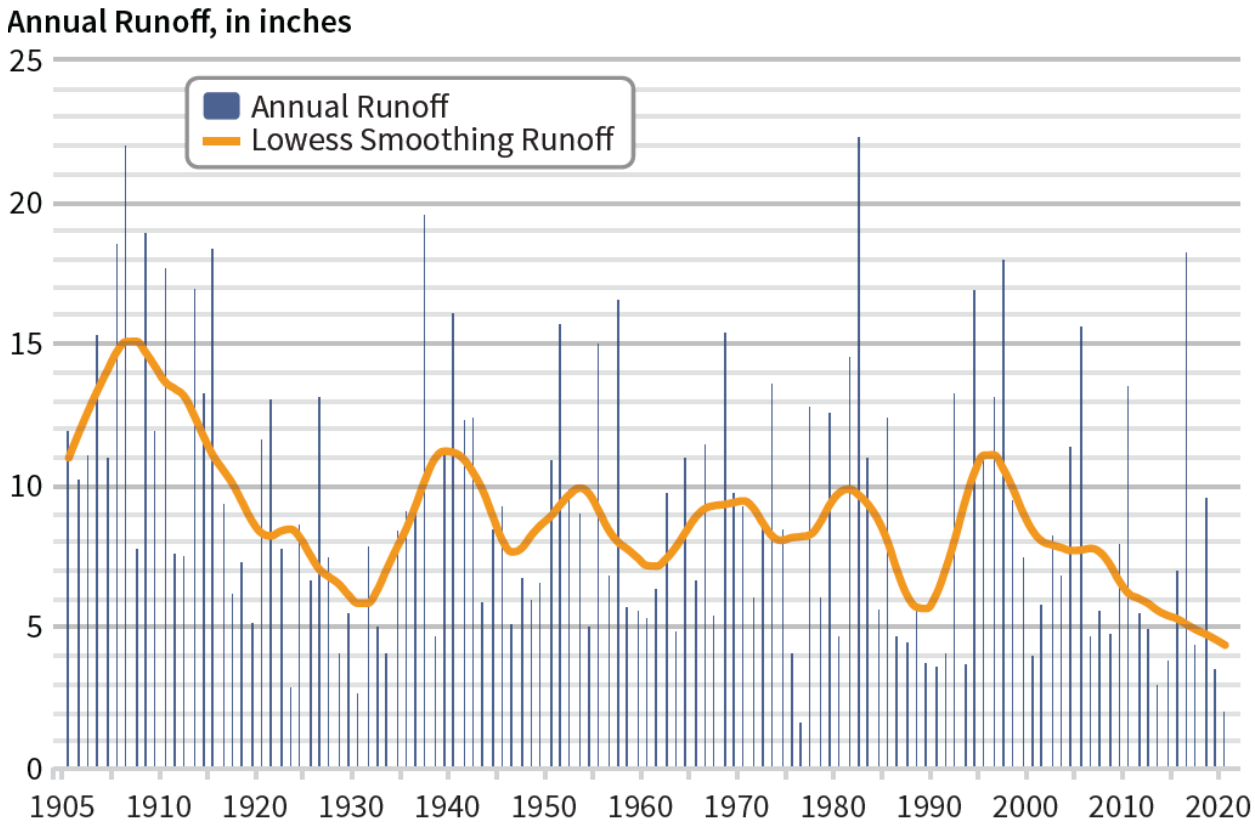


Runoff and precipitation conditions for California's six historical droughts. The most severe drought both in terms of precipitation and runoff was the drought of 1976-77. However, because it was just a two-year drought, the water supply impacts were not as severe as those associated with the longer duration droughts because shorter droughts can be partially mitigated by surface and groundwater storage.

Source: CA DWR – 2012-2016 California Drought: Historical Perspective (https://ca.water.usgs.gov/california-drought/california-drought-comparisons.html). Date retrieved 1/7/2026.

Figure 4-78 depicts runoff for the State from 1905 to 2021. This gives a historical context for the 2014-2021 drought to compare against past droughts.

Figure 4-78 Annual California Runoff –1905 to 2021



Source: Cal DWR. Date retrieved 1/7/2026.

The 2018 and 2023 California State Hazard Mitigation Plan discussed the major droughts from 1900 to 2022. The discussion below appends to the tables and figures above.

The 1975-1977 Drought

From November 1975 through November 1977, California experienced one of its most severe droughts. Although people in many areas of the state are accustomed to very little precipitation during the growing season (April to October), they expect it in the winter. In 1976 and 1977, the winters brought only one-half and one-third of normal precipitation, respectively. Most surface storage reservoirs were substantially drained in 1976, leading to widespread water shortages when 1977 turned out to be even drier. 31 counties were affected (including Sacramento County), resulting in $2.67 billion in crop damages.

The 1987-1992 Drought

From 1987 to 1992, California again experienced a serious drought due to low precipitation and run-off levels. The hardest-hit region was the Central Coast, roughly from San Jose to Ventura. In 1988, 45 California counties experienced water shortages that adversely affected about 30 percent of the state's population, much of the dry-farmed agriculture, and over 40 percent of the irrigated agriculture. Fish and wildlife resources suffered, recreational use of lakes and rivers decreased, forestry losses and fires increased, and hydroelectric power production decreased. In February 1991, DWR and Cal OES surveyed

drought conditions in all 58 California counties and found five main problems: extremely dry rangeland, irrigated agriculture with severe surface water shortages and falling groundwater levels, widespread rural areas where individual and community supplies were going dry, urban area water rationing at 25 to 50 percent of normal usage, and environmental impacts.

Storage in major reservoirs had dropped to 54 percent of average, the lowest since 1977. The shortages led to stringent water rationing and severe cutbacks in agricultural production, including threats to survival of permanent crops such as trees and vines. Fish and wildlife resources were in critical shape as well. Not since the 1928-1934 drought had there been such a prolonged dry period. In response to those conditions, the Governor established the Drought Action Team. This team almost immediately created an emergency drought water bank to develop a supply for four critical needs: municipal and industrial uses, agricultural uses, protection of fish and wildlife, and carryover storage for 1992. The large-scale transfer program, which involved over 800,000 acre-feet of water, was implemented in less than 100 days with the help and commitment of the entire water community and established important links between state agencies, local water interests, and local governments for future programs.

The 2007-2009 Drought

Water years 2007-2009 were collectively the 15th driest three-year period for DWR's eight-station precipitation index, which is a rough indicator of potential water supply availability to the State Water Project (SWP) and Central Valley Project (CVP). Water year 2007 was the driest single year of that drought and fell within the top 20 percent of dry years based on computed statewide runoff. In June 2008, a state emergency proclamation was issued due to water shortage in selected Central Valley counties. In February 2009, for the first time in its history, the State of California proclaimed a statewide drought. The state placed unprecedented restrictions on CVP and SWP diversions from the Delta to protect listed fish species, a regulatory circumstance that exacerbated the impacts of the drought for water users.

The greatest impacts of the 2007–2009 drought were observed in the CVP service area on the west side of the San Joaquin Valley, where hydrologic conditions combined with reduced CVP exports resulted in substantially reduced water supplies (50 percent supplies in 2007, 40 percent in 2008, and 10 percent in 2009) for CVP south-of Delta agricultural contractors. Small communities on the west side highly dependent on agricultural employment were especially affected by land fallowing due to lack of irrigation supplies, as well as by factors associated with current economic recession. The coupling of the drought and economic recession necessitated emergency response actions related to social services, such as food banks and unemployment assistance.

The 2012-Current Drought (which is ongoing after a pause in 2017 and 2023)

The statewide drought of 2012-2017, which is still ongoing, will be remembered as one of the most severe and costliest droughts of record in California. The drought that initially spanned water years 2012 through 2017 included the driest (at that time) four-year statewide precipitation on record (2012-2015) and the smallest Sierra-Cascades snowpack on record (2015, with 5 percent of average). It was marked by extraordinary heat: at the time 2014, 2015, and 2016 were California's first, second, and third warmest years in terms of statewide average temperatures. By the time the drought was thought to be officially over

in April 2017, the state had expended $6.6 billion in drought response and mitigation programs and had been declared a federal disaster area.

In Sacramento County, it was noted that the following issues were experienced in past drought events:

- **2011 through 2017:** Significant crop loss and loss of jobs related to agriculture. Construction of a $40 million temporary barrier at West False River in the Sac-San Joaquin Delta was installed to keep salt water from contaminating drinking water to Bay Area residents.
- **2014**: On January 17, 2014, the governor declared a State of Emergency for drought throughout California. This declaration came on the heels of a report that stated that California had the least amount of rainfall in its 163-year history. Californians were asked to voluntarily reduce their water consumption by 20 percent. Drought conditions worsened through 2014 and into 2015. On April 1, 2015, following the lowest snowpack ever recorded, Governor Brown announced actions that will save water, increase enforcement to prevent wasteful water use, streamline the State's drought response, and invest in new technologies that will make California more drought resilient. The Governor directed the State Water Resources Control Board to implement mandatory water reductions in cities and towns across California to reduce water usage by 25 percent. This savings amounts to approximately 1.5 million acre-feet of water through the end of 2015.
- **2015:** An extremely dry March followed a below normal February for most areas. By the end of March, the snowpack was only about 5 percent of normal levels. Melting snowpack supplies about a third of the annual water supply for California. Reservoirs across the area by the end of March were already well below normal levels. By the end of April, the snowpack was only about 4 percent of normal levels. As a result, reservoirs across the area by the end of April remained well below normal levels with little or no spring rise, due to the lack of snow melt. In June, as a result of continuing drought, emergency legislation appropriated over $1 billion in additional funds for drought related projects". The long-term drought continued through August with little change. Without a snowpack for late spring/early summer, reservoirs across the area by the end of the month were continuing to drop well below normal levels. All major reservoirs across the state were less than 40% of capacity by the end of the month. Folsom Lake was down to 20% of capacity, approaching near-record low levels for August, seen last in 1977. A UC Davis Center for Watershed Sciences report – (due to drought) showed statewide drought impact in 2015 at $2.7 Billion and loss of more than 21,000 jobs. Approx. 743,642 boxes of food distributed to 300k households that suffered unemployment from the drought. The long-term drought continued through September with little change. Folsom Lake was down to 18% of capacity, approaching near-record low levels for September, seen last in 1977. By November, Folsom Lake was down to 14% of capacity, breaking the all-time record low set in 1977. Lake Oroville came close to a record low but did not reach it.
- **2021**: Prolonged droughts affected the County. The County was affected by shrinking reservoirs of water. Lake Oroville — the state's second-largest reservoir — is on the Feather River, which feeds into the Sacramento River and delivers water to Sacramento residents. Meanwhile, Folsom Lake, which feeds the Lower American River and is another one of the city's primary surface water reservoirs, is also seeing tragically low water levels. The river is also a critical habitat for salmon and steelhead fish. The State Water Resources Control Board also sent out a notice last week about the lack of water availability to thousands of water rights holders in the Sacramento-San Joaquin region. The notice urged water users in the agriculture, municipal, recreation and environmental protection sectors to preserve the rapidly declining water supply to meet demands for the current and following year. The Sacramento City Council on Aug. 24 voted to declare a "Water Alert," which increases fines for wasting

water, restricts car washing and asks residents to voluntarily reduce their water use by 15 percent – an increase from the 10-percent reduction already in place. A Water Alert is the second of six stages in the City's plan to reduce overall water usage during a water shortage.

Drought in Sacramento County since 2021 have primarily stemmed from California's multi-year drought (2020–2022 being the driest three-year period on record statewide), with significant impacts on agriculture in the broader Sacramento Valley (which includes much of Sacramento County and surrounding areas). The County itself experienced reduced surface water availability, ecosystem strains, and economic ripple effects, though urban water supplies remained relatively stable due to diverse sources (e.g., Sacramento River diversions, groundwater, and conservation). Severe conditions eased after wet winters in 2023–2024, and as of early 2026, Sacramento County shows no active drought per U.S. Drought Monitor data (0% of the population affected, with recent months drier than average but no widespread shortages). A chronological summary of key effects (2021–present), drawn from state reports, UC studies, and drought monitoring:

- **2021 (Onset of Multi-Year Drought)**
  - ✓ **Severe hydrologic conditions:** Critically dry water years led to low precipitation, warm temperatures, reduced Sierra snowpack/runoff, and low reservoir levels (e.g., Folsom Lake on the American River affected).
  - ✓ **Water curtailments:** State Water Resources Control Board imposed restrictions on Sacramento-San Joaquin Delta watershed diversions (including areas affecting Sacramento County) to protect priority rights and ecosystems.
  - ✓ **Agricultural impacts:** Surface water deliveries in the Sacramento Valley dropped sharply (e.g., lower than any year in the 2012–2016 drought in some metrics). Increased groundwater pumping offset some shortages but caused declines in aquifers.
  - ✓ **Economic/ag sector:** Statewide drought costs included higher pumping expenses (~$184 million in 2021 estimates for Central Valley, with Sacramento Valley seeing notable groundwater stress). Some idled cropland and yield reductions occurred, though less severe than in San Joaquin/Tulare basins initially.
  - ✓ **Groundwater Impacts:** Reduced surface water deliveries forced agricultural water users to increase groundwater pumping, contributing to documented groundwater table declines in the Sacramento Groundwater Authority service area (CA DWR "Groundwater Conditions Report – Water Year 2021).
  - ✓ **Declarations:** Sacramento County included in Governor Newsom's drought emergency proclamations (e.g., May 2021 for 41 counties, expanded statewide by October 2021).
- **2022 (Peak Intensity in Sacramento Valley)**
  - ✓ **Unprecedented cuts:** For the first time, senior water rights holders in the Sacramento Valley faced major reductions (e.g., some irrigation districts limited to 18% deliveries or none). This hit rice production hard (projected 50% reduction vs. 2019 baselines).
  - ✓ **Economic losses:** Sacramento County participates in the same regional cropping and water supply systems; however, annual changes in County Crop Report acreage or value do not directly quantify drought impacts and should not be interpreted as such without additional analysis. Crop Report values are influenced by commodity prices, land use decisions, input costs, labor, crop specific pest or disease pressures, and market conditions. The 2022 Sacramento County Crop and Livestock

Report highlights how reduced water availability may have affected the County's agricultural economy.

- **Rice:** Sacramento Valley rice acreage declined sharply, with some areas reporting near-zero planting on west-side farmland. According to a UC Davis study by Sumner and Matthews, Sacramento Valley rice production declined by an estimated 50% relative to 2019 baseline during the 2022 drought year. In Sacramento County, rice harvested acreage dropped from 8,673 acres in 2021 to 6,162 acres in 2022 per the 2022 Crop Report, a decline of approximately 29%.
- **Alfalfa Hay:** Alfalfa acreage in Sacramento County declined from 13,190 harvested acres in 2021 to 12,607 acres in 2022, with price increases partially masking the production contraction. Alfalfa is among the most water-intensive field crops and one of the first candidates for fallowing under water shortage conditions.
- **Processed Tomatoes:** Harvested acres declined from 4,310 acres in 2021 to 4,245 acres in 2022, with total value falling from $15.4 million to $10.5 million, a 32% value decline driven by reduced yields (41.6 tons/acre in 2021 to 23.1 tons/acre in 2022) reflecting both water stress and market conditions.
- **Wine Grapes:** The county's top commodity saw gross value decline from $204.4 million in 2021 to $188.8 million in 2022, with harvested acreage reduced and per-acre yields dropping from 9.2 tons to 7.3 tons.
- **Almonds:** Almond production fell from $13.0 million in 2021 to $7.5 million in 2022, a 42% decline. The county's overall Fruit & Nut Crops category fell from $294.1 million in 2021 to $269.2 million in 2022, a $24.9 million decrease.
- UC studies estimated >$1.3 billion in Sacramento Valley agricultural output losses (2022 vs. 2019), including fallowed fields, reduced revenues (~20% drop in farm/ranch value for the valley), job impacts (~5,000 on-farm losses, broader ~9,000–14,000 jobs regionally), and ~$560 million in value added reductions. Direct farm impacts statewide were softened by groundwater and adaptations, but the Sacramento Valley bore a disproportionate share compared to prior droughts.

✓ **Ecosystem/public health:** Low flows strained Delta ecosystems, water quality (e.g., salinity issues), and some domestic wells (though fewer dry wells reported in urban Sacramento County vs. rural areas). Increased wildfire risk and heat compounded stresses.

✓ Urban effects: Voluntary conservation rose (e.g., Sacramento-area use down significantly), but no major shortages for city/county supplies.

➢ **2023–2024 (Transition to Recovery)**

✓ **Abatement:** Atmospheric rivers and wet winters (2023 onward) improved reservoirs, snowpack, and recharge. Drought emergency restrictions partially rolled back (March 2023), and much of Northern California (including Sacramento Valley) exited drought categories.

✓ **Lingering effects:** Some groundwater declines from prior pumping persisted; statewide, 2024 saw spotty dry conditions return in places, but Sacramento County avoided severe re-drought.

✓ No major new shortages: Urban suppliers reported surpluses in assessments.

➢ **2025–2026 (Current)**

✓ **Mixed but improved:** Early 2025 had below-average precipitation in parts of Northern California, with some dry spells, but no drought declaration or widespread impacts in Sacramento County. As

of February 2026, the County is drought-free (0% affected), though January was the 48th driest on record locally.

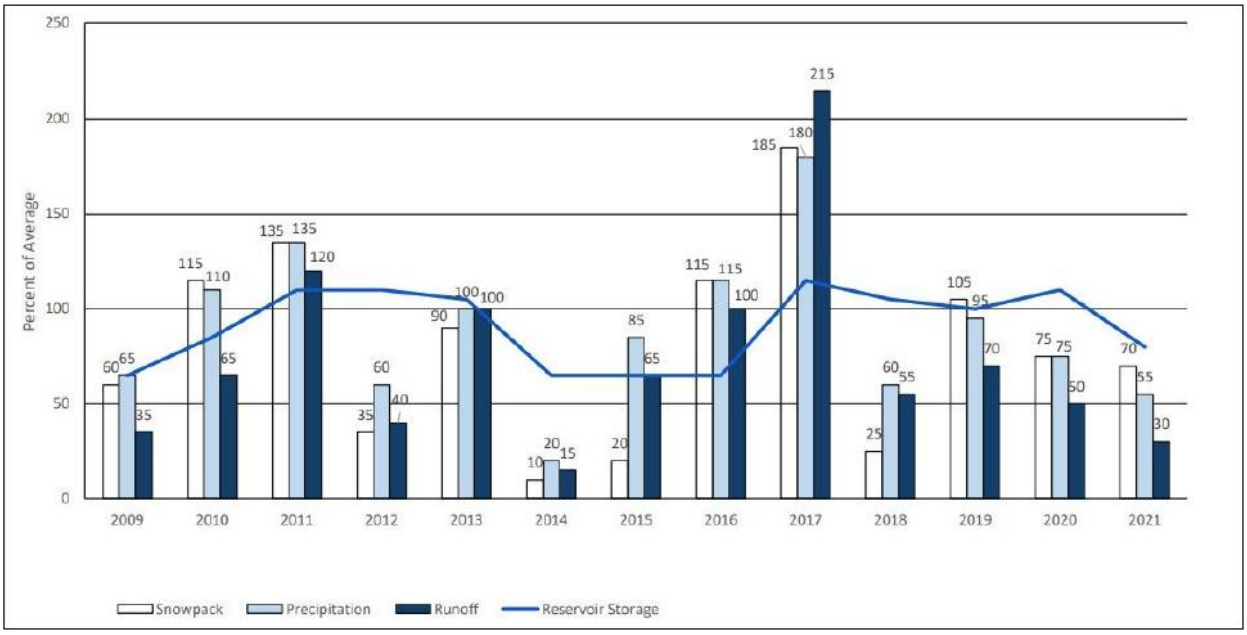
- ✓ **Ongoing risks:** Climate change projections note potential for more volatile patterns (e.g., reduced snowpack timing, intense storms over storage), but recent wet periods have bolstered resilience.

Overall, while Sacramento County avoided the extreme urban shortages seen in Southern California, the drought's biggest local footprint was on agriculture (fallowed land, crop reductions like rice, economic hits in the millions), groundwater sustainability, and regional water management (e.g., curtailments, conservation pushes). Urban areas benefited from the County's northern location and proactive measures (e.g., recharge during wet years).

Water Shortage

Figure 4-79 illustrates several indicators commonly used to evaluate water conditions in California. The percent of average values are determined by measurements made in each of the ten major hydrologic regions. The chart describes water conditions in California between 2009 and 2021. The chart illustrates the cyclical nature of weather patterns in California.

Figure 4-79 Water Supply Conditions, 2009 to 2021



Source: 2023 State of California Hazard Mitigation Plan

Likelihood of Future Occurrence

Drought

Likely—Historical drought data for the Sacramento County Planning Area indicate there have been 5 significant droughts in the last 90 years. This equates to a drought every 18 years on average or a 5.5 percent chance of a drought in any given year. Based on this data and given the multi-year length of

droughts and future climate change affects, the Sacramento County Planning Area determined that future drought occurrence continues to be likely.

Water Shortage

Occasional — Recent historical data for water shortage indicates that Sacramento County may at some time be at risk to both short and prolonged periods of water shortage. Based on this it is possible that water shortages will affect the County in the future during extreme drought conditions. Water supply has not been a significant issue in Sacramento County in years past due to the extensive surface and groundwater supplies in the region; the County's senior water rights; and their ability to maximize water resources through conjunctive use.

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

Climate Change and Drought and Water Shortage

Climate change and its effect on drought and water shortage in the County has been discussed utilizing the following sources:

- 2024 Sacramento County Climate Action Plan
- 2026 American, Bear, and Cosumnes Watersheds Resilience Plan
- California Climate Adaptation Strategy (CAS) – 2014
- Public Policy Institute

2024 Sacramento County CAP

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.

Although the County has yet to face a critical loss in water resources, it is possible that climate-induced drought and increased water demand due to population growth could result in future water shortages wherein residents must implement severe cutback strategies. Those relying on wells or groundwater may also face challenges in meeting water demands as rates of groundwater recharge decline. Drought conditions can also affect public health by increasing the spread of vector-borne illnesses, such as the airborne transmission of pathogenic fungi spores, generated by parched agricultural land. Additionally, energy production, agriculture, recreation, and ecosystem functions are especially vulnerable to drought. A declining volume of snowmelt coupled with earlier periods of melting could have severe consequences for the region's hydro-electricity generation. Drought and increased agricultural demand for water during extreme heat conditions could result in water insecurity for the sector. Reduced surface water flow in local watersheds could affect river-based economic and recreational opportunities such as the fishing, rafting, camping, and backpacking, and swimming activities in the tributaries of the Sacramento, American, Cosumnes, and Mokelumne Rivers. Reduced streamflow combined with increased human demand for water could lower the availability of water for wildlife and alter the composition and structure of riparian communities. To address the array of potential impacts associated with climate change-induced drought, the County has developed the adaptation measures to help build future resilience. These are discussed in the 2024 Sacramento County CAP. Some of these are included as mitigation actions in this LHMP Update.

2026 American, Bear, and Cosumnes Watersheds Resilience Plan

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.

2024 CAS

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 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.

Public Policy Institute

A 2018 report from the Public Policy Institute of California noted that thousands of Californians – mostly in rural, small, disadvantaged communities – already face acute water scarcity, contaminated groundwater, or complete water loss. Climate change would make these effects worse.

Vulnerability Assessment

Vulnerability—Medium

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

An assessment of a community's vulnerability to this hazard begins with an understanding of local exposure to unincorporated Sacramento County. This is included in the Local Concerns section below. After that, vulnerability is discussed in multiple sections that detail how this hazard can affect both the entire Sacramento County Planning Area as well as the unincorporated portions of Sacramento County. How the hazard affects the other participating jurisdictions can be found in their respective annexes to this LHMP Update. These sections below include assets at risk, impacts, and how future development may affect the vulnerability of the County to this hazard.

Local Concerns (unincorporated Sacramento County)

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

General Concerns

The 2024 CAP noted that climate change is affecting drought. The County needs to adapt to changes in precipitation patterns associated with climate change. With a reduction in water, water supply issues based on water rights becomes more evident. Some agricultural uses are severely impacted through limited water supply, especially those with livestock. Drought and water supply issues will continue to be a concern to the Planning Area. The drawdown of the groundwater table is one factor that has been recognized to occur during repeated dry years. Lowering of groundwater levels results in the need to deepen wells, which subsequently lead to increased pumping costs. Land subsidence can also occur when the groundwater table is depleted.

The County aims to improve resilience to drought and extreme precipitation events by implementing improvements to Sacramento County's water supply systems and networks. state and local water-efficiency requirements, including applicable landscape water-efficiency requirements, provide mechanisms for reducing potable-water demand associated with development and landscaping. AB 1572 phases in restrictions beginning in 2027 on the use of potable water to irrigate nonfunctional turf on commercial, industrial, institutional, and certain other properties, subject to statutory exceptions and phased compliance dates. This is relevant to the County's longer-term drought resilience and reduction of potable-water demand for landscaping.

As soil and vegetation dry during drought, less available moisture is present for evapotranspirative cooling, which can contribute to hotter local conditions; increased heat in turn increases evapotranspiration and water demand and can intensify drought stress on vegetation. More information on extreme heat can be found in Section 4.3.3.

Agricultural Concerns

Agricultural concerns include:

- **Irrigation reliability for high-value permanent crops that cannot be fallowed without permanent economic loss**: Even one season of acute water stress can reduce yields for multiple subsequent years. Maintaining baseline irrigation supply for these crops is the Agricultural Commissioner's Office's primary drought concern.
- **Rice and field crop fallowing and economic ripple effects:** Rice ($15.6M in 2024) is among the first Sacramento County field crops to be fallowed in drought years due to its significant water demand. Widespread rice fallowing eliminates habitat for migratory waterfowl, disrupts rice straw supply chains, and affects the milling, transportation, and export businesses that form the secondary agricultural economy.
- **Small and mid-size producer resilience:** Sacramento County has 107 certified producers farming approximately 790 acres in direct marketing, plus hundreds of additional small-scale operators in the unincorporated areas. These producers have limited financial reserves to absorb water cost increases, equipment upgrades for irrigation efficiency, or lost-season crop insurance costs. They are disproportionately vulnerable to water availability disruptions.
- **Livestock water supply:** The county's rangelands (147,789 acres), cattle and calves operations ($22.4M in 2024), poultry ($32.5M in 2024), and dairy ($51.2M in 2024) all require reliable water access. Drought reduces pond and creek water availability for livestock, increases feed costs due to hay and forage price spikes, and forces early herd liquidation.

Regional Park Concerns

The primary concerns are associated with increased wildfire and loss of vegetation (trees/shrubs). Loss of vegetation contributes to streambank erosion and contributes to changes in habitat that make it more appealing to ground squirrels which also contribute to erosion issues. Loss of tree/shrub canopy also contributes to warming and less carbon sequestration. Additionally, drought causes trees stress, which in turn makes them more susceptible to disease and infestation by pest species (notably the Mediterranean Oak Bohrer).

The irrigation at Sacramento Bar Park and Ambassador Park (61) was turned off from the beginning of drought restrictions until 2024 to reduce overall department water use on park turf. Other parks throughout the system had water reduced for conservation during drought due to water restrictions, which allowed turf and trees to potentially suffer long term damage, There is potential for irrigated turf to be turned off in the future if drought restrictions persist, This would kill off irrigated turf and effect tress in irrigated areas.

The primary source of water is surface water (rivers) and during times of drought more reliance is placed on groundwater. Water reliability is a huge concern particularly during drought years compounded by increased development (demand for water).

Tree Mortality Concerns

Tree mortality in Sacramento County is more localized to:

- Urban street/yard trees (affected by heat, drought stress, poor soil, irrigation issues, and pests).
- Riparian/oak woodlands (e.g., blue oaks, valley oaks stressed by drought and development).
- Emerging pest issues like Mediterranean Oak Borer (MOB), which expanded in Sacramento County in 2023–2024, killing valley, blue, and Oregon white oaks in localized spots (e.g., Citrus Heights, Fair Oaks, City of Sacramento).

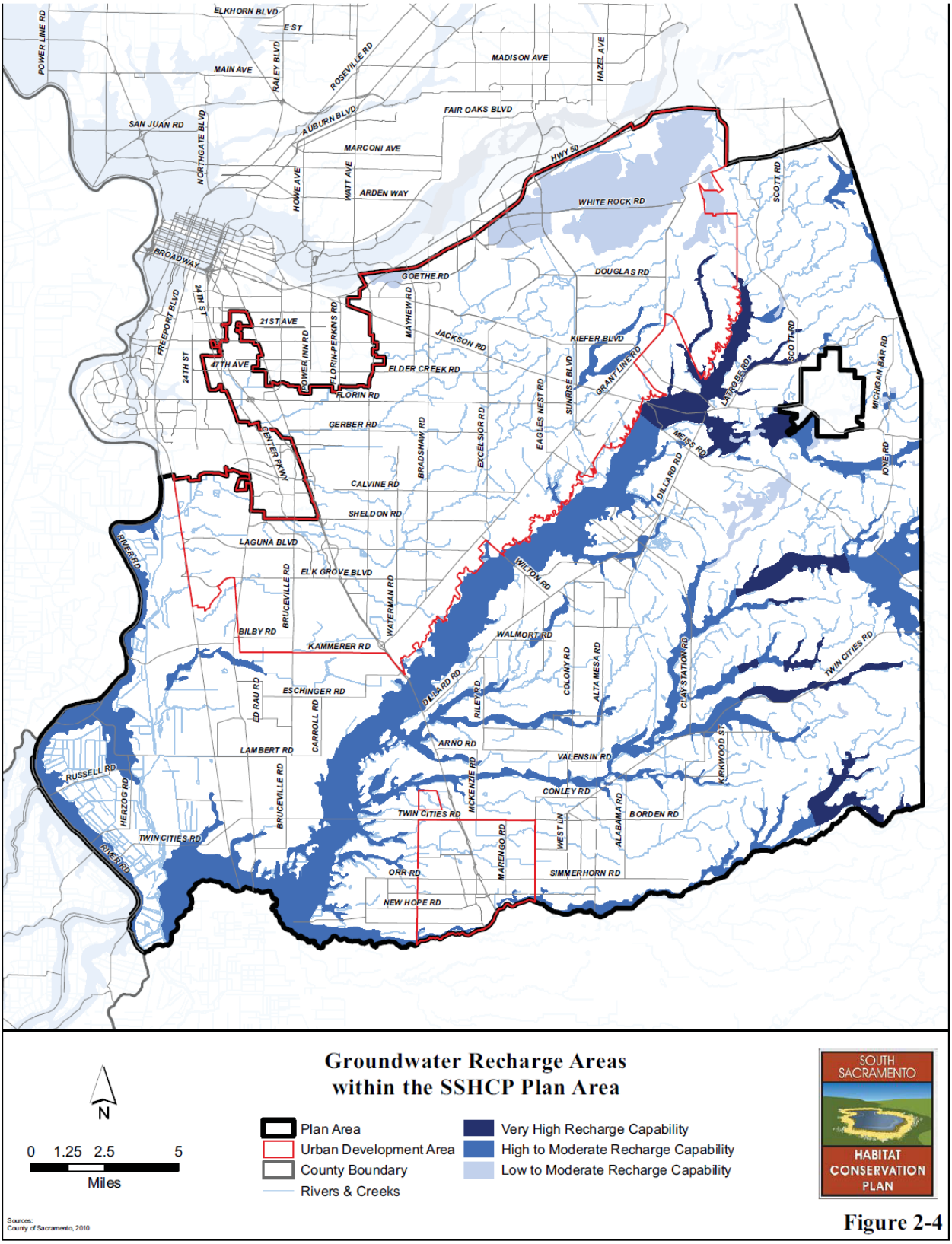
Local concerns for each of the jurisdictions can be found under the Local Concerns heading in each respective jurisdictional annex to this LHMP Update.

Groundwater Recharge

The South Sacramento Habitat Conservation Plan (SSHCP) Plan Area is entirely within the 20,000-square-mile Central Valley Aquifer System, but is split between two basins, the Sacramento Valley Groundwater Basin and the San Joaquin Valley Groundwater Basin. Precipitation that does not run off, or is not lost through evaporation and transpiration, travels beneath the surface as subsurface water. The pattern of movement of water, from the time it enters the ground to the time it emerges either naturally or by pumping from a well, is controlled by the subsurface conditions encountered. Upon entering the ground, water moves downward until it reaches a zone of saturation. This happens whenever water from precipitation, stream flow, applied irrigation, and various other water sources sinks into the ground through the open spaces in permeable materials. The size of these open spaces ranges from minute pores in clays to intergranular openings in deposits of sand and gravel, and open crevices along bedrock fractures. The area over which this is accomplished is called a recharge area.

Within the SSHCP Plan Area, most recharge occurs in locations along river channel deposits where they cross exposures of water-transmitting rocks. Here the channel deposits are very permeable, allowing for rapid infiltration of water down to water-bearing materials. Water flows over these recharge areas during the entire year and affords partial replenishment of the groundwater body (Figure 4-80). In addition to river channel recharge, recharge can occur through percolation of precipitation, percolation of irrigation return flows, and subsurface boundary inflow from adjacent aquifers.

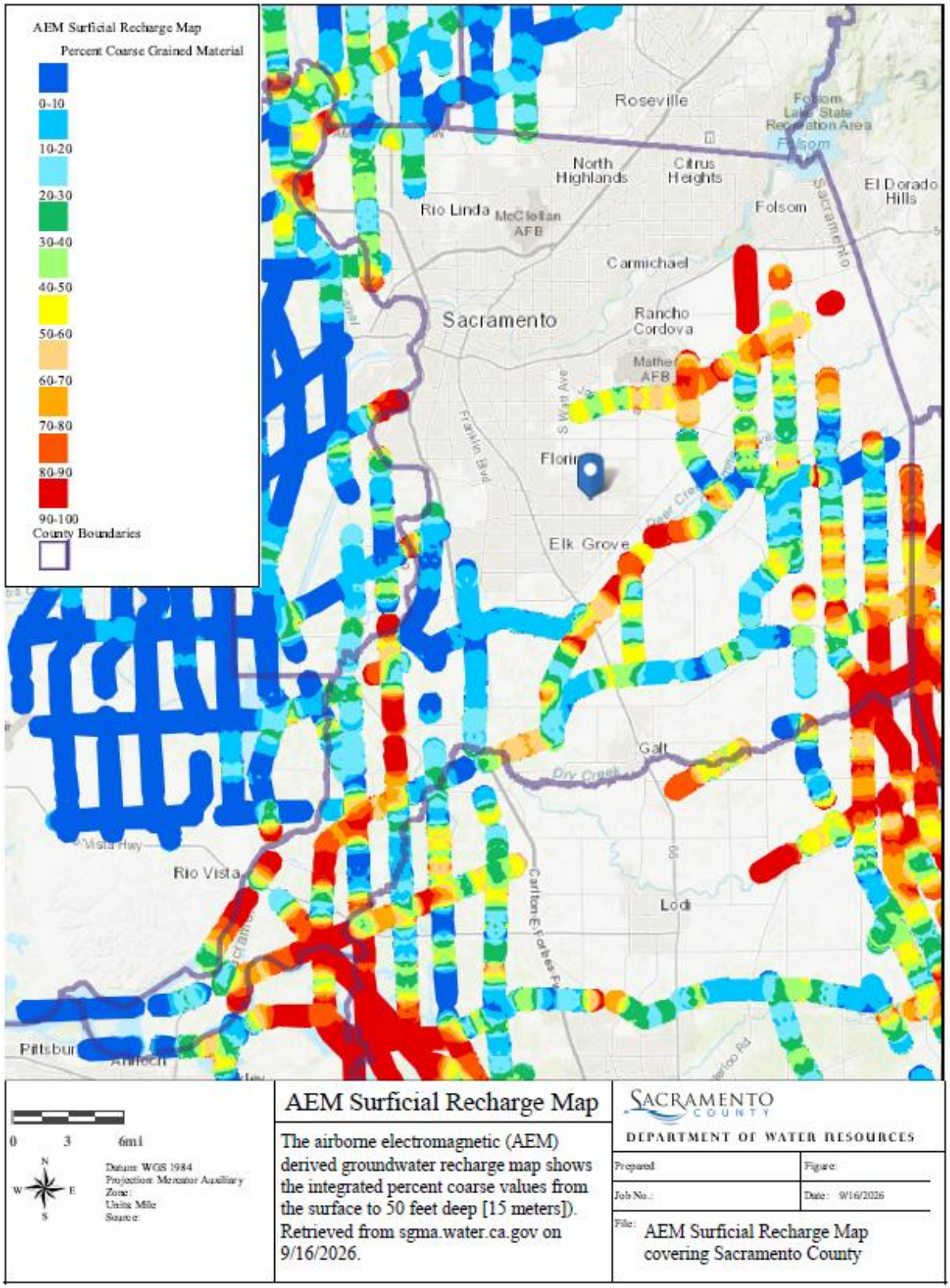
Figure 4-80 Groundwater Recharge in Sacramento County



Source: South Sacramento Habitat Conservation Plan (2018). Retrieved 12/16/2025.

In addition to the SSHCP discussion, the County noted that there is additional data from mapping from CA DWR AEM Surficial Groundwater Recharge. This is shown for the County in Figure 4-81. This map uses data from the California Department of Water Resources Statewide Airborne Electromagnetic (AEM) Survey to show the estimated proportion of coarse subsurface materials—such as sand and gravel—in the upper 50 feet of the ground across Sacramento County. Areas with a higher percentage of coarse material generally have greater potential for water to infiltrate into the subsurface and contribute to groundwater recharge. The map can help identify areas with favorable shallow subsurface conditions for groundwater recharge and support groundwater management and recharge planning.

Figure 4-81 Sacramento County – Surficial Recharge Map



Source: CA DWR SGMA Data Viewer. Retrieved 9/16/2026.

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 for the Sacramento County Planning Area and unincorporated Sacramento County.

Additionally, for each hazard in the FEMA National Risk Index in Sacramento County, the relevant portions of the hazard analysis done by FEMA is presented below. This includes the Hazard Risk Index Rating, Expected Annual Loss Values, Exposure Values, and the Historic Loss Ratio Rating. These are presented for the Sacramento County Planning Area as a whole.

People and Populations

The people and populations of the Sacramento County Planning Area are not directly affected by general drought conditions; 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 Planning Area may be vulnerable to drought and water shortage issues. Drought and water shortage can lead to an increase in tree mortality and wildfires threatening Planning Area residents. Water shortages can have an effect on all of the population in the Planning Area, but often have a greater effect on the unsheltered and other vulnerable populations that may be unable to access and afford clean drinking water during shortages. During periods of drought, as the costs of water usage may increase, 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. 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 hazards of drought (increased tree mortality and potential for spread of urban fires and wildfire) can pose a significant risk to critical facilities and infrastructure. Drought can also stress trees, causing die off and lead to increased tree mortality. Dead and weakened trees may fall on critical infrastructure adjacent to them and impact power lines and other utilities. Fallen trees can also temporarily block roads and access which can impact first responders in an emergency.

Natural, Historic, and Cultural Resources

Drought and water shortage can have a significant impact on natural resources. Water levels in reservoirs and lakes may be reduced and a loss of wetlands and marsh areas may occur. Severe drought conditions

can contribute to an increase in erosion of soils and lead to poor soil quality. Further, all of the trees in the Planning Area are at risk to drought impacts and a reduction in water supply. These trees provide a wealth of social and environmental benefits to Planning Area residents and visitors, from shade and beauty to air quality, carbon reduction and stormwater management. Increased tree mortality during extended droughts can be substantial and widespread. Increased tree mortality in the Planning Area can also add to the available fuel which can exacerbate the spread of wildfires. 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. 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 Planning Area unless they are impacted by a drought precipitated wildfire type event.

FEMA NRI Hazard Vulnerability Assessment

The FEMA NRI was queried for additional specific data on Sacramento County's vulnerability to drought. The NRI contains data and analysis for 18 separate natural hazards, including drought. According to the NRI, there have been 1,414 drought events between the years 2000-2021 with an average of 55.3 events per year. As shown in Table 4-69, drought could cause a total of $48,062,172 in expected annual losses, with a historic loss rating of relatively high. Drought has a relatively high rating for both social vulnerability and community resilience, with a risk index score of 99.7 out of 100.

Table 4-69 Sacramento County Planning Area – Drought Vulnerability Ratings from FEMA NRI

NRI Hazard	Hazard Risk Index Rating	Expected Annual Loss Values (total)	Exposure Value (total)	Historic Loss Ratio Rating
Drought	99.7	$48,062,172	$318,519,801	Relatively High

Source: FEMA NRI Report, retrieved 10/8/2025.

*Hazard Risk Index is calculated using data for only a single hazard type, and reflect a communities expected annual loss value, community risk factors, and the adjustment factor used to calculate the risk value.

**Expected annual loss represents the average economic loss in dollars resulting from natural hazards each year.

***Exposure is a natural hazard consequence factor that is the representative value of buildings, populations, or agriculture potentially exposed to a natural hazard occurrence.

Additional information on the FEMA NRI can be found in Section 4.2 and Appendix G.

Impacts from Drought and Water Shortage

The vulnerability to drought is Countywide, 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 can lead to possible 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 and fuel loads 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. Drought that occurs during periods of extreme heat and high winds is a contributing factor to a PSPS event being declared in the Planning Area. More information on PSPS can be found in Section 4.3.1.

Other qualitative impacts associated with drought in the Sacramento County Planning Area 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 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 possibly means less water available for use over the long run, and additional challenges for water supply reliability, especially during periods of extended drought.

Drought Impact Reporter

Drought impacts are wide-reaching and may be economic, environmental, and/or societal. Tracking drought impacts can be difficult. The Drought Impact Reporter from the NDMC is a useful reference tool that compiles reported drought impacts nationwide. Table 4-70 show drought impacts for County from 1850 to February 2026. The data represented is skewed, with the majority of these impacts from records within the past 15 years.

Table 4-70 Sacramento County Drought Impacts 1850-2/15/2026

Category	Sacramento County Number of Impacts
Agriculture	64
Business and Industry	14
Energy	7
Fire	21
Plants & Wildlife	76
Relief, Response, and Restrictions	132
Society and Public Health	65
Tourism and Recreation	26
Water Supply and Quality	163
Total	**568**

Source: National Drought Mitigation Center. Retrieved 2/23/2025.

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

- Climate change is likely to exacerbate future drought conditions and associated impacts and vulnerability of the County 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 County. Population growth in Sacramento County is expected to slowly increase. Sacramento County has access to large quantities of water through its groundwater as well as surface water. However, any future population growth in the County will add additional pressure to water companies during periods of drought and water shortage. Water companies 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 unsheltered that might not always have access to affordable, 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 regarding Sacramento County's water access for agricultural production, but state- and nation-wide with regard to food production. Should the County see a growth in population, it will increase the vulnerability and impacts to the County from this hazard.
- Land use planning should be proactive to address future hazard conditions. The effect of land-use change on water demand will vary depending on the location and type of development, existing land use, water source, landscaping and irrigation demand, and applicable conservation requirement. Additional development may require an increase in water supply and associated infrastructure to support future populations. Changes in land use and development may or may not increase the impacts and associated vulnerabilities of the County to this hazard depending on where and how this future growth occurs.

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 County are considered can help to make for a more resilient community.

4.3.10. Earthquake (with subhazards)

Hazard Profile

This hazard profile contains multiple sections that detail how this hazard can affect the Sacramento County Planning Area. These sections include a hazard/problem description; description of location and extent; past occurrences of this hazard; and how climate change can affect or influence this hazard.

Hazard/Problem Description

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 can cause structural damage, injury, and loss of life, as well as damage to infrastructure networks, such as water, 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. This section briefly discusses issues related to types of seismic hazards.

Ground Shaking

Ground shaking is motion that occurs as a result of energy released during faulting. The damage or collapse of buildings and other structures caused by ground shaking is among the most serious seismic hazards. Damage to structures from this vibration, or ground shaking, is caused by the transmission of earthquake vibrations from the ground to the structure. The intensity of shaking and its potential impact on buildings is determined by the physical characteristics of the underlying soil and rock, building materials and workmanship, earthquake magnitude and location of epicenter, and the character and duration of ground motion.

Actual ground breakage generally affects only those buildings directly over or nearby the fault. Ground shaking generally has a much greater impact over a greater geographical area than ground breakage. The amount of breakage and shaking is a function of earthquake magnitude, type of bedrock, depth and type of soil, general topography, and groundwater. As with most communities in northern California near active faults, portions of Sacramento County would be susceptible to violent ground shaking.

Seismic Structural Safety

Older buildings constructed before building codes were established, and even newer buildings constructed before earthquake-resistance provisions were included in the codes, are the most likely to be damaged during an earthquake. Buildings one or two stories high of wood-frame construction are considered to be the most structurally resistant to earthquake damage. Older masonry buildings without seismic reinforcement (unreinforced masonry) and soft story buildings are the most susceptible to the type of structural failure that causes injury or death.

The susceptibility of a structure to damage from ground shaking is also related to the underlying foundation material. A foundation of rock or very firm material can intensify short-period motions which affect low-rise buildings more than tall, flexible ones. A deep layer of water-logged soft alluvium can cushion low-rise buildings, but it can also accentuate the motion in tall buildings. The amplified motion resulting from softer alluvial soils can also severely damage older masonry buildings.

Other potentially dangerous conditions include but are not limited to: building architectural features that are not firmly anchored, such as parapets and cornices; roadways, including column and pile bents and abutments for bridges and overcrossings; and above-ground storage tanks and their mounting devices. Such features could be damaged or destroyed during strong or sustained ground shaking.

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.

Liquefaction during major earthquakes has caused severe damage to structures on level ground as a result of settling, titling, or floating. Such damage occurred in San Francisco on bay-filled areas during the 1989 Loma Prieta earthquake, even though the epicenter was several miles away. If liquefaction occurs in or under a sloping soil mass, the entire mass may flow toward a lower elevation. Also of particular concern in terms of developed and newly developing areas are fill areas that have been poorly compacted.

Typical effects of liquefaction include:

- **Loss of bearing strength**—the ground can liquefy and lose its ability to support structures.
- **Lateral spreading**—the ground can slide down very gentle slopes or toward stream banks riding on a buried liquefied layer.
- **Sand boils**—sand-laden water can be ejected from a buried liquefied layer and erupt at the surface to form sand volcanoes; the surrounding ground often fractures and settles.
- **Flow failures**—earth moves down steep slope with large displacement and much internal disruption of material.
- **Ground oscillation**—the surface layer, riding on a buried liquefied layer, is thrown back and forth by the shaking and can be severely deformed.
- **Flotation**—light structures that are buried in the ground (like pipelines, sewers and nearly empty fuel tanks) can float to the surface when they are surrounded by liquefied soil.
- **Settlement**—when liquefied ground re-consolidates following an earthquake, the ground surface may settle or subside as shaking decreases and the underlying liquefied soil becomes denser.

Landslide/Debris Flows

Landslides can occur as a result of horizontal seismic inertia induced in the slopes by the ground shaking. The most common earthquake-induced landslides include shallow, disrupted landslides such as rock falls, rockslides, and soil slides. Debris flows are created when surface soil on steep slopes becomes totally

saturated with water. Once the soil liquefies, it loses the ability to hold together and can flow downhill at very high speeds, taking vegetation and/or structures with it. Slide risks increase after an earthquake during a wet winter. This is discussed in the vulnerability section below, and as a stand-alone hazard in Section 4.3.13.

Settlement

Settlement can occur in poorly consolidated soils during ground shaking. During settlement, the soil materials are physically rearranged by the shaking to result in a less stable alignment of the individual minerals. Settlement of sufficient magnitude to cause significant structural damage is normally associated with rapidly deposited alluvial soils or improperly founded or poorly compacted fill. These areas are known to undergo extensive settling with the addition of irrigation water, but evidence due to ground shaking is not available.

Fire Following Earthquake

Fire ignitions and spread in following a major earthquake can further compound the potentially catastrophic impacts of a large earthquake event. Fire following earthquake is a major hazard in earthquake-prone areas which are densely developed and have high inventories of wood frame buildings. The capability of fire departments to combat fires following an earthquake is impacted by the regional nature of an earthquake, damage to transportation and water supply systems, and the potential failure of telecommunications. A local fire department may suffer impacts to its personnel, buildings, equipment, and communications systems. Moreover, fewer resources are immediately available as mutual aid – due to the commitment of nearby fire departments responding to the earthquake withing their own jurisdictions. Transportation system damage may adversely impact the mobilization of off-duty personnel and fire and rescue mutual aid resources from unaffected areas. Maneuvering fire crews within the affected areas of the earthquake may be impeded by debris or damage to roads and bridges. Additionally, the municipal water supply system which ordinarily supports firefighting operations is likely to be impacted.

Fire following earthquake is an issue that could impact any California community that experiences an earthquake – both urban and rural. According to the FM Global Insurance company, “Fires after earthquakes commonly initiate from electrical or fuel related sources because their use is widespread. In the US, natural gas is a factor 15 to 50 percent of the time, and electrical ignitions account for 40 percent or more of post-earthquake wildfires. Ignitable liquid spills, chemical reactions, and the contact of combustibles with heat sources have also initiated or contributed to many fires after earthquakes.”

Location and Extent

California is seismically active because it sits on the boundary between two of the earth’s tectonic plates. Most of the state - everything east of the San Andreas Fault (such as Sacramento) - is on the North American Plate. The cities of Monterey, Santa Barbara, Los Angeles, and San Diego are on the Pacific Plate, which is constantly moving northwest past the North American Plate. The relative rate of movement is about two inches per year. The San Andreas Fault is considered the boundary between the two plates, although some of the motion is taken up on faults as far away as central Utah.

Earthquake Faults

A fault is defined as "a fracture or fracture zone in the earth's crust along which there has been displacement of the sides relative to one another." For the purpose of planning there are two types of faults, active and inactive. Active faults have experienced displacement in historic time, suggesting that future displacement may be expected. Inactive faults show no evidence of movement in recent geologic time, suggesting that these faults are dormant. This does not mean, however, that faults having no evidence of surface displacement within the last 11,000 years are necessarily inactive. For example, the 1975 Oroville earthquake, the 1983 Coalinga earthquake, and the 1987 Whittier Narrows earthquake occurred on faults not previously recognized as active. Potentially active faults are those that have shown displacement within the last 1.6 million years (Quaternary). An inactive fault shows no evidence of movement in historic (last 200 years) or geologic time, suggesting that these faults are dormant.

Two types of fault movement represent possible hazards to structures in the immediate vicinity of the fault: fault creep and sudden fault displacement. Fault creep, a slow movement of one side of a fault relative to the other, can cause cracking and buckling of sidewalks and foundations even without perceptible ground shaking. Sudden fault displacement occurs during an earthquake event and may result in the collapse of buildings or other structures that are found along the fault zone when fault displacement exceeds an inch or two. The only protection against damage caused directly by fault displacement is to prohibit construction in the fault zone.

Geological literature indicates that no major active faults transect the County; however, there are several subsurface faults in the Delta. The Midland fault, buried under alluvium, extends north of Bethel Island in the Delta to the east of Lake Berryessa and is considered inactive but possibly capable of generating a near 7.0 (Richter Scale) earthquake. This magnitude figure is speculative based on an 1895 earthquake measuring 6.9 on the Richter Scale with an epicenter possibly in the Midland Fault vicinity. However, oil and gas companies exploring the area's energy potential have identified several subsurface faults, none of which show any recent surface rupture. A second, presumably inactive, fault is in the vicinity of Citrus Heights near Antelope Road. This fault's only exposure is along a railroad cut where offsetting geologic beds can be seen. Neither the lateral extent of the trace, the magnitude of the offset, nor the age of faulting has been determined. To the east, the Bear Mountain fault zone trends northwest-southeast through Sacramento and El Dorado Counties. Geologists believe this series of faults has not been active in historic time. Potential earthquakes on the Hayward, Calaveras or San Andreas faults pose the highest risk to Delta Region levees. Table 4-71 and Figure 4-82 identify the faults in close proximity to Sacramento County.

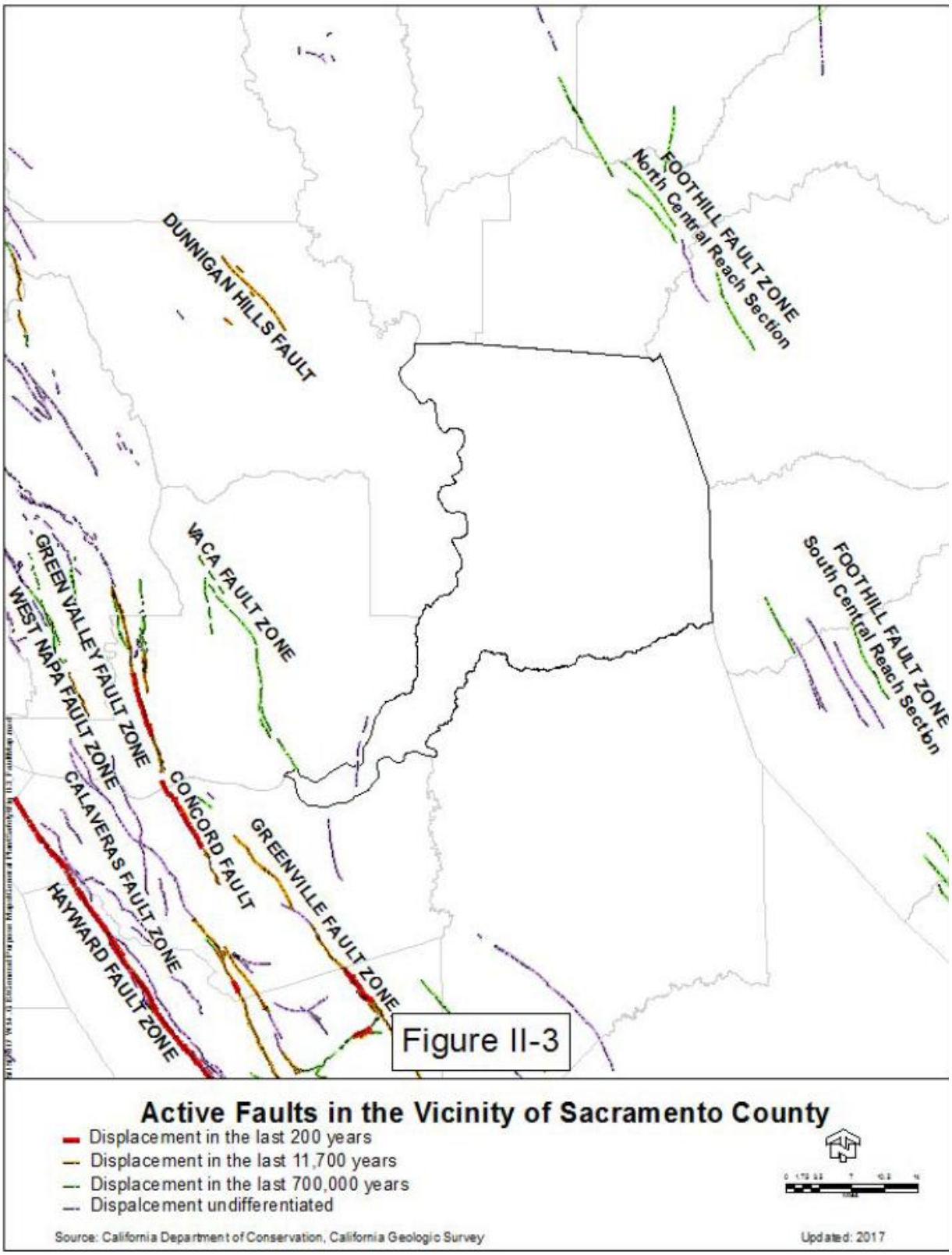
Table 4-71 Historically Active Faults in the Vicinity of Sacramento County

Fault	Approximate Distance from Sacramento County Border (Miles)	Earthquake Date	Magnitude (Richter)
San Andreas	46	1906, 1989, 2014	7.8; 7.1, 6.0
Vaca	5	1892	6.6
Concord	12	1955	5.4
Greenville	17	1980	5.1
Hayward	26	1868	7.0

Fault	Approximate Distance from Sacramento County Border (Miles)	Earthquake Date	Magnitude (Richter)
Calaveras	21	1861; 1979; 2007	5.8; 5.74; 5.44
Foothill Fault System	48	1975 (Oroville)	5.7
Las Positas	24	1980	5.4
Midland	0	1892	5.6
West Napa	22	2014	6.02

Source: Sacramento County General Plan Safety Element Background Report (2017)

Figure 4-82 Active Faults in and near Sacramento County



Source: Sacramento County General Plan Safety Element Background Report (2017)

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. One of the first was the Richter Scale, developed in 1932 by the late Dr. Charles F. Richter of the California Institute of Technology. The Richter Magnitude Scale is used to quantify the magnitude or strength of the seismic energy released by an earthquake. Another measure of earthquake severity is intensity. Intensity is an expression of the amount of shaking at any given location on the ground surface (see Table 4-72). Seismic shaking is typically the greatest cause of losses to structures during earthquakes.

Table 4-72 Modified Mercalli Intensity (MMI) Scale

MMI	Felt Intensity
I	Not felt except by a very few people under special conditions. Detected mostly by instruments.
II	Felt by a few people, especially those on upper floors of buildings. Suspended objects may swing.
III	Felt noticeably indoors. Standing automobiles may rock slightly.
IV	Felt by many people indoors; by a few outdoors. At night, some people are awakened. Dishes, windows, and doors rattle.
V	Felt by nearly everyone. Many people are awakened. Some dishes and windows are broken. Unstable objects are overturned.
VI	Felt by everyone. Many people become frightened and run outdoors. Some heavy furniture is moved. Some plaster falls.
VII	Most people are alarmed and run outside. Damage is negligible in buildings of good construction, considerable in buildings of poor construction.
VIII	Damage is slight in specially designed structures, considerable in ordinary buildings, and great in poorly built structures. Heavy furniture is overturned.
IX	Damage is considerable in specially designed buildings. Buildings shift from their foundations and partly collapse. Underground pipes are broken.
X	Some well-built wooden structures are destroyed. Most masonry structures are destroyed. The ground is badly cracked. Considerable landslides occur on steep slopes.
XI	Few, if any, masonry structures remain standing. Rails are bent. Broad fissures appear in the ground.
XII	Virtually total destruction. Waves are seen on the ground surface. Objects are thrown in the air.

Source: Multi-Hazard Identification and Risk Assessment, FEMA 1997

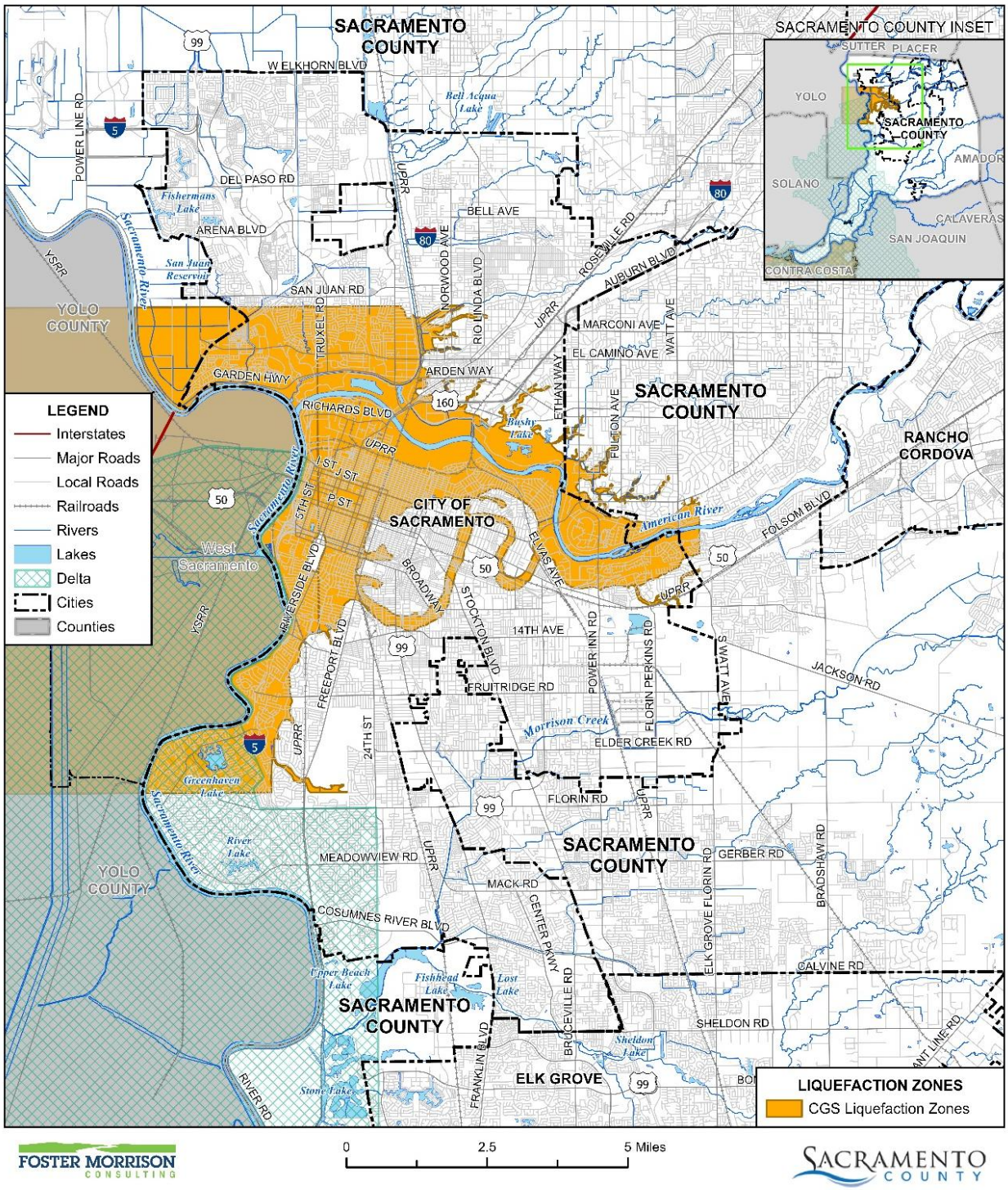
Liquefaction

There is no scientific scale for earthquake related liquefaction. The speed of onset is short, as is the duration. The effects from liquefaction can last for days, weeks, months or even years as areas of the County are rebuilt or leveed areas are dewatered and the levees rebuilt. In Sacramento County, the Delta and areas of downtown Sacramento are at risk to liquefaction. The Delta sits atop a blind fault system on the western edge of the Central Valley. Moderate earthquakes in 1892 near Vacaville and in 1983 near Coalinga demonstrate the seismic potential of this structural belt. The increasing height of the levee system has prompted growing concern about the seismic stability of the levees. The concern is based on the proximity of faulting, the nature of the levee foundations, and the materials used to build the levees. Many levees consist of uncompacted weak local soils that may be unstable under seismic loading. The presence of sand pockets and silt in the levees and their foundations indicates that liquefaction is also a possibility.

Although there have been no significant quakes in or closely adjacent to the Delta since high levees were originally constructed, there are at least five major faults within the vicinity of the Delta capable of generating peak ground acceleration values that would likely lead to levee failures.

In Sacramento County, liquefaction zones were mapped by CGS for the first time in 2025. Geographical extents of CGS liquefaction zones for the Sacramento County Planning Area are shown on Figure 4-83. Details on extents of liquefaction zones can be found in Table 4-73. Details on each jurisdiction's CGS liquefaction extents can be found in their respective annexes to this LHMP Update. Based on the new 2025 liquefaction mapping, only the unincorporated County and City of Sacramento have areas falling within a liquefaction zone. While mapped liquefaction zones are predominantly found in and around the City of Sacramento downtown area, CGS mapping stops before extending into the Delta area of the County. However, while not part of the liquefaction map extent, available data does suggest that areas prone to liquefaction occur throughout the Delta.

Figure 4-83 Sacramento Planning Area – Liquefaction Zones



Data Source: CGS Liquefaction Zones 2015 (Sacramento West and East Quads updated 11/20/2025), Sacramento County, Cal-Atlas; Map Date: 10/2/2026.

Table 4-73 Sacramento County Planning Area –Geographical Liquefaction Zone Extents by Jurisdiction and Property Use

Jurisdiction / Property Use	Total Acres	% of Total Acres	Improved Acres	% of Total Improved Acres	Unimproved Acres	% of Total Unimproved Acres
Sacramento						
Agricultural	0.1	0.00002%	0.1	0.00004%	0.1	0.00005%
Care / Health	46	0.01%	43	0.01%	46	0.02%
Church / Welfare	413	0.1%	110	0.04%	413	0.1%
Industrial	493	0.1%	418	0.1%	493	0.2%
Miscellaneous	2,346	0.4%	0.3	0.0001%	2,346	0.8%
Office	767	0.1%	536	0.2%	767	0.3%
Public / Utilities	762	0.1%	0	0.0%	762	0.3%
Recreational	299	0.1%	48	0.02%	299	0.1%
Residential	5,801	1.0%	5,356	2%	5,801	2.1%
Retail / Commercial	421	0.1%	342	0.1%	421	0.2%
Unknown	41	0.01%	0.4	0.0001%	41	0.01%
Vacant	1,030	0.2%	15	0.005%	1,030	0.4%
Sacramento Total	**12,419**	**2.1%**	**6,869**	**2.2%**	**12,419**	**4.4%**
Unincorporated Sacramento County						
Agricultural	208	0.04%	12	0.004%	208	0.1%
Care / Health	12	0.002%	12	0.004%	12	0.004%
Church / Welfare	7	0.001%	6	0.002%	7	0.003%
Industrial	21	0.004%	20.9	0.01%	21	0.01%
Miscellaneous	100	0.02%	1	0.0004%	100	0.04%
Office	68	0.01%	58	0.02%	68	0.02%
Public / Utilities	0.01	0.000001%	0	0%	0.01	0.000002%
Recreational	12	0.002%	11	0.004%	12	0.004%
Residential	441	0.1%	391	0.1%	441	0.2%
Retail / Commercial	52	0.01%	51	0.02%	52	0.02%
Unknown	26	0.0%	0	0%	26	0.01%
Vacant	864	0.1%	15	0.005%	864	0.3%
Unincorporated Sacramento County Total	**1,811**	**0.3%**	**579**	**0.2%**	**1,811**	**0.6%**

Jurisdiction / Property Use	Total Acres	% of Total Acres	Improved Acres	% of Total Improved Acres	Unimproved Acres	% of Total Unimproved Acres
Grand Total	**14,231**	**2.4%**	**7,448**	**2.4%**	**14,231**	**5.1%**

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

Other Hazards

Earthquakes can also cause or contribute to other hazards. Earthquakes may cause landslides (discussed above and in Section 4.3.13), particularly during the wet season, in areas of high water or saturated soils. Earthquakes can cause dams to fail (see Section 4.3.7 Dam Failure). Finally, earthquakes can also cause levees to fail and contribute to flooding (see Section 4.3.11 Flood: 1%/0.2% Annual Chance and Section 4.3.14 Levee Failure).

Past Occurrences

Disaster Declaration History

There have been no disaster declarations in the County related to earthquakes (or liquefaction), as shown on Table 4-4.

NCDC Events

Earthquake events (including liquefaction) are not tracked by the NCDC database.

USGS Events

The USGS National Earthquake Information Center database contains data on earthquakes in the Sacramento County area. Table 4-74 shows the approximate distances earthquakes can be felt away from the epicenter. According to the table, a magnitude 5.0 earthquake could be felt up to 90 miles away. The USGS database was searched for magnitude 5.0 or greater on the Richter Scale within 90 miles of the City of Sacramento. These 59 results are detailed in Table 4-75. The USGS does not track liquefaction events.

Table 4-74 Approximate Relationships between Earthquake Magnitude and Intensity

Richter Scale Magnitude	Maximum Expected Intensity (MM)*	Distance Felt (miles)
2.0 - 2.9	I – II	0
3.0 - 3.9	II – III	10
4.0 - 4.9	IV – V	50
5.0 - 5.9	VI – VII	90
6.0 - 6.9	VII – VIII	135
7.0 - 7.9	IX – X	240
8.0 - 8.9	XI – XII	365

*Modified Mercalli Intensity Scale.

Source: USGS Earthquake Intensity Zonation and Quaternary Deposits, Miscellaneous Field Studies Map 9093, 1977.

*Table 4-75 Magnitude 5.0 Earthquakes or greater within 90 Miles of Sacramento County**

Date	Richter Magnitude	Location
10/25/2022	5.06	15km ESE of Alum Rock, CA
12/14/2016	5.01	8km NW of The Geysers, California
8/10/2016	5.09	20km NNE of Upper Lake, California
8/24/2014	6.02	South Napa
10/31/2007	5.45	San Francisco Bay area, California
6/13/1988	5.3	San Francisco Bay area, California
3/31/1986	5.7	Northern California
4/24/1984	6.2	Northern California
11/28/1980	5.1	Northern California
1/27/1980	5.4	San Francisco Bay area, California
1/24/1980	5.1	San Francisco Bay area, California
1/24/1980	5.8	San Francisco Bay area, California
8/2/1975	5.2	Northern California
8/2/1975	5.1	Northern California
8/1/1975	5.7	0km WSW of Palermo, California
10/2/1969	5.1	Northern California
4/29/1968	5	Northern California
9/12/1966	5.91	Northern California
3/22/1957	5.3	San Francisco Bay area, California
10/24/1955	5.4	San Francisco Bay area, California
9/5/1955	5.5	San Francisco Bay area, California
3/22/1953	5	Northern California
3/30/1943	5.3	Northern California
12/17/1942	5.1	Northern California
7/1/1911	6.6	San Francisco Bay area, California
6/23/1909	5.7	Northern California
3/3/1909	5	Northern California
4/18/1906	7.9	The 1906 San Francisco Earthquake
8/3/1903	5.8	San Francisco Bay area, California
6/11/1903	5.8	San Francisco Bay area, California
5/19/1902	5.4	Northern California
06/02/1899	5.4	San Francisco Bay area, California
03/31/1898	6.2	San Francisco Bay area, California
08/09/1893	5.1	Northern California
04/30/1892	5.5	Northern California
04/21/1892	6.2	Northern California

Date	Richter Magnitude	Location
04/19/1892	6.4	Northern California
10/12/1891	5.5	Northern California
01/02/1891	5.5	San Francisco Bay area, California
07/31/1889	5.2	San Francisco Bay area, California
05/19/1889	6	San Francisco Bay area, California
04/29/1888	5.9	Northern California
04/10/1881	6.3	Southwest of Modesto, California
07/10/1877	5.5	Lake Tahoe area, California-Nevada border
04/02/1870	5.8	Near Berkeley, California
10/21/1868	6.8	The 1868 Hayward Fault Earthquake, California
07/15/1866	6	Southwest of Stockton, California
05/21/1864	5.8	Alameda County, California
03/05/1864	6.1	Alameda County, California
07/04/1861	5.8	San Francisco Bay area, California
11/26/1858	6.1	San Francisco Bay area, California
02/15/1856	5.5	San Mateo County, California
01/02/1856	5.3	San Mateo County, California
01/25/1855	5.5	Sierra County, California
05/15/1851	5	San Francisco Bay area, California

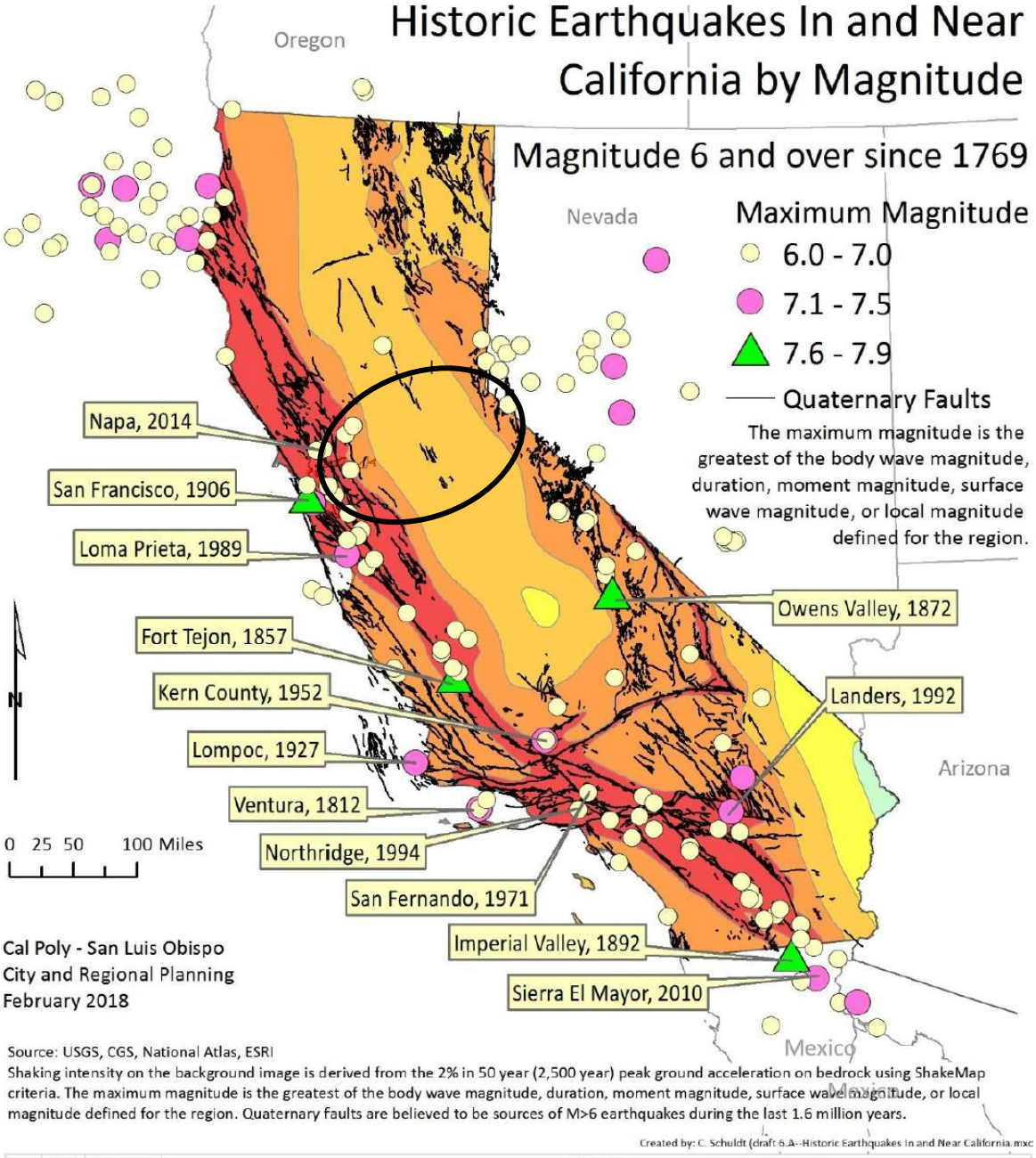
Source: USGS, National Earthquake Information Center
*Search dates 1950 – January 31, 2026

Figure 4-84 shows major historical earthquakes in California from 1769 to 2017. Since 2017, California has experienced four additional 6.0 or greater earthquakes:

- 2022 - 6.4 Ferndal
- 2021 - 6.0 Antelope Valley
- 2019 - 6.4 and 7.1 Ridgecrest

None of these earthquakes (over 6.0) since 2017 have affected the Sacramento County Planning Area.

Figure 4-84 Historic Earthquakes in California 1769 to 2017



	MMI	Damage	Effects
	X	Very Heavy	Some well-built, wooden structures destroyed; most masonry and frame structures destroyed with foundations. Rails bent.
	IX	Heavy	Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb. Damage great in substantial buildings, with partial collapse. Buildings shifted off foundations.
	VIII	Moderate to Heavy	Damage slight in specially designed structures; considerable damage in ordinary substantial buildings with partial collapse. Damage great in poorly built structures. Fall of chimneys, factory stacks, columns, monuments, walls. Heavy furniture overturned.
	VII	Moderate	Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable damage in poorly-built or badly designed structures; some chimneys broken.
	VI	Light	Felt by all, many frightened. Some heavy furniture moved; a few instance of fallen plaster. Damage slight.
	V	Very Light	Felt by nearly everyone; many awakened. Some dishes, windows broken. Unstable objects overturned. Pendulum clocks may stop.

Source: 2023 State of California Multi-Hazard Mitigation Plan

Hazard Mitigation Planning Committee Events

The HMPC noted some earthquake events in Sacramento County. Historically, major earthquakes have not been an issue for Sacramento County. While areas prone to liquefaction have been mapped in the County, no specific events of liquefaction have been reported. However, minor earthquakes have occurred in or near the County in the past. The HMPC has identified several earthquakes that were felt by area residents and/or caused damaging shaking in the County. These sections first show historic hazard events occurring since the 2021 LHMP and then those occurring prior to the 2021 LHMP. Details on some of these events follow.

Events since 2021 LHMP

The HMPC noted the following events.

October 18, 2023: A M4.2 earthquake struck about 5 km (3 miles) SSW of Isleton in southern Sacramento County. It was a significant local event, causing light shaking in the Delta region and parts of Sacramento. No damage or injuries reported.

July 8, 2021: The strongest event felt in Sacramento during this timeframe — a M6.0 earthquake south of Lake Tahoe near the California-Nevada border (roughly 100–110 miles east). It caused light to moderate shaking in Sacramento (intensity around III–IV on the Modified Mercalli scale), rattling windows, doors, and some hanging objects. No damage was reported locally, but it was part of a small swarm and felt across much of Northern California.

Events prior to 2021

The May 2022 (Amended) Sacramento County Safety Element Background Report contained a table of historical earthquakes. This is shown in Figure 4-85. Details of these and other earthquake events are discussed below the table.

Figure 4-85 Sacramento County Planning Area – Historic Earthquakes by Fault

Fault	Approximate Distance From Sacramento County Boundary	Historic Earthquake Date[3]	Magnitude (Richter)[4]
San Andreas	46	1906;1989	7.8; 7.1
Vaca	5	1892	6.6
Concord	12	1955	5.4
Greenville	17	1980	5.1
Hayward	26	1868	7
Calaveras	21	1861; 1979; 2007	5.8; 5.74; 5.44
Foothill Fault System (Cleveland Hill)	48	1975 (Oroville)	5.7
Las Positas	24	1980	5.4
Great Valley (Midland)	0	1892	5.6
West Napa Fault	22	2014	6.02

Source: Sacramento County (Amended) Safety Element Background Report

July 9, 2021: Two earthquakes struck near Sacramento County. A 6.0 magnitude earthquake with an epicenter in Antelope Valley, Ca and a 5.2 magnitude with an epicenter near Walker, Ca both caused shaking in Sacramento County. Residents noted felt effects in areas throughout the County.

2014 Napa Earthquake: A magnitude 6.0 earthquake occurred 51.1 miles west/southwest of the City of Sacramento. Damage estimates in the County were negligible. No damage was observed on the Delta levees.

Sacramento County suffered little damage from the **October 17, 1989** Loma Prieta earthquake, which was felt over an area covering 400,000 square miles from Los Angeles to the California-Oregon border. The earthquake measured 7.1 on the Richter Scale; the epicenter was located along the San Andreas fault beneath the Santa Cruz Mountains, about 60 miles southeast of San Francisco. In contrast to Sacramento County, the San Francisco Bay region suffered over $6 billion in property damage and 62 lives were lost. The Loma Prieta earthquake resulted in a federal disaster declaration (DR-845) for the area around San Francisco, including Sacramento County.

1980 Livermore Earthquake (M 5.8) and the **1984** Morgan Hill Earthquake (M 6.2): both of these earthquakes were either too small or too distant to cause any significant damage to the Delta levees.

On **August 1, 1975**, a moderate earthquake (magnitude 5.7) occurred near Oroville on the Cleveland Hills fault. This earthquake was felt in Sacramento County, although no direct damage was reported.

A **December 16, 1954** earthquake near Fairview Peak, Nevada measured 7.1 on the Richter Scale. The earthquake caused some damage in Sacramento, while virtually no damage occurred in Reno, Nevada.

The **1906** San Francisco earthquake generated little shaking in Sacramento County and damage locally was limited to minor cracks in a local post office and jail.

The greatest amount of ground shaking experienced in the County occurred on **April 21, 1892**, when an earthquake shook Yolo County between Winters and Vacaville. While the damage in Yolo County was severe, the damage in Sacramento County was substantially less. Damage to buildings in Sacramento was limited to statuary falling from building tops and cracks in chimneys.

Likelihood of Future Occurrence

Earthquake

Occasional—No major earthquakes have been recorded within the County; although the County has felt ground shaking from earthquakes with epicenters located elsewhere. Based on historical data and the location of the Sacramento County Planning Area relative to active and potentially active faults, the County will experience an earthquake occasionally.

Liquefaction

Occasional – While there are no active faults within the Planning Area, due to the presence of faults in and around the County and the new liquefaction mapping, there is concern that liquefaction could occur during future earthquake events. While CGS mapping shows liquefaction zones in and around downtown Sacramento, other sources identify the potential for liquefaction occurring in the Delta area, raising the concern of a levee failure. Embankment and foundation materials for most Delta levees are substandard, adding to the risk of failure during seismic events. The U.S. Geological Survey estimates that an earthquake of magnitude 6.7 or greater has a 62 percent probability of occurring in the San Francisco Bay Area between 2003 and 2032. Such an earthquake is capable of causing multiple levee failures in the Delta Region which could result in fatalities, extensive property damage and the interruption of water exports from the Delta for an extended period of time.

It is likely that climate change will not affect the chance of future occurrence as well as future impacts. More information on climate change and earthquake can be found below the Mapping of Future Occurrences section. More information on future impacts can be found in the Future Conditions/Future Development section of the Vulnerability Assessment below.

Mapping of Future Earthquake Probabilities

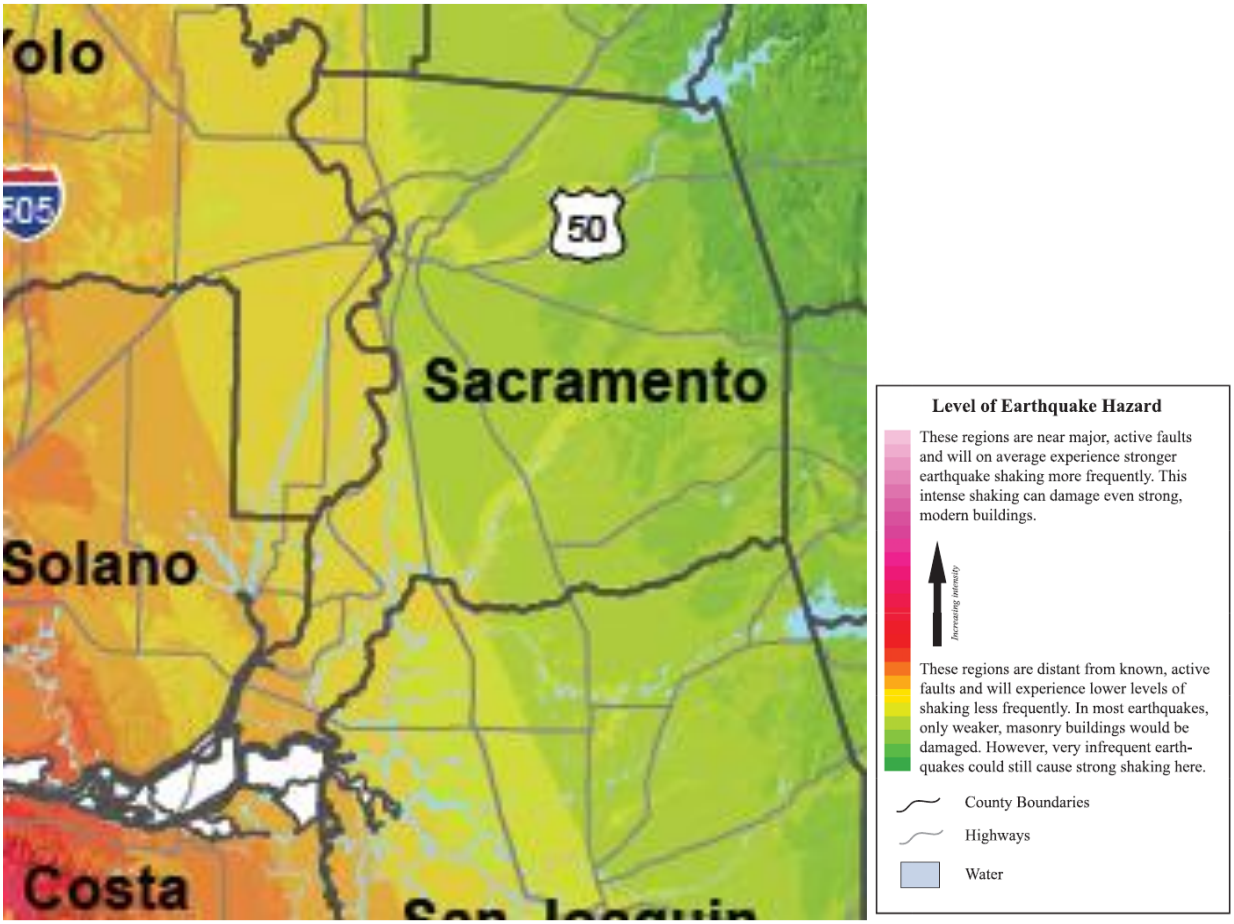
Mapping of the future earthquake probabilities have been developed for California. This mapping focuses on the future earthquake potential; no mapping of future liquefaction probabilities are available. However, there is the potential for liquefaction to occur during future earthquake events affecting the County. Mapping of future earthquake probabilities is presented in the following sections:

- CGS Analysis
- UCERF Analysis

CGS Analysis

Maps indicating the maximum expectable intensity of ground shaking for the County are available through several sources. Figure 4-86, prepared in 2016 by the California Division of Mines and Geology, shows the expected relative intensity of ground shaking and damage in California from anticipated future earthquakes. The shaking potential is calculated as the level of ground motion that has a 2% chance of being exceeded in 50 years, which is the same as the level of ground-shaking with about a 2,500-year average repeat time. Although the greatest hazard is in areas of highest intensity as shown on the map, no region is immune from potential earthquake damage. As shown, the County falls in the low to moderate zone.

Figure 4-86 Maximum Expectable Earthquake Intensity – 2% Chance in 50 Years

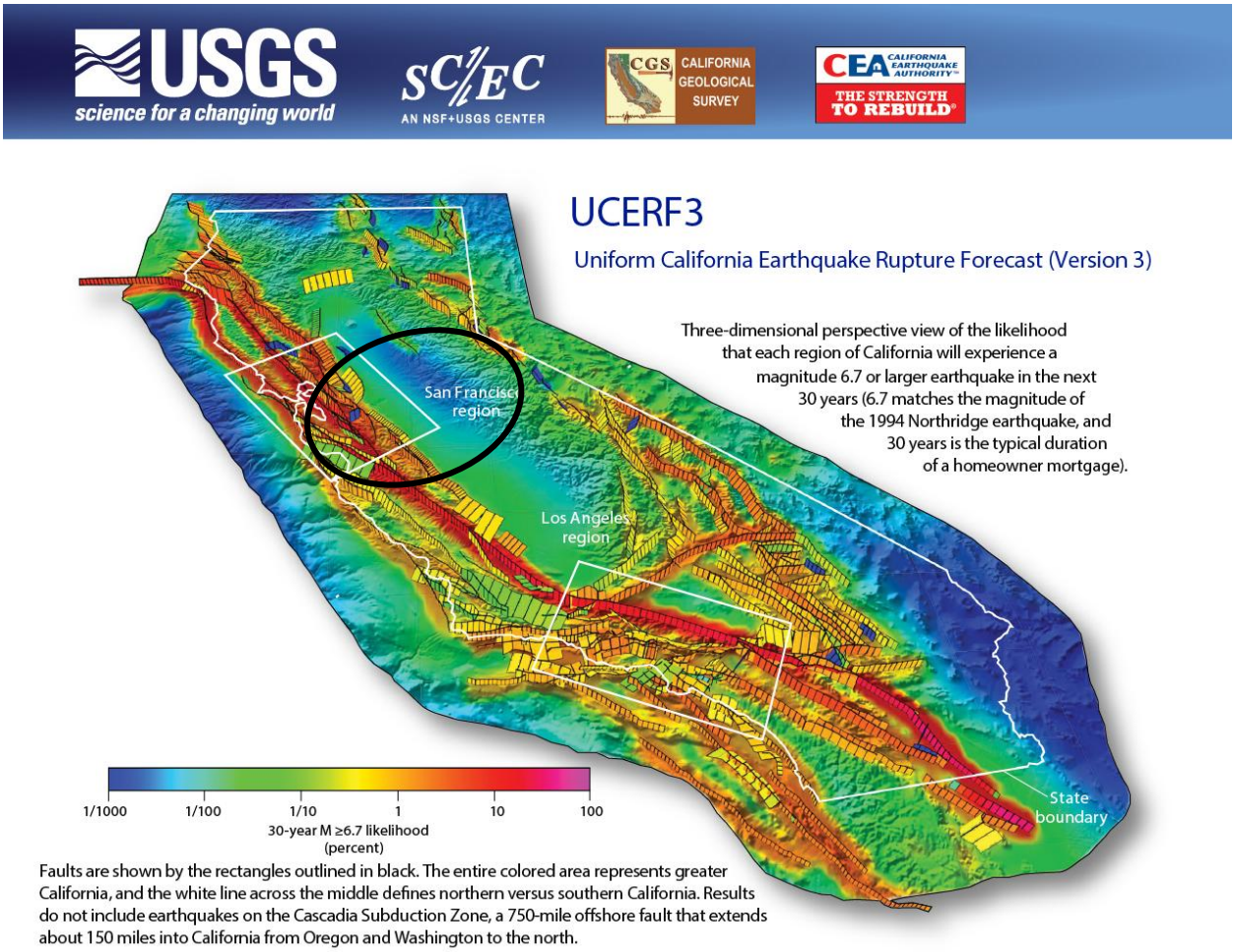


Source: California Division of Mines and Geology (2016)

UCERF Analysis

In 2014, the USGS and the California Geological Survey (CGS) released the time-dependent version of the Uniform California Earthquake Rupture Forecast (UCERF III) model. The UCERF III results have helped to reduce the uncertainty in estimated 30-year probabilities of strong ground motions in California. The UCERF map is shown in Figure 4-87 and indicates that Sacramento County has a low probability of earthquake occurrence.

Figure 4-87 Probability of Earthquake Magnitudes Occurring in 30 Year Time Frame



Source: United States Geological Survey Open File Report 2015-3009

Climate Change and Earthquake

Climate change is unlikely to increase earthquake frequency or strength. As such, liquefaction is also not expected to not be exacerbated by climate change.

Vulnerability Assessment

Vulnerability—Extremely High

Earthquake vulnerability is primarily based on population and the built environment. Urban areas in high seismic hazard zones are the most vulnerable, while uninhabited areas are less vulnerable. The primary impacts of concern are life safety and property damage. Although no active faults are located within the County, numerous active faults can be found in nearby counties. Seismic hazard mapping indicates that the County has low seismic hazard potential. Additionally, the County is not located within a delineated Alquist-Priolo Earthquake Fault Zone. Thus, the County is unlikely to experience surface rupture.

However, depending on the location and magnitude of an earthquake event, some degree of structural damage due to stronger seismic shaking and other earthquake hazards may be possible.

An assessment of a community's vulnerability to this hazard begins with an understanding of local exposure to unincorporated Sacramento County. This is included in the Local Concerns section below. After that, vulnerability is discussed in multiple sections that detail how this hazard can affect both the entire Sacramento County Planning Area as well as the unincorporated portions of Sacramento County. How the hazard affects the other participating jurisdictions can be found in their respective annexes to this LHMP Update. These sections below include assets at risk, impacts, and how future development may affect the vulnerability of the County to this hazard.

Local Concerns (unincorporated Sacramento County)

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

Earthquake Concerns

Seismic events can have particularly negative effects on older buildings constructed of unreinforced masonry (URM), including materials such as brick, concrete and stone. 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. Sacramento County is within the less hazardous Zone 3. Sacramento County noted there are no URM or soft story buildings in the unincorporated County.

Liquefaction Concerns

The 2025 California Geological Survey seismic-hazard mapping for the Sacramento East and Sacramento West quadrangles identifies areas requiring investigation for liquefaction. Local concerns include older or otherwise vulnerable buildings; nonstructural hazards; liquefaction-related damage to foundations, buried utilities, roads and levees; bridge and lifeline interruption; and continuity of County-owned critical facilities.

No reports could be found to indicate that earthquake activity, including seismic shaking and earthquake induced liquefaction, had ever induced significant damage or were the cause of the levee failures in the Delta. However, the lack of historical damage is not a reliable indicator that Delta levees are not vulnerable to earthquakes. Furthermore, the present-day Delta levees, at their current size, have not been significantly tested by moderate to high seismic shaking. More information specific to earthquakes and liquefaction in the Delta can be found in the Earthquake section of the Delta Annex to this LHMP Update.

A geological and seismological study in 1972 indicated that the Housing and Redevelopment Agency building site located downtown at the intersection of 7th and I Streets has a potential for liquefaction. More information on this can be found in the City of Sacramento's annex.

Local concerns regarding both earthquake and liquefaction for each of the jurisdictions can be found under the Local Concerns heading in each respective jurisdictional annex to this LHMP Update.

Assets at Risk

Assets at risk from earthquake include people and populations; structures; critical facilities and infrastructure and community lifelines; natural, historic, and cultural resources; and economic assets and community activities of value. These are discussed in the following sections for the Sacramento County Planning Area and unincorporated Sacramento County.

People and Populations

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

- The unsheltered
- Infants and children under age five and their caregivers
- Elderly (65 and older)
- Individuals with disabilities
- 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 and described in the Hazus Analysis section below.

Sacramento County Planning Area residents that live in 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 Planning Area'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 for each jurisdiction. This is shown in Table 4-76.

Table 4-76 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
Unincorporated County	1,515	4,166
Total	**35,677**	**92,646**

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 Citrus Heights (2.56); City of Elk Grove (3.2); City of Folsom (2.64); City of Galt (3.07); City of Isleton (3.18); City of Rancho Cordova (2.88); City of Sacramento (2.59): Unincorporated Sacramento County (2.75).

In addition to these liquefaction zones, those residents of the County who live in the Delta area may be at risk to flooding from levee failure due to levees liquefying during an earthquake event. Populations at risk from levee failure flooding are discussed in more detail in the Vulnerability Assessment in Section 4.3.14.

Structures

All structures in the Sacramento County Planning Area are vulnerable to earthquakes, depending on the severity and location of the shake. Older buildings, unreinforced masonry and soft story buildings are at a much greater risk to earthquakes. More information on structures at risk can be seen in the Hazus scenarios below.

Liquefaction can affect certain structures in the Sacramento Planning Area. GIS was used to determine the possible impacts of liquefaction on parcels and structures within the Planning Area. Table 4-77 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 Planning Area that fall in the CGS liquefaction zones. This is broken down in more detail for the unincorporated County in Table 4-78, which shows which property uses are affected by liquefaction.

Table 4-77 Sacramento County Planning Area – Count and Value of Parcels and Structures in CGS Liquefaction Zones by Jurisdiction

Jurisdiction	Total Parcel Count	Improved Parcel Count	Total Land Value	Structure Value	Estimated Contents Value	Total Value
Sacramento	39,723	36,314	$7,524,818,271	$19,613,081,249	$12,698,796,725	$39,836,696,245
Unincorporated Sacramento County	1,883	1,669	$523,321,660	$1,430,901,355	$912,833,408	$2,867,056,423
Grand Total	**41,606**	**37,983**	**$8,048,139,931**	**$21,043,982,604**	**$13,611,630,133**	**$42,703,752,668**

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

Table 4-78 Unincorporated Sacramento County – 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	7	1	$7,538,819	$12,228	$12,228	$7,563,275
Care / Health	4	4	$6,505,839	$36,932,879	$36,932,879	$80,371,597
Church / Welfare	4	3	$1,314,847	$17,581,604	$17,581,604	$36,478,055
Industrial	8	8	$9,336,973	$24,491,057	$36,736,586	$70,564,616
Miscellaneous	73	1	$97,737	$48,999	$48,999	$195,735
Office	86	74	$50,346,249	$146,219,036	$146,219,036	$342,784,321
Public / Utilities	1	0	$0	$0	$0	$0

Property Use	Total Parcel Count	Improved Parcel Count	Total Land Value	Structure Value	Estimated Contents Value	Total Value
Recreational	4	3	$2,766,792	$1,569,156	$1,569,156	$5,905,104
Residential	1,548	1,515	$361,766,023	$1,060,489,311	$530,244,656	$1,952,499,990
Retail / Commercial	57	56	$56,677,692	$143,488,265	$143,488,265	$343,654,222
Unknown	17	0	$0	$0	$0	$0
Vacant	74	4	$26,970,689	$68,820	$0	$27,039,509
Unincorporated Sacramento County Total	**1,883**	**1,669**	**$523,321,660**	**$1,430,901,355**	**$912,833,408**	**$2,867,056,423**

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

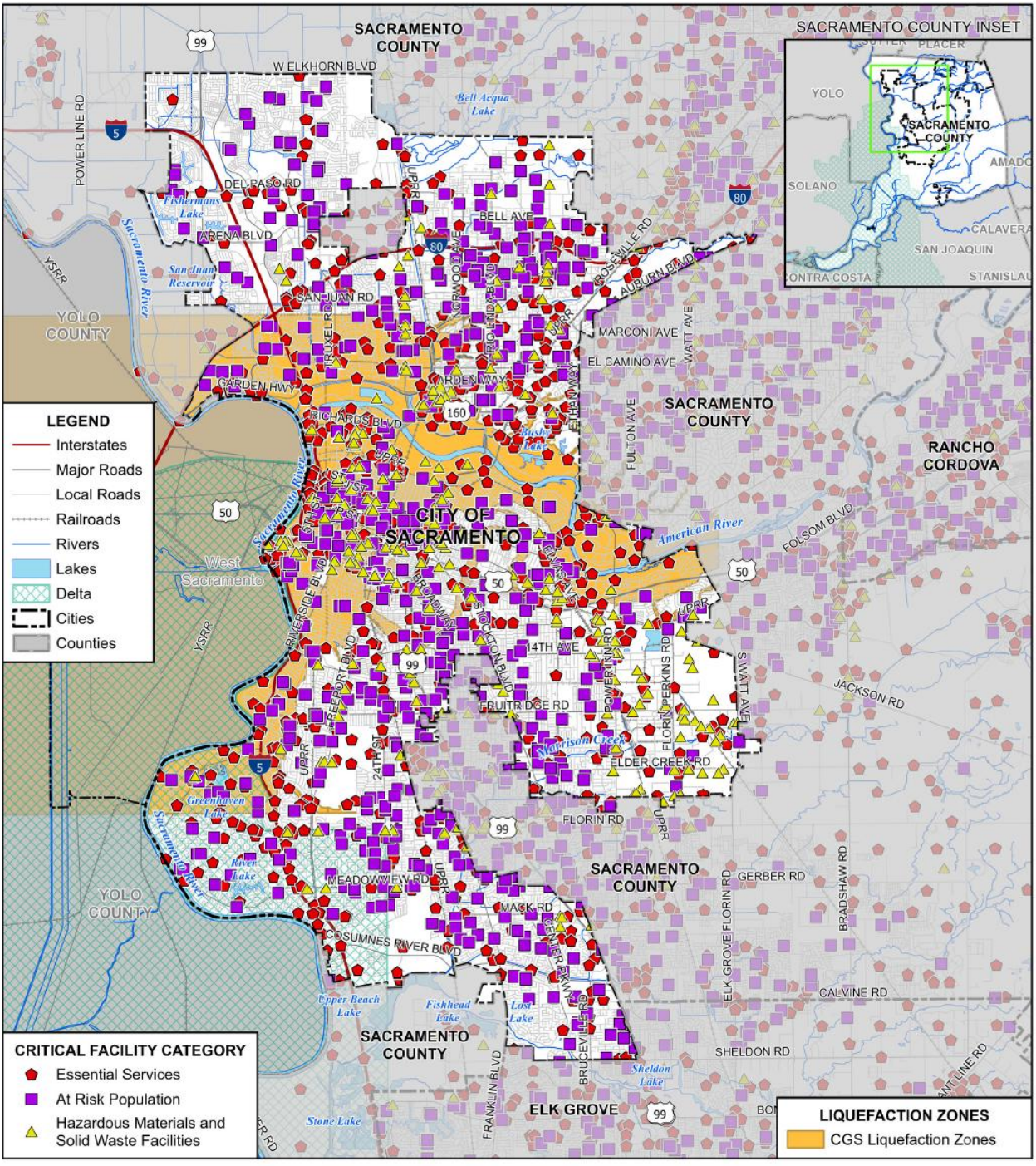
A separate analysis on liquefaction (including levee failure and dewatering costs) was done in 2008. This is included in the Earthquake section of the Delta Annex to this LHMP Update. In sum, liquefaction has not been observed as a result of recent seismic activity (including 1989 and 2014); however, it is recognized as a potential risk. In the event it does occur, liquefaction may pose a serious threat to levees, especially as levees are built larger and higher to deal with continuing island subsidence. In addition to dewatering costs, the Delta contains improved parcels at risk to flooding. More information about the Delta and its risk may be found in the Delta annex to this Plan Update.

Critical Facilities and Infrastructure

Earthquakes present a tremendous threat to critical facilities and infrastructure. More information on structures at risk can be seen in the Hazus scenarios below.

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 Sacramento County Planning Area to determine critical facilities in liquefaction zones. Using GIS, the CGS liquefaction zones were overlayed on the critical facility GIS layer. Figure 4-88 shows critical facilities as well as the liquefaction zones. Table 4-79 details critical facilities by liquefaction zone by facility type and count for the Planning Area.

Figure 4-88 Sacramento County Planning Area – Critical Facilities in 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 4-79 Sacramento County Planning Area – Critical Facilities in Liquefaction Zones by Jurisdiction and Category

Jurisdiction/Liquefaction Zone	Critical Facility Category	Facility Count
Sacramento		
Within a Liquefaction Zone	Essential Services Facilities	566
	At Risk Population Facilities	186
	Hazardous Materials and Solid Waste Facilities	83
	Total	**835**
Sacramento Total		**835**
Unincorporated Sacramento County		
Within a Liquefaction Zone	Essential Services Facilities	33
	At Risk Population Facilities	4
	Hazardous Materials and Solid Waste Facilities	1
	Total	**38**
Unincorporated Sacramento County Total		**38**
Grand Total		**873**

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. Earthquakes can significantly damage surrounding habitats. It is also 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. Historical and cultural resources are at risk, often due to their age and construction types. The Hazus scenarios below are relatively silent on the vulnerability to natural, historic, and cultural resources, but impacts to these resources could be long lasting. Additionally, any natural, historic, or cultural resources that fall in the liquefaction areas would be at risk.

Hazus Analysis

Earthquake losses will vary across the Sacramento County Planning Area depending on the source and magnitude of the event. To further evaluate potential losses associated with earthquake activity in the Planning Area, four Hazus-MH earthquake scenarios were run for this 2026 LHMP Update as detailed below.

FEMA's Hazus model, utilizing GIS technology, estimates potential losses from earthquakes by analyzing the built environment, including buildings, infrastructure, and population, along with hazard data and damage functions. The model incorporates inventory information about buildings, infrastructure (roads, utilities, etc.), and population to assess the potential impact of a hazard. It uses hazard-specific data, such

as earthquake intensity and employs damage functions that relate the intensity of the hazard to the level of damage to buildings and infrastructure based on research and historical data. By combining the inventory, hazard, and damage function data, HAZUS estimates the potential losses in terms of direct physical damage, induced damage, and direct losses (e.g., building damage, debris generation, casualty rates, economic impacts). The results of HAZUS analysis can be used to identify vulnerable areas, prioritize mitigation actions, and develop disaster preparedness plans.

Hazus-MH 6.1 was utilized to model earthquake losses for the County. Level 1 analyses were run, meaning that only the default data was used and not supplemented with local building inventory or hazard data. This is a planning level analysis.

HAZUS Level 1 Runs

These events were chosen from data gathered from the Sacramento County General Plan Safety Element and the USGS' seismic scenarios catalog. For deterministic Hazus scenarios, a single scenario event is selected based on a specific fault, the epicenter location, and the potential magnitude of the event. Table 4-80 details information on the four Hazus scenarios conducted for the Sacramento County Planning Area.

Table 4-80 Hazus Scenarios: Data from the USGS Earthquake Hazards Program Catalog

Hazus Fault Info	Hazus Catalog Information
Earthquake Fault	**Calaveras (No)**
Epicenter	37.651°N 121.931°W
Epicenter Location Description	Approx. 28 miles to the south of the County's southwestern boundary
Scenario	Calaveras: CN+CC+CS+CE
Ruptures	Calaveras: CN+CC+CS+CE
Magnitude	6.86
MMI	8.53
Event ID	bssc2014calaverasno2011cfmel_m6p86_se
URL	https://earthquake.usgs.gov/scenarios/eventpage/bssc2014calaverasno2011cfmel_m6p86_se/executive
Earthquake Fault	**Concord**
Epicenter	37.990°N 122.337°W
Epicenter Location Description	Approx. 28 miles to the northwest of the County's southwestern boundary
Scenario	Concord
Ruptures	Concord
Magnitude	6.8
MMI	8.43
Event ID	nclegacyconcordgreenvalleym6p8_se
URL	https://earthquake.usgs.gov/scenarios/eventpage/nclegacyconcordgreenvalleym6p8_se/executive
Earthquake Fault	**Hayward: RC+HN+HS+HE**

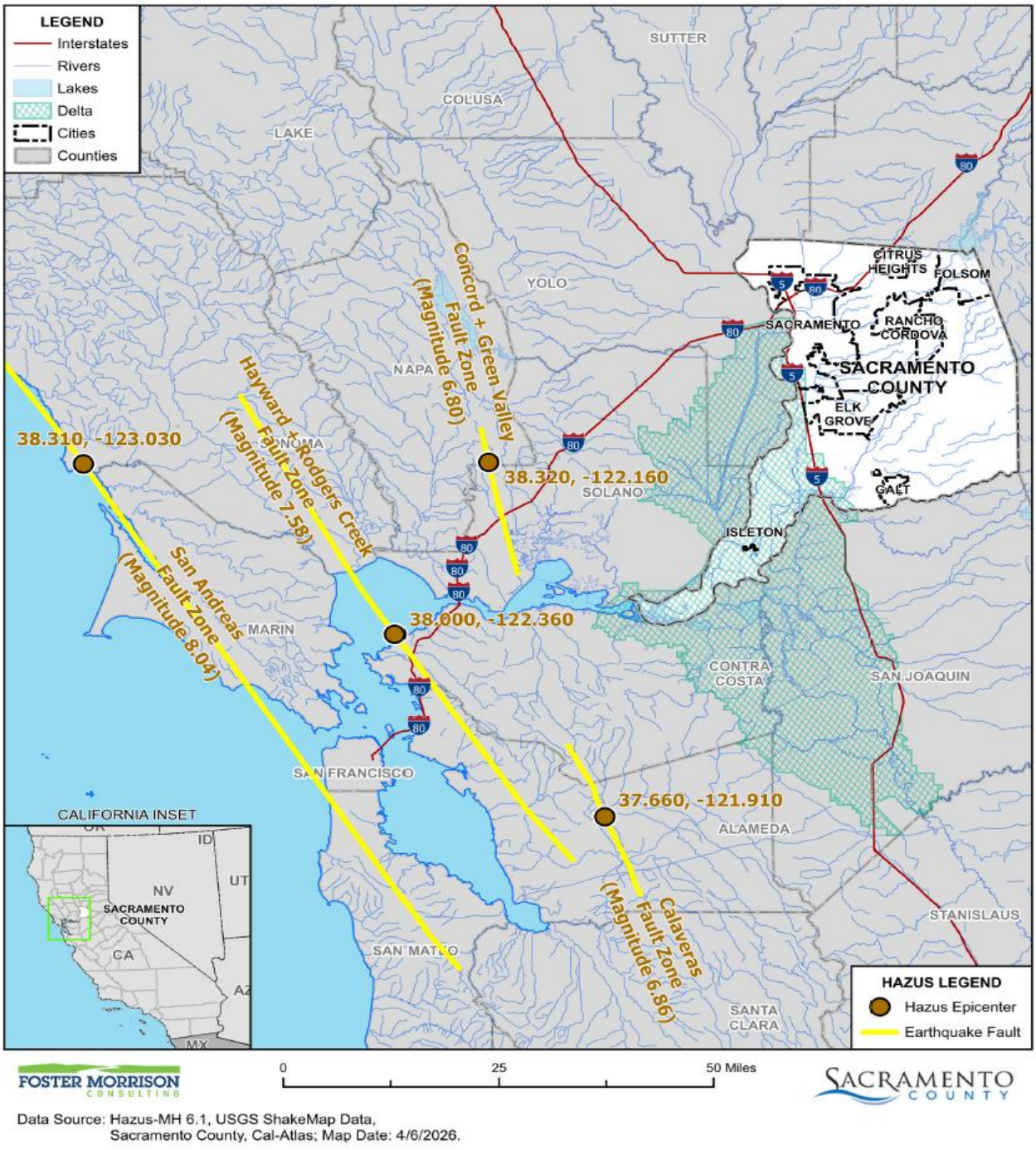
Hazus Fault Info	Hazus Catalog Information
Epicenter	37.990°N 122.337°W
Epicenter Location Description	Approx. 28 miles to the west of the County's southwestern boundary
Scenario	Hayward: RC+HN+HS+HE
Ruptures	Hayward: RC+HN+HS+HE
Magnitude	7.58
MMI	8.97
Event ID	bssc2014haywardrchnhsheshaw0_m7p58_se
URL	https://earthquake.usgs.gov/scenarios/eventpage/bssc2014haywardrchnhsheshaw0_m7p58_se/executive
Earthquake Fault	**San Andreas**
Epicenter	38.399°N 123.110°W
Epicenter Location Description	Approx. 66 miles to the W/NW of the County's southwestern boundary
Scenario	N. San Andreas: SAO+SAN+SAP+SAS
Ruptures	San Andreas (North Coast); N. San Andreas: SAO+SAN+SAP+SAS
Magnitude	8.04
MMI	9.04
Event ID	bssc2014nsanandreassaosansap_m8p04_se
URL	https://earthquake.usgs.gov/scenarios/eventpage/bssc2014nsanandreassaosansap_m8p04_se/executive

Source: Hazus 6.1

The earthquake scenarios are selected for analysis based on the earthquake fault availability in the FEMA Hazus-MH 6.1 Tool and the corresponding earthquake scenario availability through the USGS Earthquake Hazards Program Data Catalog.

These Hazus scenarios can be seen on Figure 4-89 and are captured in totality in Appendix H. Summary Hazus results follow Figure 4-89, and include summary tables of all Hazus scenario runs and a Hazus scenario comparison table.

Figure 4-89 Sacramento County Planning Area – Hazus Scenarios – Earthquake Faults and Epicenter Locations



Data Source: Hazus-MH 6.1, USGS ShakeMap Data, Sacramento County, Cal-Atlas; Map Date: 4/6/2026.

Calaveras Fault 6.86 Hazus Scenario

The Calaveras Fault deterministic scenario was developed utilizing data from the County General Plan and based on a seismic scenario obtained from the USGS seismic scenario catalog.

The results of the deterministic scenario are captured in Table 4-81. Key losses included the following:

- 308 buildings in the County were at least moderately damaged. 13 buildings in the County were extensively damaged. No buildings were completely destroyed.
- Before the earthquake, the region had 3,450 hospital beds available for use. On the day of the earthquake, the model estimates that only 3,379 hospital beds (98.00%) are available for use by patients already in the hospital and those injured by the earthquake.
- No households experienced a loss of potable water the first day after the earthquake.
- No households experienced a loss of electricity the first day after the earthquake.
- Regardless of the time of earthquake, none had casualties.
- Total economic loss estimated for the earthquake was $157,360,000 which includes building losses and lifeline losses based on the Hazus-MH inventory.
- The total building-related losses were $124,380,000; 15 % of the estimated losses were related to the business interruption of the region. By far, the largest loss was sustained by the residential occupancies which made up over 50 % of the total loss.

Table 4-81 Sacramento County Planning Area – Calaveras Fault 6.86 Magnitude Deterministic Scenario Results

Type of Impact	Calaveras 6.86 Deterministic Scenario	
Total Buildings Damaged (based on 475,667 buildings)	Slight: 3,756 Moderate: 308 Extensive: 13 Complete: 0	
Damage to Essential Facilities	None with at least moderate damage	
Damage to Transportation Systems	None with at least moderate damage	
Damage to Utility Systems	No facilities with at least moderate damage. 8 potable water line breaks, 4 wastewater line breaks, and 0 natural gas line breaks.	
Households without Power/Water Service (Based on 564,445 total households)	Power loss, Day 1: 0 Power loss, Day 3: 0 Power loss, Day 7: 0 Power loss, Day 30: 0 Power loss, Day 90: 0	Water loss, Day 1: 0 Water loss, Day 3: 0 Water loss, Day 7: 0 Water loss, Day 30: 0 Water loss, Day 90: 0
Debris Generation	16,000 tons	
Displaced Households	8 displaced households	
Shelter Requirements	4 persons	
Casualties (Based on 2 a.m. time of occurrence)	Without requiring hospitalization: 9 Requiring hospitalization: 0 Life threatening: 0 Fatalities: 0	
Casualties (Based on 2 p.m. time of occurrence)	Without requiring hospitalization: 16 Requiring hospitalization: 1 Life threatening: 0 Fatalities: 0	
Casualties (Based on 5 p.m. time of occurrence)	Without requiring hospitalization: 11 Requiring hospitalization: 1 Life threatening: 0	

Type of Impact	Calaveras 6.86 Deterministic Scenario
	Fatalities: 0
Total Economic Losses (Includes building, income and lifeline losses)	$157,360,000
Building and Income Related Losses	$124,380,000

Source: Hazus 6.1

Fires often occur after an earthquake. Because of the number of fires and the lack of water to fight the fires, they can often burn out of control. Hazus uses a Monte Carlo simulation model to estimate the number of ignitions and the amount of burnt area. For this scenario, the model estimates that there will be 0 ignitions that will burn about 0.01 sq. mi 0.00 % of the region's total area.). The model also estimates that the fires will displace about 53 people and burn about 7 (millions of dollars) of building value.

Figure 4-90 shows the peak ground acceleration due to the Calaveras 6.86 magnitude earthquake. Figure 4-91 shows the total losses by census tract in Sacramento County due to the Calaveras 6.86 magnitude earthquake.

Figure 4-90 Sacramento County Planning Area – Calaveras 6.86 Magnitude Peak Ground Accelerations

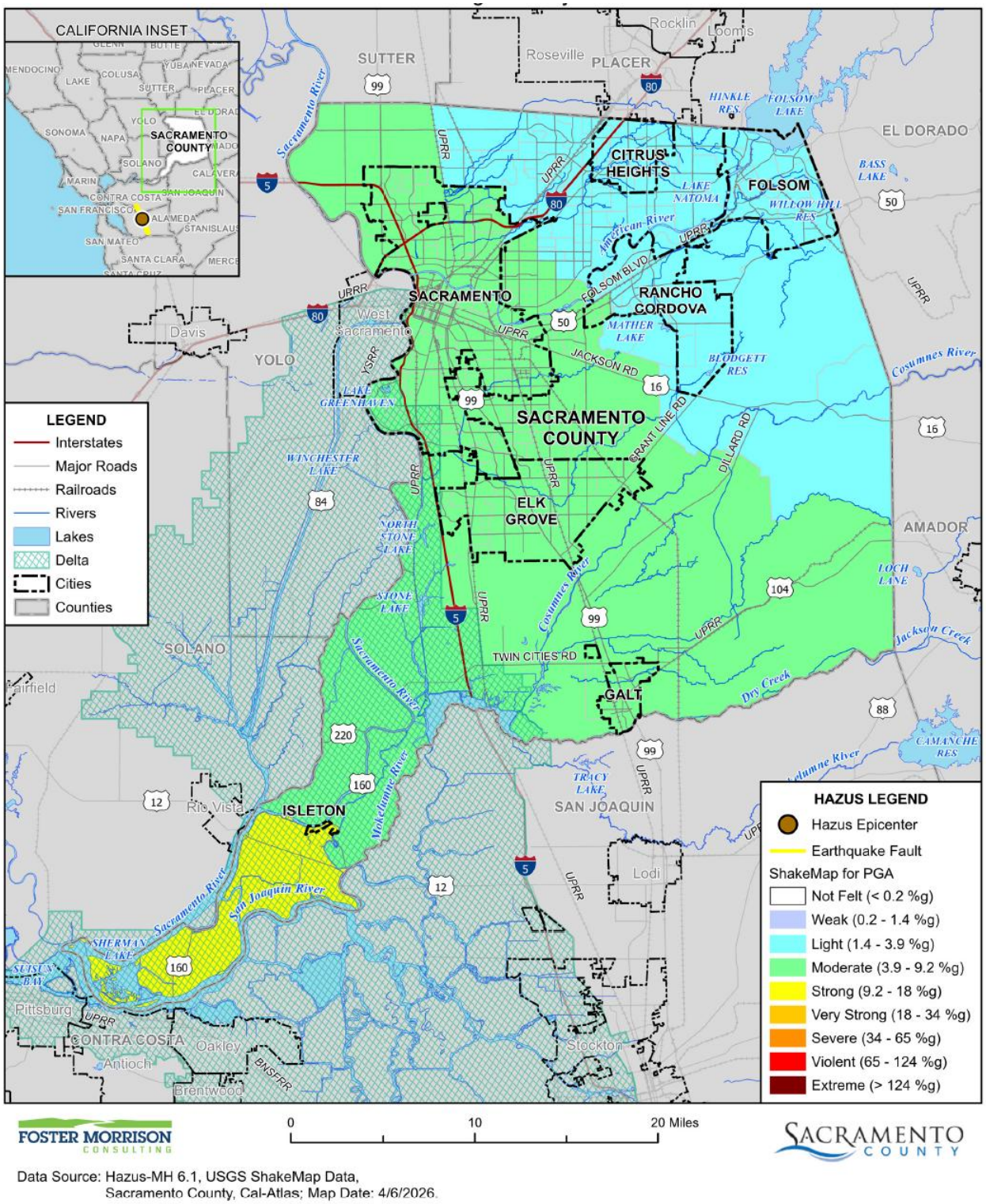
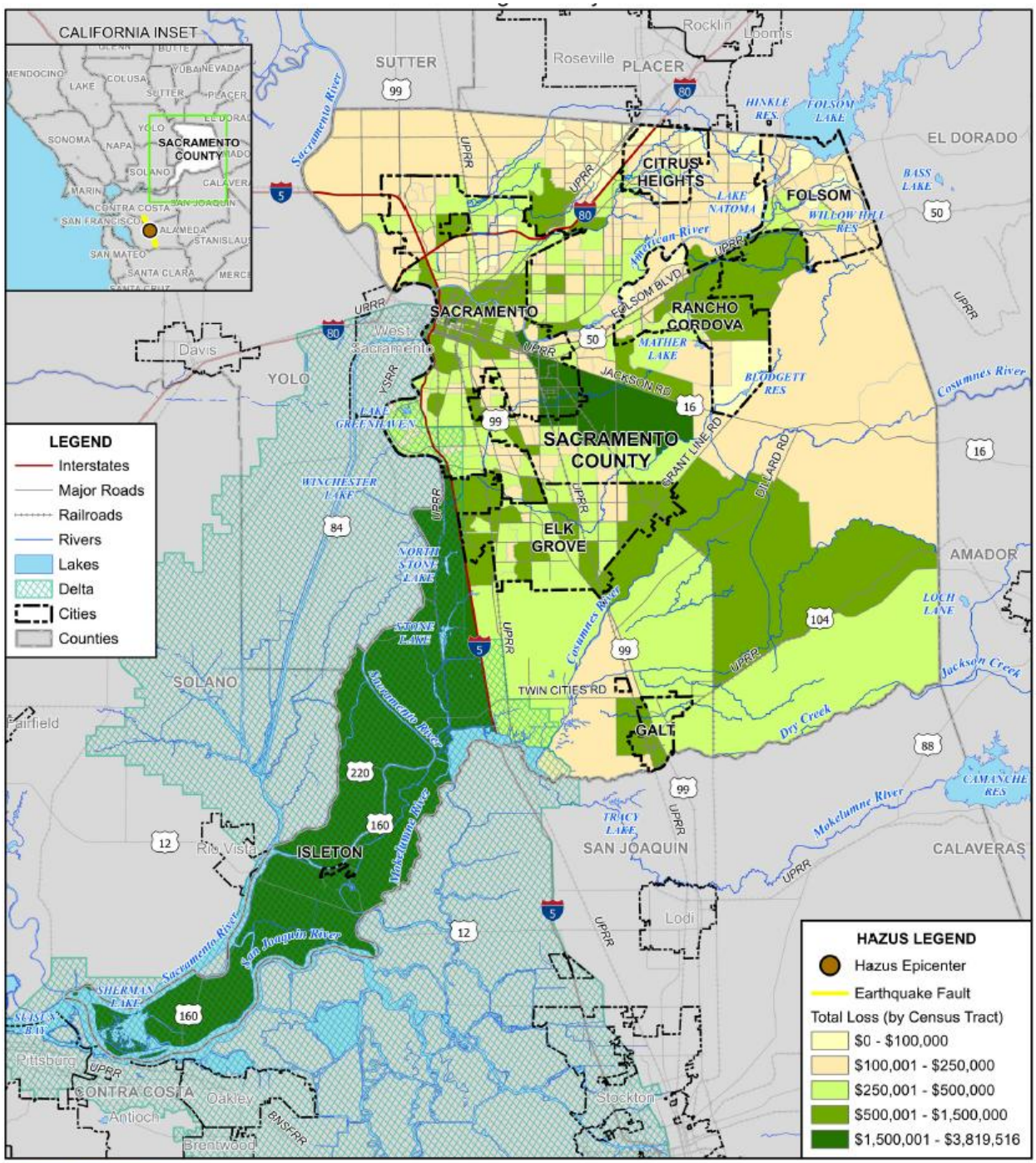


Figure 4-91 Sacramento County Planning Area – Calaveras 6.86 Magnitude Hazus Total Loss



Data Source: Hazus-MH 6.1, USGS ShakeMap Data, Sacramento County, Cal-Atlas; Map Date: 4/6/2026.

Concord Fault 6.8 Hazus Scenario

The Concord Fault deterministic scenario was developed utilizing data from the County General Plan and based on a seismic scenario obtained from the USGS seismic scenario catalog.

The results of the deterministic scenario are captured in Table 4-81. Key losses included the following:

- 632 buildings in the County were at least moderately damaged. 26 buildings were extensively damaged. 1 building was completely destroyed.
- Before the earthquake, the region had 3,450 hospital beds available for use. On the day of the earthquake, the model estimates that only 3,338 hospital beds (97.00%) are available for use by patients already in the hospital and those injured by the earthquake.
- No households experienced a loss of potable water the first day after the earthquake.
- No households experienced a loss of electricity the first day after the earthquake.
- Regardless of the time of earthquake, none had casualties.
- Total economic loss estimated for the earthquake was $263,723,000 which includes building losses and lifeline losses based on the Hazus-MH inventory.
- The total building-related losses were $257,560,000; 15 % of the estimated losses were related to the business interruption of the region. By far, the largest loss was sustained by the residential occupancies which made up over 49 % of the total loss.

Table 4-82 Sacramento County Planning Area – Concord Fault 6.8 Magnitude Deterministic Scenario Results

Type of Impact	Concord 6.8 Deterministic Scenario	
Total Buildings Damaged (based on 472,381 buildings)	Slight: 7,034 Moderate: 632 Extensive: 26 Complete: 1	
Damage to Essential Facilities	None with at least moderate damage	
Damage to Transportation Systems	None with at least moderate damage	
Damage to Utility Systems	No facilities with at least moderate damage. 11 potable water line breaks, 6 wastewater line breaks, and 0 natural gas line breaks.	
Households without Power/Water Service (Based on 564,445 total households)	Power loss, Day 1: 0 Power loss, Day 3: 0 Power loss, Day 7: 0 Power loss, Day 30: 0 Power loss, Day 90: 0	Water loss, Day 1: 0 Water loss, Day 3: 0 Water loss, Day 7: 0 Water loss, Day 30: 0 Water loss, Day 90: 0
Debris Generation	30,000 tons	
Displaced Households	20 displaced households	
Shelter Requirements	10 persons	
Casualties (Based on 2 a.m. time of occurrence)	Without requiring hospitalization: 17 Requiring hospitalization: 1 Life threatening: 0 Fatalities: 0	
Casualties (Based on 2 p.m. time of occurrence)	Without requiring hospitalization: 32 Requiring hospitalization: 3	

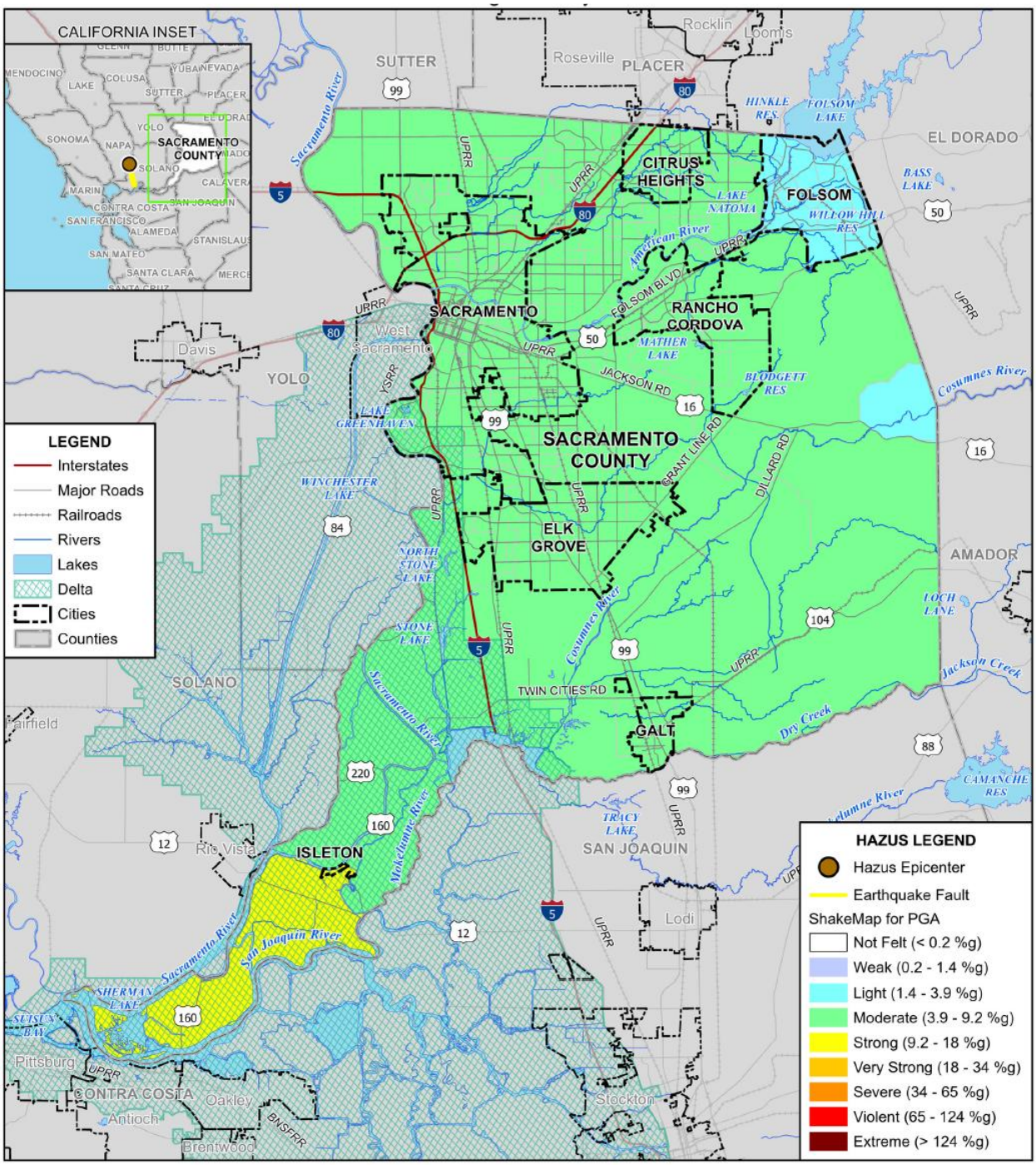
Type of Impact	Concord 6.8 Deterministic Scenario
	Life threatening: 0 Fatalities: 0
Casualties (Based on 5 p.m. time of occurrence)	Without requiring hospitalization: 21 Requiring hospitalization: 2 Life threatening: 0 Fatalities: 0
Total Economic Losses (Includes building, income and lifeline losses)	$263,723,000
Building and Income Related Losses	$257,560,000

Source: Hazus 6.1

Fires often occur after an earthquake. Because of the number of fires and the lack of water to fight the fires, they can often burn out of control. Hazus uses a Monte Carlo simulation model to estimate the number of ignitions and the amount of burnt area. For this scenario, the model estimates that there will be 5 ignitions that will burn about 0.01 sq. mi 0.00 % of the region's total area.). The model also estimates that the fires will displace about 124 people and burn about 9 (millions of dollars) of building value.

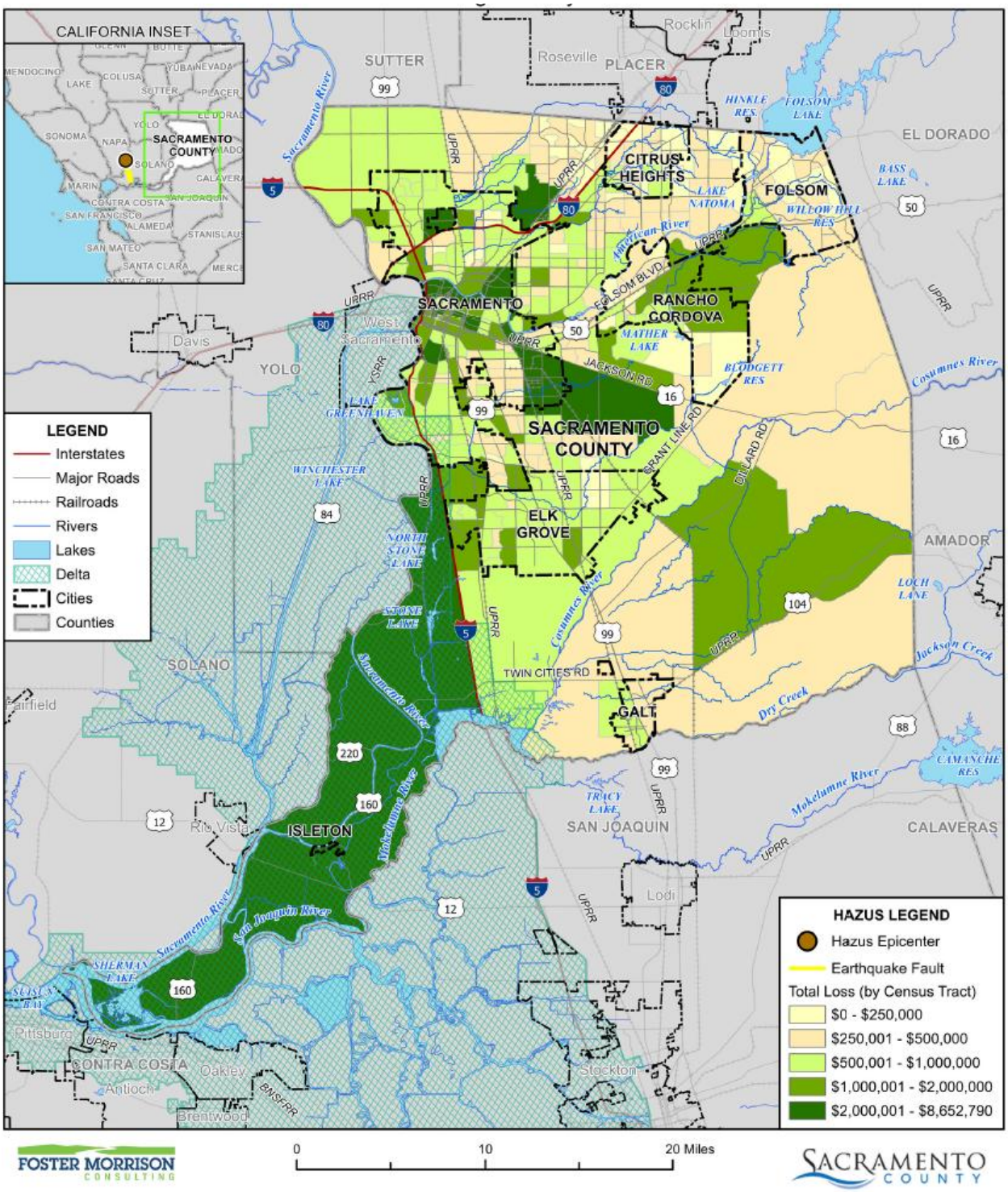
Figure 4-92 shows the peak ground acceleration due to the Concord 6.8 magnitude earthquake. Figure 4-93 shows the total losses by census tract in Sacramento County due to the Concord 6.8 magnitude earthquake.

Figure 4-92 Sacramento County Planning Area – Concord 6.8 Magnitude Hazus Peak Ground Acceleration



Data Source: Hazus-MH 6.1, USGS ShakeMap Data, Sacramento County, Cal-Atlas; Map Date: 4/6/2026.

Figure 4-93 Sacramento County Planning Area – Concord 6.8 Magnitude Hazus Total Loss



Data Source: Hazus-MH 6.1, USGS ShakeMap Data, Sacramento County, Cal-Atlas; Map Date: 4/6/2026.

Hayward Fault 7.58 Hazus Scenario

The Hayward Fault deterministic scenario was developed utilizing data from the County General Plan and based on a seismic scenario obtained from the USGS seismic scenario catalog.

The results of the deterministic scenario are captured in Table 4-81. Key losses included the following:

- 705 buildings in the County were at least moderately damaged. 31 buildings were extensively damaged. 1 building was completely destroyed.
- Before the earthquake, the region had 3,450 hospital beds available for use. On the day of the earthquake, the model estimates that only 3,336 hospital beds (97.00%) are available for use by patients already in the hospital and those injured by the earthquake.
- No households experienced a loss of potable water the first day after the earthquake.
- No households experienced a loss of electricity the first day after the earthquake.
- Regardless of the time of earthquake, none had casualties.
- Total economic loss estimated for the earthquake was $263,723,000 which includes building losses and lifeline losses based on the Hazus-MH inventory.
- The total building-related losses were $293,830,000; 15 % of the estimated losses were related to the business interruption of the region. By far, the largest loss was sustained by the residential occupancies which made up over 49 % of the total loss.

Table 4-83 Sacramento County Planning Area – Hayward Fault 7.58 Magnitude Deterministic Scenario Results

Type of Impact	Hayward 7.58 Deterministic Scenario	
Total Buildings Damaged (based on 471,750 buildings)	Slight: 7,588 Moderate: 705 Extensive: 31 Complete: 1	
Damage to Essential Facilities	None with at least moderate damage	
Damage to Transportation Systems	None with at least moderate damage	
Damage to Utility Systems	No facilities with at least moderate damage. 23 potable water line breaks, 11 wastewater line breaks, and 0 natural gas line breaks.	
Households without Power/Water Service (Based on 564,445 total households)	Power loss, Day 1: 0 Power loss, Day 3: 0 Power loss, Day 7: 0 Power loss, Day 30: 0 Power loss, Day 90: 0	Water loss, Day 1: 0 Water loss, Day 3: 0 Water loss, Day 7: 0 Water loss, Day 30: 0 Water loss, Day 90: 0
Debris Generation	34,000 tons	
Displaced Households	26 displaced households	
Shelter Requirements	14 persons	
Casualties (Based on 2 a.m. time of occurrence)	Without requiring hospitalization: 18 Requiring hospitalization: 1 Life threatening: 0 Fatalities: 0	
Casualties (Based on 2 p.m. time of occurrence)	Without requiring hospitalization: 40 Requiring hospitalization: 4	

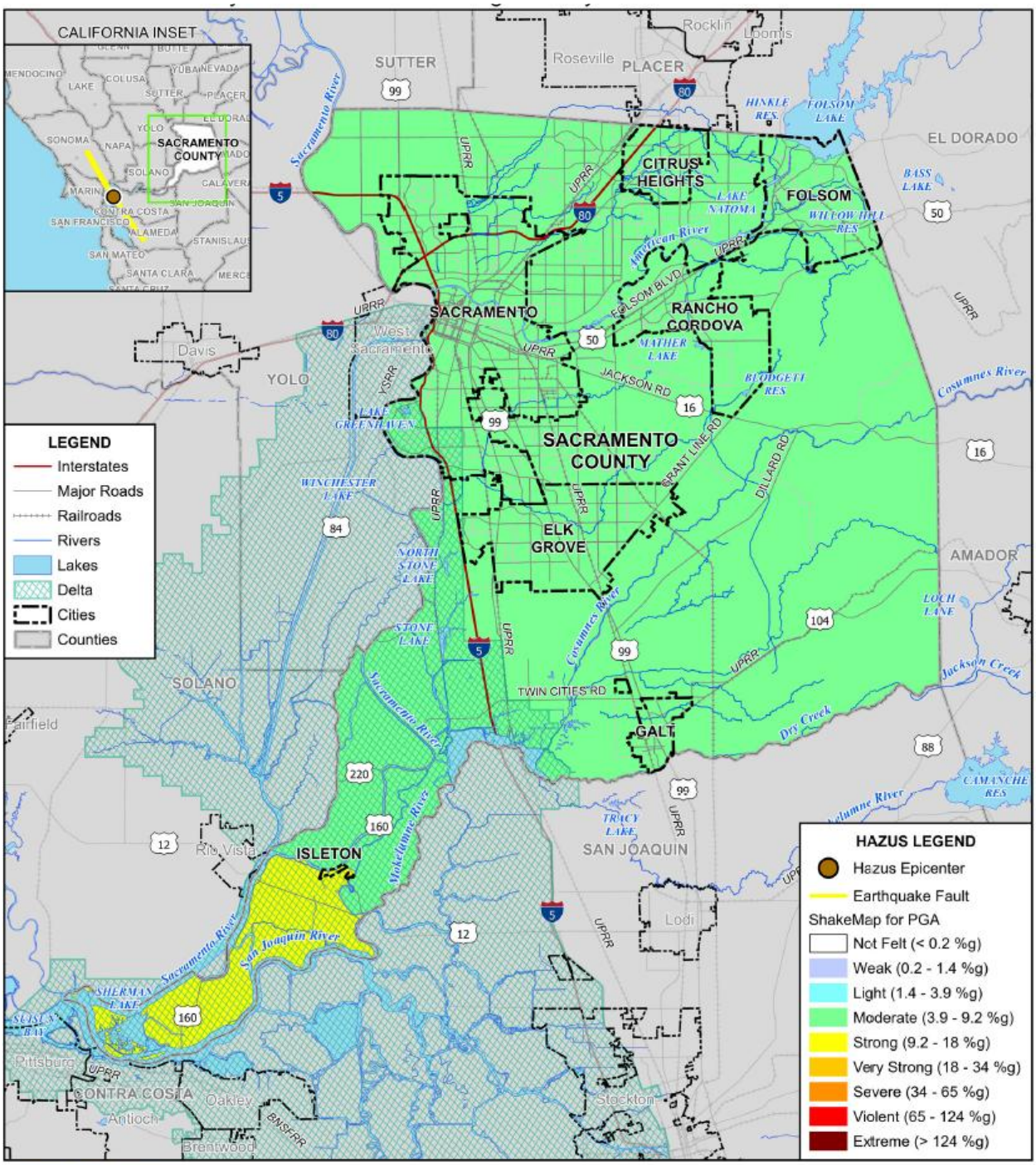
Type of Impact	Hayward 7.58 Deterministic Scenario
	Life threatening: 0 Fatalities: 0
Casualties (Based on 5 p.m. time of occurrence)	Without requiring hospitalization: 26 Requiring hospitalization: 2 Life threatening: 0 Fatalities: 0
Total Economic Losses (Includes building, income and lifeline losses)	$374,140,000
Building and Income Related Losses	$293,830,000

Source: Hazus 6.1

Fires often occur after an earthquake. Because of the number of fires and the lack of water to fight the fires, they can often burn out of control. Hazus uses a Monte Carlo simulation model to estimate the number of ignitions and the amount of burnt area. For this scenario, the model estimates that there will be 6 ignitions that will burn about 0.05 sq. mi 0.00 % of the region's total area.). The model also estimates that the fires will displace about 478 people and burn about 51 (millions of dollars) of building value.

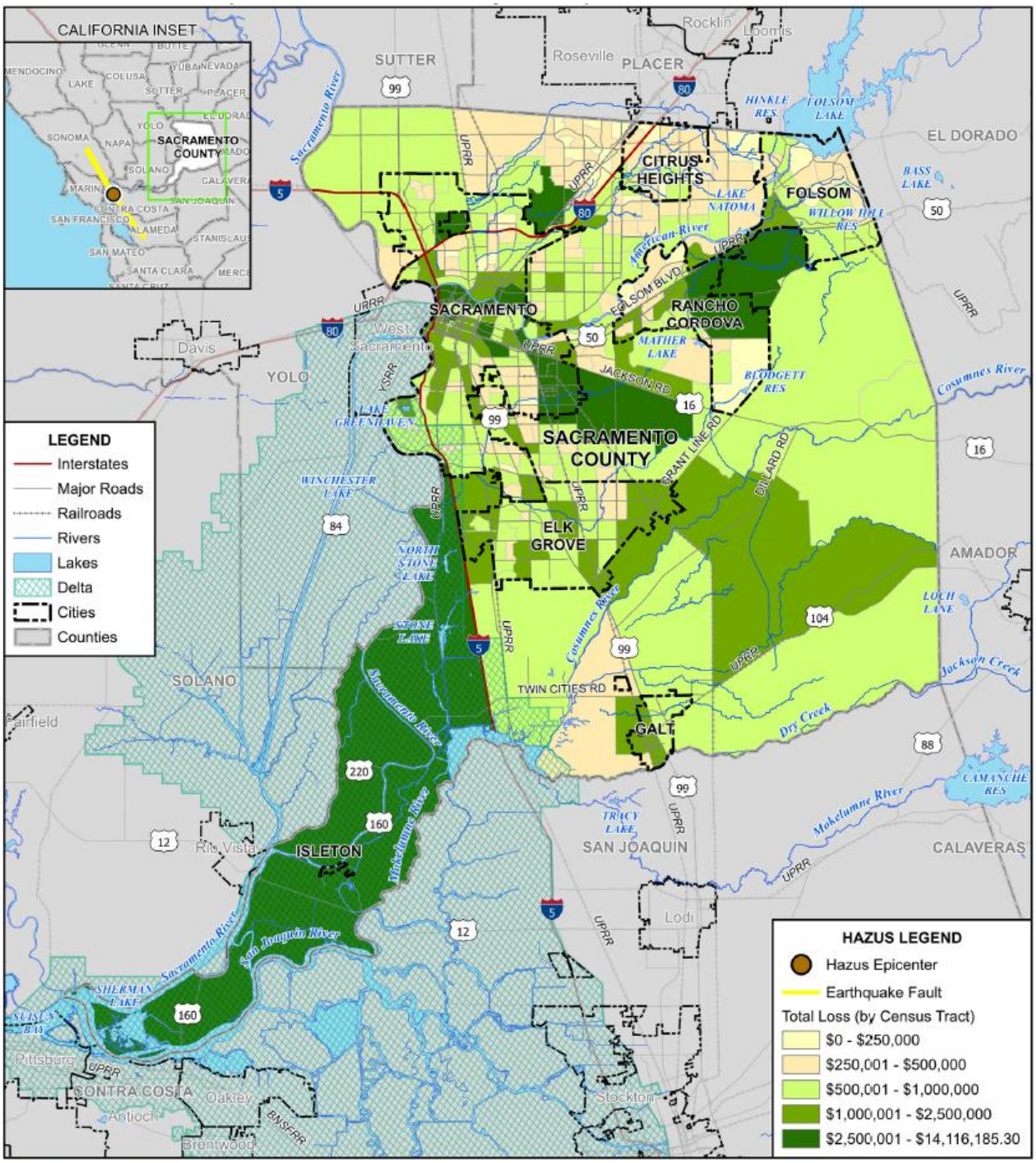
Figure 4-90 shows the peak ground acceleration due to the Hayward 7.58 magnitude earthquake. Figure 4-95 shows the total losses by census tract in Sacramento County due to the Hayward 7.58 magnitude earthquake.

Figure 4-94 Sacramento County Planning Area – Hayward 7.58 Magnitude Hazus Peak Ground Acceleration



Data Source: Hazus-MH 6.1, USGS ShakeMap Data, Sacramento County, Cal-Atlas; Map Date: 4/6/2026.

Figure 4-95 Sacramento County Planning Area – Hayward 7.58 Magnitude Hazus Total Loss



Data Source: Hazus-MH 6.1, USGS ShakeMap Data, Sacramento County, Cal-Atlas; Map Date: 4/6/2026.

San Andreas Fault 8.04 Hazus Scenario

The San Andreas Fault deterministic scenario was developed utilizing data from the County General Plan and based on a seismic scenario obtained from the USGS seismic scenario catalog.

The results of the deterministic scenario are captured in Table 4-81. Key losses included the following:

- 754 buildings in the County were at least moderately damaged. 34 were extensively damaged. 1 building was completely destroyed.
- Before the earthquake, the region had 3,450 hospital beds available for use. On the day of the earthquake, the model estimates that only 3,331 hospital beds (97.00%) are available for use by patients already in the hospital and those injured by the earthquake.
- No households experienced a loss of potable water the first day after the earthquake.
- No households experienced a loss of electricity the first day after the earthquake.
- If a quake of this magnitude struck at 2 PM, earthquake, there would be 1 casualty. The other two-time frames had no casualties.
- Total economic loss estimated for the earthquake was $404,700,000, which includes building losses and lifeline losses based on the Hazus-MH inventory.
- The total building-related losses were $320,700,000; 16 % of the estimated losses were related to the business interruption of the region. By far, the largest loss was sustained by the residential occupancies which made up over 48 % of the total loss.

Table 4-84 Sacramento County Planning Area – San Andreas Fault 8.04 Magnitude Deterministic Scenario Results

Type of Impact	San Andreas 8.04 Deterministic Scenario	
Total Buildings Damaged (based on 471,307 buildings)	Slight: 7,978 Moderate: 754 Extensive: 34 Complete: 2	
Damage to Essential Facilities	None with at least moderate damage	
Damage to Transportation Systems	None with at least moderate damage	
Damage to Utility Systems	No facilities with at least moderate damage. 37 potable water line breaks, 18 wastewater line breaks, and 0 natural gas line breaks.	
Households without Power/Water Service (Based on 564,445 total households)	Power loss, Day 1: 0 Power loss, Day 3: 0 Power loss, Day 7: 0 Power loss, Day 30: 0 Power loss, Day 90: 0	Water loss, Day 1: 0 Water loss, Day 3: 0 Water loss, Day 7: 0 Water loss, Day 30: 0 Water loss, Day 90: 0
Debris Generation	38,000 tons	
Displaced Households	38 displaced households	
Shelter Requirements	21 persons	
Casualties (Based on 2 a.m. time of occurrence)	Without requiring hospitalization: 20 Requiring hospitalization: 1 Life threatening: 0 Fatalities: 0	
Casualties	Without requiring hospitalization: 52	

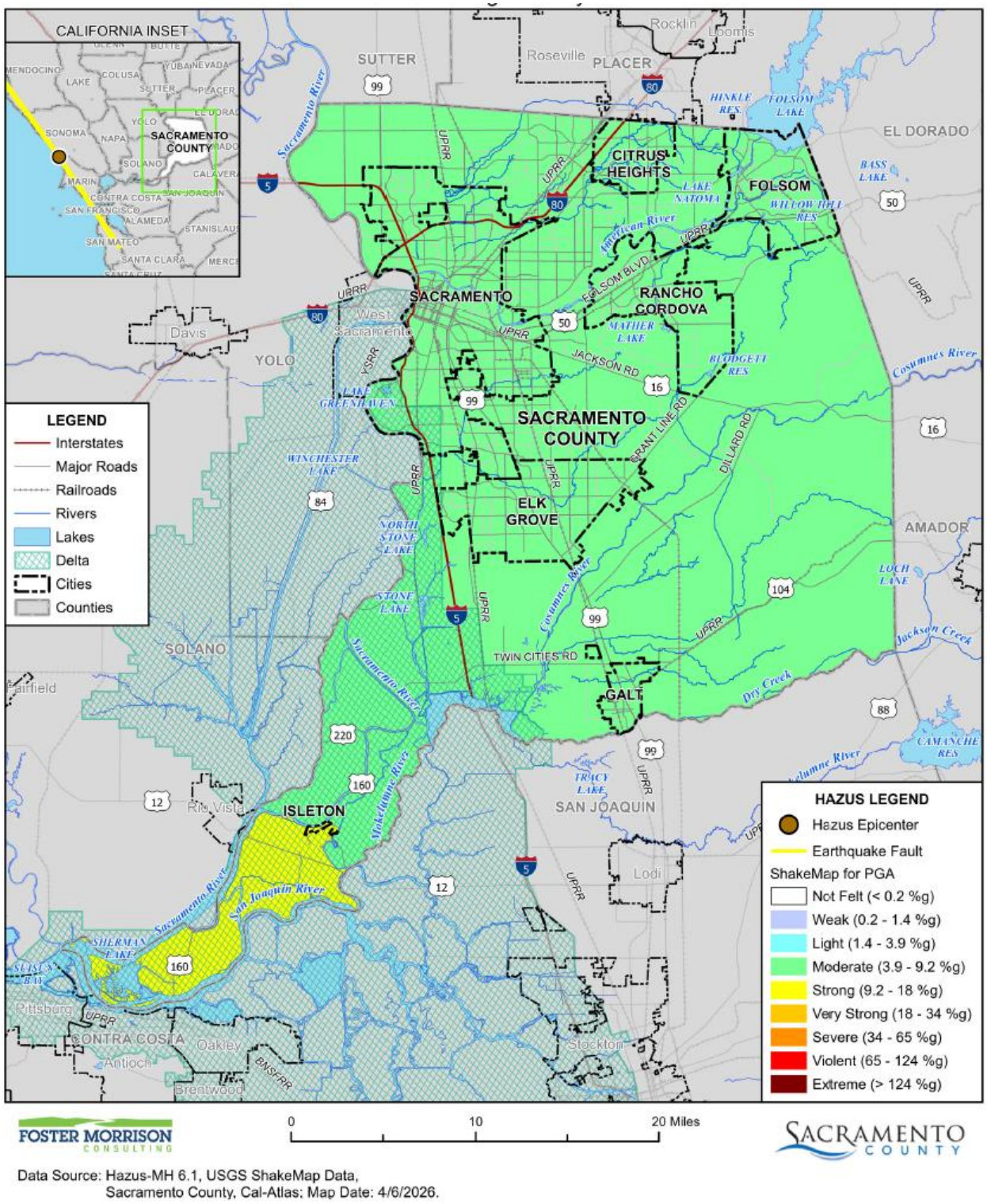
Type of Impact	San Andreas 8.04 Deterministic Scenario
(Based on 2 p.m. time of occurrence)	Requiring hospitalization: 5 Life threatening: 0 Fatalities: 1
Casualties (Based on 5 p.m. time of occurrence)	Without requiring hospitalization: 32 Requiring hospitalization: 3 Life threatening: 0 Fatalities: 0
Total Economic Losses (Includes building, income and lifeline losses)	$404,700,000
Building and Income Related Losses	$320,000,000

Source: Hazus 6.1

Fires often occur after an earthquake. Because of the number of fires and the lack of water to fight the fires, they can often burn out of control. Hazus uses a Monte Carlo simulation model to estimate the number of ignitions and the amount of burnt area. For this scenario, the model estimates that there will be 7 ignitions that will burn about 0.04 sq. mi 0.00 % of the region's total area.). The model also estimates that the fires will displace about 242 people and burn about 41 (millions of dollars) of building value.

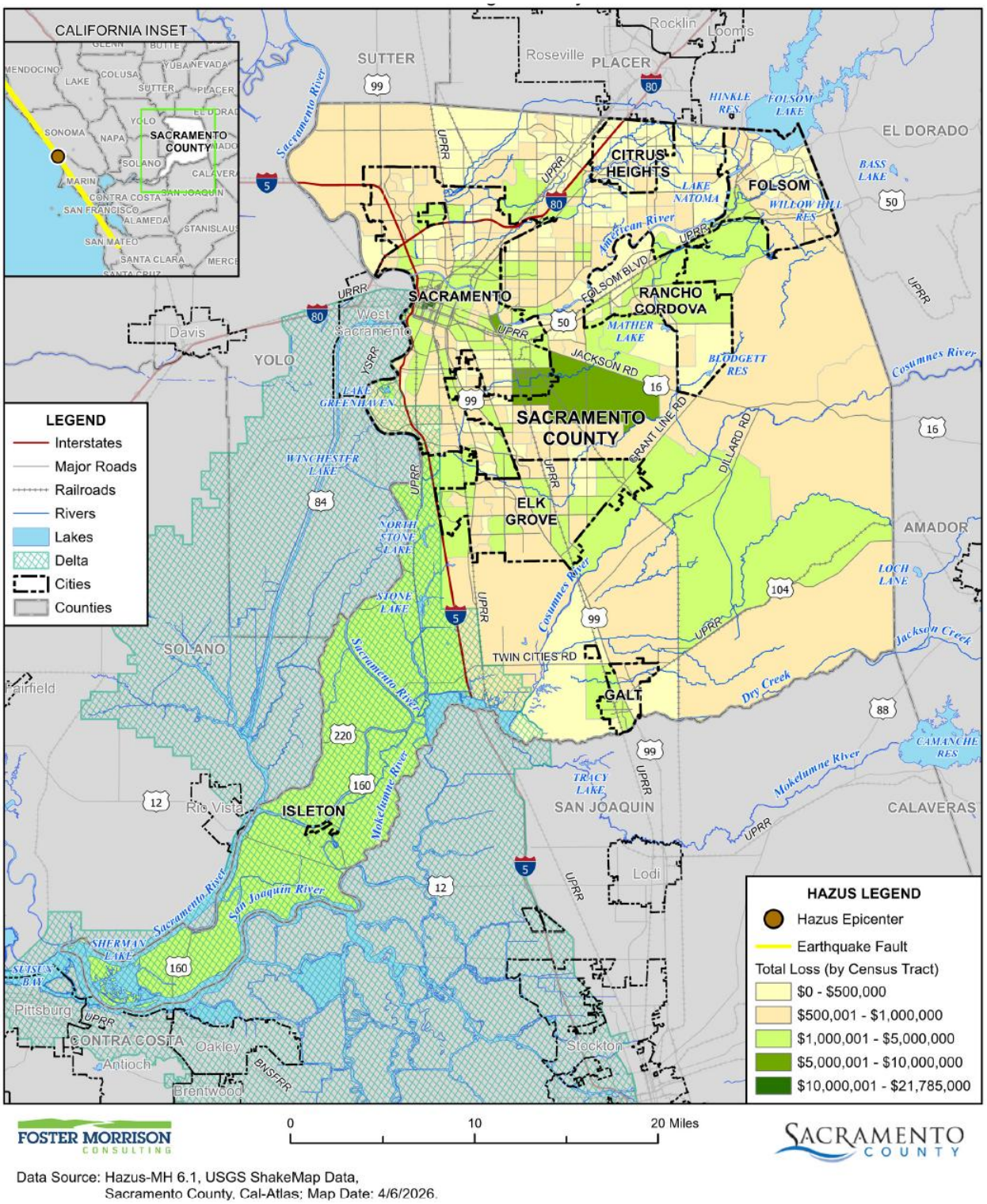
Figure 4-90 shows the peak ground acceleration due to the San Andreas 8.04 magnitude earthquake. Figure 4-95 shows the total losses by census tract in Sacramento County due to the San Andreas 8.04 magnitude earthquake.

Figure 4-96 Sacramento County Planning Area – San Andreas 8.04 Magnitude Hazus Peak Ground Acceleration



Data Source: Hazus-MH 6.1, USGS ShakeMap Data, Sacramento County, Cal-Atlas; Map Date: 4/6/2026.

Figure 4-97 Sacramento County Planning Area – San Andreas 8.04 Magnitude Hazus Total Loss



Data Source: Hazus-MH 6.1, USGS ShakeMap Data, Sacramento County, Cal-Atlas; Map Date: 4/6/2026.

Hazus Scenario Comparisons

A comparison of the results of the four deterministic scenarios is shown on Table 4-85.

Table 4-85 Sacramento County Planning Area – Comparison of Hazus Scenarios

Type of Impact	Calaveras 6.86 Deterministic Scenario		Concord 6.8 Deterministic Scenario		Hayward 7.58 Deterministic Scenario		San Andreas 8.04 Deterministic Scenario	
Total Buildings Damaged (based on 475,667 buildings)	Slight: 3,756 Moderate: 308 Extensive: 13 Complete: 0		Slight: 7,034 Moderate: 632 Extensive: 26 Complete: 1		Slight: 7,588 Moderate: 705 Extensive: 31 Complete: 1		Slight: 7,978 Moderate: 754 Extensive: 34 Complete: 2	
Damage to Essential Facilities	None with at least moderate damage		None with at least moderate damage		None with at least moderate damage		None with at least moderate damage	
Damage to Transportation Systems	None with at least moderate damage		None with at least moderate damage		None with at least moderate damage		None with at least moderate damage	
Damage to Utility Systems	No facilities with at least moderate damage. 8 potable water line breaks, 4 wastewater line breaks, and 0 natural gas line breaks.		No facilities with at least moderate damage. 11 potable water line breaks, 6 wastewater line breaks, and 0 natural gas line breaks.		No facilities with at least moderate damage. 23 potable water line breaks, 11 wastewater line breaks, and 0 natural gas line breaks.		No facilities with at least moderate damage. 37 potable water line breaks, 18 wastewater line breaks, and 0 natural gas line breaks.	
Households without Power/Water Service (Based on 564,445 total households)	Power loss, Day 1: 0 Power loss, Day 3: 0 Power loss, Day 7: 0 Power loss, Day 30: 0 Power loss, Day 90: 0	Power loss, Day 1: 0 Power loss, Day 3: 0 Power loss, Day 7: 0 Power loss, Day 30: 0 Power loss, Day 90: 0	Power loss, Day 1: 0 Power loss, Day 3: 0 Power loss, Day 7: 0 Power loss, Day 30: 0 Power loss, Day 90: 0	Power loss, Day 1: 0 Power loss, Day 3: 0 Power loss, Day 7: 0 Power loss, Day 30: 0 Power loss, Day 90: 0	Water loss, Day 1: 0 Water loss, Day 3: 0 Water loss, Day 7: 0 Water loss, Day 30: 0 Water loss, Day 90: 0	Water loss, Day 1: 0 Water loss, Day 3: 0 Water loss, Day 7: 0 Water loss, Day 30: 0 Water loss, Day 90: 0	Water loss, Day 1: 0 Water loss, Day 3: 0 Water loss, Day 7: 0 Water loss, Day 30: 0 Water loss, Day 90: 0	Water loss, Day 1: 0 Water loss, Day 3: 0 Water loss, Day 7: 0 Water loss, Day 30: 0 Water loss, Day 90: 0
Debris Generation	16,000 tons		30,000 tons		34,000 tons		38,000 tons	
Displaced Households	8 displaced households		20 displaced households		26 displaced households		38 displaced households	
Shelter Requirements	4 persons		10 persons		14 persons		21 persons	
Casualties (Based on 2 a.m. time of occurrence)	Without requiring hospitalization: 9 Requiring hospitalization: 0 Life threatening: 0		Without requiring hospitalization: 17 Requiring hospitalization: 1 Life threatening: 0		Without requiring hospitalization: 18 Requiring hospitalization: 1 Life threatening: 0		Without requiring hospitalization: 20 Requiring hospitalization: 1 Life threatening: 0	

Type of Impact	Calaveras 6.86 Deterministic Scenario	Concord 6.8 Deterministic Scenario	Hayward 7.58 Deterministic Scenario	San Andreas 8.04 Deterministic Scenario
	Fatalities: 0	Fatalities: 0	Fatalities: 0	Fatalities: 0
Casualties (Based on 2 p.m. time of occurrence)	Without requiring hospitalization: 16 Requiring hospitalization: 1 Life threatening: 0 Fatalities: 0	Without requiring hospitalization: 32 Requiring hospitalization: 3 Life threatening: 0 Fatalities: 0	Without requiring hospitalization: 40 Requiring hospitalization: 4 Life threatening: 0 Fatalities: 0	Without requiring hospitalization: 52 Requiring hospitalization: 5 Life threatening: 0 Fatalities: 1
Casualties (Based on 5 p.m. time of occurrence)	Without requiring hospitalization: 11 Requiring hospitalization: 1 Life threatening: 0 Fatalities: 0	Without requiring hospitalization: 21 Requiring hospitalization: 2 Life threatening: 0 Fatalities: 0	Without requiring hospitalization: 26 Requiring hospitalization: 2 Life threatening: 0 Fatalities: 0	Without requiring hospitalization: 32 Requiring hospitalization: 3 Life threatening: 0 Fatalities: 0
Total Economic Losses (Includes building, income and lifeline losses)	$157,360,000	$263,723,000	$374,140,000	$404,700,000
Building and Income Related Losses	$124,380,000	$257,560,000	$293,830,000	$320,000,000

Source: Hazus 6.1

FEMA NRI Hazard Vulnerability Assessment

The FEMA NRI was queried for additional specific data on Sacramento County's vulnerability to earthquakes. The NRI contains data and analysis for 18 separate natural hazards, including earthquakes. According to the NRI, there have been 0 earthquake events during the 2021 dataset with a 0.65% annual chance per year. As shown in Table 4-86, earthquakes could cause a total of $104,969,015 in expected annual losses, with a historic loss rating of relatively low. Earthquake has a relatively high rating for both social vulnerability and community resilience, with a risk index score of 99 out of 100.

Table 4-86 Sacramento County Planning Area – Earthquake Vulnerability Ratings from FEMA NRI

NRI Hazard	Hazard Risk Index Rating	Expected Annual Loss Values (total)	Exposure Value (total)	Historic Loss Ratio Rating
Earthquake	99	$104,969,015	$18,650,361,501,000	Relatively Low

Source: FEMA NRI Report, retrieved 10/8/2025.

*Hazard Risk Index is calculated using data for only a single hazard type, and reflect a communities expected annual loss value, community risk factors, and the adjustment factor used to calculate the risk value.

**Expected annual loss represents the average economic loss in dollars resulting from natural hazards each year.

***Exposure is a natural hazard consequence factor that is the representative value of buildings, populations, or agriculture potentially exposed to a natural hazard occurrence.

Additional information on the FEMA NRI can be found in Section 4.2 Appendix G.

Impacts from Earthquake and Liquefaction

Earthquakes and accompanying liquefaction 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 Sacramento County residents and visitors. Earthquakes can cause loss of life and injuries in affected areas. Other impacts to the Sacramento County Planning Area would include damages to infrastructure such as roads, bridges, and dams; damages and loss of services to utilities and critical infrastructure, including those related to gas, power, water, wastewater and communication systems; and damages to structures and other development.

Earthquakes can also cause failure of dams, levees, and reservoirs. Facilities and land downslope from dams or water reservoirs or behind levees might be subject to flooding, if the dams, reservoirs, or levees fail as a result of an earthquake. The County has locations with significant flood risk that include facilities downslope from dams or reservoirs or behind levees.

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 County 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 Sacramento County include the following:

- Climate change is likely to have no effect on future earthquake conditions and associated impacts and vulnerability of the County. This was discussed in greater detail in the Climate Change and Earthquake section of the Hazard Profile above
- Population growth in Sacramento County is expected to continue going forward. Any additional growth in the County would place additional populations at risk to earthquake and its subhazards. Population growth in the Delta would add additional populations who would be at risk to liquefaction. Additional population growth would likely bring continued diversity to the County. 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 County to this hazard depending on the location and nature of growth and continued planning for future hazard conditions as well as the location and magnitude of a future earthquake event.
- Land use planning should be proactive to address future hazard conditions. County 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 County to this hazard.

Future Development

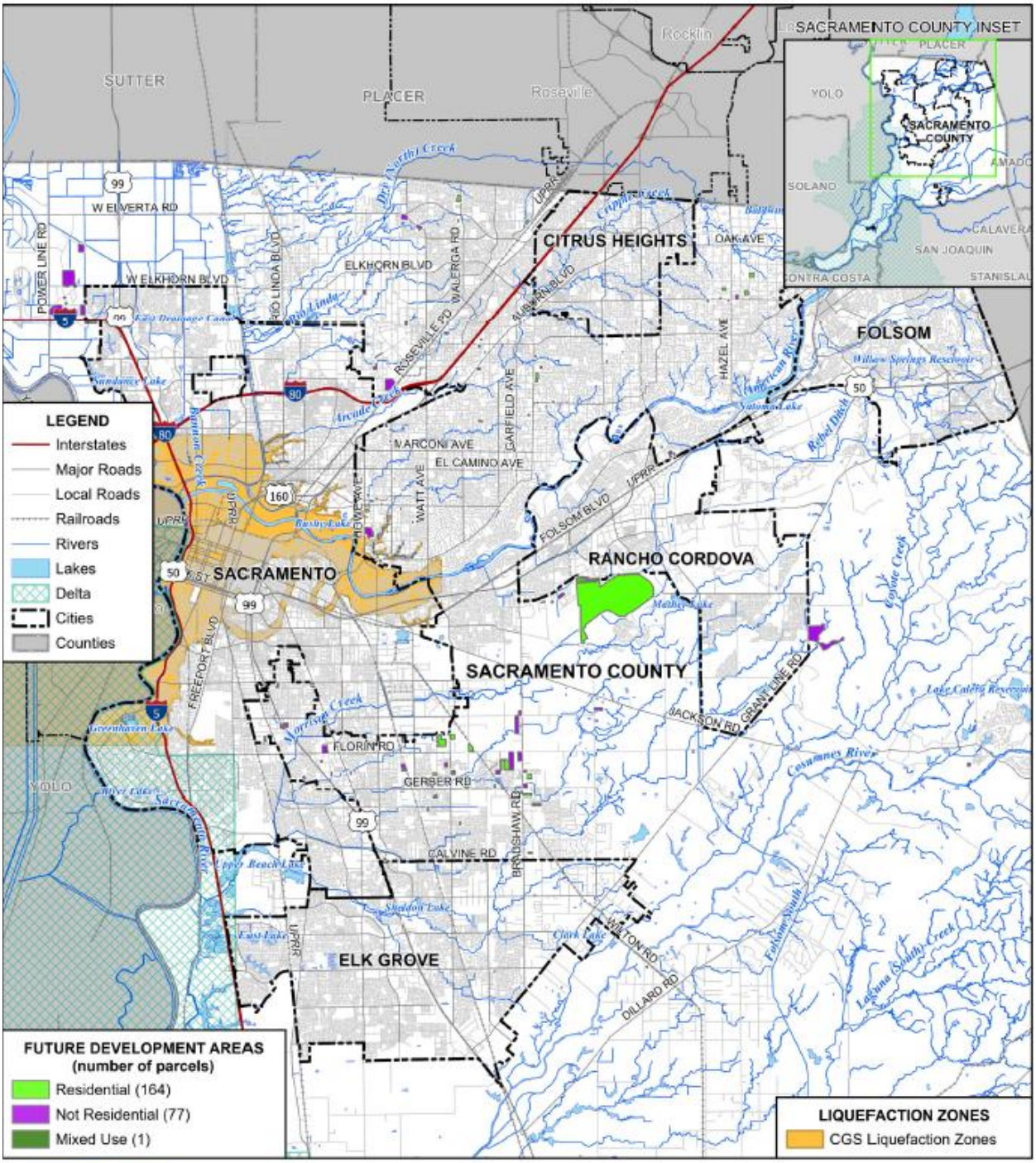
Future development considerations should be ongoing and proactive. Ensuring that comprehensive land use planning is conducted, regulatory requirements, such as building codes, are followed, and varying needs for different demographic groups with intersecting identities that reside within the County are considered can help to make for a more resilient community. The County noted that current seismic and liquefaction hazard information is considered, as applicable, through General Plan/Safety Element planning and development review. Although new growth and development corridors would fall in the area affected by earthquake, given the low probability of major earthquake in the County and the building codes in effect, development in the earthquake areas will continue to occur.

The consequences of a major earthquake in the Delta Region will also increase with time. Because of increasing water demand and the state's growing population and economy, the economic consequences of an interruption in Delta water supply operations due to an earthquake will increase. Consequences to the Delta Region will also increase due to additional development. More information on this can be seen in the Delta Annex to this LHMP Update.

GIS Analysis

Sacramento County provided 129 future development areas which were used as the basis for the inventory of future development for the unincorporated County. These were mapped in GIS and are shown on Figure 4-98. None of the CGS Liquefaction Zones intersected future development; as such, no tabular analysis is presented.

Figure 4-98 Unincorporated Sacramento County – Future Development in Deep Seated Landslide



Data Source: CGS Liquefaction Zones 2015 (Sacramento West and East Quads updated 11/20/2025), Sacramento County, Cal-Atlas; Map Date: 7/17/2026.

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

Hazard Profile

This hazard profile contains multiple sections that detail how this hazard can affect the Sacramento County Planning Area. These sections include a hazard/problem description; description of location and extent; past occurrences of this hazard; likelihood of future occurrence, and how climate change can affect or influence this hazard.

Hazard/Problem Description

Flooding is the rising and overflowing of a body of water onto normally dry land. Floods are among the costliest natural disasters in terms of human hardship and economic loss nationwide. Floods can cause substantial damage to structures, landscapes, and utilities and can cause life safety issues. Floods can be extremely dangerous. Six inches of moving water can knock over a person given a strong current. A car will float in less than two feet of moving water and can be swept downstream into deeper waters. Floods kill more people trapped in vehicles than anywhere else.

During a flood, people can also suffer heart attacks or electrocution due to electrical equipment short outs. Floodwaters can transport large objects downstream which can damage or remove stationary structures, such as dam spillways. 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. Standing water can cause damage to crops, roads, foundations, and electrical circuits. Direct impacts, such as drowning, can be limited with adequate warning and public education about what to do during floods. Where flooding occurs in populated areas, warning and evacuation will be of critical importance to reduce life and safety impacts from any type of flooding.

Flooding is the rising and overflowing of a body of water onto normally dry land. History clearly highlights floods as one of the primary natural hazards impacting Sacramento County. Floods are among the costliest natural disasters in terms of human hardship and economic loss nationwide. The Sacramento County Planning Area is susceptible to various types of flood events as described below.

- **Riverine flooding** – Riverine flooding, defined as when a watercourse exceeds its "bank-full" capacity, generally occurs as a result of prolonged rainfall, or rainfall that is combined with snowmelt and/or already saturated soils from previous rain events. This type of flood occurs in river systems whose tributaries may drain large geographic areas and include one or more independent river basins. The onset and duration of riverine floods may vary from a few hours to many days and is often characterized by high peak flows combined with a large volume of runoff. Factors that directly affect the amount of flood runoff include precipitation amount, intensity and distribution, the amount of soil moisture, seasonal variation in vegetation, snow depth, and water-resistance of the surface due to urbanization. In the Sacramento County Planning Area, riverine flooding is largely caused by heavy and continued rains, sometimes combined with snowmelt, increased outflows from upstream dams, and heavy flow from tributary streams. These intense storms can overwhelm the local waterways as well as the integrity of flood control structures. Flooding is more severe when antecedent rainfall has resulted in saturated ground conditions. The warning time associated with slow rise riverine floods assists in life and property protection

- **Flash flooding** – Flash flooding describes localized floods of great volume and short duration. This type of flood usually results from a heavy rainfall on a relatively small drainage area. Precipitation of this sort usually occurs in the winter and spring. Flash floods often require immediate evacuation within the hour, and thus early threat identification and warning is critical for saving lives.
- **Localized/Stormwater flooding** – Localized flooding problems are often caused by flash flooding, severe weather, or an unusual amount of rainfall. Flooding from these intense weather events usually occurs in areas experiencing an increase in runoff from impervious surfaces associated with development and urbanization as well as inadequate storm drainage systems. This is discussed in greater detail in Section 4.3.12 Localized Flood.

According to the 2024 Flood Insurance Study for Sacramento County, general rain floods can occur in the study area anytime during the period from November through April. This type of flood results from prolonged heavy rainfall and is characterized by high peak flows of moderate duration and by a large volume of runoff. The severity of flooding on all the streams studied is intensified by backwater conditions between stream systems. Floodwater elevations are increased in the lower portions of tributary streams due to the backwater effect from main streams reducing hydraulic gradients and flow-storage areas. During this time there will be a high degree of coincidental l-percent-annual-chance floodflows on all the study area waterways.

The area is also at risk to flooding resulting from levee failures and dam failures. Dam failure flooding is discussed separately in Section 4.3.8 of this document; Levee failure flooding is discussed separately in Section 4.3.14 of this document. Regardless of the type of flood, the cause is often the result of severe weather and excessive rainfall, either in the flood area or upstream reach.

Streambank Erosion

In addition to the damages to people and property from the above flooding issues, Sacramento County's waterways often experience streambank erosion. Streambank erosion is a natural process, but acceleration of this natural process leads to a disproportionate sediment supply, stream channel instability, land loss, habitat loss and other adverse effects. Streambank erosion processes, although complex, are driven by two major components: streambank characteristics (erodibility) and hydraulic/gravitational forces. Many land use activities can affect both of these components and lead to accelerated bank erosion. The vegetation rooting characteristics can protect banks from fluvial entrainment and collapse, and also provide internal bank strength. When riparian vegetation is changed from woody species to annual grasses and/or forbs, the internal strength is weakened, causing acceleration of mass wasting processes. Streambank aggradation or degradation is often a response to stream channel instability. Since bank erosion is often a symptom of a larger, more complex problem, long-term solutions often involve much more than just bank stabilization. Streambank erosion increases the sediment that a stream must carry, results in the loss of fertile bottomland and causes a decline in the quality of habitat on land and in the stream.

Addressing the problem of streambank erosion requires an understanding of both stream dynamics and the management of streamside vegetation. When a stream is straightened or widened, streambank erosion increases. Accelerated streambank erosion is part of the process as the stream seeks to re-establish a stable size and pattern. Damaging or removing streamside vegetation to the point where it no longer provides for bank stability can cause a dramatic increase in bank erosion. A degrading streambed results in higher and

often unstable, eroding banks. When land use changes occur in a watershed, such as clearing land for agriculture or development, runoff increases. With this increase in runoff the stream channel will adjust to accommodate the additional flow, increasing streambank erosion.

Erosion and deposition are occurring continually at varying rates over the Planning Area. Swiftly moving floodwaters cause rapid local erosion as the water carries away earth materials. Severe erosion removes the earth from beneath bridges, roads and foundations of structures adjacent to streams. By undercutting it can lead to increased rockfall and landslide hazard. The deposition of material can block culverts, aggravate flooding, destroy crops and lawns by burying them, and reduce the capacity of water reservoirs as the deposited materials displace water.

Delta Issues

Approximately 150 years ago, the levees of the Sacramento-San Joaquin Delta were raised to prevent flooding on what remains some of the most fertile farmland in the nation. While the peat soils were excellent for agriculture, they did not create strong foundations for levee barriers meant to contain a constant flow of river water. Nevertheless, it was these native soils that were primarily used to create the levee system.

As farmers settled the valleys, the Gold Rush drew prospectors to the hills. As mining in the Sierra Nevada turned to the more "efficient" methods of hydraulic mining, the use of environmentally destructive high-pressure water jets washed entire mountainsides into local streams and rivers. Hydraulic gold mining in the northern Sierra Nevada foothills produced 1.1 billion cubic meters of sediment. As a result, the enormous amounts of silt deposited in the riverbeds of the Central Valley increased flood risk. As a remedy to these rising riverbeds, levees were built very close to the river channels to keep water velocity high and thereby scour away the sediment.

However, the design of these narrow channels has been too successful. While the Gold Rush silt is long gone, the erosive force of the constrained river continues to eat away at the levee system. In addition, the peat soils of the Delta have subsided, gradually lowering the elevations of Delta islands. As a result, some of these parcels are now more than 20 feet below sea level. All of these issues contribute to an increase in flood concerns throughout the Delta region.

Location and Extent

This section discussed flood locations and extents. This is done in the following sections:

- Hydrologic Regions
- The Sacramento County Watersheds and Waterways System
- Floodplains
- Sacramento County Floodplain Mapping

Hydrologic Regions

According to Cal DWR, California has 10 hydrologic regions. Sacramento County sits in both the Sacramento and San Joaquin hydrologic region.

- The Sacramento River hydrologic region covers approximately 17.4 million acres (27,200 square miles). The region includes all or large portions of Modoc, Siskiyou, Lassen, Shasta, Tehama, Glenn, Plumas, Butte, Colusa, Sutter, Yuba, Sierra, Nevada, Placer, Sacramento, El Dorado, Yolo, Solano, Lake, and Napa counties. Areas of Alpine and Sacramento counties are also within the region. Geographically, the region extends south from the Modoc Plateau and Cascade Range at the Oregon border to the Sacramento-San Joaquin Delta. The Sacramento Valley, which forms the core of the region, is bounded to the east by the crest of the Sierra Nevada and southern Cascades and to the west by the crest of the Coast Range and Klamath Mountains. The Sacramento metropolitan area and surrounding communities form the major population center of the region. With the exception of Redding, cities and towns to the north, while steadily increasing in size, are more rural than urban in nature, being based in major agricultural areas.
- The San Joaquin River hydrologic region covers approximately 9.7 million acres (15,200 square miles) and includes all of Calaveras, Tuolumne, Mariposa, Madera, San Joaquin, and Stanislaus counties, most of Merced and Sacramento counties, and parts of Alpine, Fresno, Alameda, Contra Costa, Sacramento, El Dorado, and San Benito counties. Significant geographic features include the northern half of the San Joaquin Valley, the southern part of the Sacramento-San Joaquin Delta, the Sierra Nevada and Diablo Range. The region is home to about 1.6 million people.

A map of California's hydrological regions is provided in Figure 4-99.

Figure 4-99 California Hydrologic Regions



Source: California Department of Water Resources

The Sacramento County Watersheds and Waterway System

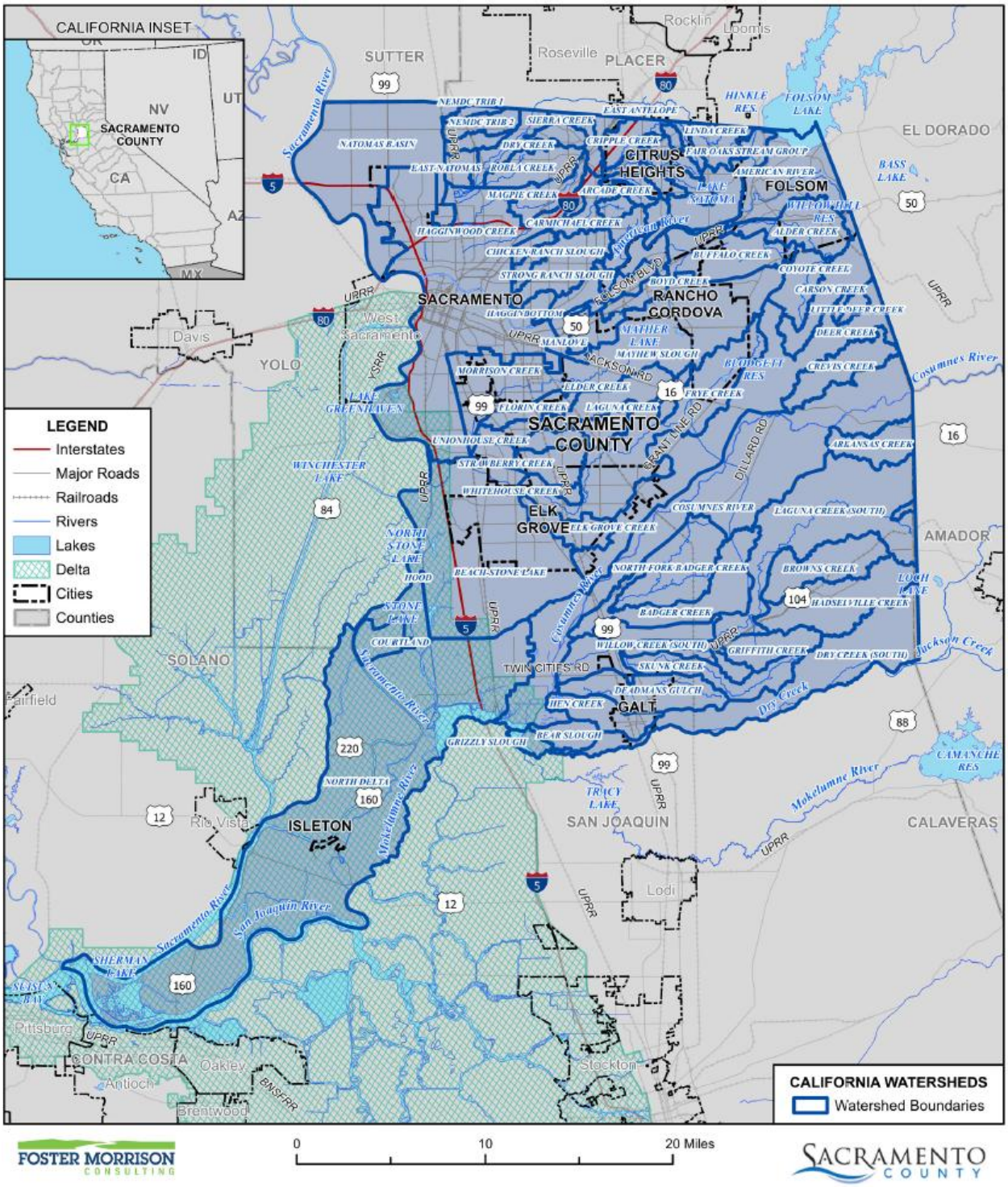
Sacramento County encompasses multiple rivers, streams, creeks, and associated watersheds.

In the Sierra Nevada Mountains, small creeks and high streams are fed by underground springs, storm run-off, and melting snow. Descending from the upper watershed, these creeks and streams form large rivers such as the Sacramento, American, Feather, Yuba, San Joaquin, Mokelumne, and Cosumnes. These waterways are characterized by small riverbeds conveying normal flow from the mountains and wide overbank floodplains carrying flood flows caused by heavy mountain rainfall. The Sacramento River

Watershed, which includes the American River, encompasses some 27,000 square miles and drains most of Northern California.

The watersheds of Sacramento County include numerous watersheds contained within the County as well as several watersheds that drain into Sacramento County from Placer, El Dorado, or Sacramento Counties. Figure 4-100 illustrates the watersheds of Sacramento County. Table 4-87 details the watersheds in Sacramento County. Figure 4-101 illustrates the major waterways of Sacramento County. The streams in Table 4-88, listed by stream groups, are all found in Sacramento County.

Figure 4-100 Sacramento County Watersheds



Data Source: California Interagency Watershed Map of 1999 (Calwater 2.2.1 ("calw221"; updated May 9/2023), Sacramento County, Cal-Atlas; Map Date: 1/30/2026.

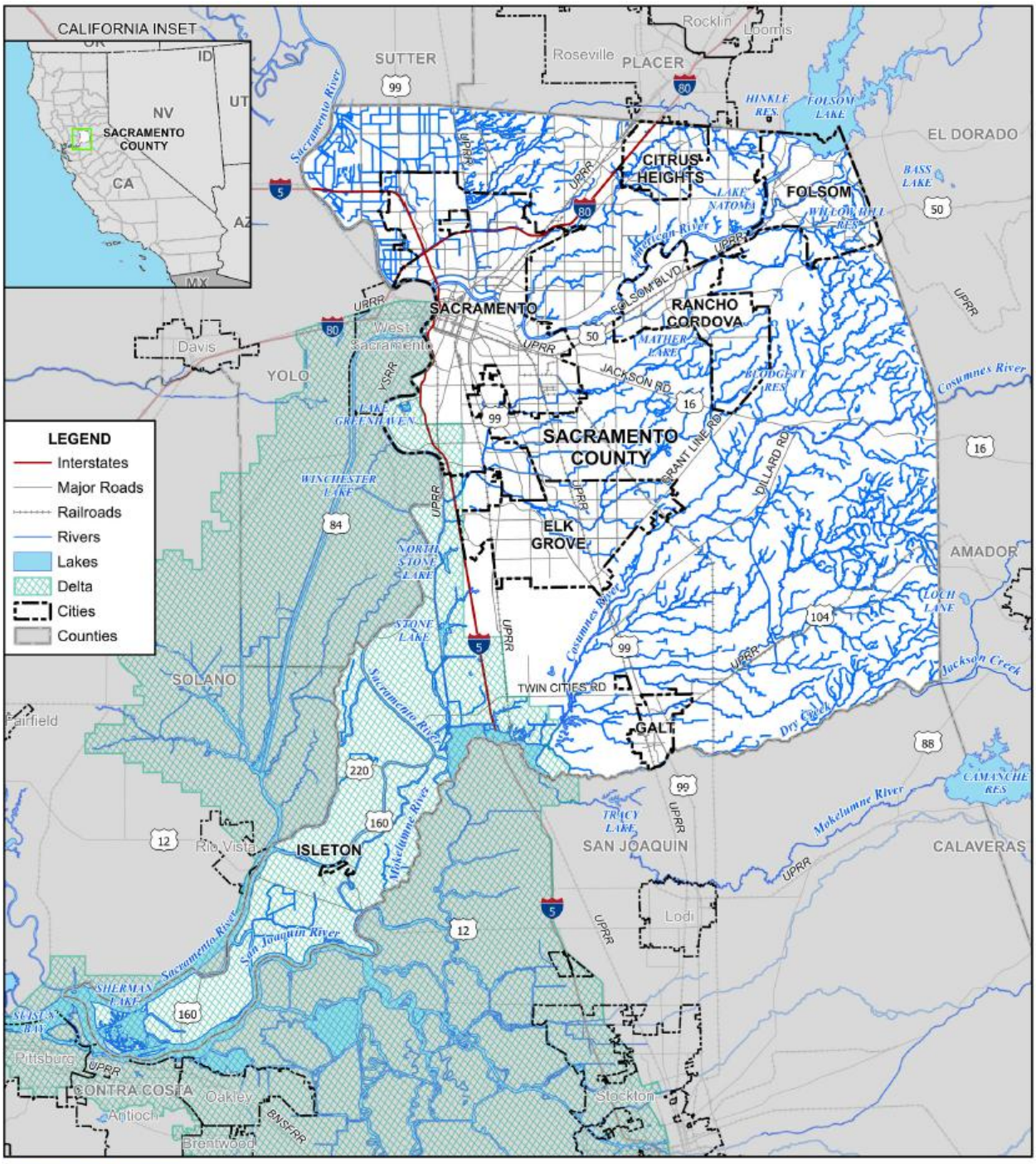
Table 4-87 Watersheds in Sacramento County

Watershed Name	Area (acres)	Watershed Name	Area (acres)
Alder Creek	7,226	Hadselville Creek	11,759
Antelope Creek	973	Hagginbottom	2,571
Arcade Creek	6,508	Hagginwood Creek	885
Arcade Creek South Branch	1,657	Hen Creek	4,759
Arkansas Creek	4,768	Laguna Creek	21,176
Badger Creek	11,109	Laguna Creek (South)	32,471
Beach-Stone Lake	40,118	Linda Creek	3,580
Bear Slough	2,699	Little Deer Creek	1,040
Boyd Creek	2,201	Magpie Creek	3,789
Brooktree Creek	1,180	Manlove	1,987
Browns Creek	8,077	Mariposa Creek	812
Buffalo Creek	9,167	Mayhew Slough	2,954
Carmichael Creek	2,726	Minnesota Creek	1,095
Carson Creek	6,811	Morrison Creek	34,502
Chicken Ranch Slough	3,722	Natomas Basin	26,449
Cordova/Coloma Stream Group	1,728	Negro Slough	285
Cosumnes River	45,130	NEMDC Trib 1	865
Courtland	3,099	NEMDC Trib 2	2,744
Coyle Creek	987	NEMDC Trib 3	1,567
Coyote Creek	4,625	North Delta	100,143
Crevis Creek	5,940	North Fork Badger Creek	10,423
Cripple Creek	4,327	Robla Creek	5,141
Date Creek	694	Rolling Draw Creek	1,128
Deadmans Gulch	8,641	San Juan Creek	1,334
Deer Creek	26,125	Sierra Branch	978
Diablo Creek	893	Sierra Creek	1,743
Dry Creek	4,138	Skunk Creek	6,744
Dry Creek (South)	20,158	Slate Creek	510
East Antelope	1,118	Strawberry Creek	5,588
East Natomas	1,816	Strong Ranch Slough	4,573
Elder Creek	7,632	Sunrise Creek	636
Elk Grove Creek	4,019	Unionhouse Creek	2,194
Fair Oaks Stream Group	7,819	Unnamed	51,157
Florin Creek	2,857	Verde Cruz Creek	1,226
Frye Creek	1,286	Whitehouse Creek	1,585

Watershed Name	Area (acres)	Watershed Name	Area (acres)
Gerber Creek	2,579	Willow Creek	15,207
Griffith Creek	4,806	Willow Creek (Middle)	359
Grizzly Slough	1,374	Willow Creek (South)	3,843

Source: Sacramento County GIS

Figure 4-101 Sacramento County Major Waterways



Data Source: Sacramento County Open Data (Hydrology_Linear); updated December 26, 2025), Sacramento County, Cal-Atlas; Map Date: 1/30/2026.

Table 4-88 Waterways and Streams in Sacramento County

Stream Group and Stream	
American River Stream Group	
American River	Magpie Creek
Arcade Creek	Mariposa Creek
Arcade Creek (South Branch)	Natomas East Main Drainage Canal
Brooktree Creek	Natomas East Main Drainage Canal Tributary 1
Carmichael Creek	Natomas East Main Drainage Canal Tributary 2
Chicken Ranch Slough	Natomas East Main Drainage Canal Tributary 3
Cripple Creek	Robla Creek
Coyle Creek	San Juan Creek
Dry Creek	Sierra Creek
Dry Creek (North Branch)	Strong Ranch Slough
Linda Creek	Verde Cruz Creek
Morrison Creek Stream Group	
Elder Creek	Morrison Creek
Elk Grove Creek	North Fork Laguna Creek
Florin Creek	Strawberry Creek
Gerber Creek	Unionhouse Creek
Laguna Creek	Whitehouse Creek
Laguna Creek Tributary 1	
Sacramento River and Delta Slough Group	
Georgiana Slough	Steamboat Slough
Sacramento River	Sutter Slough
Sevenmile Slough	Three Mile Slough
San Joaquin River Stream Group	
Delta Cross Canal	San Joaquin River
Mokelumne River	Snodgrass Slough
North Fork Mokelumne River	
Natomas Area Stream Group	
Natomas East Drainage Canal	Deer Creek
Natomas Main Drainage Canal	Dry Creek
Natomas North Drainage Canal	Hadselville Creek
Natomas West Drainage Canal	Hen Creek
Arkansas Creek	Laguna Creek
Badger Creek	North Fork Badger Creek
Browns Creek	North Stone Lake Tributary

Stream Group and Stream	
Carson Creek	Skunk Creek
Cosumnes River	South Stone Lake-North Tributary
Cosumnes River Overflow	South Stone Lake-South Tributary
Crevis Creek	Willow Creek
Deadman Gulch	

Source: Sacramento County Flood Insurance Study, 2008

Sacramento County Primary Waterways

In Sacramento County, there are three main rivers that are considered primary waterways: the Sacramento, American and Cosumnes Rivers. The Sacramento and American Rivers and several tributaries to the east, north, and west all flow toward the City of Sacramento. The watersheds of these two main rivers convey flows for most of northern California and part of southern Oregon for a total of approximately 26,000 square miles. The third, the Cosumnes River, emanates from the Sierra Nevada foothills and flows southwesterly through the southern portion of the County and into the Delta.

The Sacramento River extends north to Mount Shasta and the Shasta Reservoir. Many other rivers are tributary to the Sacramento, including (immediately north of Sacramento) the Bear and Feather Rivers. The American River extends to the Sierra Nevada foothills in three branches (South, North and Middle). Folsom Reservoir is at the eastern boundary of Sacramento County and serves to control the American River.

High water levels along the Sacramento and American Rivers are a common occurrence in the winter and early spring months due to increased flow from storm runoff and snowmelt. An extensive system of dams, levees, overflow weirs, drainage pumping plants, and flood control bypass channels strategically located on the Sacramento and American Rivers has been established to protect the area from flooding, referred to as the Sacramento River Flood Control Project (SRFCP). These facilities control floodwaters by regulating the amount of water passing through a particular reach of the river. The amount of water flowing through the levee system is regulated by releases from Folsom Dam on the American River, and the reserve overflow area of the Yolo Bypass on the Sacramento River. However, the ability for the levees in Sacramento County to provide flood protection as intended by the SRFCP had been of significant concern, especially from the impacts of the floods of 1986 and 1997 in the region. Over time, this concern has been reduced as USACE and SAFCA have completed work on levee improvement and certification projects.

During flood conditions when the Sacramento and American Rivers reach their peak flows, the flow regime at their confluence is altered. These conditions result in "backflows' which impact the ability for tributaries to efficiently convey floodwater. The Sacramento River is also affected by ocean tides that periodically raise and lower the water level. High tides that occur simultaneously with flooding conditions could increase the rate of flooding.

The Cosumnes River is a non-regulated and natural river originating in the Sierra Nevada foothills, flowing into southern area of Sacramento County. This area is mostly rural farmland and open space. High flows on the Cosumnes River are less frequent, as river flows are uncontrolled (i.e. no upstream dam or reservoir). Historic flooding along the river has generally been due to high water coupled with the failure of non-standard, poorly constructed private levees. Levees were constructed by agricultural interests, and are

inadequate for containing record storm flows such as those experienced in February 1986, in January 1997, and in December 2022. These storms left the levee system sorely damaged. Each time, the levee breaks were repaired, but the overall system is vulnerable to another flood event.

Another river, the Mokelumne River is the southernmost river in the County and is controlled by a dam in the neighboring county and a series of levees.

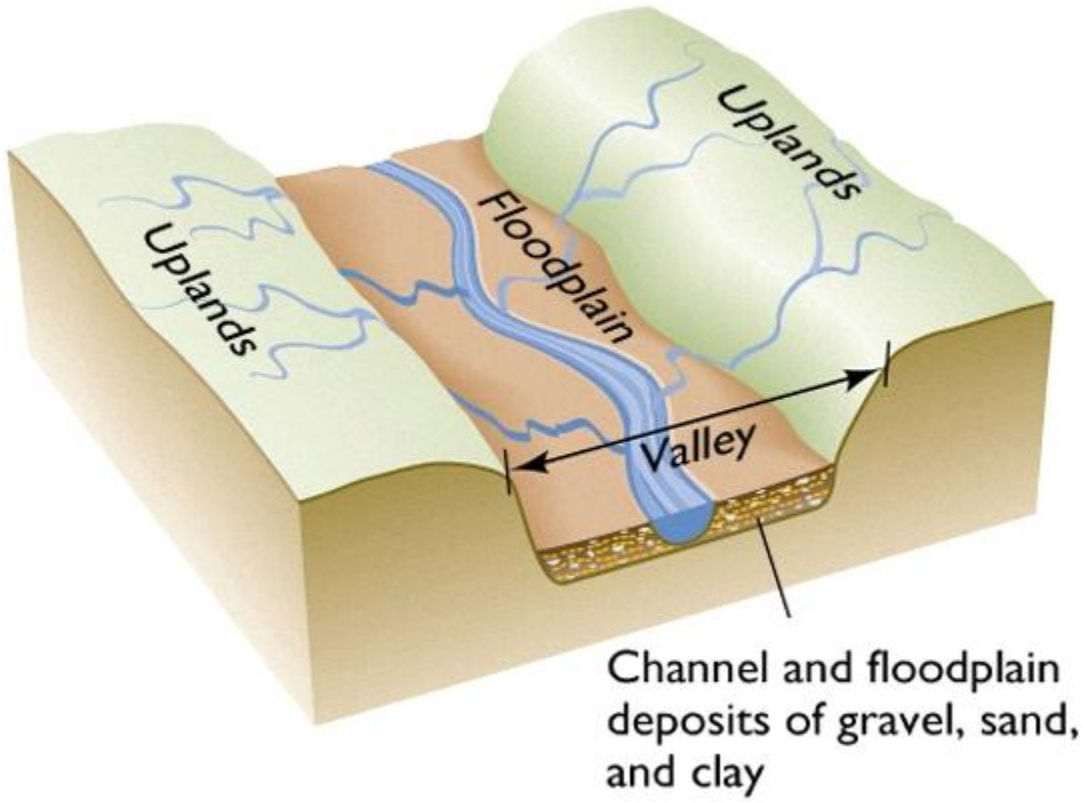
All of the watersheds converge at the Sacramento River Delta. Surface water originating in or passing through Sacramento County discharges to the ocean via the Sacramento and San Joaquin Rivers, which join at the head of Suisun Bay, the easternmost arm of San Francisco Bay. With a combined tributary drainage area of approximately 60,000 square miles, these rivers provide most of the freshwater inflow to San Francisco Bay.

Numerous areas of the County are still subject to flooding by the overtopping of rivers and creeks, levee failures, and the failure of urban drainage systems that cannot accommodate large volumes of water during severe rainstorms. The flood issues in the Delta are of concern as agricultural interests continue to farm the land which is subsiding annually, making the levee systems more vulnerable to breaching. However, with the implementation of multiple improvements to the area's flood control structures, including those designed to provide a 200-year level of flood protection, flood risk is being reduced, but not eliminated. Residual risk remains, including the potential for devastating floods in the Sacramento County Planning Area. These status of flood control projects and associated flood issues on these waterways are discussed further in this flood hazard.

Floodplains

The area adjacent to a flooding source, such as a river, creek, or designated floodway, during a specific flood frequency (e.g. 1% or 0.2% annual chance event) may be floodplain depending on hydrologic and hydraulic conditions (see Figure 4-102). Floodplains are illustrated on inundation maps, which show areas of potential flooding and water depths. In its common usage, such as what is depicted on FEMA maps, the floodplain most often refers to that area that is inundated by the 1% annual chance (or 100-year) flood, the flood that has a one percent chance in any given year of being equaled or exceeded. The 1% annual chance flood is the national minimum standard to which communities regulate their floodplains through the National Flood Insurance Program. The 500-year flood is the flood that has a 0.2% chance of being equaled or exceeded in any given year. The 200-year flood is the flood that has a 0.5% chance of being equaled or exceeded in any given year. The potential for flooding can change and increase through various land use changes and changes to land surface, which result in a change to the floodplain. A change in environment can create localized flooding problems inside and outside of natural floodplains by altering or confining natural drainage channels. These changes are most often created by human activity.

Figure 4-102 Floodplain Schematic



Source: FEMA

Sacramento County Flood Mapping

As part of the County's ongoing efforts to identify and manage their flood prone areas, Sacramento County relies on a variety of different mapping and related efforts. What follows is a brief description of FEMA and DWR mapping efforts covering the Sacramento County Planning Area.

FEMA Floodplain Mapping

FEMA established standards for floodplain mapping studies as part of the National Flood Insurance Program (NFIP). The NFIP makes flood insurance available to property owners in participating communities adopting FEMA-approved local floodplain studies, maps, and regulations. Floodplain studies that may be approved by FEMA include federally funded studies; studies developed by state, city, and regional public agencies; and technical studies generated by private interests as part of property annexation and land development efforts. Such studies may include entire stream reaches or limited stream sections depending on the nature and scope of a study. The FEMA floodplain include lands subject to the 1% annual chance (100-year) flood. FEMA mapping also includes areas subject to the 0.2% annual chance (500-year) flood. A general overview of floodplain mapping is provided in the following paragraphs. Details on the NFIP and mapping specific to the County is further detailed in the Vulnerability Assessment below.

Flood Insurance Study (FIS)

The FIS develops flood-risk data for various areas of the community that will be used to establish flood insurance rates and to assist the community in its efforts to promote sound floodplain management. The current Sacramento County FIS is dated February 22, 2024, replacing the previous FIS for the County. This study covers both the unincorporated and incorporated areas of the County.

Flood Insurance Rate Map (FIRM)

The FIRM is designed for flood insurance and floodplain management applications. For flood insurance, the FIRM designates flood insurance rate zones to assign premium rates for flood insurance policies. For floodplain management, the FIRM delineates 1% and 0.2% annual chance floodplains, floodways, and the locations of selected cross sections used in the hydraulic analysis and local floodplain regulation. The County FIRMs (or paper maps) have been updated by digital flood insurance rate maps (DFIRMs) as part of FEMA's Map Modernization program, which is discussed further below.

Letter of Map Revision (LOMR) and Map Amendment (LOMA)

LOMRs and LOMAs represent separate floodplain studies dealing with individual properties or limited stream segments that update the FIS and FIRM data between periodic FEMA publications of the FIS and FIRM.

Levee Considerations in Floodplain Mapping

As part of FEMA's Map Modernization program, FEMA is mapping levees within communities, to include those levees accredited as providing protection against the 1 percent annual chance flood.

In August of 2005, FEMA Headquarters' issued Memo 34 Interim Guidance for Studies Including Levees. This memo recognizes the risk and vulnerability of communities with levees. The memo mandates the inclusion of levee evaluations for those communities that are undergoing map changes such as the conversion to DFIRMs. No maps can become effective without an evaluation of all levees within a community against the criteria set forth in 44 CFR 65.10 Mapping of Areas Protected by Levee Systems. Generally, these levee certification requirements include evaluations of freeboard, geotechnical stability and seepage, bank erosion potential due to currents and waves, closure structures, operations and maintenance, and wind wet and wave run-up. In short, these guidelines require certification of levees before accrediting any levee as providing protection from the 1 percent annual chance event (e.g., the 100-year flood).

In Sacramento County, similar to other locations in California, levees and flood control facilities have been built and are maintained variously by public and private entities, including water, irrigation and flood control districts, other state and local agencies, and private interests. Some of these facilities were constructed with flood control as secondary or incidental to their primary purpose, so are not considered as providing protection from the 100-year or greater flood. Levees in the County are further discussed in Section 4.3.14 of this Plan Update.

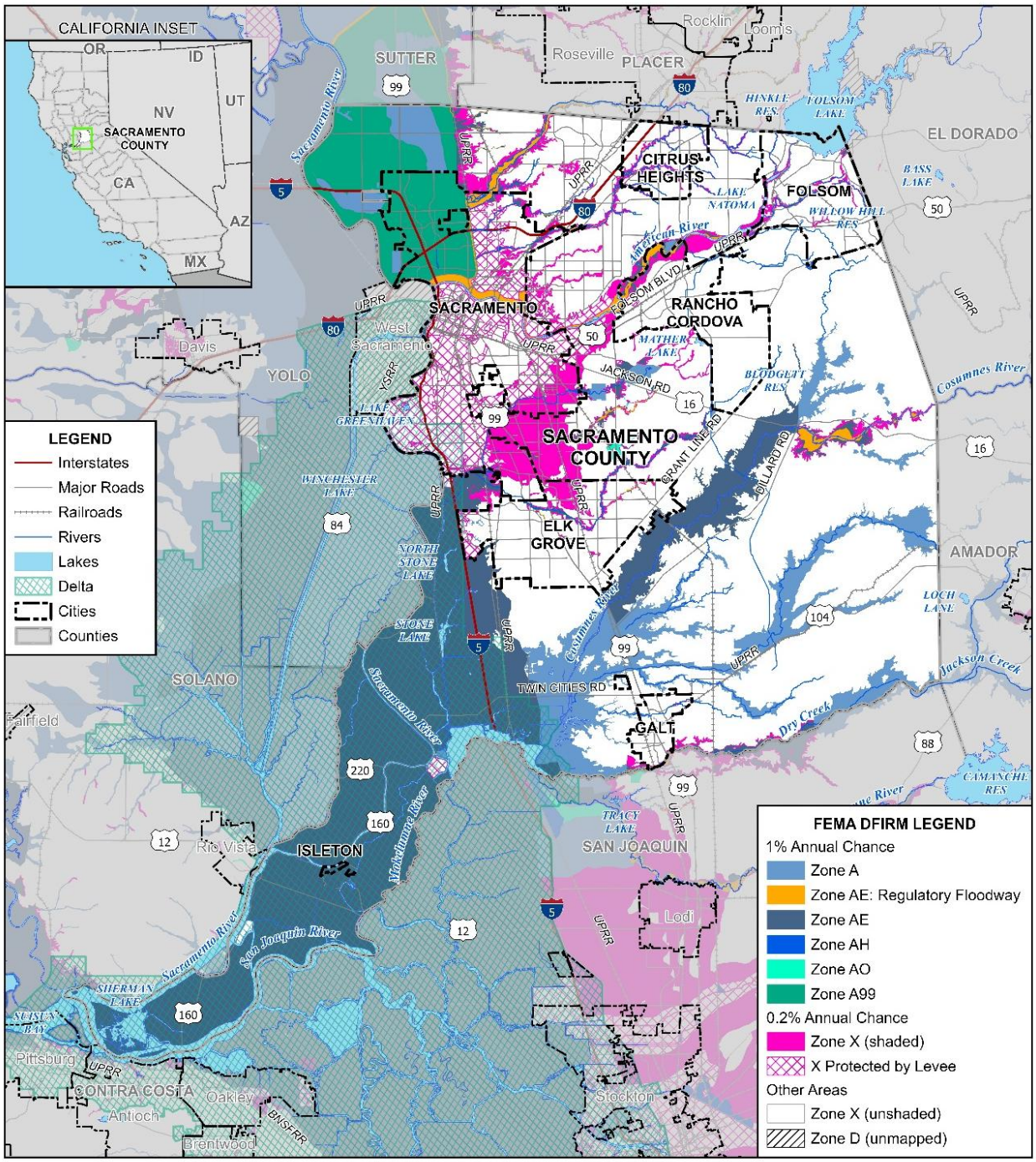
Digital Flood Insurance Rate Maps (DFIRM)

Through its Map Modernization program, FEMA is converting paper FIRMS to digital FIRMs, DFIRMS. These digital maps:

- Incorporate the latest updates (LOMRs and LOMAs);
- Utilize community supplied data;
- Verify the currency of the floodplains and refit them to community supplied basemaps;
- Upgrade the FIRMs to a GIS database format to set the stage for future updates and to enable support for GIS analyses and other digital applications; and
- Solicit community participation.

DFIRMs for Sacramento County have been developed. The most current Effective DFIRMs for Sacramento County are dated February 22, 2024, and are being used for the flood analysis for this LHMP Update. The DFIRM is shown in Figure 4-103, and DFIRM flood zones, by jurisdiction, are shown on Table 4-89.

Figure 4-103 Sacramento County – DFIRM Flood Zones



FOSTER MORRISON CONSULTING

SACRAMENTO COUNTY

Data Source: FEMA Effective DFIRM 02/22/2024 (NFHL 10/13/2025 database), Sacramento County, Cal-Atlas; Map Date: 10/2/2026.

Table 4-89 Sacramento County – FEMA DFIRM Flood Zones by Jurisdiction

Flood Zone	Description	Citrus Heights	Elk Grove	Folsom	Galt	Isleton	Rancho Cordova	Sacramento	Unincorporated County
A	1% annual chance flooding: No base flood elevations provided		X	X	X			X	X
AE Regulatory Floodway	1% annual chance flood: Regulatory floodway; Base flood elevations provided	X	X	X	X		X	X	X
AE	1% annual chance flooding; Base flood elevations provided	X	X	X	X	X	X	X	X
AH	1% annual chance flood areas of shallow flooding between one to three feet deep. Regulatory floodway; Base flood elevations provided							X	X
AO	Areas subject to inundation by 1-percent-annual-chance shallow flooding (usually sheet flow on sloping terrain) where average depths are between one and three feet. Average flood depths derived from detailed hydraulic analyses are shown in this zone.		X						X

Flood Zone	Description	Citrus Heights	Elk Grove	Folsom	Galt	Isleton	Rancho Cordova	Sacramento	Unincorporated County
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 X	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	X	X		X	X	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	X	X
X (unshaded)	Areas of minimal flood hazard	X	X	X	X	X	X	X	X
D	Unmapped areas	X							

Source: FEMA DFIRM 02/22/2024

Flood extents are usually measured in depths of flooding and area flooded. Expected flood depths in the Sacramento County Planning Area vary. Flood durations in the County tend to be short to medium term, or until either the storm drainage system can catch up or flood waters move downstream. Geographical extents of DFIRM flood zones for the Sacramento County Planning Area are summarized in Table 4-90, and then shown by jurisdiction and flood zone in Table 4-91. Details on extents of flood zones by property use for the unincorporated County can be found on Table 4-92. Details on each jurisdiction's DFIRM flood extents by property use can be found in their respective annexes to this LHMP Update.

Table 4-90 Sacramento County Planning Area –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	219,631	37%	106,173	34%	113,459	41%
0.2% Annual Chance Flood Hazard	47,884	8%	33,196	11%	14,688	5%
Other Areas	324,221	55%	172,510	55%	151,711	54%
Total	**591,737**	**100%**	**311,879**	**100%**	**279,858**	**100%**

Source: FEMA DFIRM 02/2024

*Table 4-91 Sacramento County Planning Area –Geographical DFIRM Flood Zone Extents by Jurisdiction**

Jurisdiction / Flood Zone	Total Acres	% of Total Acres	Improved Acres	% of Total Improved Acres	Unimproved Acres	% of Total Unimproved Acres
Citrus Heights						
1% Annual Chance Flood Hazard	514	0.1%	300	0.1%	214	0.1%
0.2% Annual Chance Flood Hazard	151	0.03%	120	0.0%	31	0.01%
Other Areas	6,982	1%	6,046	2%	935	0.3%
Citrus Heights Total	**7,647**	**1%**	**6,466**	**2%**	**1,180**	**0.4%**
Elk Grove						
1% Annual Chance Flood Hazard	1,265	0.2%	499	0.2%	766	0.3%
0.2% Annual Chance Flood Hazard	1,887	0.3%	1,349	0.4%	538	0.2%
Other Areas	20,452	3%	14,539	5%	5,913	2%

Jurisdiction / Flood Zone	Total Acres	% of Total Acres	Improved Acres	% of Total Improved Acres	Unimproved Acres	% of Total Unimproved Acres
Elk Grove Total	**23,604**	**4%**	**16,387**	**5%**	**7,217**	**3%**
Folsom						
1% Annual Chance Flood Hazard	563	0.1%	57	0.02%	506	0.2%
0.2% Annual Chance Flood Hazard	326	0.1%	78	0.02%	248	0.1%
Other Areas	14,645	2%	6,997	2%	7,647	3%
Folsom Total	**15,534**	**3%**	**7,132**	**2%**	**8,402**	**3%**
Galt						
1% Annual Chance Flood Hazard	299	0.1%	27	0.01%	272	0.1%
0.2% Annual Chance Flood Hazard	13	0.002%	1	0.0004%	11	0.004%
Other Areas	3,857	1%	2,240	1%	1,617	1%
Galt Total	**4,169**	**1%**	**2,268**	**1%**	**1,901**	**1%**
Isleton						
1% Annual Chance Flood Hazard	220	0.04%	61	0.02%	159	0.1%
0.2% Annual Chance Flood Hazard	0	0%	0	0%	0	0%
Other Areas	13	0.002%	5	0.002%	9	0.003%
Isleton Total	**233**	**0.04%**	**66**	**0.02%**	**167**	**0.1%**
Rancho Cordova						
1% Annual Chance Flood Hazard	1,149	0.2%	23	0.01%	1,125	0.4%
0.2% Annual Chance Flood Hazard	694	0.1%	376	0.1%	318	0.1%
Other Areas	18,359	3%	7,170	2%	11,189	4%
Rancho Cordova Total	**20,201**	**3%**	**7,569**	**2%**	**12,633**	**5%**

Jurisdiction / Flood Zone	Total Acres	% of Total Acres	Improved Acres	% of Total Improved Acres	Unimproved Acres	% of Total Unimproved Acres
Sacramento						
1% Annual Chance Flood Hazard	14,190	2%	6,386	2%	7,803	3%
0.2% Annual Chance Flood Hazard	28,581	5%	19,622	6%	8,959	3%
Other Areas	9,241	2%	6,164	2%	3,077	1%
Sacramento Total	**52,011**	**9%**	**32,172**	**10%**	**19,839**	**7%**
Unincorporated Sacramento County						
1% Annual Chance Flood Hazard	201,432	34%	98,820	32%	102,612	37%
0.2% Annual Chance Flood Hazard	16,233	3%	11,649	4%	4,583	2%
Other Areas	250,671	42%	129,349	41%	121,323	43%
Unincorporated Sacramento County Total	**468,336**	**79%**	**239,818**	**77%**	**228,518**	**82%**
Grand Total	**591,737**	**100%**	**311,879**	**100%**	**279,858**	**100%**

Source: FEMA DFIRM 02/2024

*This table represents the percentages of flood zone for the Planning Area. Percentages of flood zones for each jurisdiction are shown in their respective annexes.

Table 4-92 Unincorporated Sacramento County – Geographical DFIRM Flood Zone Extents by Property Use

Flood Zone	Total Acres	% of Total Acres	Improved Acres	% of Total Improved Acres	Unimproved Acres	% of Total Unimproved Acres
1% Annual Chance Flood Hazard						
Zone A						
Agricultural	38,962	8%	21,766	9%	17,196	8%
Church / Welfare	0.3	0.0001%	0.3	0.0001%	0	0%
Industrial	1,002	0.2%	0.3	0.0001%	1,002	0.4%
Miscellaneous	1,327	0.3%	0	0%	1,327	1%
Public / Utilities	1,420	0.3%	0	0%	1,420	1%
Recreational	12	0.002%	0.4	0.0002%	11	0.005%

Flood Zone	Total Acres	% of Total Acres	Improved Acres	% of Total Improved Acres	Unimproved Acres	% of Total Unimproved Acres
Residential	1,653	0.4%	1,396	1%	257	0.1%
Retail / Commercial	0.3	0.0%	0.3	0.0001%	0	0%
Vacant	4,538	1%	120	0.05%	4,418	2%
Zone A Total	**48,915**	**10%**	**23,283**	**10%**	**25,631**	**11%**
Zone AE						
Agricultural	91,859	20%	63,586	27%	28,273	12%
Care / Health	12	0.003%	11	0.004%	2	0.001%
Church / Welfare	84	0.02%	66	0.03%	18	0.01%
Industrial	1,422	0.3%	332	0.1%	1,090	0.5%
Miscellaneous	9,321	2%	48	0.02%	9,273	4%
Office	70	0.0150%	45	0.019%	25	0.01%
Public / Utilities	3,334	0.7%	0	0%	3,334	1.46%
Recreational	648	0.1%	432	0.2%	216	0.1%
Residential	4,684	1%	4,527	1.9%	156	0.07%
Retail / Commercial	96	0.02%	87	0.04%	9	0.004%
Unknown	29	0.01%	0	0%	29	0.01%
Vacant	17,612	4%	329	0.1%	17,282	7.6%
Zone AE Total	**129,171**	**28%**	**69,462**	**29.0%**	**59,708**	**26%**
Zone AE: Regulatory Floodway						
Agricultural	1,136	0.2%	1,000	0.4%	136	0.1%
Care / Health	4	0.001%	4	0.001%	0	0%
Church / Welfare	15	0.003%	15	0.01%	0.2	0.0001%
Industrial	130	0.03%	52	0.02%	78	0.03%
Miscellaneous	1,895	0.4%	0	0%	1,895	1%
Office	17	0.004%	12	0.01%	5	0.002%
Public / Utilities	36	0.01%	0	0%	36	0.02%
Recreational	219	0.05%	68	0.03%	150	0.066%
Residential	508	0.1%	480	0.2%	28	0.01%
Retail / Commercial	15	0.003%	15	0.01%	0.3	0.0001%
Unknown	0.4	0.0001%	0	0%	0.4	0.0002%
Vacant	568	0.1%	63	0.03%	505	0.2%

Flood Zone	Total Acres	% of Total Acres	Improved Acres	% of Total Improved Acres	Unimproved Acres	% of Total Unimproved Acres
Zone AE: Regulatory Floodway Total	**4,543**	**1%**	**1,709**	**0.7%**	**2,834**	**1%**
Zone AH						
Church / Welfare	0.01	0.000001%	0.01	0.000003%	0	0%
Miscellaneous	119	0.03%	0	0%	119	0.1%
Office	0.3	0.0001%	0.3	0.0001%	0	0%
Public / Utilities	3	0.001%	0	0%	3	0.001%
Residential	28	0.01%	27	0.01%	0.1	0.00004%
Retail / Commercial	4	0.001%	4	0.002%	0	0%
Vacant	5	0.001%	0	0%	5	0.002%
Zone AH Total	159	0.03%	32	0.013%	127	0.1%
Zone AO						
Care / Health	1	0.000%	1	0.001%	0	0%
Church / Welfare	14	0.003%	13	0.01%	1	0.001%
Industrial	2	0.001%	1	0.001%	1	0.001%
Miscellaneous	9	0.002%	0	0%	9	0.004%
Office	10	0.002%	0	0%	10	0.004%
Public / Utilities	10	0.002%	0	0%	10	0.005%
Residential	287	0.1%	287	0.1%	0.005	0.000002%
Vacant	109	0.02%	2	0.001%	108	0.05%
Zone AO Total	**444**	**0.1%**	**304**	**0.1%**	**140**	**0.1%**
Zone A99						
Agricultural	7,948	2%	2,055	1%	5,893	3%
Church / Welfare	8	0.002%	8	0.003%	0	0%
Industrial	3,114	1%	1,212	1%	1,902	1%
Miscellaneous	547	0.1%	0	0%	547	0.2%
Office	128	0.03%	97	0.04%	31	0.01%
Public / Utilities	2,468	1%	0	0%	2,468	1%
Recreational	283	0.1%	283	0.1%	0	0%
Residential	348	0.1%	306	0.1%	42	0.02%
Retail / Commercial	30	0.01%	24	0.01%	6	0.002%

Flood Zone	Total Acres	% of Total Acres	Improved Acres	% of Total Improved Acres	Unimproved Acres	% of Total Unimproved Acres
Vacant	3,325	1%	43	0.02%	3,282	1%
Zone A99 Total	**18,201**	**4%**	**4,030**	**2%**	**14,171**	**6%**
1% Annual Chance Flood Hazard Total	**201,432**	**43%**	**98,820**	**41%**	**102,612**	**45%**
0.2% Annual Chance Flood Hazard						
X Protected by Levee						
Agricultural	376	0.1%	376	0%	0	0%
Care / Health	30	0.01%	20	0.01%	10	0.004%
Church / Welfare	95	0.02%	70	0%	25	0.01%
Industrial	419	0.1%	335	0%	84	0.04%
Miscellaneous	214	0.05%	0	0%	214	0.1%
Office	274	0.06%	200	0.08%	74	0.03%
Public / Utilities	222	0.05%	0	0%	222	0.1%
Recreational	133	0.03%	32	0%	101	0.04%
Residential	2,329	0.5%	2,235	1%	94	0.04%
Retail / Commercial	318	0.07%	300	0.1%	17	0.01%
Unknown	83	0.02%	0	0%	83	0.04%
Vacant	253	0.05%	7	0%	246	0.11%
X Protected by Levee Total	**4,746**	**1%**	**3,578**	**1%**	**1,169**	**0.5%**
Zone X (shaded)						
Agricultural	515	0.11%	398	0.2%	117	0.1%
Care / Health	32	0.007%	32	0.01%	0	0%
Church / Welfare	192	0.04%	161	0.1%	31	0.01%
Industrial	1,012	0.2%	772	0.3%	240	0.1%
Miscellaneous	1,206	0.3%	0.2	0.0001%	1,206	1%
Office	155	0.03%	98	0.04%	57	0.02%
Public / Utilities	216	0.05%	0	0%	216	0.1%
Recreational	177	0.04%	86	0.04%	91	0.04%
Residential	6,101	1%	5,827	2%	274	0.12%
Retail / Commercial	619	0.1%	596	0.2%	22	0%
Unknown	16	0.003%	0	0%	16	0.01%
Vacant	1,245	0.3%	102	0.042%	1,143	0.5%

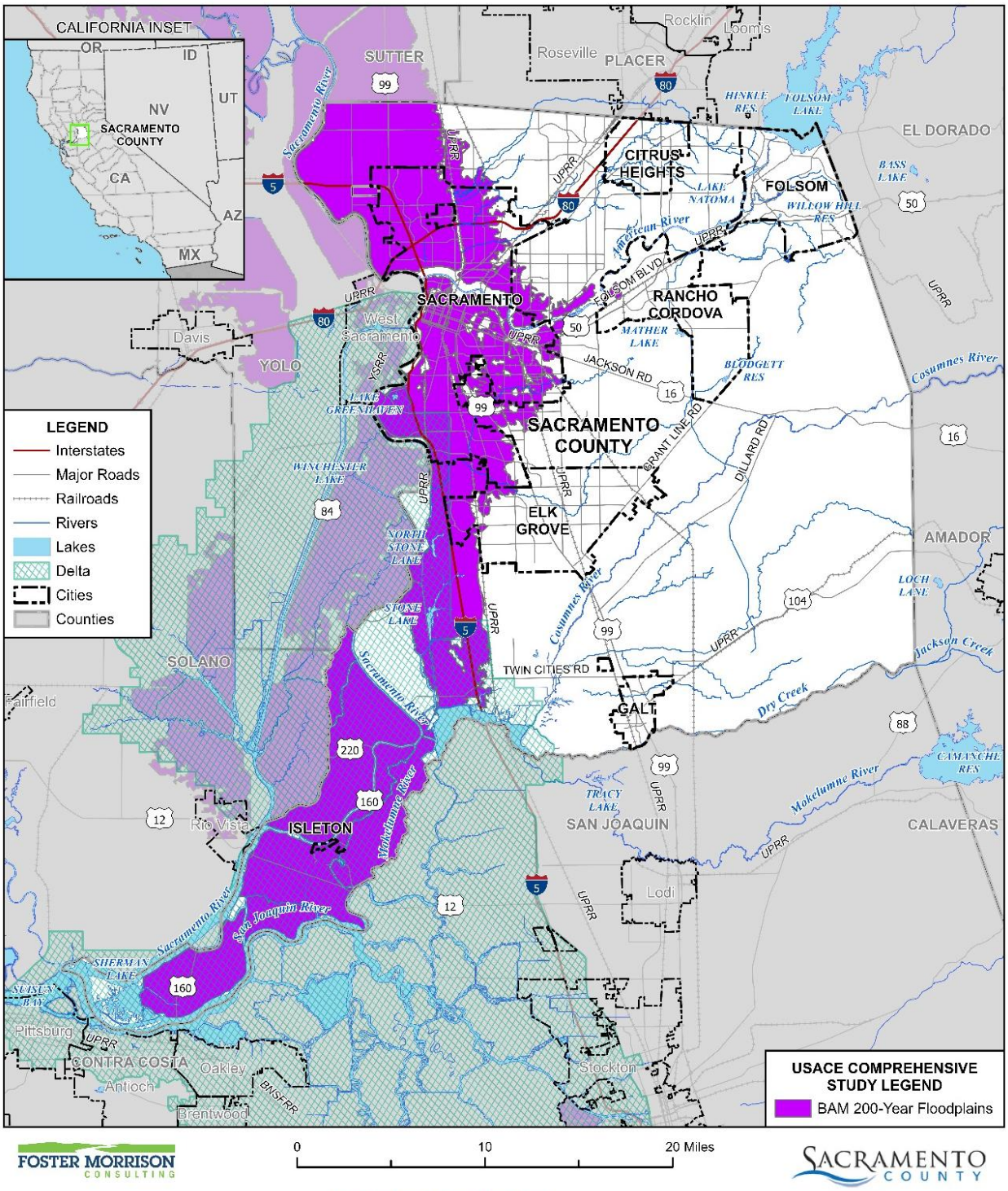
Flood Zone	Total Acres	% of Total Acres	Improved Acres	% of Total Improved Acres	Unimproved Acres	% of Total Unimproved Acres
Zone X (shaded) Total	**11,486**	**2%**	**8,072**	**3%**	**3,414**	**1%**
0.2% Annual Chance Flood Hazard Total	**16,233**	**3%**	**11,649**	**5%**	**4,583**	**2%**
Other Areas						
Zone X (unshaded)						
Agricultural	131,898	28%	54,447	23%	77,452	34%
Care / Health	497	0.1%	473	0.2%	24	0.01%
Church / Welfare	1,244	0.3%	928	0%	316	0.1%
Industrial	14,661	3.1%	7,794	3%	6,867	3%
Miscellaneous	9,258	2%	3	0.001%	9,255	4%
Office	1,348	0.3%	758	0.3%	589	0.3%
Public / Utilities	2,259	0.5%	3	0.001%	2,255	1.0%
Recreational	2,342	0.5%	900	0.4%	1,442	0.6%
Residential	62,153	13%	60,626	25%	1,527	1%
Retail / Commercial	1,893	0.4%	1,800	1%	93	0.04%
Unknown	237	0.1%	0	0%	237	0.1%
Vacant	22,881	5%	1,615	1%	21,266	9%
Zone X (unshaded) Total	**250,671**	**54%**	**129,349**	**54%**	**121,323**	**53%**
Other Areas Total	**250,671**	**54%**	**129,349**	**54%**	**121,323**	**53%**
Grand Total	**468,336**	**100%**	**239,818**	**100%**	**228,518**	**100%**

Source: FEMA DFIRM 02/2024

0.5% Annual Chance Flood Mapping

Urban level of flood control in California is defined as the level of protection necessary to withstand a 1-in-200 or 0.5% annual chance of flooding in any given year. This standard is mandated for urban and urbanizing areas within the Central Valley (populations of 10,000 or more) by the Central Valley Flood Protection Act of 2008, which requires local jurisdictions to incorporate these criteria into land use planning and development policies. There are 0.5% annual chance flood areas in Sacramento County. These are shown on Figure 4-104.

Figure 4-104 Sacramento County Planning Area – 0.5% Annual Chance Flooding



Data Source: DWR Best Available Maps (BAM) https://gis.bam.water.ca.gov/bam/ (Comprehensive Study data downloaded 4/4/2026), Sacramento County, Cal-Atlas; Map Date: 10/2/2026.

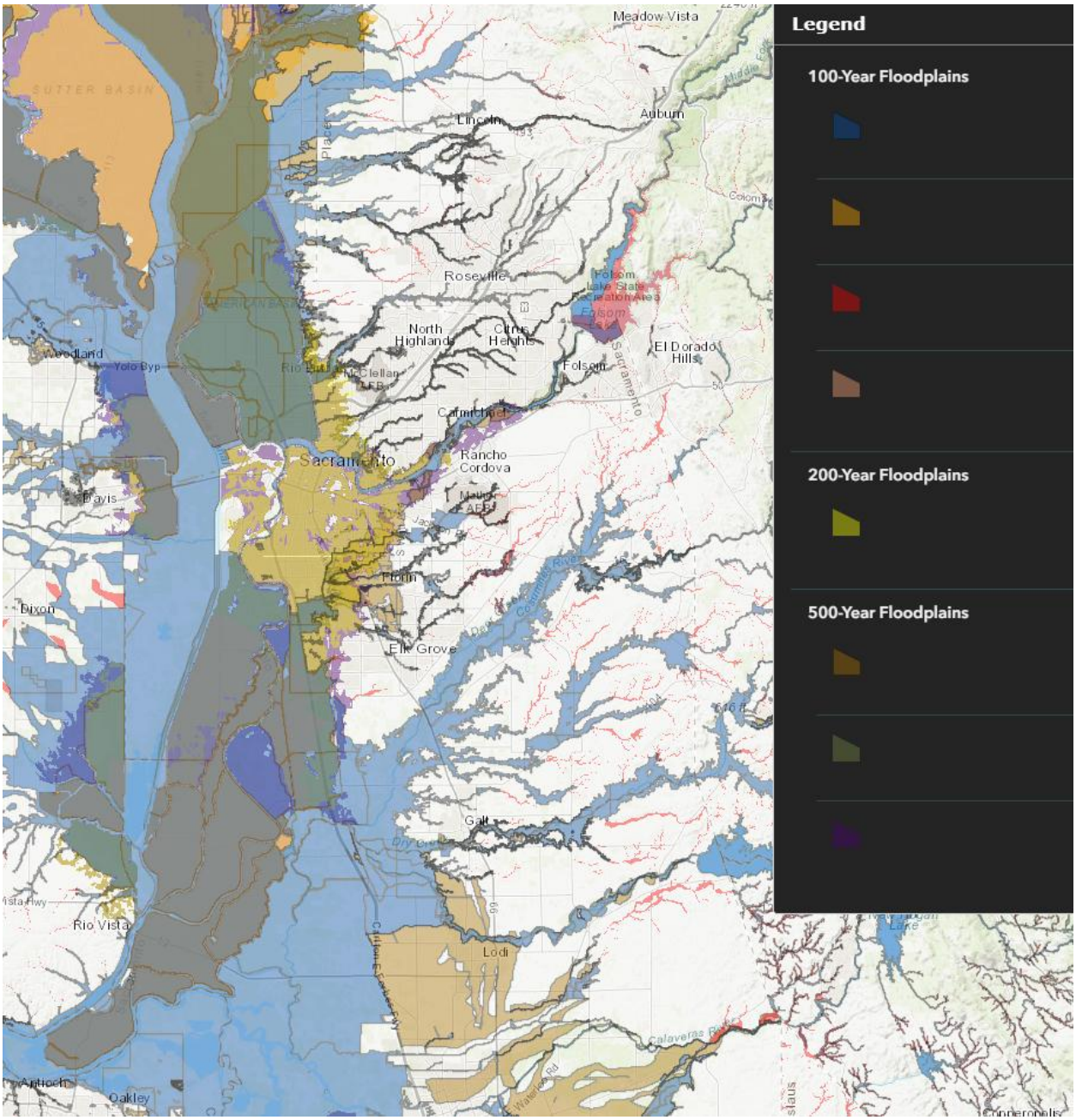
California DWR Floodplain Mapping

Also to be considered when evaluating the flood risks in Sacramento County are various floodplain maps developed by the California DWR for various areas throughout California, and in the Sacramento-San Joaquin Valley cities and counties. The FEMA regulatory maps provide just one perspective on flood risks in Sacramento County. Senate Bill 5 (SB 5), enacted in 2007, authorized Cal-DWR to develop the Best Available Maps (BAM) displaying 1% and 0.5% (200-year) annual chance floodplains for areas located within the Sacramento-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 0.2% annual chance flood zones.

Different than the FEMA DFIRMs which have been prepared to support the NFIP and generally reflect only the 1% and 0.2% annual chance flood risks, the BAMs are provided for informational purposes and are intended to reflect current 1%, 0.5% (200-year) as applicable, and 0.2% annual chance flood risks using the best available data. The 100-year floodplain limits on the BAM are a composite of multiple 1% annual chance floodplain mapping sources. It is intended to show all currently identified areas at risk for a 100-year flood event, including FEMA's 1% annual chance flood zones. The BAMs are comprised of different engineering studies performed by FEMA, USACE, and DWR for assessment of potential 1%, 0.5%, and 0.2% annual chance 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 County than that provided in the FEMA DFIRMs. This provides the community and residents with an additional tool for understanding potential flood hazards not currently mapped as a regulated FEMA floodplain. Improved awareness of flood risk can reduce exposure to flooding for new structures and promote increased protection for existing development. Informed land use planning will also assist in identifying levee maintenance needs and levels of protection. By including the FEMA 1% annual chance flood zone, it also supports identification of the need and requirement for flood insurance. Figure 4-105 shows the BAM for the Sacramento County Planning Area.

Figure 4-105 Sacramento County– Flood Awareness (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 federal and state disaster declarations for Sacramento County from flooding (including heavy rains and storms) is shown on Table 4-93.

Table 4-93 Sacramento County – Federal and State Disaster Declaration 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. Table 4-94 shows the 174 events in Sacramento County since 1993.

*Table 4-94 NCDC Flood Events in Sacramento County 1993 to 1/1/2026**

Event Type	Number of Events	Deaths	Deaths (indirect)	Injuries	Injuries (indirect)	Property Damage	Crop Damage
Flash Flood	9	4	0	0	0	$138,400,000	$0
Flood	165	2	0	1	0	$142,877,000	$7,800,000
Total	**174**	**6**	**0**	**1**	**0**	**$281,277,000**	**$7,800,000**

Source: NCDC
*Note: Losses reflect totals for all impacted areas, much of which fell outside of Sacramento County

Hazard Mitigation Planning Committee Events

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

Events since 2021 LHMP

The HMPC noted the following events since the 2021 LHMP.

2024 – Severe Winter Storms (Federal and State Disaster Declarations): Winter 2024 storm systems produced additional rounds of heavy rain and localized flooding. Caltrans District 3 Damage Survey Reports (DSSRs) identified Sacramento County among jurisdictions with road damage. Agricultural field preparation was delayed, early planting windows were missed, and transportation routes used for agricultural product movement were temporarily closed.

On **January 14, 2023**, President Biden approved a major disaster declaration for California due to Severe Winter Storms, Flooding, Landslides, and Mudslides (incident period: December 27, 2022 – January 31, 2023). This was requested by Governor Gavin Newsom on an expedited basis.

Sacramento County was one of the hardest-hit areas in the state during the December–January phase. At least five fatalities in Sacramento County from the December–January storms (the highest county total in California). These included:

- Deaths from vehicles being swept away or stranded in floodwaters on roads.
- At least two deaths from falling trees due to high winds.
- Additional road-related flooding deaths.

A levee break along the Cosumnes River (in January) flooded nearby areas. This was traced to privately owned agricultural levees (typically designed only for lower-frequency events, like a 10-year flood). It caused flooding that closed State Route 99 (SR 99), stranded motorists, and led to water rescues.

Road inundations, ponding in low-lying neighborhoods, and overflows on small streams/creeks cause many water rescues to be performed. Over 200,000 customers lost power regionally during peaks (affecting SMUD and PG&E service areas in Sacramento County), with winds knocking down trees and lines. Numerous county roads, highways (including sections of SR 99 and others), and underpasses were impacted or closed for days. Evacuation orders were issued in areas like Wilton and other rural/south county spots near the Cosumnes River. Shelter-in-place orders were also used in some zones.

Folsom Lake rose rapidly (from ~29% full in late December to 61% by early January), but controlled releases through Folsom Dam (including use of the auxiliary spillway) prevented major overflows on the American River downstream into Sacramento. The Sacramento and American Rivers saw elevated levels but stayed within protected levee capacities for the most part—no widespread urban riverine flooding in downtown or Natomas areas. Later March storms pushed some water into the Yolo Bypass, but this was a designed flood-management feature. The events highlighted both the effectiveness of major flood infrastructure (Folsom Dam and urban levees prevented worse outcomes) and vulnerabilities in smaller/private levees and urban drainage during prolonged AR sequences.

The **December 2022 – March 2023** California floods were driven by a parade of atmospheric rivers (roughly 9–10 major systems from late December through March 2023), following years of severe drought. This created a dramatic "weather whiplash" with heavy rain, high winds, and rapid reservoir filling. Multiple back-to-back ARs brought prolonged heavy rainfall, often 1–several inches per day in the valley, with much higher amounts in the Sierra foothills and mountains. Sacramento area recorded significant precipitation totals (e.g., around 9–10+ inches in some periods), saturating soils and causing repeated runoff issues. Winds gusted over 60 mph at times, contributing to tree falls and power outages. Key documented events include:

- December 31, 2022 - January 2023 AR Event: Multiple levee breaches on the Cosumnes River near Wilton caused by a stalled atmospheric river that delivered up to 4 inches of rain in 24 hours across southern Sacramento County. The levee failures near Wilton opened a breach described as "football field-sized" in the Cosumnes River Levee near Fig Road and Lee School Road. Agricultural evacuation

coordination was activated, with the Sacramento County Office of Emergency Services (OES) urging residents to move livestock to higher ground.

- Cosumnes River Levee failures flooded thousands of acres of agricultural land in the Wilton farming community and adjacent areas. According to the Agricultural Commissioner's Office tally, total documented agricultural damages from the winter 2023 AR events exceeded $38 million in damages and projected lost revenues. Affected commodities included: wine grapes (approximately 4,000 acres impacted), processed tomatoes (approximately 1,600 acres), alfalfa, wheat, oats, and field crops. Damage categories included debris and sand burial, destroyed irrigation infrastructure, pond failures, and equipment and facility losses.

Sacramento County issued a local emergency proclamation on March 8, 2023, in response to severe winter storms and flooding that caused widespread impacts to agricultural areas, livestock operations, and rural infrastructure. In a related formal communication on March 9, 2023, the Agricultural Commissioner reported that early-January atmospheric river events caused the Cosumnes River to overflow its banks, breach levees, and inundate agricultural lands, resulting in over $38 million in reported damages and projected lost revenue to local producers and businesses. These documented losses included destruction of perennial crops, sand- and debris-buried farmland, damaged irrigation systems, livestock losses, and severe structural damage to agricultural equipment and facilities.

Events before 2021

February 2017: Sacramento County was impacted by a series of Atmospheric River and storm systems starting February 2, 2017 and continuing through February 23, 2017. These storm systems followed a series of Atmospheric Rivers in January 2017 and cumulatively impacted the region causing worsening damage throughout the month. Sacramento continued to respond to levee issues and emergency work and the County continued to see flooded areas even though river levels dropped slightly.

Figure 4-106 Sacramento County 2017 Flooding



Source: CA DWR Pixel website

Water from storm systems, king tides, releases, and runoff into the watershed impacted several areas of Sacramento County, specifically: Rio Linda, Point Pleasant, Glanville tract, Wilton and the southern portions of the County in which voluntary evacuations were called. Rescues took place in Point Pleasant assisting people from their homes to safe areas. Water damaged levees with breaks and overtopping

(discussed in further detail in the Past Occurrences of Section 4.3.14). Additionally, several roadways were flooded. A private levee failure within San Joaquin County continued to cause flooding to New Hope Road through March 2017. Heavy soil saturation weakened the ground near trees and power poles and significant high winds caused numerous outages throughout the County, some lasting as long as 48 hours. Public utility crews spent excessive man hours responding to downed trees and limbs, and fire crews and equipment were completely tasked either on standby or response to downed power lines. Volunteer fire crews were brought in as a supplement.

The Sacramento County Emergency Operations Center (EOC) and field crews were active throughout the month coordinating response to the storms and providing communication to the public about the risks and actions they should take to maintain their safety. Forty-six different agencies and departments came together for successful EOC operations.

January 2017: Sacramento County was impacted by a series of Atmospheric River and storm systems starting January 3, 2017 through January 24, 2017. These storm systems cumulatively impacted the region causing worsening damage throughout the month. Sacramento continued to respond to levee issues and emergency work and the County continued to see flooded areas even though river levels dropped slightly.

Water from storm systems, king tides, releases, and runoff into the watershed impacted several areas of Sacramento County, specifically: Rio Linda, Point Pleasant, Glanville tract, Wilton and the southern portions of the County in which voluntary evacuations were called. Rescues took place in Point Pleasant assisting people from their homes to safe areas. Water damaged levees with breaks and overtopping. Additionally, several roadways were flooded. A private levee failure within San Joaquin County continues to cause flooding to New Hope Road through March 2017. Heavy soil saturation weakened the ground near trees and power poles and significant high winds caused numerous outages throughout the County, some lasting as long as 48 hours. Public utility crews spent excessive man hours responding to downed trees and limbs, and fire crews and equipment were completely tasked either on standby or response to downed power lines. Volunteer fire crews were brought in to supplement.

On January 25, 2017, the County was still actively engaged in emergency responses to levee erosion, boils, and repairs due to high water conditions caused by the weather systems and dam releases. Cosumnes River was flooded from levee failures at Twin Cities Road and roads in the area were closed on January 24, 2017. It took days before damage and debris assessments were completed.

The EOC and field crews were active throughout the month coordinating response to the storms and providing communication to the public about the risks and actions they should take to maintain their safety. Forty-six different agencies and departments came together for successful EOC operations.

February 1986: Flooding occurred in South Sacramento County. A 35-year flood event flooded 15,000 acres, including areas around I-5. I-5 was closed for 4 weeks and was under 3' of water in areas. Substantial damages to homes and businesses in the area. No deaths or injuries were reported.

Likelihood of Future Occurrence

1% Annual Chance Flood

Occasional— The 1% annual chance flood (100-year) is the flood that has a 1 percent chance of being equaled or exceeded in any given year. This, by definition, makes the likelihood of future occurrence occasional. However, the 100-year flood could occur more than once in a relatively short period of time.

0.5% Annual Chance Flood

Unlikely—The 0.5% annual chance flood (200-year) is the flood that has a 0.5 percent chance of being equaled or exceeded in any given year. This, by definition, makes the likelihood of future occurrence unlikely.

0.2% Annual Chance Flood

Unlikely—The 0.2% annual chance flood (500-year) is the flood that has a 0.2 percent chance of being equaled or exceeded in any given year. This, by definition, makes the likelihood of future occurrence unlikely.

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

Climate Change and Flood

Climate change and its effect on flooding is discussed using following sources:

- 2024 CAS
- 2026 American, Bear, and Cosumnes Watersheds Resilience Plan
- Cal-Adapt
- National Center for Atmospheric Research
- 2024 Sacramento County Climate Adaptation Plan

California Climate Adaptation Strategy

According to the 2024 CAS, climate change may affect flooding in California and the Planning Area. 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 temperatures, 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.

2026 American, Bear, and Cosumnes Watersheds Resilience Plan

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.

Cal Adapt

Cal Adapt future precipitation projections were shown in Figure 4-50 in the Severe Weather Heavy Rains and Storms in Section 4.3.4. These could affect flooding in the Sacramento County Planning Area.

National Center for Atmospheric Research

Also, according to the National Center for Atmospheric Research in Boulder, Colorado, atmospheric rivers are likely to grow more intense in coming decades, as climate changes warms the atmosphere enabling it to hold more water.

2024 Sacramento County Climate Adaptation Plan

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 on Figure 4-49 in Section 4.3.4 above). 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.

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. Noting this, the County may experience changes in the frequency and/or intensity of flood events, though the exact frequency, intensity, and duration of these events will vary annually.

Future flooding exacerbated by climate change will result in a range of potential impacts across the County. 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.

Lastly, severe flooding is capable of destroying building and infrastructure such as bridges, roadways, electrical boxes, drainage systems, and levees. Extreme weather events could weaken or collapse levees in the Delta and could breach Sacramento and American river levees especially where they have not yet been upgraded or do not meet the minimum National Flood Insurance Program requirements.

Vulnerability Assessment

Vulnerability—High

Historically, the Sacramento County Planning Area has always been at risk to flooding during the rainy season from November through April. Several areas of the Planning Area are subject to flooding by the overtopping of rivers and creeks, levee failures, and the failure of urban drainage systems that cannot accommodate large volumes of water during severe rainstorms. In addition to the major rivers, there are many streams, channels, canals, and creeks that serve the drainage needs of the Planning Area and communities surrounding it. There is significant threat of flooding in areas of the Planning Area from many of these waterways.

Sacramento County Primary Waterways, Flood Control System, and Key Flood Vulnerabilities

Sacramento County is protected from the American River and Sacramento River by a comprehensive system of dams, levees, overflow weirs, and flood bypasses known as the Sacramento River Flood Control Project (SRFCP). Local creeks are often controlled by detention basins that attenuate peak flow by allowing flood water to spill over a weir, detained, and released when the creek subsides. Sacramento County maintains a system of ALERT Flood Warning gages throughout the County that provide real time monitoring information on current flood conditions (www.stormready.org).

In the aftermath of the 1986, 1995, and 1997 floods, multiple flood control projects were identified to address flood risks in the Sacramento area. Many of these projects were designed to correct structural deficiencies, others to address levee conditions, while additional projects were intended to increase the level of flood protection provided by the system. The Sacramento River improvements would focus predominantly on rehabilitating the existing system, while the American River required a significant increase in the system's flood control capacity.

Established in 1989, Sacramento Area Flood Control Agency (SAFCA) is a regional joint-exercise-of-powers agency consisting of Sacramento and Sutter counties, the City of Sacramento, Reclamation District 1000, and the American River Flood Control District. SAFCA's long-term goal is to provide the urbanized portions of Sacramento with a minimum 200-year level of flood protection to reduce the risk of catastrophic damages and loss of life associated with a failure of the flood control system in the Sacramento area. SAFCA initiated several studies to determine the best implementable approaches to address the area's flood problems. These flood control projects are in various stages of implementation; the majority have been completed, while others are under construction, and some are under planning and/or design.

Lower American River

The flood management features along the American River consist of the Folsom Dam, an auxiliary dam at Mormon Island, eight earth-filled dikes, Nimbus Dam, and levees on either side of the downstream river. The system receives runoff from the American River watershed, which is about 2,100 square miles of the western slope in the Sierra Nevada.

Immediately after the Folsom Dam was completed in 1956, a huge flood filled the reservoir, saving Sacramento. The dam protected the County from at least four potentially catastrophic floods in 1986, 1995, 1997, and 2005. An initial reconnaissance report, "American River Investigation, January 1988" concluded that Folsom Dam and the American River levees were only capable of handling a 70-year flood event. Recommendations were to increase the carrying capacity of the American River downstream of the Nimbus Dam, modifying the Folsom Dam outlets, increasing storage capacity at Folsom Lake, and for greatest protection (200-year level), construct a new upstream storage facility. The dam continues to protect the County an estimated 4 years out of every 10, and it stores water and generates electricity, protects fisheries and provides for recreation.

American River Common Features

SAFCA and the Central Valley Flood Protection Board (CVFPB), working with US Army Corp of Engineers (USACE), identified an American River project to address the low level of flood protection provided by the existing system. Unable to gain support for construction of an expandable flood control dam near Auburn, SAFCA identified a series of American River Common Features and Folsom Dam improvement projects. The Common Features projects focused on the identification of features that were "common" to any project associated with controlling flood flows at Folsom Dam. These projects focused on the conveyance of higher flood flows through the leveed portion of the American River. Currently, with the new spillway, the authorized flood discharge from Folsom Dam of 160,000 cubic feet per second (cfs) can be safely released. The Folsom Dam Raise Project will increase the height of the wing dams and dikes at Folsom Lake an additional 3.5 feet to match the height of the main dam. When this project is completed, the 200-year release will be approximately equal to the current 100-year flow rate or about 115,000 cfs and have capacity to release additional flow. The lower American River levees are being improved to a standard that is calculated to safely convey flood flows up to 160,000 cfs. Thus, upon completion of the Folsom Dam Raise Project there will be an added factor of safety to the system. The Folsom Dam improvements are scheduled for completion in 2028.

American River Projects

Additional projects have significantly improved the capacity and flows of the American River levee system. These include:

- **Seepage Mitigation and Slope Stabilization** – The majority of levee improvements to remediate seepage and slope issues along the right and left banks of the American River were completed as part of WRDA 96/99 with various projects completed between 2000 and 2025.
- **Erosion Protection** – Portions of the levees along the American River are subject to extremely high velocities during a major flood event, eroding banks and levee toes, leading to levee failure. Several projects have been completed and are underway as part of WRDA 2016 to preserve levee embankment and channel integrity.
- **Mayhew levee Improvements** – This entailed raising and widening the levee and constructing a slurry wall, providing for 160,000 cfs to pass and providing greater than 100-year level of protection. The Mayhew Drain Closure Structure project completed in 2009 prevents water from the American River from backing up the drain and putting additional strain on drain levees.

Sacramento River Projects

Several projects have been completed to rehabilitate the existing flood control system and work towards providing a minimum of 200-year level of flood protection in the urbanized portions of the Sacramento County Planning Area. Key projects include:

- **Seepage Mitigation and Slope Stabilization** – The majority of levee improvements to remediate seepage and slope issues along the left bank of the Sacrament River, between the American River and the Town of Freeport, were completed as part of WRDAs 1996 and 2016 with various projects completed between 2000 and 2026. Other improvements to address freeboard deficiencies and localized stability issues are underway for completion by 2028.
- **Erosion Protection** – Portions of the levee along the Sacramento River left bank are subject to high velocities during a major flood event, eroding banks and levee toes, leading to levee failure. Several projects have been completed and are underway as part of WRDA 2016 to preserve levee embankment.
- **Sacramento River Bank Protection Program (Sac bank)** – this is an ongoing effort to address systematic erosion issues along the Sacramento River and its tributaries, including the American River. Erosion, primarily caused by high water events, which lead to scour and high bank erosion and summer boat traffic, which creates wave induced erosion at the levee toe.

South Sacramento Streams Group (SSSG)

USACE, in cooperation with SAFCA and the City and County of Sacramento completed a study of alternatives, including both upstream detention and modifications to the downstream levee system. Results of the study supported work to be done to the existing Morrison Creek levees as well as to the Unionhouse, Florin, and Elder Creek levees. The County is also collecting development impact fees from upstream developers, which will be used to build detention basins to hold the additional run-off generated as new development occurs.

The Morrison Creek System

In 1987, the USACE in a study concluded that the levees and channels lacked adequate capacity to handle the 100-year storm. In 2005, USACE completed construction of nearly four miles of levee from Freeport Boulevard/Sacramento River Levee on the west to the Union Pacific Railroad to the east, raising the existing levee system to protect against a 200-year storm. USACE also constructed floodwalls along the four creeks (Elder, Unionhouse Florin, and Morrison) up to Franklin Boulevard.7

Unionhouse Creek Channel Improvements

Channel improvements completed in 2012 increased the amount of water that can be contained in the channel, resulting in 100-year flood protection.

Florin Creek Improvements

Channel improvements in this area, combined with plans to construct a detention basin along Florin Creek will provide FEMA level of flood protection along much of Florin Creek.

The Natomas Area

After the 1986 flood demonstrated the inadequacy of the levee system in this area, efforts ensued to implement a series of levee improvements and other flood control improvements designed to address through-levee seepage and work in tandem with increased storage on the American River to provide affected areas with increased flood protection. This project provided a minimum 1% annual chance level of flood protection to the Natomas Basin and to the lower Dry and Arcade Creek watersheds, including portions of Rio Linda and North Sacramento.

A huge development effort followed including residential in the incorporated City and commercial/industrial in the unincorporated County of Sacramento. The Natomas area includes about 70,000 residents, both Interstates 5 and 80, Sacramento Airport, and significant commercial and industrial development. Natomas is protected from flooding by levees on all sides. Some believe Natomas to be threatened by high probability flood events, but the fact remains that the area has never suffered a levee breach.

December 2008, FEMA remapped the Natomas Area as not having protection from the 1% annual recurrence flood event, and SAFCA kicked off a massive effort to improve the levees. SAFCA's efforts have been to restore at a minimum a 1% annual chance level of protection, while working toward 0.5% annual chance level of protection. This is still in progress.

The Natomas Basin's effective FEMA flood zone, Zone A99, is a special flood hazard designation identifying an area protected by decertified levees where a plan with associated funding is in place to achieve the required level of protection. The Natomas Basin qualified for this designation effective June 16, 2015. Zone A99 designation provides a local agency the opportunity to allow building permits subject to its determination that an area is reasonably safe and to allow development that would not otherwise be allowed in an area with flood protection that does not meet FEMA requirements.

Flood Zone A99 is an area of undefined flood risk, thus, pursuant to the Code of Federal Regulations, 44CFR60.3(a)(3), the local agency must determine if the area is reasonably safe from flooding. This assures FEMA that the land use agency is taking an active interest in public safety when allowing development in this flood zone designation even while levees are being improved to the required standards.

The Board of Supervisors Report from May 19, 2015, Item 76 (Resolution 2015-0392), described the ULOP, the FEMA flood zone A99, and the importance of finding an area to be reasonably safe from flooding before permitting new construction on existing entitled land. The Board allowed for a limited, measured approach to the issuance of building permits and development approvals in the Natomas Basin allowing issuance of Floodplain Management Permits (required for building permit approvals) for only:

- Substantial repairs or improvements for existing structures,
- Construction on previously entitled lots, and
- Entitlement and land division consistent with the Zoning Code.

Further, all building permits in the Natomas Basin, except on County owned land, are conditioned upon recordation by the property owner of an instrument that includes notice and acknowledgment of the flood hazard, insurance requirements, and levee project uncertainties.

The Sacramento County Zoning Code SZC-2016-0023, known as the Floodplain Management Ordinance (search at www.Saccounty.net) dated January 13, 2017, provides some direction on new development in the Natomas Basin. Section 902-57.1 defines where ULOP standards apply for a development project and/or new construction. Section 906-06(0) indicates how the County must find that development projects subject to ULOP 200-year flood protection requirement.

The 200-year flood protection plan for the Natomas Basin will make it one of the most flood-safe areas in the 1,600-mile Central Valley flood control system. Improvements to the RD 1000 Natomas perimeter levees are currently underway. Adequate progress of these levee improvements has been demonstrated to ensure ULOP will be achieved by 2030 which will allow land use agencies to approve current and future development.

The Delta Region

In the Delta, for the last five thousand years to the 1850s, relative sea level rise was balanced by vertical marsh growth through biomass accumulation and sediment deposition. A transition from deposition of organic silt-clay to peat formation in the Delta largely reflects the decline in inundation frequency and the maturation of the marsh plain towards mean higher high water elevations. The resulting freshwater tidal marshes developed because a relatively large freshwater inflow compared to the size of the tidal prism sustained a low salinity, which supported highly productive organic peat formation through plant growth. As plants such as tules began to grow in the silt deposits, organic sediments such as peat from decomposed roots and rhizomes and other organic soils began to accumulate above these deposits due to plant material decaying and accumulating under anaerobic conditions as the sea level rose. Once the plants were firmly established, their growth and decay led to accumulations of peat that kept pace with the rising sea levels and basin subsidence. Organic deposit thickness ranges from less than three feet in the eastern, northern, and southern margins of the Delta, to over thirty feet in the western delta. These thicker deposits of peat accumulated in the areas that had the lowest elevation during the final low sea levels. These low basin

areas were the first areas receiving deposits and growing plants, allowing the peat buildup to match that of the shallower surrounding areas.

The peat accumulations eventually formed peat islands, with river channels and sloughs established around them and within some of the larger islands. During floods, rivers would overtop the banks of the peat islands, and as the water receded, would leave deposits of sand and silt that formed natural levees along the edges of the islands. Many of the levees currently in the Delta are founded on these natural levees.

For over a century, subsidence of the organic soils in portions of the Delta has led to an increasing need for subsurface drainage. Aerobic oxidation of organic carbon, the primary cause of subsidence, began in the late 1800s as the nutrient-rich organic soils were cleared and farming began. Peat fires, lit to level agricultural fields prior to 1950, and wind erosion are also significant causes of subsidence throughout the Delta. Since reclamation of the island began, elevations have fallen to as much as twenty feet below sea level, requiring protection by over 1,125 miles of man-made levees throughout the Delta. Drainage is provided by a network of ditches that collect and transport shallow groundwater, irrigation runoff, and levee seepage to pump stations that discharge back into the Delta waterways. These ditches create an unsaturated root zone for crops, and provide a more stable levee foundation.

Historically, flooding in the Delta has resulted from levee failures caused by the separate or coincidental occurrence of very high tides, and high runoff and river outflow through the Delta region. Strong onshore winds associated with low barometric pressure storms aggravate flood potential by causing an additional rise of the water surface elevations, and can cause severe erosion on levees in a short period of time. Flood events resulting from high tides and/or high river outflow must be expected to occur in the future.

Levee failures from collapse of rodent dens, seepage, falling trees, or some other mechanical failure are unpredictable and relatively uncommon. Routine levee inspections are the primary preventative measure to identify potential threats that could result in these types of levee failure events.

It should be noted that since 1986, significant improvements have been made to the levee system within the Legal Delta, which has resulted in an overall reduction in the number of flooded islands since the 1986 Delta high water events. Flood events prior to the inception of the Delta Levees Programs in 1973 are not a reliable indicator of current levee condition or flood threat.

Ongoing investments in Delta-wide multi-benefit and systemwide improvements have been ongoing in the since Prop 84 and 1e fundamentally changed the magnitude of available funding to improve performance of Delta levees and transition towards overall ecosystem health. Ongoing investments by California Department of Water Resources within the Yolo Bypass and North Delta continue to change the flood dynamics in the County while ongoing strategies to continue funding for future investments are planned. The emergency operation plans in the Delta (Local, County, State), along with strategic mutual aide flood depots within the County, support the flood readiness capabilities of the region during high water and emergency events.

Ongoing and Planned Improvements to the Existing Flood Control Systems

Individual reclamation districts, in charge of levee maintenance, are pursuing individual projects that are funded by local and/or State assistance. These are further described in their respective chapters in the Delta Annex.

There are currently six federally authorized projects by the US Army Corps of Engineers (USACE) that are being implemented to reduce flood risk to the Sacramento area:

- Natomas Levee Improvement Project
- American River Common Features - WRDA 96/99 and WRDA 2016
- Folsom Dam Modifications/Join Federal Project
- Folsom Dam Raise project
- South Sacramento Streams Group Project
- Sacramento River Bank Protection Program

Other ongoing projects include:

- SAFCA levee accreditation for FEMA level of protection
- Regional planning as part of the Central Valley Flood Protection Plan
- USACE-CVFPB-SAFCA General Reevaluation Report (GRR) planning for 200-year flood protection for Sacramento area
- SAFCA and local community plan development for 200-year flood protection to meet state requirements for urban Level of Protection and Urban Levee Design Criteria.

An assessment of a community's vulnerability to this hazard begins with an understanding of local exposure to unincorporated Sacramento County. This is included in the Local Concerns section below. After that, vulnerability is discussed in multiple sections that detail how this hazard can affect both the entire Sacramento County Planning Area as well as the unincorporated portions of Sacramento County. How the hazard affects the other participating jurisdictions can be found in their respective annexes to this LHMP Update. These sections below include assets at risk, impacts, and how future development may affect the vulnerability of the County to this hazard.

Local Concerns (unincorporated Sacramento County)

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

General Concerns

Historically, Sacramento County has always been vulnerable to flooding because of its relatively flat terrain and the number of water courses that traverse the County. Flood zones in Sacramento County are quite extensive. High water levels are a common occurrence in winter and spring months due to increased flow from stormwater runoff and snowmelt. Several areas of the County are subject to flooding by the overtopping of rivers and creeks, levee failures, and the failure of urban drainage systems that cannot accommodate large volumes of water during severe rainstorms.

River flooding is the most significant natural hazard that Sacramento County faces. Sacramento is not just at high risk of flooding, but is at high risk of catastrophic flooding. When the 1% annual chance flood event is exceeded, the consequences could be great as flood depths behind levees and within non-leveed floodways can range up to many feet deep in some urban areas.

In addition to the major rivers, there are many streams, channels, canals, and creeks that serve the drainage needs of the County. There is significant threat of flooding in large areas of the County from several of these streams. Many of these streams are prone to rapid flooding with little notice.

Historically, much of the growth in the County has occurred adjacent to streams, resulting in significant damages to property, and losses from disruption of community activities when the streams overflow. Additional development in the watersheds of these streams affects both the frequency and duration of damaging floods through an increase in stormwater runoff. Other problems connected with flooding and stormwater runoff include erosion, sedimentation, degradation of water quality, losses of environmental resources, and certain health hazards. Land-use planning and development review can reduce future flood vulnerability by considering flood-hazard information, site-specific conditions, drainage and stormwater impacts, access and evacuation constraints, and applicable floodplain-management and development requirements when evaluating future development.

The 2024 CAP noted that while the risk for large-scale flood-related evacuations in Sacramento County is relatively low, the risk is not zero, and additionally, even smaller-scale evacuations need to be prepared for. For any evacuation scenario, the limited bridge crossings in the county are just one of many unique considerations that could potentially complicate any scale of evacuation. Development of a comprehensive plan and multiple routes for evacuation and supply transport will be necessary to protect Sacramento County residents during flood events.

The 2024 CAP also noted that stagnant water following flood events provides excellent breeding grounds for mosquitoes and other insects that may carry vector-borne diseases (e.g., West Nile virus, Zika virus). Expending greater resources to expand upon existing educational programs would reduce the deleterious effects these diseases may have on Sacramento County residents. Special focus should be placed on environmental justice communities and sensitive populations (e.g., populations with chronic conditions).

In addition, the County noted that:

- Cosumnes River System: 2023 recovery and repairs focused on critical repairs to the damaged areas during the recent flood event. System improvements are beyond the ability of Reclamation District No. 800 to perform without significant funding. Efforts by CA DWR, and the USACE to perform a levee review and update the National Levee Database with the District, along with recent surveying to identify low lying areas of flood protection will help future prioritization and projects to improve flood control for the Wilton region.
- Delta Region: Along the North Delta mainstem Sacramento River corridor, seepage and erosion are the primary areas of concern for Project Levees and small communities that are dependent on levee performance during high water flood events. Critical infrastructure and facility needs to upgrade and enhance redundancy of emergency pumping capabilities during these events requires significant investments as well. Non-Project levees still need significant investments to support development of

Bulletin 192-82 engineering design criteria to improve levee performance; stability berms, freeboard and seepage control are needed throughout the County.

Agricultural Concerns

The Sacramento County Agricultural Commissioner noted that there are specific flood concerns for the agricultural community:

- **Cosumnes River levee vulnerability**: The Cosumnes River is the only major Sierra Nevada river flowing to the Central Valley without a large upstream dam. Its levee system is rated for approximately 10-year flood protection, far below the 1% annual chance (100-year) standard. The January 2023 levee failures at Wilton confirmed this vulnerability. Sacramento County's most productive agricultural lands in the southern county, including wine grape vineyards, pear orchards, tomato fields, and grain farms, lie within or adjacent to the Cosumnes River floodplain and face repeated inundation risk. RD 800 continues to improve operations after the 2023 disaster recovery effort with a focus on improvements to access and operations and maintenance of the flood control system.
- **Perennial crop loss from flood inundation**: Perennial crops such as wine grapes and pears cannot recover quickly from inundation damage. Prolonged flooding saturates root zones, promotes Phytophthora and other root diseases, and can kill mature vines and trees. The county's wine grape industry (37,173 acres harvested, $167.9M gross value in 2024) and pear industry (4,848 acres, $49.5M in 2024) are disproportionately vulnerable to permanent loss from flooding events.
- **Sediment and debris burial**: A distinctive and costly flood impact in Sacramento County is the burial of agricultural soil by sand and debris deposits from levee breaches, which renders fields unproductive for multiple seasons and requires expensive rehabilitation (soil removal, land leveling). This impact was documented in the 2023 events and is not well-captured in standard flood damage assessments.
- **Agricultural access and re-entry delays**: During and after flood events, road closures prevent animal caretakers, crop managers, and equipment operators from accessing farms. The Sacramento County Agricultural Commissioner's Ag Pass Program is specifically designed to facilitate credentialed re-entry for agricultural operators during emergencies, but road closure duration and coordination complexity remain ongoing concerns.
- **Delta island agricultural flooding**: Sacramento County's Delta-fringe agricultural areas are at risk from levee failures on Delta islands, which can convert productive farmland into flooded basins. Delta island flooding is difficult and expensive to reverse and can result in permanent agricultural land loss. Even without levee failures, long duration flood events, which have not occurred in the recent past, similar to 1997 and 1986 can cause significant seepage and interior flooding that impacts agricultural production by damaging/killing permanent crops and limiting ability to prepare for annual field preparation and subsequent growing seasons. Excessive pumping to control interior flooding can lead to significant pumping costs, pump damage and extreme costs for repairs of aging infrastructure.

Evacuation Concerns

The Natomas Basin has a high risk of flooding and is bordered by Interstate 5, Highway 80, canals, and the Sacramento and American Rivers. These features provide barriers to the safe and efficient evacuation of pedestrians and bicycles from the Basin during a flood. Originally, the Jibboom Street Bridge crossed the American River from the south and connected to the Garden Highway. The Jibboom Street bridge now drops into Discovery Park, which is designed to flood every winter during high water events thus preventing

people in Natomas from accessing the bridge. During these high water events, bicyclists are allowed to use the shoulder of the Interstate 5 bridge to cross the American River. This situation is potentially unsafe and leads to a high level of traffic stress for users. The level of stress would be exacerbated during a mass evacuation event and the risk of an accident would increase, which would then limit the bridge's effectiveness in moving people out of harm's way.

Mercury in Waterways in Sacramento County

Floods in Sacramento County could introduce mercury into additional waterways. As a result of historical releases of mercury associated with gold mining in Sacramento County, as well as in areas throughout watersheds upstream of Sacramento County, mercury contamination is a significant hazard to County residents and visitors, as well as wildlife. The State Resources Agency, as well as Cal EPA and US EPA, have recognized this contamination. The Sacramento-San Joaquin Delta, the American River, Lake Natoma, and numerous water bodies that are tributaries to them, are designated through the Clean Water Act 303d listing process as impaired water bodies due to mercury levels found in fish that so high that they are hazardous both to the human population and to wildlife. Additional water bodies in and near Sacramento are likely to be added to the 303d list in the future due to mercury contamination. Fish consumption advisories developed by the State Dept. of Public Health and the Office of Environmental and Health Hazard Assessment warn people not to eat certain types of fish caught in these waters.

Various factors in the Sacramento region can affect the amount of mercury that enters the food chain and poses a hazard to human health and the environment. Some of these factors may be subject to some level of influence by human activity. Factors that affect the hazard caused by mercury include but are not limited nutrient levels, sediment transport, streambed modification, food chain and ecological effects, fish consumption practices, management of water levels, water exports and diversions, irrigation practices, salinity, oxygen concentrations, wetland restoration and management practices, flooding of Delta islands, dredging, reservoir management, stormwater and wastewater discharges and treatment processes, source control and pollution prevention activities, and levels of mercury in sediments, water bodies, and discharges.

Water Contamination

The 2024 CAP noted that floodwaters may interact with sources of pollution and disperse hazardous substances locally or regionally, potentially impairing freshwater supplies. Safeguarding freshwater supply sources through infrastructure improvements (e.g., backflow preventers) will improve Sacramento County’s ability to provide drinking water to its residents during flood events.

Local concerns for each of the jurisdictions can be found under the Local Concerns heading in each respective jurisdictional annex to this LHMP Update.

Assets at Risk

Assets at risk from 1%, 0.5%, and 0.2% annual chance floods include people and populations; structures; critical facilities and infrastructure; and natural, historic, and cultural resources. These are discussed in the following sections for the Sacramento County Planning Area and unincorporated Sacramento County.

Note: No analysis below was performed on the 0.5% annual chance (or 200-year flood. While no analysis was performed, the Planning Area is vulnerable to impacts associated with the 0.5% annual chance flood.

Additionally, for each hazard in the FEMA National Risk Index in Sacramento County, the relevant portions of the hazard analysis done by FEMA is presented below. This includes the Hazard Risk Index Rating, Expected Annual Loss Values, Exposure Values, and the Historic Loss Ratio Rating. These are presented for the Sacramento County Planning Area as a whole.

The Planning Area has mapped FEMA DFIRMs with flood hazard areas. GIS was used to determine the possible impacts of flooding within the Planning Area and how the risk varies across the Sacramento County Planning Area. The following methodology was utilized in determining assets at risk to the 1% annual chance flood event and 0.2% annual chance flood event.

Methodology (Parcel and Structures)

In order to analyze people and populations, structures, and critical facilities at risk in DFIRM flood zones, GIS was used to quantify those values. The 2025 Sacramento County Parcel/Assessor Data was provided by Sacramento County and was used as the basis for the inventory of assessed values for both improved and unimproved parcels within the Sacramento County Planning Area. Sacramento County has a FEMA effective DFIRM dated 02/22/2024, which was obtained from FEMA's National Flood Hazard Layer to perform the flood analysis. The DFIRM flood zones, were then overlaid on the parcel layer. In some cases, there are parcels in multiple flood zones, such as Zone A, Zone X, or Shaded X. For the purposes of this analysis, if multiple DFIRM flood zones intersected any portion of a parcel polygon, the entire parcel was assigned the highest annual chance flood zone category. The parcels were segregated and analyzed in this fashion for the entire Planning Area.

Once the DFIRM flood zones were intersected, land and improved (structure) values from the Assessor data were included for each parcel and estimated content replacement values were added to the analysis. Improved parcels include those with improved structure values identified in the Amador County Assessor's database.

It should also be noted that this is a planning level of analysis, rather than a site specific determination of inundation risk.

Methodology (Loss Estimate)

The loss estimate for flood is based on the total of improved and contents value. Only improved parcels and the value of their structure improvements were included in the flood loss analysis. The value of land is not included in the loss estimates as generally the land is not at loss to floods, just the value of improvements and structure contents. The land value is represented in the detailed flood tables but is primarily present to show the value of the land associated with each flood zone.

Once the potential value of affected parcels was calculated, a damage factor was applied to obtain loss estimates by flood zone. When a flood occurs, seldom does the event cause total loss of an area or building. Potential losses from flooding are related to a variety of factors including flood depth, flood velocity, building type, and construction. The percentage of damage is primarily related to the flood depth. FEMA's

flood benefit/cost module uses a simplified approach to model flood damage based on building type and flood depth. The values at risk in the flood analysis tables were refined by applying an average damage estimation of 20% of the total building value. The 20% damage estimate utilized FEMA's Flood Building Loss Table based on an assumed average flood depth of 2 feet. The end result of this more refined flood hazard loss estimate analysis is an inventory of the numbers, types, and values of parcels subject to the flood hazard.

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.

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. 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.

Sacramento County Planning Area 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 Planning Area's residential population residing within these hazard areas, the DFIRM flood zones were overlayed on the parcel layer and linked to the Assessor Data. Those residential parcels that were assigned the highest annual chance flood zones as detailed in the above methodology, were counted and multiplied by the 2020 Census Bureau average household factors for each jurisdiction. This is shown in Table 4-95.

Table 4-95 Sacramento County Planning Area – Improved Residential Parcels and Populations in FEMA DFIRM Flood Zones by Jurisdiction

Jurisdiction	1% Annual Chance		0.2% Annual Chance*	
	Improved Residential Parcels	Population at Risk	Improved Residential Parcels	Population at Risk
Citrus Heights	1,411	3,612	356	911
Elk Grove	2,245	7,184	4,412	14,119
Folsom	196	517	194	512
Galt	24	74	9	28
Isleton	249	792	0	0
Rancho Cordova	48	138	1,988	5,725
Sacramento	36,213	93,792	80,206	207,734
Unincorporated County	7,039	19,357	34,573	95,571

Source: FEMA DFIRM 02/2024, 2025 Sacramento County Parcel/Assessor Data, 2020 US Census Bureau Average Household Size – City of Citrus Heights (2.56); City of Elk Grove (3.2); City of Folsom (2.64); City of Galt (3.07); City of Isleton (3.18); City of Rancho Cordova (2.88); City of Sacramento (2.59): Unincorporated Sacramento County (2.75).
*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.

Structures

Results are presented here first for the Sacramento County Planning Area and secondly for unincorporated Sacramento County.

Sacramento County Planning Area

Certain structures in the Sacramento County Planning Area are at risk of DFIRM flooding and primarily include those structures located within the 1% and 0.2% annual chance floodplains. GIS was used to determine the possible impacts of flooding on parcels and structures within the Planning Area. Table 4-96 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 Planning Area. This is 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.

Table 4-96 Sacramento County Planning Area – Count and Value of Parcels and Structures in FEMA DFIRM 1% and 0.2% Annual Chance Flood Zones by Jurisdiction*

Jurisdiction / Flood Zone	Total Parcel Count	Improved Parcel Count	Total Land Value	Structure Value	Estimated Contents Value	Total Value
Citrus Heights						
1% Annual Chance Flood Hazard	1,676	1,456	$247,870,386	$623,877,999	$345,298,328	$1,217,046,713
0.2% Annual Chance Flood Hazard**	422	390	$109,292,609	$216,553,960	$164,376,328	$490,222,897
Other Areas	23,851	23,039	$2,831,634,977	$9,769,564,809	$5,253,362,997	$17,854,562,783
Citrus Heights Total	**25,949**	**24,885**	**$3,188,797,972**	**$10,609,996,768**	**$5,763,037,652**	**$19,561,832,392**
Elk Grove						
1% Annual Chance Flood Hazard	1,435	1,150	$311,127,774	$799,508,947	$570,967,157	$1,681,603,878
0.2% Annual Chance Flood Hazard**	7,556	7,123	$975,770,137	$2,772,402,387	$1,620,829,549	$5,369,002,073
Other Areas	51,377	47,098	$7,081,176,565	$18,943,686,934	$10,794,051,116	$36,818,914,615
Elk Grove Total	**60,368**	**55,371**	**$8,368,074,476**	**$22,515,598,268**	**$12,985,847,821**	**$43,869,520,565**

Jurisdiction / Flood Zone	Total Parcel Count	Improved Parcel Count	Total Land Value	Structure Value	Estimated Contents Value	Total Value
Folsom						
1% Annual Chance Flood Hazard	437	253	$239,355,778	$867,312,137	$602,629,510	$1,709,297,425
0.2% Annual Chance Flood Hazard**	286	237	$113,482,115	$358,536,829	$338,471,996	$810,490,940
Other Areas	29,391	26,632	$5,596,665,091	$14,642,274,199	$8,516,733,399	$28,755,672,689
Folsom Total	**30,114**	**27,122**	**$5,949,502,984**	**$15,868,123,165**	**$9,457,834,905**	**$31,275,461,054**
Galt						
1% Annual Chance Flood Hazard	96	37	$18,297,127	$8,493,095	$6,666,686	$33,456,908
0.2% Annual Chance Flood Hazard**	13	10	$818,526	$6,180,485	$4,416,243	$11,415,254
Other Areas	9,085	7,845	$938,747,677	$2,446,265,652	$1,426,400,178	$4,811,413,507
Galt Total	**9,194**	**7,892**	**$957,863,330**	**$2,460,939,232**	**$1,437,483,106**	**$4,856,285,668**
Isleton						
1% Annual Chance Flood Hazard	524	330	$31,553,669	$59,856,684	$38,265,993	$129,676,346
0.2% Annual Chance Flood Hazard**	0	0	$0	$0	$0	$0
Other Areas	3	0	$50,668	$0	$0	$50,668
Isleton Total	**527**	**330**	**$31,604,337**	**$59,856,684**	**$38,265,993**	**$129,727,014**
Rancho Cordova						
1% Annual Chance Flood Hazard	105	49	$22,890,919	$26,948,440	$17,124,220	$66,963,579
0.2% Annual Chance Flood Hazard**	2,057	2,009	$188,885,097	$537,272,589	$280,323,650	$1,006,481,336
Other Areas	26,049	22,077	$3,932,176,763	$9,656,600,473	$6,873,371,275	$20,462,148,511
Rancho Cordova Total	**28,211**	**24,135**	**$4,143,952,779**	**$10,220,821,502**	**$7,170,819,145**	**$21,535,593,426**
Sacramento						
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

Jurisdiction / Flood Zone	Total Parcel Count	Improved Parcel Count	Total Land Value	Structure Value	Estimated Contents Value	Total Value
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**
Unincorporated Sacramento County						
1% Annual Chance Flood Hazard	13,312	8,937	$3,435,990,687	$6,414,214,884	$5,956,501,139	$15,806,706,710
0.2% Annual Chance Flood Hazard**	38,118	35,938	$4,790,902,145	$11,842,694,181	$7,308,439,362	$23,942,035,688
Other Areas	134,327	125,589	$17,094,051,039	$41,173,086,640	$23,572,333,187	$81,839,470,866
Unincorporated Sacramento County Total	**185,757**	**170,464**	**$25,320,943,871**	**$59,429,995,705**	**$36,837,273,688**	**$121,588,213,264**
Grand Total	**499,109**	**456,161**	**$69,954,992,528**	**$180,460,710,586**	**$112,288,039,965**	**$362,703,743,079**

Source: FEMA DFIRM 2/2024, 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 4-97 shows Planning Area loss estimates and improved values at risk by FEMA 1% and 0.2% annual chance flood zones. More detailed tables and discussions can be found in each jurisdiction's respective annex to this Base Plan.

*Table 4-97 Sacramento County Planning Area – FEMA DFIRM 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	56,302	46,835	$24,346,071,385	$16,833,427,443	$41,179,498,828	$8,235,899,766	3.29%
0.2% Annual Chance Flood Hazard**	139,998	130,451	$50,099,974,782	$33,004,954,178	$83,104,928,960	$16,620,985,792	6.64%
Total	**196,300**	**177,286**	**$74,446,046,167**	**$49,838,381,621**	**$124,284,427,788**	**$24,856,885,558**	**9.93%**

Source: FEMA DFIRM 2/2024, 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.

According to the information in Table 4-96 and Table 4-97, the Sacramento County Planning Area has 46,835 improved parcels and roughly $41.2 billion of structure and contents value in the 1% annual chance floodplain. There are an additional 130,451 improved parcels and roughly $83.1 billion of structure and contents value in the 0.2% annual chance flood event. A loss ratio of 3.29% and 6.64% indicates that while the Sacramento County Planning Area does have structural assets at risk to flooding, the County should be able to effectively (though possibly slowly) recover from a major flood event.

Unincorporated Sacramento County

Numerous structures in unincorporated Sacramento County are at risk of DFIRM flooding and primarily include those structures located within the 1% and 0.2% annual chance floodplains. GIS was used to determine the possible impacts of flooding on parcels and structures within the unincorporated County. Table 4-98 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 unincorporated County. This is shown for the detailed flood zones by 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.

Table 4-98 Unincorporated Sacramento County – Count and Value of Parcels and Structures in Detailed FEMA DFIRM 1% and 0.2% Annual Chance Flood Zones 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 A						
Agricultural	516	300	$225,066,371	$231,037,562	$231,037,562	$687,141,495
Care / Health	0	0	$0	$0	$0	$0
Church / Welfare	1	1	$82,847	$171,940	$171,940	$426,727
Industrial	36	3	$8,852,513	$1,246,037	$1,869,056	$11,967,606
Miscellaneous	99	0	$86,581	$0	$0	$86,581
Office	0	0	$0	$0	$0	$0
Public / Utilities	21	0	$0	$0	$0	$0
Recreational	4	1	$432,181	$18,131	$18,131	$468,443
Residential	520	500	$99,851,708	$189,077,013	$94,538,507	$383,467,228
Retail / Commercial	1	1	$99,427	$176,090	$176,090	$451,607
Unknown	0	0	$0	$0	$0	$0
Vacant	123	17	$29,670,057	$574,610	$0	$30,244,667
Zone A Total	**1,321**	**823**	**$364,141,685**	**$422,301,383**	**$327,811,285**	**$1,114,254,353**
Zone AE						

Flood Zone / Property Use	Total Parcel Count	Improved Parcel Count	Total Land Value	Structure Value	Estimated Contents Value	Total Value
Agricultural	1,176	741	$471,578,891	$511,389,647	$511,389,647	$1,494,358,185
Care / Health	5	4	$30,780,214	$7,598,884	$7,598,884	$45,977,982
Church / Welfare	25	16	$6,951,965	$40,268,830	$40,268,830	$87,489,625
Industrial	119	65	$59,974,213	$73,536,149	$110,304,224	$243,814,586
Miscellaneous	552	6	$2,197,052	$77,727	$77,727	$2,352,506
Office	35	29	$16,405,613	$29,916,741	$29,916,741	$76,239,095
Public / Utilities	193	0	$55	$0	$0	$55
Recreational	97	52	$19,045,435	$32,401,777	$32,401,777	$83,848,989
Residential	4,033	3,932	$627,476,148	$1,281,893,864	$640,946,932	$2,550,316,944
Retail / Commercial	99	91	$59,427,553	$114,207,727	$114,207,727	$287,843,007
Unknown	66	0	$0	$0	$0	$0
Vacant	981	49	$166,861,208	$3,265,569	$0	$170,126,777
Zone AE Total	**7,381**	**4,985**	**$1,460,698,347**	**$2,094,556,915**	**$1,487,112,489**	**$5,042,367,751**
Zone AE: Regulatory Floodway						
Agricultural	51	29	$24,907,132	$12,723,632	$12,723,632	$50,354,396
Care / Health	7	7	$7,245,004	$136,341,626	$136,341,626	$279,928,256
Church / Welfare	21	20	$7,529,536	$50,769,575	$50,769,575	$109,068,686
Industrial	109	64	$59,598,265	$124,025,779	$186,038,669	$369,662,713
Miscellaneous	492	0	$2,228,161	$0	$0	$2,228,161
Office	43	38	$35,766,882	$87,885,759	$87,885,759	$211,538,400
Public / Utilities	34	0	$48	$0	$0	$48
Recreational	24	10	$10,875,420	$13,164,751	$13,164,751	$37,204,922
Residential	1,776	1,730	$448,610,255	$1,182,274,453	$591,137,227	$2,222,021,935
Retail / Commercial	60	58	$50,779,884	$111,309,562	$111,309,562	$273,399,008
Unknown	9	0	$0	$0	$0	$0
Vacant	251	4	$55,459,901	$317,452	$0	$55,777,353
Zone AE: Regulatory Floodway Total	**2,877**	**1,960**	**$703,000,488**	**$1,718,812,589**	**$1,189,370,800**	**$3,611,183,877**
Zone AH						
Agricultural	0	0	$0	$0	$0	$0

Flood Zone / Property Use	Total Parcel Count	Improved Parcel Count	Total Land Value	Structure Value	Estimated Contents Value	Total Value
Care / Health	0	0	$0	$0	$0	$0
Church / Welfare	1	1	$19,603	$45,020	$45,020	$109,643
Industrial	0	0	$0	$0	$0	$0
Miscellaneous	18	0	$311,218	$0	$0	$311,218
Office	4	4	$314,011	$518,285	$518,285	$1,350,581
Public / Utilities	1	0	$0	$0	$0	$0
Recreational	0	0	$0	$0	$0	$0
Residential	729	723	$50,849,551	$138,589,810	$69,294,905	$258,734,266
Retail / Commercial	9	9	$7,780,793	$14,053,329	$14,053,329	$35,887,451
Unknown	0	0	$0	$0	$0	$0
Vacant	6	0	$324,769	$0	$0	$324,769
Zone AH Total	**768**	**737**	**$59,599,945**	**$153,206,444**	**$83,911,539**	**$296,717,928**
Zone AO						
Agricultural	0	0	$0	$0	$0	$0
Care / Health	2	2	$867,927	$620,941	$620,941	$2,109,809
Church / Welfare	4	2	$309,775	$584,485	$584,485	$1,478,745
Industrial	2	0	$641,978	$0	$0	$641,978
Miscellaneous	5	0	$29	$0	$0	$29
Office	0	0	$0	$0	$0	$0
Public / Utilities	3	0	$0	$0	$0	$0
Recreational	0	0	$0	$0	$0	$0
Residential	99	98	$24,734,610	$33,706,568	$16,853,284	$75,294,462
Retail / Commercial	0	0	$0	$0	$0	$0
Unknown	0	0	$0	$0	$0	$0
Vacant	37	1	$12,299,970	$66,929	$0	$12,366,899
Zone AO Total	**152**	**103**	**$38,854,289**	**$34,978,923**	**$18,058,710**	**$91,891,922**
Zone A99						
Agricultural	130	25	$85,212,103	$9,548,188	$9,548,188	$104,308,479
Care / Health	0	0	$0	$0	$0	$0
Church / Welfare	5	5	$1,894,597	$10,569,034	$10,569,034	$23,032,665

Flood Zone / Property Use	Total Parcel Count	Improved Parcel Count	Total Land Value	Structure Value	Estimated Contents Value	Total Value
Industrial	214	186	$334,476,604	$1,767,881,564	$2,651,822,346	$4,754,180,514
Miscellaneous	73	0	$6,175,980	$0	$0	$6,175,980
Office	37	32	$29,956,656	$137,433,475	$137,433,475	$304,823,606
Public / Utilities	48	0	$0	$0	$0	$0
Recreational	9	9	$5,809,147	$5,246,745	$5,246,745	$16,302,637
Residential	60	56	$14,423,899	$39,967,983	$19,983,992	$74,375,874
Retail / Commercial	12	9	$11,435,786	$15,632,537	$15,632,537	$42,700,860
Unknown	0	0	$0	$0	$0	$0
Vacant	225	7	$320,311,161	$4,079,104	$0	$324,390,265
Zone A99 Total	**813**	**329**	**$809,695,933**	**$1,990,358,630**	**$2,850,236,317**	**$5,650,290,880**
1% Annual Chance Flood Hazard Total	**13,312**	**8,937**	**$3,435,990,687**	**$6,414,214,884**	**$5,956,501,139**	**$15,806,706,710**
0.2% Annual Chance Flood Hazard**						
0.2% Annual Chance						
Agricultural	9	7	$1,899,870	$2,354,671	$2,354,671	$6,609,212
Care / Health	18	18	$6,491,835	$43,938,731	$43,938,731	$94,369,297
Church / Welfare	54	50	$17,572,341	$62,681,262	$62,681,262	$142,934,865
Industrial	229	202	$149,887,001	$426,061,632	$639,092,448	$1,215,041,081
Miscellaneous	366	2	$2,185,616	$51,310	$51,310	$2,288,236
Office	87	76	$36,714,412	$115,568,264	$115,568,264	$267,850,940
Public / Utilities	30	0	$19	$0	$0	$19
Recreational	21	17	$12,098,361	$13,314,989	$13,314,989	$38,728,339
Residential	23,231	22,821	$2,146,619,835	$5,873,406,032	$2,936,703,016	$10,956,728,883
Retail / Commercial	363	332	$298,267,425	$549,366,392	$549,366,392	$1,397,000,209
Unknown	23	0	$0	$0	$0	$0
Vacant	569	31	$126,819,816	$2,822,571	$0	$129,642,387
0.2% Annual Chance Total	**25,000**	**23,556**	**$2,798,556,531**	**$7,089,565,854**	**$4,363,071,083**	**$14,251,193,468**
X Protected by Levee						
Agricultural	1	1	$188,916	$149,173	$149,173	$487,262
Care / Health	17	12	$11,511,645	$65,817,899	$65,817,899	$143,147,443

Flood Zone / Property Use	Total Parcel Count	Improved Parcel Count	Total Land Value	Structure Value	Estimated Contents Value	Total Value
Church / Welfare	33	28	$25,459,920	$97,575,540	$97,575,540	$220,611,000
Industrial	106	99	$49,584,085	$118,193,775	$177,290,663	$345,068,523
Miscellaneous	157	0	$1,124,677	$0	$0	$1,124,677
Office	189	166	$115,209,497	$316,998,260	$316,998,260	$749,206,017
Public / Utilities	41	0	$0	$0	$0	$0
Recreational	19	5	$950,517	$2,466,315	$2,466,315	$5,883,147
Residential	11,917	11,752	$1,537,463,052	$3,731,071,927	$1,865,535,964	$7,134,070,943
Retail / Commercial	322	299	$203,908,838	$419,534,466	$419,534,466	$1,042,977,770
Unknown	103	0	$0	$0	$0	$0
Vacant	213	20	$46,944,467	$1,320,972	$0	$48,265,439
X Protected by Levee Total**	**13,118**	**12,382**	**$1,992,345,614**	**$4,753,128,327**	**$2,945,368,279**	**$9,690,842,220**
0.2% Annual Chance Flood Hazard Total**	**38,118**	**35,938**	**$4,790,902,145**	**$11,842,694,181**	**$7,308,439,362**	**$23,942,035,688**
Other Areas						
Zone X (unshaded)						
Agricultural	724	359	$218,042,749	$166,137,180	$166,137,180	$550,317,109
Care / Health	158	147	$94,601,923	$474,513,814	$474,513,814	$1,043,629,551
Church / Welfare	324	277	$108,213,249	$504,537,236	$504,537,236	$1,117,287,721
Industrial	843	656	$393,470,150	$1,109,495,566	$1,664,243,349	$3,167,209,065
Miscellaneous	2,248	6	$9,880,247	$33,539	$33,539	$9,947,325
Office	1,031	927	$322,629,711	$923,724,494	$923,724,494	$2,170,078,699
Public / Utilities	246	1	$1,344,109	$1,622,492	$1,622,492	$4,589,093
Recreational	54	35	$36,959,673	$53,586,654	$53,586,654	$144,132,981
Residential	122,877	121,635	$14,381,691,304	$36,272,976,124	$18,136,488,062	$68,791,155,490
Retail / Commercial	1,396	1,301	$901,888,811	$1,647,446,367	$1,647,446,367	$4,196,781,545
Unknown	232	0	$8,789	$0	$0	$8,789
Vacant	4,194	245	$625,320,324	$19,013,174	$0	$644,333,498
Zone X (unshaded) Total	**134,327**	**125,589**	**$17,094,051,039**	**$41,173,086,640**	**$23,572,333,187**	**$81,839,470,866**

Flood Zone / Property Use	Total Parcel Count	Improved Parcel Count	Total Land Value	Structure Value	Estimated Contents Value	Total Value
Other Areas Total	**134,327**	**125,589**	**$17,094,051,039**	**$41,173,086,640**	**$23,572,333,187**	**$81,839,470,866**
Grand Total	**185,757**	**170,464**	**$25,320,943,871**	**$59,429,995,705**	**$36,837,273,688**	**$121,588,213,264**

Source: FEMA DFIRM 2/2024, 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 4-99 shows unincorporated Sacramento County loss estimates and improved values at risk by FEMA 1% and 0.2% annual chance flood zones.

*Table 4-99 Unincorporated Sacramento County – FEMA DFIRM 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	13,312	8,937	$6,414,214,884	$5,956,501,139	$12,370,716,023	$2,474,143,205	2.6%
0.2% Annual Chance Flood Hazard**	38,118	35,938	$11,842,694,181	$7,308,439,362	$19,151,133,543	$3,830,226,709	4.0%
Total	**51,430**	**44,875**	**$18,256,909,065**	**$13,264,940,501**	**$31,521,849,566**	**$6,304,369,914**	**6.6%**

Source: FEMA DFIRM 2/2024, 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.

According to the information in Table 4-98 and Table 4-99, unincorporated Sacramento County has 8,937 improved parcels and roughly $12.4 billion of structure and contents value in the 1% annual chance floodplain. There are an additional 35,938 improved parcels and roughly $19.2 billion of structure and contents value in the 0.2% annual chance flood event. A loss ratio of 2.6% and 4.0% indicates that while the County does have structural assets at risk to flood, the County should be able to effectively recover from a major flood event.

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 for structures located within a 1% annual chance 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. Flood insurance promotion and outreach will be important moving forward to ensure vulnerable structures are adequately insured and protected.

Unincorporated Sacramento County and the 7 cities all participate in the NFIP. Currently, the cities of Citrus Heights and Sacramento also participate in the NFIP's Community Rating System (CRS). Insurance data and other information related to unincorporated Sacramento County's participation in these programs are provided below and in Chapter 5 of the Base Plan. NFIP and CRS data related to the other participating cities can be found in their jurisdictional annexes.

Unincorporated Sacramento County joined as an Emergency Entry on 3/31/1972, and then as a Regular NFIP Entry on 3/15/1979. The County participates in the CRS program and is a Class 2, resulting in a 40% discount for those residents in the Special Flood Hazard Area (SFHA). NFIP insurance data indicates that as of February 2, 2026, there were 4,202 policies in force in the unincorporated County, resulting in $1,233,271,000 of insurance in force and $2,100,935 in annual premiums paid. Of these, 3,870 are for residential properties and 332 are nonresidential. 1,850 of these are in A zones; and 2,343 policies are for parcels in the B, C, & X zones, while 9 fall outside these zones.

There have been 1,824 closed paid losses totaling $26,737,271.61. 1,711 of these were for residential properties and 113 were for nonresidential. Of these 1,824 paid losses, 1,218 were parcels in A zones, 583 parcels were in B, C, & X zones, and 23 had no zone data attached to them. Of the 1,824 claims, 1,400 claims were associated with pre-FIRM structures and 399 with post-FIRM structures, and 25 had no data attached to them. There have been 145 substantial damage claims since 1978. There have been 0 Increased Cost of Compliance (ICC) losses. According to FEMA's Community Information System (CIS) data, there are 404 repetitive loss (RL) and 5 Post-FIRM Severe Repetitive Loss (SRL) buildings.

Based on the flood analysis, the Sacramento County Planning Area and unincorporated Sacramento County have significant values at risk to the 1% and 0.2% annual chance and greater floods. In many instances, the impact to the community from those structures falling within the special flood hazard zone (i.e., the 1% annual chance flood zone) can be lessened by those individuals that maintain flood insurance. Within the Planning Area, of the 8,937 improved parcels within the 1% annual chance flood zone, only 1,850 (or 20.7 percent) of those parcels maintain flood insurance. For the unincorporated County, of the 8,937 parcels within the 1% annual chance flood zone, only 23 (or 20.7 percent) of these parcels maintain flood insurance. his can be seen on Table 4-100, along with insurance information from the incorporated communities in the County. There are 122 repetitive loss and 27 severe repetitive loss buildings in the unincorporated County. This information (provided by FEMA's PIVOT database) can be seen in Table 4-101.

Table 4-100 Sacramento County Planning Area – Percentage of Policy Holders to Improved Parcels in the 1% Annual Chance Floodplain by Jurisdiction

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
Citrus Heights	1,456	65	4.5%
Elk Grove	1,150	17	1.5%

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
Folsom	253	5	2.0%
Galt	37	0	0.0%
Isleton	330	49	14.9%
Rancho Cordova	49	9	18.4%
Sacramento	34,623	17,889	51.7%
Unincorporated County	8,937	1,850	20.7%
Total	**46,835**	**19,884**	**42.5%**

Source: FEMA DFIRM 02/2024, FEMA CIS 2026, 2025 Sacramento County Parcel/Assessor's Data

Table 4-101 Unincorporated Sacramento County – Repetitive Loss Structures

Residential Type	Total Number of Properties	Number of Properties Mitigated	NFIP Repetitive Loss Property	NFIP Severe Repetitive Loss Property	Total Number of Paid Losses
2-4 Family	7	2	2	2	17
Non-Business Non Residential	1	0	1	1	9
Non-Residential Commercial (Non-Small Business)	2	0	0	0	4
Other Residential	15	0	14	0	30
Single Family	185	33	115	24	513
Total	**210**	**35**	**122**	**27**	**573**

Source: FEMA Region IX (PIVOT database)

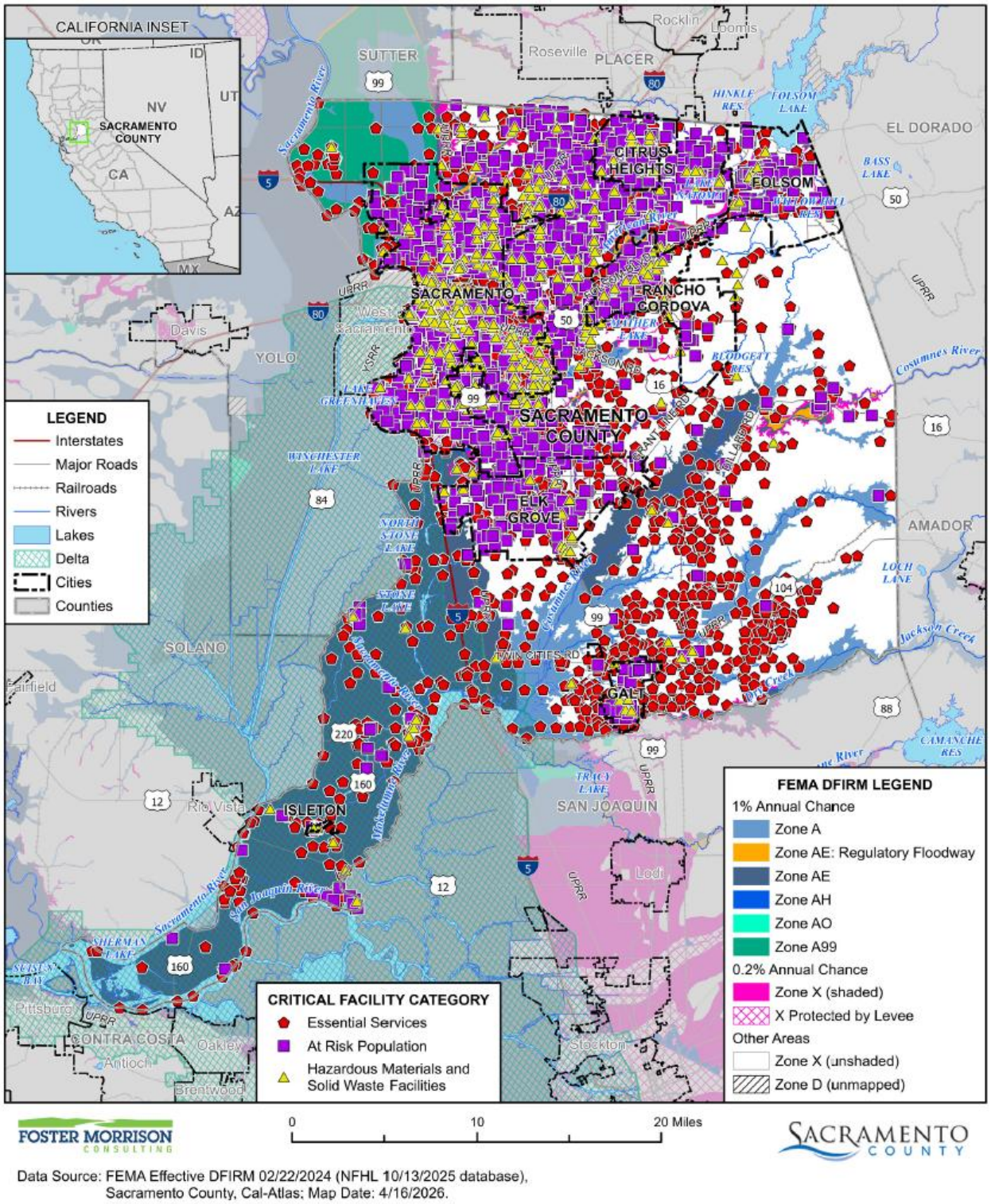
Critical Facilities and Infrastructure

Flooding presents a threat to critical facilities and infrastructure, and community lifelines. Critical facilities and infrastructure play an immensely important role in communities. As previously noted, communities rely on roads, rail corridors, and related biking and pedestrian routes for transportation, and on critical infrastructure for drinking water, wastewater service, and draining streets of rainwater. Other utilities play an important role in providing critical services to area residents. Fire, police and other emergency response facilities and functions are also critical to the wellbeing of the community and the ability to respond and recover from hazard events, such as floods. 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 that cascade throughout the Sacramento County Planning Area. The following GIS analysis identifies critical facilities and infrastructure at risk to 1% and 0.2% annual chance flooding.

A separate analysis was performed on the critical facility inventory in the Sacramento County Planning Area to determine critical facilities in the 1% and 0.2 annual chance flood zones. Using GIS, the DFIRM flood zones were overlayed on the critical facility GIS layer. Figure 4-107 shows critical facilities and the

detailed DFIRM flood zones. Table 4-102 details critical facilities in detailed DFIRM flood zones by facility type and count for the Sacramento County Planning Area broken out by jurisdiction.

Figure 4-107 Sacramento County Planning Area – Critical Facilities in DFIRM Flood Zones



Data Source: FEMA Effective DFIRM 02/22/2024 (NFHL 10/13/2025 database), Sacramento County, Cal-Atlas; Map Date: 4/16/2026.

Table 4-102 Sacramento County Planning Area – Critical Facilities in DFIRM Flood Zones by Jurisdiction and Category

Jurisdiction /Flood Zone	Critical Facility Category	Facility Count
Citrus Heights		
1% Annual Chance Flood Hazard	Essential Services Facilities	5
	At Risk Population Facilities	3
	1% Annual Chance Flood Hazard Total	**8**
0.2% Annual Chance Flood Hazard	Essential Services Facilities	3
	At Risk Population Facilities	3
	Hazardous Materials and Solid Waste Facilities	1
	0.2% Annual Chance Flood Hazard Total	**7**
Other Areas	Essential Services Facilities	68
	At Risk Population Facilities	102
	Hazardous Materials and Solid Waste Facilities	11
	Other Areas Total	**181**
Citrus Heights Total		**196**
Elk Grove		
1% Annual Chance Flood Hazard	Essential Services Facilities	3
	At Risk Population Facilities	1
	1% Annual Chance Flood Hazard Total	**4**
0.2% Annual Chance Flood Hazard	Essential Services Facilities	38
	At Risk Population Facilities	15
	Hazardous Materials and Solid Waste Facilities	1
	0.2% Annual Chance Flood Hazard Total	**54**
Other Areas	Essential Services Facilities	277
	At Risk Population Facilities	156
	Hazardous Materials and Solid Waste Facilities	17
	Other Areas Total	**450**
Elk Grove Total		**508**
Folsom		
1% Annual Chance Flood Hazard	Essential Services Facilities	6
	At Risk Population Facilities	2
	Hazardous Materials and Solid Waste Facilities	1

Jurisdiction /Flood Zone	Critical Facility Category	Facility Count
	1% Annual Chance Flood Hazard Total	**9**
0.2% Annual Chance Flood Hazard	At Risk Population Facilities	2
	0.2% Annual Chance Flood Hazard Total	**2**
Other Areas	Essential Services Facilities	146
	At Risk Population Facilities	85
	Hazardous Materials and Solid Waste Facilities	9
	Other Areas Total	**240**
Folsom Total		**251**
Galt		
1% Annual Chance Flood Hazard	Essential Services Facilities	1
	1% Annual Chance Flood Hazard Total	**1**
Other Areas	Essential Services Facilities	117
	At Risk Population Facilities	40
	Hazardous Materials and Solid Waste Facilities	11
	Other Areas Total	168
Galt Total		**169**
Isleton		
1% Annual Chance Flood Hazard	Essential Services Facilities	8
	At Risk Population Facilities	4
	Hazardous Materials and Solid Waste Facilities	3
	1% Annual Chance Flood Hazard Total	**15**
Other Areas	Essential Services Facilities	1
	Other Areas Total	**1**
Isleton Total		**16**
Rancho Cordova		
1% Annual Chance Flood Hazard	Essential Services Facilities	3
	1% Annual Chance Flood Hazard Total	**3**
0.2% Annual Chance Flood Hazard	Essential Services Facilities	5
	At Risk Population Facilities	5
	0.2% Annual Chance Flood Hazard Total	**10**
Other Areas	Essential Services Facilities	213
	At Risk Population Facilities	147

Jurisdiction /Flood Zone	Critical Facility Category	Facility Count
	Hazardous Materials and Solid Waste Facilities	20
	Other Areas Total	**380**
Rancho Cordova Total		**393**
Sacramento		
1% Annual Chance Flood Hazard	Essential Services Facilities	168
	At Risk Population Facilities	102
	Hazardous Materials and Solid Waste Facilities	18
	1% Annual Chance Flood Hazard Total	**288**
0.2% Annual Chance Flood Hazard	Essential Services Facilities	816
	At Risk Population Facilities	552
	Hazardous Materials and Solid Waste Facilities	178
	0.2% Annual Chance Flood Hazard Total	**1,546**
Other Areas	Essential Services Facilities	300
	At Risk Population Facilities	189
	Hazardous Materials and Solid Waste Facilities	53
	Other Areas Total	**542**
Sacramento Total		**2,376**
Unincorporated Sacramento County		
1% Annual Chance Flood Hazard	Essential Services Facilities	699
	At Risk Population Facilities	63
	Hazardous Materials and Solid Waste Facilities	22
	1% Annual Chance Flood Hazard Total	**784**
0.2% Annual Chance Flood Hazard	Essential Services Facilities	252
	At Risk Population Facilities	196
	Hazardous Materials and Solid Waste Facilities	42
	0.2% Annual Chance Flood Hazard Total	**490**
Other Areas	Essential Services Facilities	1,598
	At Risk Population Facilities	691
	Hazardous Materials and Solid Waste Facilities	113
	Other Areas Total	**2,402**
Unincorporated Sacramento County Total		**3,676**

Jurisdiction /Flood Zone	Critical Facility Category	Facility Count
Grand Total		**7,585**

Source: FEMA 02/2024 DFIRM, Sacramento County GIS

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 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 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 resources that fall in the flood zones would be vulnerable.

FEMA NRI Hazard Vulnerability Assessment

The FEMA NRI was queried for additional specific data on Sacramento County's vulnerability to Flood: 1%/0.2% annual chance and Flood: Localized Flooding. The NRI contains data and analysis for 18 separate natural hazards. The NRI hazard related to Sacramento County's Flood: 1%/0.2% annual chance and Flood: Localized Flooding is riverine flooding. According to the NRI, there have been 36 riverine flooding events between the years 1996-2019 with an average of 1.5 events per year. As shown in Table 4-103, riverine flooding could cause a total of $1,295,253 in expected annual losses, with a historic loss rating of very low. Riverine flooding has a relatively high rating for both social vulnerability and community resilience, with a risk index score of 75.4 out of 100.

Table 4-103 Sacramento County Planning Area – Riverine Flooding Vulnerability Ratings from FEMA NRI

NRI Hazard	Hazard Risk Index Rating	Expected Annual Loss Values (total)	Exposure Value (total)	Historic Loss Ratio Rating
Riverine Flooding	75.4	$1,295,253	$1,669,035,153,635	Very Low

Source: FEMA NRI Report, retrieved 10/8/2025.

*Hazard Risk Index is calculated using data for only a single hazard type, and reflect a communities expected annual loss value, community risk factors, and the adjustment factor used to calculate the risk value.

**Expected annual loss represents the average economic loss in dollars resulting from natural hazards each year.

***Exposure is a natural hazard consequence factor that is the representative value of buildings, populations, or agriculture potentially exposed to a natural hazard occurrence.

Additional information on the FEMA NRI can be found in Section 4.2 and Appendix G.

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

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

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

Impacts 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 County 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 Sacramento County include the following:

- Climate change is likely to exacerbate future flood conditions and associated impacts and vulnerability of the County to 1%, 0.5%, and 0.2% annual chance flooding. This was discussed in greater detail in the Climate Change and Flood section of the Hazard Profile above
- Population growth in Sacramento County is expected to continue at a moderate pace. There are 129 areas in the unincorporated County where development is expected to occur in the next 5 years. Additional growth within the DFIRM flood zones in the County would place additional populations at risk to flooding. Additional population growth would likely bring continued diversity to the County. Vulnerable population groups could face disproportionate effects from a flood and should be planned for. Changes in population and population patterns may or may not increase the impacts and vulnerability of the County 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. There are 129 areas where the unincorporated County is expected development to occur in the next 5 years. The location, type, and design of future development can influence flood exposure and vulnerability. Future land-use and

development decisions should consider applicable flood-hazard mapping, projected changes in flood conditions, drainage and stormwater effects, access and evacuation constraints, and applicable floodplain-management requirements. Locating new development, structures and critical facilities and infrastructure within or near areas of flood risk may put additional development at risk. However, County General Plan Safety Element, along with County building codes and the County's floodplain ordinance are in effect to reduce this risk and should be updated as necessary to continue to address future flood conditions. Depending on the location of new development and adherence to protective building codes and the floodplain ordinance, changes in land use and development may or may not increase the impacts and associated vulnerabilities of the County to this hazard.

Future Development

This section provides an analysis of the flood hazard and proposed future development within the County 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. Sacramento County'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 24, a design standard developed by the American Society of Civil Engineers, expands on the minimum NFIP requirements with more specificity, additional requirements, and some limitations.

With the adoption of 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.

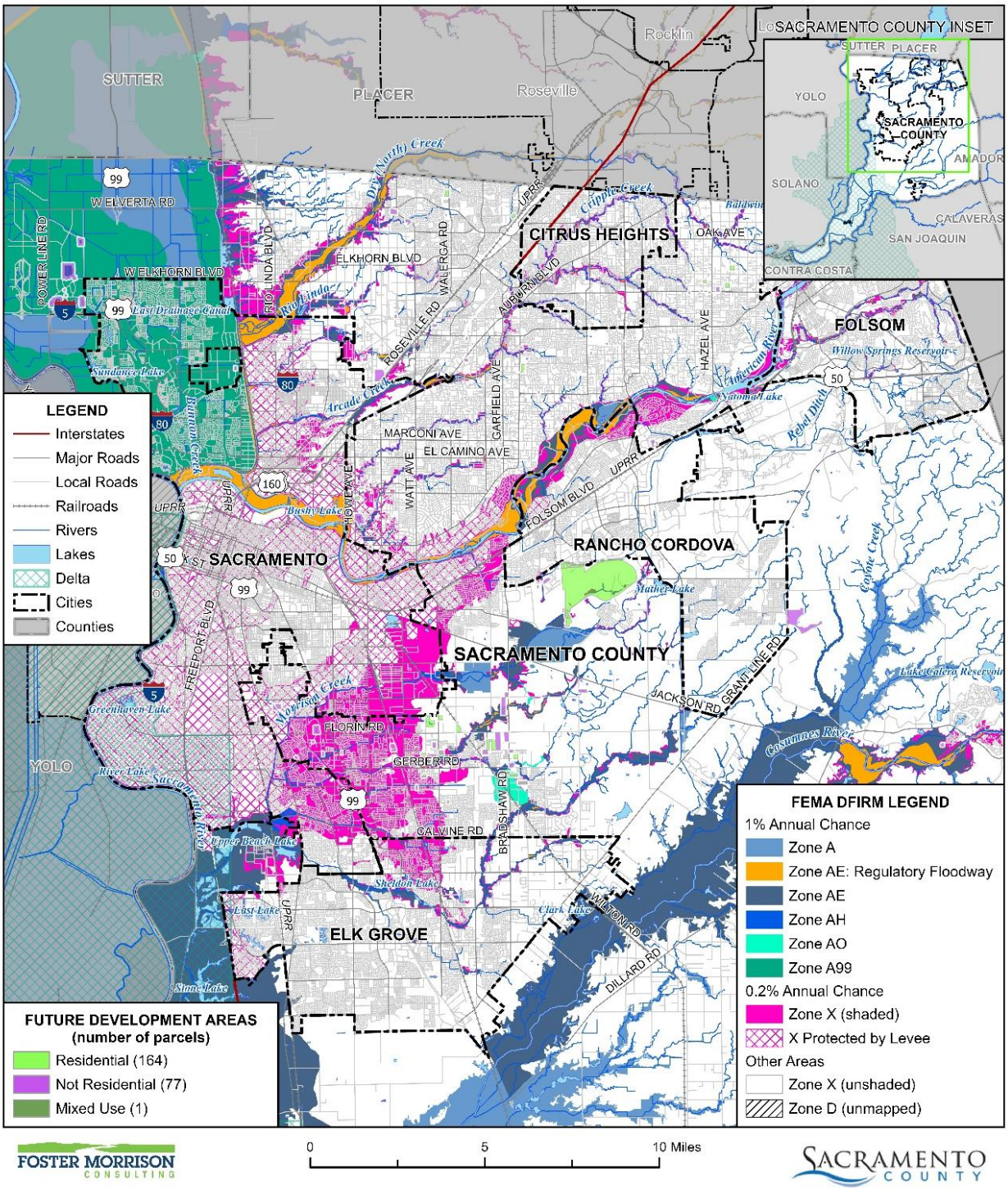
Future land-use planning should consider projected changes in flood conditions in addition to current regulatory floodplain mapping.

Future development in the County may be built in the floodplain, in conformance to the standards of the floodplain ordinance. The County enforces the floodplain ordinance on new development in unincorporated Sacramento County. Future development areas and their vulnerability to DFIRM flooding is discussed further in the below GIS analysis.

Future Development: GIS Analysis

Sacramento County provided 129 future development areas which were used as the basis for the inventory of future development for the unincorporated County. These were mapped in GIS. Future development areas in DFIRM flood zones are shown on Figure 4-108 and detailed in Table 4-104. As shown, 30 future development areas falls in the 1% annual chance flood zone, and 31 fall in the 0.2% annual chance flood zone.

Figure 4-108 Unincorporated Sacramento County – Future Development in DFIRM Flood Zones



Data Source: FEMA Effective DFIRM 02/22/2024 (NFHL 10/13/2025 database), Sacramento County, Cal-Atlas; Map Date: 10/2/2026.

Table 4-104 Unincorporated Sacramento County – Future Development Areas by Type and Status in DFIRM Flood Zones with Parcels and Acres

Flood Zones / Future Development Type and Status	Site/Location Name	Total Parcel Count	Improved Parcel Count	Unimproved Parcel Count	Total Acres	Total Improved Acres	Total Unimproved Acres
1% Annual Chance Flood Hazard							
Residential							
Complete	1530 Howe Avenue Apartments (UPPamendSPP amendUPMDRS)	1	1	0	4.5	4.5	0.0
	6809 Fleming Tentative Parcel Map (PMRSPZDRS)	1	1	0	1.5	1.5	0.0
	Wildhawk West Subdivision Map Extension (XSP)	1	0	1	9.8	0.0	9.8
	Complete Total	**3**	**2**	**1**	**15.8**	**6.0**	**9.8**
Closed	EVA Flight Training Academy Residence Hall (DRSmjrPRC)	1	0	1	0.0	0.0	0.0
	Riverhaven Subdivision (DRSMajor)	1	1	0	2.9	2.9	0.0
	Village at Elder Creek	6	0	6	1.0	0.0	1.0
	Closed Total	**8**	**1**	**7**	**3.9**	**2.9**	**1.0**
Residential Total		**11**	**3**	**8**	**19.7**	**8.9**	**10.8**
Not Residential							
Complete	Metro Air Park West Commercial (PMRDRS)	1	0	1	16.5	0.0	16.5
	North Vineyard Plaza Map Extension (XPR)	1	1	0	7.7	7.7	0.0
	Complete Total	**2**	**1**	**1**	**24.3**	**7.7**	**16.5**
Closed	1100 Howe Ave Fitness Building (DRSmajor)	1	1	0	32.0	32.0	0.0
	2227 Wyda Way Minor Auto Repair Facility (DRSmjPRC)	1	0	1	1.0	0.0	1.0
	7360 Metro Air Parkway Costco Depot (DRSmjPRC)	1	0	1	91.7	0.0	91.7
	American Tower Data Center (DRSmjPRC)	1	1	0	3.6	3.6	0.0

Flood Zones / Future Development Type and Status	Site/Location Name	Total Parcel Count	Improved Parcel Count	Unimproved Parcel Count	Total Acres	Total Improved Acres	Total Unimproved Acres
	ARCO Metro Air Park (UPB-DRS)	1	0	1	1.4	0.0	1.4
	Cambria Suites MAP (SPPDRSmajor)	1	0	1	1.5	0.0	1.5
	Caselman North West Landscaping	1	1	0	2.9	2.9	0.0
	Costco Depot Parking Lot (DRSmajor)	1	0	1	1.4	0.0	1.4
	Elder Creek Rd Truck Parking (DRSmajorPRC)	1	0	1	31.5	0.0	31.5
	Jack N. Sheldon Park and Florin Creek Trail Improvements	1	0	1	2.3	0.0	2.3
	JATC Training Center Expansion (DRSmjPRC)	1	1	0	2.0	2.0	0.0
	Logisticenter at Metro Air Park Design Review	1	0	1	20.7	0.0	20.7
	MAP Buildings 17 & 18 (DRSmjPRC)	1	0	1	19.1	0.0	19.1
	MAP Commerce Center Building A (DRSmajor)	1	0	1	13.7	0.0	13.7
	MAP Commerce Center Building B (DRSmajor)	1	0	1	49.5	0.0	49.5
	MAP Commerce Center Building C (DRSmajor)	1	0	1	49.5	0.0	49.5
	MAP Commerce Center Building D (DRSmajor)	1	0	1	49.5	0.0	49.5
	MAP Commerce Center Building E (DRSmajor)	1	0	1	49.5	0.0	49.5
	MAP Commerce Center Building F (DRSmajor)	1	0	1	49.5	0.0	49.5
	MAP Commerce Center Building G (DRSmajor)	1	0	1	49.5	0.0	49.5
	Sierra Village Apartments Garage (DRSmajor)	1	1	0	4.5	4.5	0.0
	Closed Total	**21**	**5**	**16**	**526.4**	**45.0**	**481.5**
Not Residential Total		**23**	**6**	**17**	**550.7**	**52.7**	**498.0**
Mixed Use							

Flood Zones / Future Development Type and Status	Site/Location Name	Total Parcel Count	Improved Parcel Count	Unimproved Parcel Count	Total Acres	Total Improved Acres	Total Unimproved Acres
Closed	Bradshaw Sikh Temple Dining Hall Addition (DRSmjPRC)	1	1	0	9.4	9.4	0.0
	Closed Total	**1**	**1**	**0**	**9.4**	**9.4**	**0.0**
Mixed Use Total		**1**	**1**	**0**	**9.4**	**9.4**	**0.0**
1% Annual Chance Flood Hazard Total		**35**	**10**	**25**	**579.7**	**71.0**	**508.8**
0.2% Annual Chance Flood Hazard							
Residential							
Closed	2391 Arden Way Apartment Conversion (UPMDRS)	1	1	0	0.5	0.5	0.0
	2511 Larkspur Lane Townhomes (DRSmjPRC)	1	1	0	0.4	0.4	0.0
	2856 Arden Way MultiFamily Development (DRSmjPRC)	1	1	0	0.1	0.1	0.0
	2862 Arden Way MultiFamily Development (DRSmjPRC)	1	1	0	0.3	0.3	0.0
	9055 Gerber Road Apartments	1	0	1	9.6	0.0	9.6
	Altal Estates (CZBSDPDRS)	1	1	0	2.4	2.4	0.0
	Gerber Creek Unit 3 (DRSmajor)	1	0	1	0.1	0.0	0.1
	Gerber Road Apartments (PSSDRS)	1	0	1	9.6	0.0	9.6
	Lakewood Road Tentative Subdivision Map Resubmission (RSPDRS)	1	0	1	3.9	0.0	3.9
	Markston Apartments (DRSmjPRC)	1	0	1	1.1	0.0	1.1
	Power Inn Apartments (PSSDRS)	1	0	1	1.3	0.0	1.3
	Summer Trace Apartments (DRSmjPRC)	1	1	0	2.6	2.6	0.0

Flood Zones / Future Development Type and Status	Site/Location Name	Total Parcel Count	Improved Parcel Count	Unimproved Parcel Count	Total Acres	Total Improved Acres	Total Unimproved Acres
	Village at Elder Creek	7	0	7	1.2	0.0	1.2
	Willow Vista Production Homes (DRSmajor)	1	0	1	37.3	0.0	37.3
	Closed Total	**20**	**6**	**14**	**70.4**	**6.4**	**64.0**
Paid	Manzanita Muldrow Place (SDPSPPaddDRSmajor)	1	0	1	1.3	0.0	1.3
	Paid Total	**1**	**0**	**1**	**1.3**	**0.0**	**1.3**
Residential Total		**21**	**6**	**15**	**71.7**	**6.4**	**65.3**
Not Residential							
Complete	AlFarooq Mosque (UPPDRS)	1	1	0	2.4	2.4	0.0
	Echo Hotel at Florin Towne Centre (UPPDRS)	1	1	0	19.6	19.6	0.0
	Florin Towne Centre Tentative Parcel Map (PMRDRS)	1	1	0	19.6	19.6	0.0
	Rising South Point Parcel Map (PMRDRS)	1	1	0	3.9	3.9	0.0
	Complete Total	**4**	**4**	**0**	**45.6**	**45.6**	**0.0**
Closed	7325 Reese Road Metal Building	1	1	0	8.5	8.5	0.0
	Bowling Green Park Improvement Project (DRSmajor)	1	0	1	4.9	0.0	4.9
	Crown Sacramento Phase 2 (DRSmjPRC)	1	0	1	4.0	0.0	4.0
	CSI Training Building (DRSmajor)	1	0	1	7.3	0.0	7.3
	Filipino Community Center (DRSmajor)	1	0	1	1.9	0.0	1.9
	Frasinetti Winery Tasting Room (DRSmajor)	1	1	0	3.6	3.6	0.0
	McClellan Police Modular Classroom (DRSmajor)	1	0	1	7.3	0.0	7.3
	Rio Del Oro Plaza Parcel Map (PMRDRS)	1	1	0	1.7	1.7	0.0

Flood Zones / Future Development Type and Status	Site/Location Name	Total Parcel Count	Improved Parcel Count	Unimproved Parcel Count	Total Acres	Total Improved Acres	Total Unimproved Acres
	RMCC Church Addition (DRSmajor)	1	1	0	3.3	3.3	0.0
	UHaul at 47th Ave (DRS Mjr PRC)	1	0	1	5.0	0.0	5.0
	Wilbur Way Metal Shop (DRSMajor)	1	0	1	0.9	0.0	0.9
	Closed Total	**11**	**4**	**7**	**48.4**	**17.1**	**31.3**
Not Residential Total		**15**	**8**	**7**	**94.0**	**62.7**	**31.3**
0.2% Annual Chance Flood Hazard Total		**36**	**14**	**22**	**165.7**	**69.0**	**96.7**

Source: 02/2024 DFIRM, Sacramento County GIS

4.3.12. Flood: Localized Flooding

Hazard Profile

This hazard profile contains multiple sections that detail how this hazard can affect the Sacramento County Planning Area. These sections include a hazard/problem description; description of location and extent; past occurrences of this hazard; likelihood of future occurrence; and how climate change can affect or influence this hazard.

Hazard/Problem Description

Flooding occurs in areas other than the FEMA mapped 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 Sacramento County Planning Area during the rainy season from November through April. Prolonged heavy rainfall contributes to a large volume of runoff resulting in high peak flows of moderate duration. Flooding is more severe when previous rainfall has created saturated ground conditions. Urban storm drainpipes and pump stations have a finite capacity. When rainfall exceeds this capacity, or the system is clogged, water accumulates in the street until it reaches a level of overland release. This type of flooding may occur when intense storms occur over areas of development.

Location and Extent

There is no established scientific scale or measurement system for localized flooding. Localized flooding is generally measured by depth of flooding and the area affected. Localized flooding often happens quickly and has a short speed of onset. In the County this happens more often during the winter months, as was shown on Figure 4-42 above. Localized flooding often has a short duration. Specific locations in the County can be seen in the Local Concerns section below in Table 4-105.

Past Occurrences

Disaster Declarations

There are no identified state or federal disaster declarations for localized flooding, as shown in Table 4-4. However, localized flooding was likely an issue during previous declarations for floods, including heavy rains severe storms.

NCDC Events

The past occurrences of localized flooding are included in the 1% and 0.2% annual chance flood hazard profile in Section 4.3.11.

Hazard Mitigation Planning Committee Events

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

Events since 2021 LHMP

The HMPC noted the following events that have occurred since the 2021 LHMP.

Mid-to-late February 2026 through March 2026: Repeated storms with moderate-to-heavy rain triggered Flood Advisories and Watches for the Sacramento Valley. Concerns focused on localized flooding of roadways, urban areas, and small creeks/streams. NWS highlighted risks in poorly drained intersections and low-lying spots, with some road impacts reported but generally manageable by local crews.

Early January 2026 (January 3–5 peak): Widespread localized flooding across Sacramento County, including Sacramento proper, Elk Grove, and surrounding areas. Impacts included:

- Multiple road closures (e.g., Sorento Road between Elverta and Rio Linda).
- At least one notable water rescue: Sacramento Metropolitan Fire District rescued a Walmart delivery driver whose vehicle was partially submerged in ~2 feet of water near Kiefer Boulevard and Jackson Road (southeast Sacramento County area).
- Additional reports of ponding, street flooding, and minor creek rises. No levee failures or catastrophic flooding occurred.

Late December 2025 (around Christmas period): A storm system caused street and urban flooding risks. Sacramento County Department of Water Resources responded to dozens of flooding reports and downed trees. The City of Sacramento cleared hundreds of storm drains. A Flash Flood Warning was issued for parts of northwest Sacramento County (including Natomas, Rio Linda, Elverta) and adjacent Yolo County areas, with concerns for poor drainage and low spots. Residents were urged to report issues via 311.

February 13, 2025: Heavy rain led to localized flooding on Sacramento County roads, with reports of street flooding. Officials highlighted poor drainage areas as the main concern, prompting advisories but no major rescues or widespread closures reported.

Late January and February 2024 storm systems brought additional rounds of localized flooding and road impacts. Agricultural impacts included:

- Field preparation delays for 2024 spring planting season, affecting processed tomato (a critical Sacramento County crop worth $37.7M in 2023), corn, and cover crop establishment timelines.
- Some orchards and vineyards in lower-lying areas experienced repeat ponding that extended dormant-season soil saturation, increasing disease pressure heading into the 2024 growing season.

The **December 2022 - March 2023** atmospheric river sequence produced localized flooding throughout Sacramento County's rural and peri-urban areas in addition to the major Cosumnes River levee failures. Specific documented agricultural impacts include:

- Dillard Road and Twin Cities Road closures in the Wilton/Elk Grove area, primary access routes for agricultural operators, livestock haulers, and emergency veterinary response in the southern county.
- Farm field and orchard ponding in low-lying areas along the Cosumnes River corridor, Laguna Creek, and drainage channels in the Elk Grove and Galt sub-areas.
- Power outages in the Delta area that halted electric drainage pump operations. Delta growers reported operating emergency generators continuously for up to three weeks to prevent field flooding from groundwater intrusion when pump power was lost.
- Road closures affected the Agricultural Commissioner's Office's ability to conduct timely inspection visits, pesticide use enforcement, and pest detection activities in affected areas.

October 23–27, 2021 (Category 5 atmospheric river): This early-season storm delivered record rainfall (5.44 inches in one day in downtown Sacramento). It caused localized street flooding, ponding in urban areas, and some road closures. Officials noted the system "held up well," with flooding handled locally and no major riverine impacts. Dry antecedent conditions from the ongoing drought helped limit runoff severity.

Events prior to 2021 LHMP

The Planning Team for the County noted the following localized flooding events that have occurred in the County between 2011 and 2021.

- **April 5, 2020**: California Highway Patrol reported 2 feet of water flooding between I80 W and Madison Avenue near North Highlands, CA, 8 inches of water flooding the roadway between Eastern Ave and Marconi Ave, 1 1/2 feet of water flowing across all lanes between Interstate 80 East and Auburn Boulevard near North Highlands, roadway flooding between Sutters Gold Drive and Manlove Road in Rosemont, CA, roadway flooding near Whitney Avenue in Carmichael, CA, roadway flooding between Roseville Road and Antelope Road in Antelope, CA, roadway flooding between Kiefer Blvd and Rosemont Drive in Rosemont, C, and roadway flooding between Sunrise Blvd and Wildridge Dr in Fair Oaks, CA. Several rain gauges recorded intense rainfall over a short duration, some reaching 20 to 80 year storm return frequency for 1 hour intensity.
- **February 25, 2019**: CHP reported Roseville Road north and southbound just north of Antelope Rd. closed due to flooding, roadway flooding from arcade creek reported at Winding Way and Walnut Ave, roadway flooding on I80 W at Truxel Rd. off-ramp, and roadway flooding with 8 inches of water affecting north and southbound Stockton Blvd north of Elsie Ave. The rainfall record (2/25/19 10am to 2/27/19 10am) shows 2.6 to 2.7 inches of rainfall in 24 hours

- **January 17, 2019**: Stockton Blvd was impassable due to flooding. Local media shared a video of law enforcement rescuing a stranded motorist in Sloughhouse near Kiefer Blvd and Jackson Rd. Road was completely flooded. Areas of the County received up to 2.3 inches of rainfall.
- **January and February 2017:** Heavy rains caused multiple areas of localized flooding in both unincorporated Sacramento County, as well as in cities in the County.
- **January 5th & 19th, 2016**: A cool winter storm brought moderate rain, 1-2 inches across the Valley, with ponding on roads and small stream rises. There was roadway flooding with partial lane blockage reported on I80 and also on US Highway 50.
- **Feb 5 – 9, 2015**: 1"-3" rain. 47 drainage service calls.
- **Dec 11 -12, 2014:** 2.3" – 3.5" rain. 179 drainage service calls.
- **Dec 2 – 4, 2014**: 1.1 -5.5" rain. 321 drainage service calls. No structural flooding. Watt Ave. and Roseville Rd. number 1 lane flooded with 2 feet of water due to clogged drain. Roadway flooding in Sacramento on southbound Highway 99 near Sacramentoville Rd. Water was as deep as car doors and traffic was backed up. I-80 at Watt Ave. Eastbound Underpass had significant flooding due to heavy rain and pump failure. This resulted in major traffic backup, lasting several hours during evening rush hour.
- **February 10, 2014**: 2.5" – 4.5" rain. 72 drainage service calls.
- **Nov 30, 2012**: Dec 3. – High winds & 4" -6" rain. 800 service calls w/ 474 drainage service requests. 24 Mobile homes flooded at Auburn Blvd. & 15 other structures Countywide.
- **Mar 24, 2011**: High winds & 1 – 1.5" rain. 90 service calls, most for plugged drains. 1 structure flooded.

Likelihood of Future Occurrence

Highly Likely— With respect to the localized, stormwater flood issues, the potential for flooding may increase as storm water is channelized due to land development. Such changes can create localized flooding problems in and outside of natural floodplains by altering or confining natural drainage channels. Urban storm drainage systems have a finite capacity. When rainfall exceeds this capacity or systems clog, water accumulates in the street until it reaches a level of overland release. With increasing urbanization of the Sacramento County Planning Area, combined with older infrastructure, this type of flooding will continue to occur during heavy rains. Based on historical data, localized, stormwater flooding events less severe than a 1% annual chance flood and those outside of the floodplain occur frequently (on an annual basis) during periods of heavy rains.

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

Climate Change and Localized Flood

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.

Vulnerability Assessment

Vulnerability—Medium

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

Many areas of the Planning Area are at some measure of vulnerability to localized flooding. An assessment of a community's vulnerability to this hazard begins with an understanding of local exposure to unincorporated Sacramento County. This is included in the Local Concerns section below. After that, vulnerability is discussed in multiple sections that detail how this hazard can affect both the entire Sacramento County Planning Area as well as the unincorporated portions of Sacramento County. How the hazard affects the other participating jurisdictions can be found in their respective annexes to this LHMP Update. These sections below include assets at risk, impacts, and how future development may affect the vulnerability of the County to this hazard.

Local Concerns (unincorporated Sacramento County)

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

General Concerns

Localized flooding affects many parcels and road segments outside FEMA mapped floodplains, leading to issues such as roadway flooding, pavement deterioration, washouts, debris accumulation, and downed trees. Aging and capacity limited drainage systems, along with clogged storm drains and pump station constraints, contribute to these recurring concerns. These events can disrupt access routes, delay emergency response, and impact agricultural operations through ponding and reduced field access. Regional parks (such as Discovery Park) may experience temporary closures and erosion, while interior Delta areas face additional drainage and roadway stability challenges.

In addition to flooding, damage to these areas during heavy storms includes pavement deterioration, washouts, mudslides, debris areas, and downed trees. The frequency and type of damage or flooding that occurs varies from year to year, depending on the quantity of runoff.

Table 4-105, provided by Sacramento County, identifies the number of parcels and roads by watersheds affected by localized flooding throughout the unincorporated County. Parcels were identified by the County based on those parcels historically affected by localized flooding issues. Affected roads are estimated based on those roads fully within 50 feet of a parcel with historical flooding problems. The Watershed Management Plan included as Appendix K to this LHMP Update also addresses these flood prone areas falling outside of the established 1% and 0.2% annual chance floodplains.

Table 4-105 Unincorporated Sacramento County Localized Flooding Areas

Watershed	# of Parcels Affected	# of Road Segments Affected
Alder Creek	18	82
American River	4	9
Antelope Creek	19	60
Arcade Creek	724	348
Arcade Creek South Branch	74	75
Arkansas Creek	15	4
Badger Creek	115	45
Beach Stone Lake	37	31
Bear Slough	0	0
Boyd Creek	0	0
Brooktree Creek	8	7
Browns Creek	12	1
Buffalo Creek	100	681
Carmichael Creek	460	270
Carson Creek	30	5
Chicken Ranch Slough	512	285
Cordova Coloma Stream Group	0	0
Cosumnes River	277	264
Courtland	0	0
Coyle Creek	138	60
Coyote Creek	47	5
Crevis Creek	17	8
Cripple Creek	53	50
Date Creek	51	38
Deadman's Gulch	136	68
Deer Creek	42	27
Diablo Creek	238	108
Dry Creek	241	161
Dry Creek South	68	38
East Antelope	37	58
East Natomas	224	98
Elder Creek	59	63
Elk Grove Creek	1	1
Fair Oaks Stream Group	1082	628
Florin Creek	1300	274
Frye Creek	15	9

Watershed	# of Parcels Affected	# of Road Segments Affected
Gerber Creek	19	47
Griffith Creek	103	25
Grizzly Slough	1	0
Hadselville Creek	55	15
Hagginbottom	587	178
Hagginwood Creek	202	82
Hen Creek	74	34
Hood	0	0
Laguna Creek	127	104
Laguna Creek South	68	41
Linda Creek	395	179
Little Deer Creek	2	1
Magpie Creek	230	470
Manlove	70	33
Mariposa Creek	0	0
Mayhew Slough	69	72
Minnesota Creek	246	155
Morrison Creek	802	274
Natomas Basin	16	5
Negro Slough	59	24
NEMDC Trib 1	91	26
NEMDC Trib 2	170	55
NEMDC Trib 3	186	106
North Delta	0	0
North Fork Badger Creek	98	65
Robla Creek	664	259
Rolling Draw Creek	8	10
San Juan Creek	51	27
Sierra Branch	167	95
Sierra Creek	93	210
Skunk Creek	60	45
Slate Creek	0	0
Strawberry Creek	165	83
Strong Ranch Slough	837	348
Sunrise Creek	0	0
Unionhouse Creek	626	161
Verde Cruz Creek	109	93

Watershed	# of Parcels Affected	# of Road Segments Affected
Whitehouse Creek	0	0
Willow Creek Middle	0	0
Willow Creek South	22	11
Total	**12,626**	**7,194**

Source: Sacramento County, 2026

Similar to the unincorporated areas, within the Delta region, each Reclamation District operates during localized flooding to control depth and duration during high rainfall events independently. County roadways within the interior of these Districts, and those connecting culverts, bridges and private access roads are all susceptible during these events. Access and emergency evacuation or flood operations rely on clear pathways to address emergency conditions. Saturation of these areas can also lead to roadway failures, power line damage and loss of power, which leads to operational issues with drainage and inundation within these Districts. Mitigation actions to address interior flooding should focus on facility and infrastructure redundancy, improvements or modifications to allow flexibility during power outages and high rainfall events.

Regional Parks Concerns

Sacramento County Regional Parks properties experience shoulder and bank erosion and repeated flooding, tree loss due to oversaturated soils, revenue loss due to closed parks and additional costs associated with clean up. Typically, major flooding from Watt Ave to the confluence results in loss of use, closures, and damage to low lying park areas. Localized flooding in parks and on trails results in repeated closure and damage of those areas. Typical areas affected throughout the parks system include bike trail shoulders being eroded or washed away, repeated asphalt being submerged for long periods of time, restrooms being submerged and closed including electrical systems, and wells and pumps being submerged.

There is also a localized flood concern along the Dry Creek. Bank erosion and repeated flooding, tree loss due to oversaturated soils, revenue loss due to closed parks and additional costs associated with clean up have occurred in the past. Major flooding of the Dry Creek multi-use trail results in loss of use, closures, and damage to Park properties. Localized flooding in parks and on trails results in repeated closure and damage of those areas.

Local concerns for each of the participating jurisdictions can be found under the Local Concerns heading in each respective jurisdictional annex to this LHMP Update.

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 for the Sacramento County Planning Area and unincorporated Sacramento County.

Additionally, for each hazard in the FEMA National Risk Index in Sacramento County, the relevant portions of the hazard analysis done by FEMA is presented below. This includes the Hazard Risk Index Rating,

Expected Annual Loss Values, Exposure Values, and the Historic Loss Ratio Rating. These are presented for the Sacramento County Planning Area as a whole.

People and Populations

Localized flooding generally presents a lower life-safety risk than major riverine flooding, but can affect people through roadway flooding, locally restricted access and egress, service disruptions, and flooding of homes and businesses. In addition, their structures and contents can be at risk. Localized flooding may also cause larger transportation issues as roads and lanes are impacted or closed and affect the ability for people to travel throughout the Planning Area.

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. Ground saturation can result in instability, collapse, or other damage to structures. Trees can also be compromised and uprooted falling on structures causing damage. Table 4-105 shows the number of parcels affected. Analysis of property use on these parcels was not available for this LHMP Update.

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.

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. Wetlands areas in the Planning Area 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.

FEMA NRI Hazard Vulnerability Assessment

Localized flooding is not an NRI hazard, therefore no data is presented.

Impacts from Localized Flood

Primary concerns associated with stormwater flooding include impacts to infrastructure that provides 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 County 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 Sacramento County include the following:

- Climate change is likely to exacerbate future heavy rain conditions and associated impacts and vulnerability of the County to localized flood. This was discussed in greater detail in the Climate Change and Localized 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 County. Population growth in Sacramento County is expected to continue at a moderate pace. There are 129 areas in the unincorporated County where development is expected to occur in the next 5 years. Additional population growth would likely bring continued diversity to the County. Vulnerable population groups such as low-income individuals and households living in floodprone 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 County 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. There are 129 areas in the unincorporated County where development is expected to occur in the next 5 years. Much of the growth in Sacramento County is occurring through expansion of the more urbanized areas, causing 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. County 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 County to this hazard.

Future Development

The potential for flooding may increase as stormwater is channeled due to land development. Such changes can create localized flooding problems inside and outside of natural floodplains by altering or confining natural drainage channels. Mitigating the root causes of the localized stormwater flooding or choosing not to develop in areas that often are subject to localized flooding will reduce future risks of losses due to stormwater/localized flooding. Floodplain modeling and master planning should be based on built out property conditions to ensure that all new development remains safe from future flooding.

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 County are considered can help to make for a more resilient community.

4.3.13. Landslides, Mudslides, and Debris Flows

Hazard Profile

This hazard profile contains multiple sections that detail how this hazard can affect the Sacramento County Planning Area. These sections include a hazard/problem description; description of location and extent; past occurrences of this hazard; the likelihood of future occurrence; and how climate change can affect or influence this hazard.

Hazard/Problem Description

Like its earthquake-generating faults, California's mountainous terrain is a consequence of dynamic geologic processes in operation as the North American Plate grinds past the Pacific Plate. According to the CGS, a landslide is a general term for a variety of mass-movement processes that generate a down-slope movement of mud, soil, rock, and/or vegetation. Landslides are classified into many different types based on form and type of movement. They range from slow-moving rotational slumps and earth flows, which can slowly distress structures but are less threatening to personal safety, to fast-moving rock avalanches and debris flows that are a serious threat to structures and have been responsible for most fatalities during landslide events. For the purposes of this LHMP Update, the term landslide includes mudslides, debris flows, and rockfalls that tend to occur suddenly; as well as hillside erosion, which is a similar process that tends to occur on smaller scales and more gradually but can exacerbate landslide events.

Landslides, debris flows and mudslides are closely related to flooding, as both processes are related to precipitation, runoff, and the saturation of ground by water. In addition, landslides, mud flows, and debris

flows can occur on small, steep stream channels and are often mistaken for floods. However, landslide events may be much more destructive than floods because of their higher densities, high debris loads, and high velocities.

Soil erosion is another common form of soil instability. Erosion is a function of soil type, slope, rainfall intensity, and groundcover. It accounts for a loss in many dollars of valuable soil, is aesthetically displeasing, and often induces even greater rates of erosion and sedimentation. Sedimentation is simply the accumulation of soil as a result of erosion. Construction activities often contribute greatly to erosion and sedimentation. Besides being a pollutant in its own right, sediment acts as a transport medium for other pollutants, especially nutrients, pesticides, and heavy metals, which adhere to the eroded soil particles. As the sediment drains into watercourses, the combination of these pollutants adversely affects water quality and can eventually impact stream flows and contribute to flooding potential. Conditions that contribute to landslide, mudslides, debris flows, hillside and streambank erosion include the following:

- Degree of slope
- Water (heavy rain, river flows, or wave action)
- Unconsolidated soil or soft rock and sediments
- Lack of vegetation (no stabilizing root structure)
- Previous wildfires and other forest disturbances (discussed in Section 4.3.17)
- Road building, excavation, and grading
- Earthquake

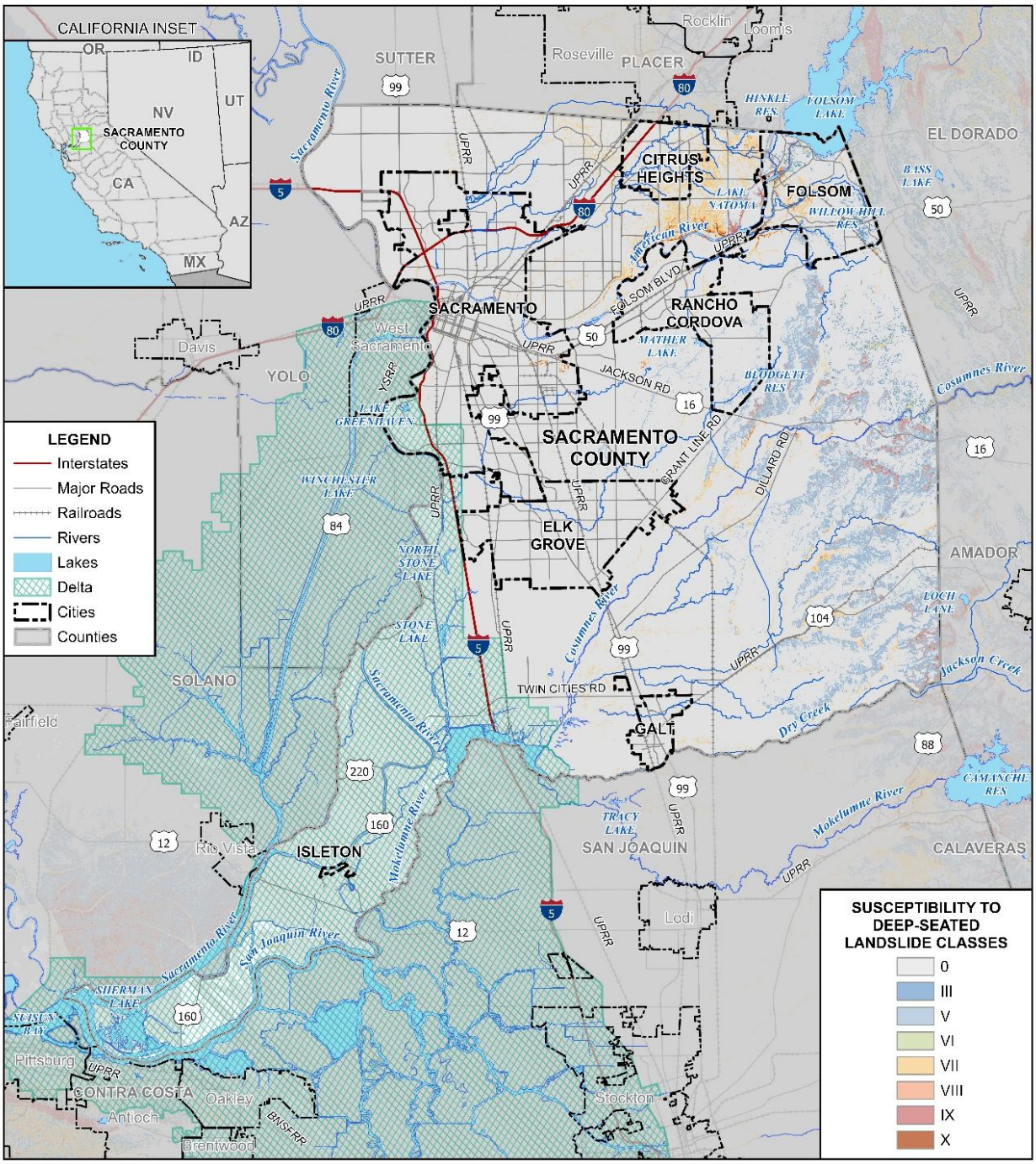
Location and Extent

Landslides can be expected in areas with steep slopes and weak soils. It can also occur in areas where erosion has previously occurred. Both winter storms (precipitation-induced) and earthquake triggered landslides tend to occur in or near places that have experienced previous landslides. However, landslides may also occur in other locations over time.

Figure 4-109 shows the CGS areas at susceptible to deep seated landslides. The legend on Figure 4-109 shows the susceptibility scale (from 0-X with 0 being the least and X being the most susceptible) that the CGS uses to show the susceptibility of landslides. It is a primarily a combination of slope class and rock strength. Geographic extents of these classes for the Sacramento County Planning Area are summarized on Table 4-106, and detailed by jurisdiction on Table 4-107. Details on each participating jurisdiction's CGS deep-seated landslide extents can be found in their respective annexes to this LHMP Update.

According to the 2023 State Hazard Mitigation Plan, the susceptibility classes were further categorized into Very High (susceptibility class X) and High (susceptibility classes VII, VIII, & IX) for exposure analysis. The rest of the classes were not categorized. CGS mapping indicates that only small portions of the County Planning Area and surrounding area have areas at high to very high susceptibility areas for landslides. The eastern and northeastern portions of the County includes some areas at high to very high landslide susceptibility. This can be seen in the darker orange and red colors. The speed of onset of landslide is often short, especially in post-wildfire burn scar areas, but it can also take years for a slope to fail. Landslide duration is usually short, though digging out and repairing landslide areas can take some time. In Sacramento County, landslides generally occur where there is very little population or infrastructure.

Figure 4-109 Sacramento County Planning Area – Susceptibility to Deep Seated Landslides



FOSTER MORRISON CONSULTING

SACRAMENTO COUNTY

Data Source: Susceptibility to Deep-Seated Landslides map - CGS Map Sheet 58 (May 2011), Sacramento County, Cal-Atlas; Map Date: 10/2/2026.

Table 4-106 Sacramento County Planning Area – Geographical Deep Seated Landslide Classes Extent

Susceptibility to Deep-Seated Landslide Class	Total Acres	% of Total Acres	Improved Acres"	% of Total Improved Acres	Unimproved Acres	% of Total Unimproved Acres
0	529,831	90%	289,499	93%	240,332	86%
III	2,772	0.5%	606	0.2%	2,166	1%
VI	29,935	5%	9,126	3%	20,809	7%
VII	14,755	2%	9,448	3%	5,307	2%
VIII	2,618	0.4%	664	0.2%	1,954	1%
X	354	0.1%	128	0.04%	226	0.1%
IX	1,538	0.3%	577	0.2%	961	0.3%
Total	9,927	2%	1,828	1%	8,099	3%

Source: Susceptibility to Deep-Seated Landslides map – CSG Map Sheet 58 (05/2011)

Table 4-107 Sacramento County Planning Area – Geographical Deep Seated Landslide Classes Extent by Jurisdiction

Jurisdiction / Susceptibility to Deep-Seated Landslide Class	Total Acres	% of Total Acres	Improved Acres"	% of Total Improved Acres	Unimproved Acres	% of Total Unimproved Acres
Citrus Heights						
0	6,800	1%	5,775	2%	1,025	0.4%
III	0	0%	0	0%	0	0%
VI	0	0%	0	0%	0	0%
VII	845	0.1%	690	0.2%	154	0.1%
VIII	0	0%	0	0%	0	0%
X	0	0%	0	0%	0	0%
IX	1	0.0002%	0.3	0.0001%	1	0.0002%
Citrus Heights Total	**7,646**	**1%**	**6,466**	**2%**	**1,180**	**0.4%**
Elk Grove						
0	23,427	4%	16,300	5%	7,127	3%
III	0	0%	0	0%	0	0%
VI	44	0.01%	20	0.01%	24	0.01%
VII	126	0.02%	63	0.02%	63	0.02%
VIII	0.2	0.00004%	0.2	0.0001%	0.1	0.00002%
X	2	0.0003%	0.4	0.0001%	1	0.0004%
IX	6	0.001%	3	0.001%	3	0.001%

Jurisdiction / Susceptibility to Deep-Seated Landslide Class	Total Acres	% of Total Acres	Improved Acres"	% of Total Improved Acres	Unimproved Acres	% of Total Unimproved Acres
Elk Grove Total	**23,604**	**4%**	**16,387**	**5%**	**7,217**	**3%**
Folsom						
0	12,901	2%	6,122	2%	6,779	2%
III	936	0.2%	267	0.1%	669	0.2%
VI	500	0.1%	192	0.1%	308	0.1%
VII	912	0.2%	460	0.1%	452	0.2%
VIII	104	0.02%	33	0.01%	71	0.03%
X	52	0.01%	7	0.002%	45	0.02%
IX	131	0.02%	52	0.02%	79	0.03%
Folsom Total	**15,535**	**3%**	**7,132**	**2%**	**8,403**	**3%**
Galt						
0	4,098	1%	2,255	1%	1,843	1%
III	0	0%	0	0%	0	0%
VI	0	0%	0	0%	0	0%
VII	70	0.01%	13	0.004%	57	0.02%
VIII	0	0%	0	0%	0	0%
X	0.02	0.000004%	0.02	0.00001%	0	0%
IX	1	0.0002%	0.2	0.0001%	1	0.0003%
Galt Total	**4,169**	**1%**	**2,268**	**1%**	**1,901**	**1%**
Isleton						
0	223	0.04%	63	0.02%	160	0.1%
III	0	0%	0	0%	0	0%
VI	0	0%	0	0%	0	0%
VII	9	0.002%	2	0.001%	7	0.002%
VIII	0	0%	0	0%	0	0%
X	0	0%	0	0%	0	0%
IX	0.05	0.00001%	0	0%	0.05	0.00002%
Isleton Total	**233**	**0%**	**66**	**0.02%**	**167**	**0.1%**
Rancho Cordova						
0	19,251	3%	7,330	2%	11,921	4%
III	0	0%	0	0%	0	0%
VI	566	0.1%	153	0.05%	413	0.1%
VII	347	0.1%	81	0.03%	266	0.1%
VIII	2	0.0004%	1	0.0003%	1	0.0005%

Jurisdiction / Susceptibility to Deep-Seated Landslide Class	Total Acres	% of Total Acres	Improved Acres"	% of Total Improved Acres	Unimproved Acres	% of Total Unimproved Acres
X	15	0.003%	1	0.0004%	14	0.01%
IX	20	0.003%	2	0.001%	18	0.01%
Rancho Cordova Total	**20,201**	**3%**	**7,569**	**2%**	**12,633**	**5%**
Sacramento						
0	51,111	9%	31,927	10%	19,184	7%
III	0	0%	0	0%	0	0%
VI	0	0%	0	0%	0	0%
VII	828	0.1%	228	0.1%	600	0.2%
VIII	0	0%	0	0%	0	0%
X	25	0.004%	8	0.003%	18	0.01%
IX	47	0.01%	10	0.003%	37	0.01%
Sacramento Total	**52,011**	**9%**	**32,172**	**10%**	**19,839**	**7%**
Unincorporated Sacramento County						
0	412,019	70%	219,727	70%	192,293	69%
III	1,836	0.3%	339	0.1%	1,497	1%
VI	28,824	5%	8,760	3%	20,064	7%
VII	11,618	2%	7,910	3%	3,709	1%
VIII	2,512	0.4%	631	0.2%	1,882	1%
X	260	0.04%	112	0.04%	148	0.1%
IX	1,333	0.2%	510	0.2%	823	0.3%
No Data	9,926	2%	1,828	1%	8,099	3%
Unincorporated Sacramento County Total	**468,329**	**79%**	**239,815**	**77%**	**228,513**	**82%**
Grand Total	**591,729**	**100%**	**311,875**	**100%**	**279,854**	**100%**

Source: Susceptibility to Deep-Seated Landslides map – CSG Map Sheet 58 (05/2011)

Past Occurrences

Disaster Declaration History

There have been no disaster declarations associated with solely landslides in Sacramento County; however, as shown in Table 4-108, there have been 1 state and 4 federal disaster declarations for flood which included landslides as a component.

Table 4-108 Sacramento County – Federal and State Disaster Declarations Summary 1950-2025

Disaster Type	State Declarations		Federal Declarations	
	Count	Years	Count	Years
Flood (events that included landslide)	1	2022	4	2023 (three times), 2024

Source: Cal OES, FEMA. Retrieved November 2025.

NCDC Events

The NCDC contains no records for landslides in Sacramento County.

Hazard Mitigation Planning Committee Events

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

Events since 2021 LHMP

The HMPC noted the following events that have occurred since the 2021 LHMP.

The active **2025–2026** winter season (with multiple atmospheric rivers in December 2025–February 2026) included Flood Watches that explicitly warned of rock/mudslides in the foothills and mountains in the State. Locally, heavy rain on saturated ground led to some localized mudslides and rockslides, mainly in higher-elevation areas east of Sacramento (foothills) or along routes like Highway 50.

The **December 27, 2022 – January 31, 2023** atmospheric river sequence (part of the federally declared disaster) included landslides and mudslides as explicit hazards in the declaration for Sacramento County. Heavy, prolonged rainfall on saturated soils and any remaining burn-scar areas led to mudslides, debris flows, and rockslides, particularly in the rural eastern/southern parts of the County. Impacts included road blockages, debris in drainages, and contributions to power outages (downed lines from slides or associated tree falls).

October 23–27, 2021 (Category 5 atmospheric river): This record-setting storm brought intense rainfall to the Sacramento region, triggering debris flows and mudslides, especially near wildfire burn scars (e.g., from the 2021 River Fire and other fires). In the Sacramento foothills and adjacent areas (including parts of eastern Sacramento County and nearby Placer County), officials issued evacuation warnings/orders for potential debris flows east of the Bear River near Colfax and around burn-scar zones. Ash and debris flows affected foothill roads and drainages, with some mud and rock movement reported.

While the valley floor (Sacramento proper) saw mostly urban flooding and ponding, the storm caused rockslides and mudslides that closed highways elsewhere in Northern California (e.g., Highway 70, Highway 50), and similar hazards were monitored locally.

Events prior to 2021 LHMP

No landslide incidents were reported prior to 2021 in the previous LHMP.

Likelihood of Future Occurrence

Unlikely – The topography of the majority of Sacramento County is relatively flat and not subject to landslide. In Sacramento County, only a narrow strip along the eastern boundary, from the Placer County line to the Cosumnes River, is considered to have landslide potential. However, future slides on these slopes are expected to be minor in nature and do not pose a large-scale threat to life or property. The American River Bluffs downstream from Folsom and in Fair Oaks and Carmichael are considered stable and are generally not subject to fracture or landslides; most land movement in this area is attributed to natural processes. This small portion, coupled with a lack of previous occurrences, equates to a likelihood of future occurrence of unlikely.

It is likely that climate change will increase the chance of future occurrence as well as future impacts. However, with relatively flat topography and limited areas prone to landslides, any future landslide related impacts in the Sacramento County Planning Area are likely to be minimal. More information on climate change and landslide and debris flow can be found in the next section. More information on future impacts can be found in the Future Conditions/Future Development section of the Vulnerability Assessment below.

Climate Change and Landslide and Debris Flows

According to the 2024 CAS, climate change may result in precipitation extremes (i.e., wetter wet periods and drier dry periods). More information on precipitation increases can be found in Section 4.3.3. While total average annual rainfall may decrease only slightly, rainfall is predicted to occur in fewer, more intense precipitation events. The combination of a generally drier climate in the future, which will increase the chance of drought and wildfires, and the occasional extreme downpour is likely to cause more mudslides, landslides, and debris flows.

Vulnerability Assessment

Vulnerability—Low

According to historical hazard data and landslide hazard mapping, landslides, while limited, can occur in the Sacramento County Planning Area. An assessment of a community's vulnerability to this hazard begins with an understanding of local exposure to unincorporated Sacramento County. This is included in the Local Concerns section below. After that, vulnerability is discussed in multiple sections that detail how this hazard can affect both the entire Sacramento County Planning Area as well as the unincorporated portions of Sacramento County. How the hazard affects the other participating jurisdictions can be found in their respective annexes to this LHMP Update. These sections below include assets at risk, impacts, and how future development may affect the vulnerability of the County to this hazard.

Local Concerns (unincorporated Sacramento County)

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

General Concerns

Generally, there risk to landslide in the County is limited due to its relatively flat topography. There are only a few areas that are at greater risk. The Sacramento County General Plan Background Report describes areas in the County that are particularly prone to landslides. In Sacramento County, only a narrow strip along the eastern boundary, from the Placer County line to the Cosumnes River, is considered to have landslide potential. However, future slides on these slopes are expected to be minor in nature and do not pose a large-scale threat to life or property. The American River Bluffs downstream from Folsom and in Fair Oaks and Carmichael are considered stable (per the Background Report) and are generally not subject to fracture or landslides.

While the Background Report contains this specific information, it should be noted that the CGS Deep-Seated Landslide Classes show larger areas in the County at risk to landslides, as shown above on Figure 4-109.

Regional Parks Concerns

Riverbank erosion near Hagan Park in Rancho Cordova, Tiscornia Park in Sacramento, between mile marker 3 and 4, between 8.5 and 10, 13.75, and 20.5, on the American River Bike Trail, and some creek embankments near the Dry Creek multi-use trail have occurred in the past and could occur again in the future.

Local concerns for each of the other participating jurisdictions can be found under the Local Concerns heading in each respective jurisdictional annex to this LHMP Update.

Assets at Risk

Assets at risk from landslide include people and populations; structures; critical facilities and infrastructure; and natural, historic, and cultural resources. These are discussed in the following sections for the Sacramento County Planning Area and unincorporated Sacramento County.

Additionally, for each hazard in the FEMA National Risk Index in Sacramento County, the relevant portions of the hazard analysis done by FEMA is presented below. This includes the Hazard Risk Index Rating, Expected Annual Loss Values, Exposure Values, and the Historic Loss Ratio Rating. These are presented for the Sacramento County Planning Area as a whole.

Methodology (Parcels and Structures)

In order to analyze people and populations, structures, and critical facilities at risk in each landslide class, GIS was used to quantify those values. The 2025 Sacramento County Parcel/Assessor Data was provided by Sacramento County and was used as the basis for the inventory of assessed values for both improved

and unimproved parcels within the Sacramento County Planning Area. The 2011 California Geologic Survey Deep Seated Landslide Susceptibility data was obtained for the Sacramento County Planning Area. The landslide hazard layer was then overlaid on the parcel layer. In some cases, there are parcels in multiple deep seated landslide classes. For the purposes of this analysis, if the deep seated landslide classes intersected any portion of a parcel polygon, the entire parcel was considered to be in the highest risk class. The parcels were segregated and analyzed in this fashion for the entire Planning Area.

Once the deep-seated landslide susceptibility classes were intersected, land and improved (structure) values from the Assessor data were included for each parcel and estimated content replacement values were added to the analysis. Improved parcels include those with improved structure values identified in the Sacramento County Assessor's database.

It should be noted that that the CGS dataset addresses deep-seated landslide susceptibility and may not capture all localized slope, bluff, riverbank, cut/fill, erosion, mudslide, or debris-flow conditions discussed elsewhere in the hazard profile. This distinction is important so the mapped susceptibility analysis is not interpreted as identifying all potential localized landslide hazards.

People and Populations

All populations located within areas of landslide susceptibility, especially in the High to Very High hazard areas (i.e., Classes VII to X) are at some vulnerability to landslide. This includes those people residing in these landslide potential areas as well as those that might reside or work within the landslide run out areas. People residing in these areas may also be cut off from transportation routes if roads and streets providing a means of ingress and egress are impacted. Certain vulnerable populations may be at greater risk due to the often sudden onset of a landslide event and include: the unsheltered, those with limited mobility, and those that lack the resources to leave the area.

Sacramento County Planning Area residents that live in the High and Very High landslide susceptibility areas are often the most vulnerable, but those who live in in the landslide run out areas (which are not mapped) are also 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 Planning Area's residential population residing within these hazard areas, an analysis was conducted of those who physically reside in the mapped landslide susceptibility areas. The CGS Susceptibility to Deep Seated Landslide maps were overlayed on the parcel layer and linked to the assessor data. Those residential parcel centroids that intersect the High or Very High risk areas (Class VII or higher) were counted and multiplied by the 2020 Census Bureau average household factors each jurisdiction in the Planning Area. Analysis results are shown in Table 4-109.

Table 4-109 Sacramento County Planning Area – Improved Residential Parcels and Population in High and Very High Susceptibility to Deep Seated Landslides Classes (VII, VIII, IX, and X) by Jurisdiction

Deep Seated Landslide Class/Jurisdiction	Improved Residential Parcels	Population
VII		
City of Citrus Heights	5,672	14,520
City of Elk Grove	279	893
City of Folsom	2,399	6,333
City of Galt	80	246
City of Isleton	21	67
City of Rancho Cordova	530	1,526
City of Sacramento	1,787	4,628
Unincorporated County	23,430	64,433
Total	**34,198**	**92,646**
VIII		
City of Citrus Heights	0	0
City of Elk Grove	1	3
City of Folsom	185	488
City of Galt	0	0
City of Isleton	0	0
City of Rancho Cordova	0	0
City of Sacramento	0	0
Unincorporated County	480	1,320
Total	**666**	**1,811**
IX		
City of Citrus Heights	19	49
City of Elk Grove	6	19
City of Folsom	434	1,146
City of Galt	1	3
City of Isleton	0	0
City of Rancho Cordova	17	49
City of Sacramento	25	64
Unincorporated County	1,398	3,845
Total	**1,900**	**5,175**
X		
City of Citrus Heights	0	0
City of Elk Grove	0	0

Deep Seated Landslide Class/Jurisdiction	Improved Residential Parcels	Population
City of Folsom	103	272
City of Galt	0	0
City of Isleton	0	0
City of Rancho Cordova	13	37
City of Sacramento	2	5
Unincorporated County	517	1,422
Total	**635**	**1,736**

Source: Susceptibility to Deep-Seated Landslides map – CSG Map Sheet 58 (05/2011), 2025 Sacramento County Parcel/Assessor Data, 2020 US Census Bureau Average Household Size – City of Citrus Heights (2.56); City of Elk Grove (3.2); City of Folsom (2.64); City of Galt (3.07); City of Isleton (3.18); City of Rancho Cordova (2.88); City of Sacramento (2.59): Unincorporated Sacramento County (2.75).

Structures

Landslides can affect the built environment of the Sacramento County Planning Area and those structures located within the high to very high hazard areas (i.e., Classes VII to X) are especially vulnerable, as are the structures located within the landslide run out areas. The CGS Deep Seated Landslide Susceptibility layer was overlaid with the County parcel (structure) layer in GIS and linked to the assessor data. The mapped landslide areas are shown on Figure 4-109. Table 4-110 summarizes parcel counts, land and improved values (i.e., those with a structure improvement on the parcel), other values, estimated content replacement values, and total values in the Planning Area for deep seated landslide classes. Table 4-111 summarizes 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 unincorporated County for the high and very high (VII and above) deep seated landslide classes. As shown, a limited number of improved parcels fall in Classes VII to X in the cities, while there are moderate improved parcels in Classes VII to X in the unincorporated County.

Table 4-110 Sacramento County Planning Area – Count and Value of Parcels and Structures Susceptible to Deep Seated Landslide by Class and Jurisdiction

Jurisdiction / Susceptibility to Deep-Seated Landslide Class	Total Parcel Count	Improved Parcel Count	Total Land Value	Structure Value	Estimated Contents Value	Total Value
Citrus Heights						
0	19,688	18,983	$2,252,143,334	$8,235,718,283	$4,330,158,223	$14,818,019,840
VII	6,238	5,885	$934,972,559	$2,370,502,137	$1,430,991,256	$4,736,465,952
IX	23	17	$1,682,079	$3,776,348	$1,888,174	$7,346,601
Citrus Heights Total	**25,949**	**24,885**	**$3,188,797,972**	**$10,609,996,768**	**$5,763,037,652**	**$19,561,832,392**
Elk Grove						
0	59,746	54,894	$8,226,518,512	$22,194,304,198	$12,762,936,359	$43,183,759,069

Jurisdiction / Susceptibility to Deep-Seated Landslide Class	Total Parcel Count	Improved Parcel Count	Total Land Value	Structure Value	Estimated Contents Value	Total Value
VI	205	176	$43,561,061	$85,460,138	$61,907,484	$190,928,683
VII	397	293	$93,588,434	$233,052,816	$159,578,947	$486,220,197
VIII	2	1	$231,530	$495,575	$247,788	$974,893
IX	13	6	$3,531,607	$2,251,067	$1,125,534	$6,908,208
X	5	1	$643,332	$34,474	$51,711	$729,517
Elk Grove Total	**60,368**	**55,371**	**$8,368,074,476**	**$22,515,598,268**	**$12,985,847,821**	**$43,869,520,565**
Folsom						
0	22,917	20,976	$4,176,125,728	$10,897,391,784	$6,388,768,078	$21,462,285,590
III	2,229	1,880	$635,818,526	$1,597,171,862	$967,759,277	$3,200,749,665
VI	1,092	926	$240,042,064	$712,927,099	$355,751,769	$1,308,720,932
VII	2,929	2,585	$619,649,085	$2,098,904,016	$1,409,548,150	$4,128,101,251
VIII	218	186	$67,327,596	$110,564,238	$56,273,651	$234,165,485
IX	566	460	$156,568,129	$348,779,276	$222,378,264	$727,725,669
X	163	109	$53,971,856	$102,384,890	$57,355,718	$213,712,464
Folsom Total	**30,114**	**27,122**	**$5,949,502,984**	**$15,868,123,165**	**$9,457,834,905**	**$31,275,461,054**
Galt						
0	8,990	7,793	$918,971,487	$2,400,193,287	$1,383,629,621	$4,702,794,395
VII	190	95	$33,829,636	$54,732,706	$50,778,831	$139,341,173
IX	12	2	$4,895,267	$5,892,905	$2,947,213	$13,735,385
X	2	2	$166,940	$120,334	$127,441	$414,715
Galt Total	**9,194**	**7,892**	**$957,863,330**	**$2,460,939,232**	**$1,437,483,106**	**$4,856,285,668**
Isleton						
0	457	296	$24,412,826	$50,608,785	$31,141,941	$106,163,552
VII	66	32	$6,889,636	$8,878,639	$6,759,994	$22,528,269
IX	1	0	$62,000	$0	$0	$62,000
No Data	3	2	$239,875	$369,260	$364,058	$973,193
Isleton Total	**527**	**330**	**$31,604,337**	**$59,856,684**	**$38,265,993**	**$129,727,014**
Rancho Cordova						
0	26,260	22,818	$3,672,417,010	$9,319,849,742	$6,453,565,212	$19,445,831,964
VI	1,053	664	$198,167,262	$314,917,214	$207,456,723	$720,541,199
VII	824	614	$243,996,605	$545,734,288	$481,436,442	$1,271,167,335
VIII	8	2	$1,490,440	$140,384	$140,384	$1,771,208
IX	38	20	$12,699,484	$30,631,899	$19,465,168	$62,796,551
X	28	17	$15,181,978	$9,547,975	$8,755,217	$33,485,170

Jurisdiction / Susceptibility to Deep-Seated Landslide Class	Total Parcel Count	Improved Parcel Count	Total Land Value	Structure Value	Estimated Contents Value	Total Value
Rancho Cordova Total	**28,211**	**24,135**	**$4,143,952,779**	**$10,220,821,502**	**$7,170,819,145**	**$21,535,593,426**
Sacramento						
0	155,688	143,796	$21,076,403,570	$56,193,872,914	$35,912,180,506	$113,182,456,990
VII	3,105	2,103	$848,383,537	$2,905,194,080	$2,497,075,122	$6,250,652,739
IX	130	37	$41,736,535	$90,872,347	$75,058,658	$207,667,540
X	66	26	$27,729,137	$105,439,921	$113,163,371	$246,332,429
Sacramento Total	**158,989**	**145,962**	**$21,994,252,779**	**$59,295,379,262**	**$38,597,477,657**	**$119,887,109,698**
Unincorporated Sacramento County						
0	149,718	139,057	$18,776,426,292	$44,626,064,164	$27,720,720,553	$91,123,211,009
III	115	59	$27,318,273	$32,634,074	$15,806,744	$75,759,091
VI	4,455	3,677	$729,012,106	$1,336,701,019	$705,635,315	$2,771,348,440
VII	27,795	24,929	$4,877,244,382	$11,838,150,506	$7,397,920,636	$24,113,315,524
VIII	688	517	$140,000,892	$256,254,573	$146,388,358	$542,643,823
IX	1,938	1,537	$543,222,291	$929,656,873	$584,664,231	$2,057,543,395
X	774	558	$190,115,663	$357,974,535	$217,697,388	$765,787,586
No Data	274	130	$37,603,972	$52,559,961	$48,440,466	$138,604,399
Unincorporated Sacramento County Total	**185,757**	**170,464**	**$25,320,943,871**	**$59,429,995,705**	**$36,837,273,688**	**$121,588,213,264**
Grand Total	**499,109**	**456,161**	**$69,954,992,528**	**$180,460,710,586**	**$112,288,039,965**	**$362,703,743,079**

Source: Susceptibility to Deep-Seated Landslides map – CSG Map Sheet 58 (05/2011), 2025 Sacramento County Parcel/Assessor Data

Table 4-111 Unincorporated Sacramento County – Count and Value of Parcels and Structures Susceptible to Deep Seated Landslide by Class and Property Use

Susceptibility to Deep-Seated Landslide Class / Property Use	Total Parcel Count	Improved Parcel Count	Total Land Value	Structure Value	Estimated Contents Value	Total Value
VII						
Agricultural	872	565	$409,157,352	$404,128,722	$404,128,722	$1,217,414,796
Care / Health	57	54	$60,205,385	$475,641,822	$475,641,822	$1,011,489,029
Church / Welfare	100	84	$56,789,083	$285,958,569	$285,958,569	$628,706,221
Industrial	191	131	$131,428,289	$424,879,602	$637,319,403	$1,193,627,294
Miscellaneous	855	1	$3,162,671	$6,275	$6,275	$3,175,221

Susceptibility to Deep-Seated Landslide Class / Property Use	Total Parcel Count	Improved Parcel Count	Total Land Value	Structure Value	Estimated Contents Value	Total Value
Office	254	215	$109,054,390	$274,642,176	$274,642,176	$658,338,742
Public / Utilities	180	0	$115	$0	$0	$115
Recreational	79	48	$27,801,444	$43,938,380	$43,938,380	$115,678,204
Residential	23,690	23,430	$3,580,674,027	$9,299,098,542	$4,649,549,271	$17,529,321,840
Retail / Commercial	331	313	$292,289,126	$626,736,018	$626,736,018	$1,545,761,162
Unknown	74	0	$0	$0	$0	$0
Vacant	1,112	88	$206,682,500	$3,120,400	$0	$209,802,900
VII Total	**27,795**	**24,929**	**$4,877,244,382**	**$11,838,150,506**	**$7,397,920,636**	**$24,113,315,524**
VIII						
Agricultural	93	34	$30,174,041	$33,224,316	$33,224,316	$96,622,673
Industrial	7	1	$8,813,720	$150,000	$225,000	$9,188,720
Miscellaneous	34	0	$55,000	$0	$0	$55,000
Recreational	3	1	$1,901,361	$3,309,826	$3,309,826	$8,521,013
Residential	490	480	$76,464,703	$219,258,431	$109,629,216	$405,352,350
Vacant	61	1	$22,592,067	$312,000	$0	$22,904,067
VIII Total	**688**	**517**	**$140,000,892**	**$256,254,573**	**$146,388,358**	**$542,643,823**
IX						
Agricultural	211	92	$96,348,269	$93,317,458	$93,317,458	$282,983,185
Care / Health	6	6	$30,512,917	$8,270,185	$8,270,185	$47,053,287
Church / Welfare	4	3	$7,337,329	$14,840,254	$14,840,254	$37,017,837
Industrial	8	6	$2,125,315	$36,499,176	$54,748,764	$93,373,255
Miscellaneous	99	1	$293,992	$48,999	$48,999	$391,990
Office	8	8	$4,305,084	$14,592,017	$14,592,017	$33,489,118
Public / Utilities	18	0	$0	$0	$0	$0
Recreational	16	6	$8,302,582	$9,124,235	$9,124,235	$26,551,052
Residential	1,437	1,398	$324,385,114	$725,368,729	$362,684,365	$1,412,438,208
Retail / Commercial	7	7	$11,631,525	$27,037,954	$27,037,954	$65,707,433
Unknown	2	0	$0	$0	$0	$0
Vacant	122	10	$57,980,164	$557,866	$0	$58,538,030
IX Total	**1,938**	**1,537**	**$543,222,291**	**$929,656,873**	**$584,664,231**	**$2,057,543,395**
X						
Agricultural	59	38	$27,497,063	$46,204,788	$46,204,788	$119,906,639
Care / Health	1	0	$177	$0	$0	$177
Church / Welfare	1	1	$450,144	$29,359,157	$29,359,157	$59,168,458
Industrial	5	1	$2,091,288	$937,896	$1,406,844	$4,436,028

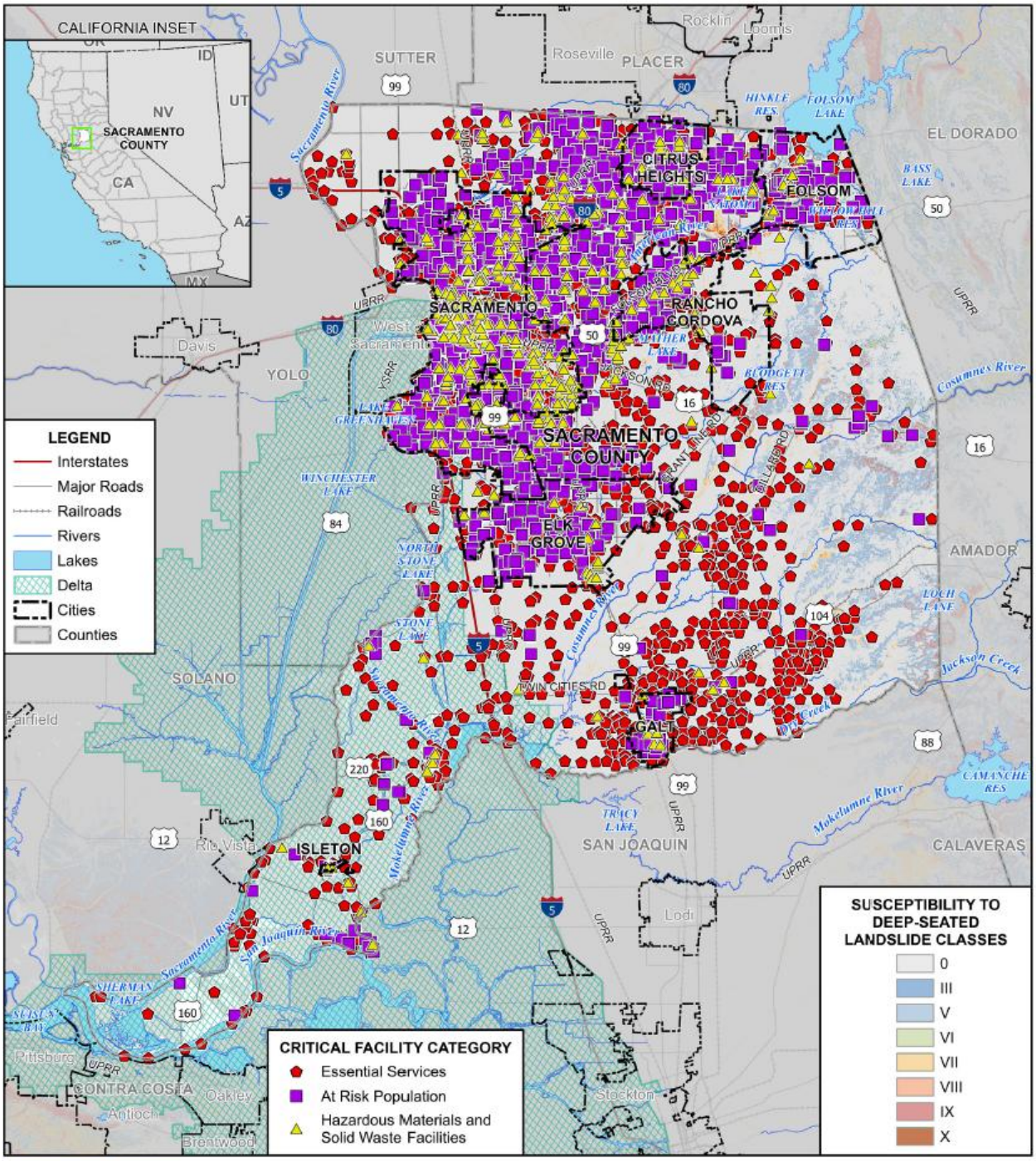
Susceptibility to Deep-Seated Landslide Class / Property Use	Total Parcel Count	Improved Parcel Count	Total Land Value	Structure Value	Estimated Contents Value	Total Value
Miscellaneous	94	0	$65,696	$0	$0	$65,696
Office	1	0	$0	$0	$0	$0
Public / Utilities	1	0	$0	$0	$0	$0
Recreational	3	0	$0	$0	$0	$0
Residential	531	517	$147,833,418	$281,453,197	$140,726,599	$570,013,214
Unknown	19	0	$0	$0	$0	$0
Vacant	59	1	$12,177,877	$19,497	$0	$12,197,374
X Total	**774**	**558**	**$190,115,663**	**$357,974,535**	**$217,697,388**	**$765,787,586**
No Data						
Agricultural	126	74	$26,065,549	$41,243,789	$41,243,789	$108,553,127
Care / Health	1	0	$10	$0	$0	$10
Industrial	4	4	$1,538,990	$1,436,900	$2,155,350	$5,131,240
Miscellaneous	27	1	$489,831	$3,689	$3,689	$497,209
Public / Utilities	8	0	$9	$0	$0	$9
Recreational	7	2	$1,122,086	$546,009	$546,009	$2,214,104
Residential	45	45	$6,640,169	$8,983,257	$4,491,629	$20,115,055
Vacant	56	4	$1,747,328	$346,317	$0	$2,093,645
No Data Total	**274**	**130**	**$37,603,972**	**$52,559,961**	**$48,440,466**	**$138,604,399**
Unincorporated Sacramento County Total	**185,757**	**170,464**	**$25,320,943,871**	**$59,429,995,705**	**$36,837,273,688**	**$121,588,213,264**

Source: Susceptibility to Deep-Seated Landslides map – CSG Map Sheet 58 (05/2011), 2025 Sacramento County Parcel/Assessor Data

Critical Facilities and Infrastructure

Landslides present 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 Sacramento County Planning Area to determine critical facilities by deep-seated landslide class. Using GIS, the landslide classes were overlayed on the critical facility GIS layer. Figure 4-110 shows critical facilities, as well as the deep-seated landslide classes. Table 4-112 details critical facilities by deep seated landslide class by facility type and count for the Planning Area.

Figure 4-110 Sacramento County Planning Area – Critical Facilities in Deep-Seated Landslide Class



Data Source: Susceptibility to Deep-Seated Landslides map - CGS Map Sheet 58 (May 2011), Sacramento County, Cal-Atlas; Map Date: 4/16/2026.

Table 4-112 Sacramento County Planning Area – Critical Facilities in Deep-Seated Landslide Class by Jurisdiction and Category

Jurisdiction /Susceptibility to Deep-Seated Landslide Class	Critical Facility Category	Facility Count
Citrus Heights		
0	Essential Services Facilities	74
	At Risk Population Facilities	91
	Hazardous Materials and Solid Waste Facilities	11
	Total	**176**
VII	Essential Services Facilities	2
	At Risk Population Facilities	17
	Hazardous Materials and Solid Waste Facilities	1
	Total	**20**
Citrus Heights Total		**196**
Elk Grove		
0	Essential Services Facilities	317
	At Risk Population Facilities	172
	Hazardous Materials and Solid Waste Facilities	17
	Total	**506**
VII	Essential Services Facilities	1
	Total	**1**
X	Hazardous Materials and Solid Waste Facilities	1
	Total	**1**
Elk Grove Total		**508**
Folsom		
0	Essential Services Facilities	135
	At Risk Population Facilities	81
	Hazardous Materials and Solid Waste Facilities	9
	Total	**225**
III	Essential Services Facilities	2
	At Risk Population Facilities	1
	Total	**3**
VI	Essential Services Facilities	6
	Total	**6**
VII	Essential Services Facilities	7
	At Risk Population Facilities	7
	Hazardous Materials and Solid Waste Facilities	1
	Total	**15**

Jurisdiction /Susceptibility to Deep-Seated Landslide Class	Critical Facility Category	Facility Count
VIII	Essential Services Facilities	2
	Total	**2**
Folsom Total		**251**
Galt		
0	Essential Services Facilities	116
	At Risk Population Facilities	40
	Hazardous Materials and Solid Waste Facilities	10
	Total	**166**
VII	Essential Services Facilities	2
	Hazardous Materials and Solid Waste Facilities	1
	Total	**3**
Galt Total		**169**
Isleton		
0	Essential Services Facilities	9
	At Risk Population Facilities	3
	Hazardous Materials and Solid Waste Facilities	3
	Total	**15**
VII	At Risk Population Facilities	1
	Total	**1**
Isleton Total		**16**
Rancho Cordova		
0	Essential Services Facilities	210
	At Risk Population Facilities	151
	Hazardous Materials and Solid Waste Facilities	19
	Total	**380**
VI	Essential Services Facilities	1
	At Risk Population Facilities	1
	Hazardous Materials and Solid Waste Facilities	1
	Total	**3**
VII	Essential Services Facilities	10
	Total	**10**
Rancho Cordova Total		**393**
Sacramento		
0	Essential Services Facilities	1,252
	At Risk Population Facilities	838
	Hazardous Materials and Solid Waste Facilities	244

Jurisdiction /Susceptibility to Deep-Seated Landslide Class	Critical Facility Category	Facility Count
	Total	**2,334**
VII	Essential Services Facilities	31
	At Risk Population Facilities	5
	Hazardous Materials and Solid Waste Facilities	4
	Total	**40**
IX	Hazardous Materials and Solid Waste Facilities	1
	Total	**1**
X	Essential Services Facilities	1
	Total	**1**
Sacramento Total		**2,376**
Unincorporated Sacramento County		
0	Essential Services Facilities	2,342
	At Risk Population Facilities	905
	Hazardous Materials and Solid Waste Facilities	167
	Total	**3,414**
V	Essential Services Facilities	66
	At Risk Population Facilities	5
	Hazardous Materials and Solid Waste Facilities	1
	Total	**72**
VII	Essential Services Facilities	79
	At Risk Population Facilities	38
	Hazardous Materials and Solid Waste Facilities	8
	Total	**125**
VIII	Essential Services Facilities	2
	At Risk Population Facilities	1
	Hazardous Materials and Solid Waste Facilities	1
	Total	**4**
No Data	Essential Services Facilities	60
	At Risk Population Facilities	1
	Total	61
Unincorporated Sacramento County Total		**3,676**
Grand Total		**7,585**

Source: Susceptibility to Deep-Seated Landslides map – CGS Map Sheet 58 (05/2011), Sacramento County GIS

Natural, Historic, and Cultural Resources

Landslides can affect natural, historic, and cultural resources that lie in the landslide area, or the landslide run out area. Landslides can destroy large tracts of open space areas, destroy wildlife habitat, and remove productive soils and vegetation from slopes. It can also fill in waterways, impact water quality, and potentially affect flooding potential. Natural resources that fall in the High or Very High susceptibility classes shown on Figure 4-109 would be most vulnerable, as well as those in the run out areas.

FEMA NRI Hazard Vulnerability Assessment

The FEMA NRI was queried for additional specific data on Sacramento County's vulnerability to Landslides, Mudslides, and Debris Flow. The NRI contains data and analysis for 18 separate natural hazards. The NRI hazard related to Sacramento County's Landslides, Mudslides, and Debris Flow is only landslide. According to the NRI, there have been 2 landslide events between the years 2010-2021 with an average of 0 events per year. As shown in Table 4-113, landslides could cause a total of $169,504 in expected annual losses, with a historic loss rating of very low. Landslide has a relatively high rating for both social vulnerability and community resilience, with a risk index score of 91.3 out of 100.

Table 4-113 Sacramento County Planning Area – Landslide Vulnerability Ratings from FEMA NRI

NRI Hazard	Hazard Risk Index Rating	Expected Annual Loss Values (total)	Exposure Value (total)	Historic Loss Ratio Rating
Landslide	91.3	$169,504	$744,034,861,428	Very Low

Source: FEMA NRI Report, retrieved 10/8/2025.

*Hazard Risk Index is calculated using data for only a single hazard type, and reflect a communities expected annual loss value, community risk factors, and the adjustment factor used to calculate the risk value.

**Expected annual loss represents the average economic loss in dollars resulting from natural hazards each year.

***Exposure is a natural hazard consequence factor that is the representative value of buildings, populations, or agriculture potentially exposed to a natural hazard occurrence.

Additional information on the FEMA NRI can be found in Section 4.2 and Appendix G.

Impacts from Landslide

Any type of landslide may result in damages or complete destruction of buildings in their path, as well as deaths and injuries. Landslides can cause road blockages by depositing debris on road surfaces or road damage if the road surface itself slides downhill. Utility lines and pipes are also prone to breakage in slide areas.

Landslides can collapse into water bodies, causing tsunamis or seiches. In 1958, a magnitude 8 earthquake collapsed a hillside into Lituya Bay, Alaska, causing a water splash wave that reached 1,720 feet up a mountain slope, stripping all vegetation. A massive landslide into the Vaoint Reservoir in Italy in 1963 caused a water splash wave that swept 800 feet over the top of a dam, causing a major flood that killed an estimated 2,600 people below. Landslides can relocate river channels, as occurred during the Oso mudslide in Washington State in March 2014. This occurred in an area not considered landslide prone on local maps.

Landslides and debris flows can relocate river channels, impact water quality and the storage capacity of surface water reservoirs used to store potable water.

Landslides, debris flows, and mud flows impacts vary by location and severity of any given event and will likely only affect certain areas of the Planning Area susceptible to landslide. Based on the risk assessment, there is limited potential for significant landslides to occur in the Planning Area in the more developed areas. Most, but not all, of the historic landslides in the Sacramento County Planning Area have been minor, localized events that are more of a nuisance than a disaster. Impacts that are not quantified, but can be anticipated if a large landslide event were to occur, 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 County 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 Sacramento County include the following:

- Climate change is likely to exacerbate future landslide conditions and associated impacts and vulnerability of the County to landslides. This is especially true in burn scar areas that are at greater risk to landslides. This was discussed in greater detail in the Climate Change and Landslide 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 County. Population growth in Sacramento County is expected to continue. There are 129 areas in the unincorporated County where development is expected to occur in the next 5 years. Additional population growth would likely bring continued diversity to the County. Vulnerable population groups could face disproportionate effects from a landslide. Changes in population and population patterns may or may not increase the impacts and vulnerability of the County 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. There are 129 areas in the unincorporated County where development is expected to occur in the next 5 years. Locating new development, structures and critical facilities and infrastructure within or near areas of landslide risk may put additional development at risk. However, County building codes are in effect to reduce this risk and should be updated as necessary to continue to address future landslide conditions. Site location, slope and geologic conditions, grading, drainage, erosion, and applicable geotechnical review can affect landslide vulnerability and should be considered through land-use/development review where applicable. It should be noted that most of the growth in the County is occurring in areas outside the landslide risk areas. Thus, 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 County to this hazard.

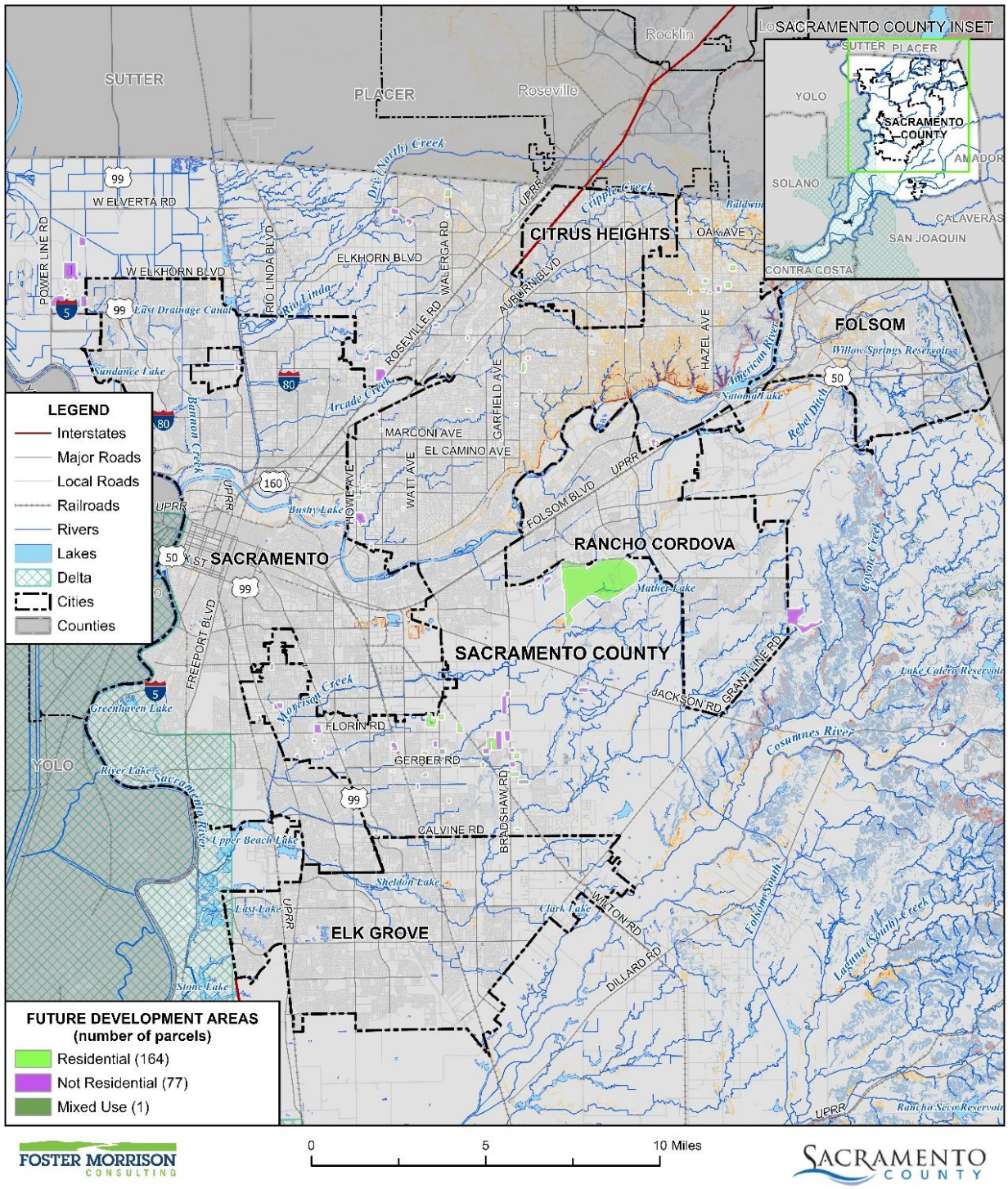
Future Development

Future development considerations should be ongoing and proactive. Ensuring that comprehensive land use planning is conducted, regulatory requirements are followed, and varying needs for different demographic groups with intersecting identities that reside within the County are considered can help to make for a more resilient community. Although new growth and development corridors may fall in or near areas affected by moderate risk of landslide, given the small chance of a major landslide and the building codes and erosion ordinance in effect, development in the landslide areas will continue to occur.

GIS Analysis

Sacramento County provided 129 future development areas which were used as the basis for the inventory of future development for the unincorporated County. These were mapped in GIS. Future development areas in deep-seated landslide classes are shown on Figure 4-111 and detailed in Table 4-114. As shown, 24 future development areas falls in the VI or higher deep-seated landslide classes.

Figure 4-111 Unincorporated Sacramento County – Future Development Areas in Deep-Seated Landslide Classes



Data Source: Susceptibility to Deep-Seated Landslides map - CGS Map Sheet 58 (May 2011), Sacramento County, Cal-Atlas; Map Date: 10/2/2026.

Table 4-114 Unincorporated Sacramento County – Future Development Areas by Type and Status in Class VI or Higher Deep-Seated Landslide Classes with Parcels and Acres

Susceptibility to Deep-Seated Landslide Class / Future Development Type and Status	Site/Location Name	Total Parcel Count	Improved Parcel Count	Unimproved Parcel Count	Total Acres	Total Improved Acres	Total Unimproved Acres
VI							
Residential							
Closed	Murieta Hills East Unit 1 Lots 125 & West Unit 1 Lots 16 (DRSmajor)	1	0	1	0.2	0.0	0.2
	Vineyard Glen Oxform	1	0	1	10.1	0.0	10.1
	Closed Total	**2**	**0**	**2**	**10.4**	**0.0**	**10.4**
Residential Total		**2**	**0**	**2**	**10.4**	**0.0**	**10.4**
Not Residential							
Closed	FlorinBradshaw Commercial (RZBSDPUPBSPPDRS)	1	0	1	18.5	0.0	18.5
	Closed Total	**1**	**0**	**1**	**18.5**	**0.0**	**18.5**
Not Residential Total		**1**	**0**	**1**	**18.5**	**0.0**	**18.5**
VI Total		**3**	**0**	**3**	**28.9**	**0.0**	**28.9**
VII							
Residential							
Complete	1530 Howe Avenue Apartments (UPPamendSPP amendUPMDRS)	1	1	0	4.5	4.5	0.0
	The Legacy Apartments New Units (SPMDRS)	1	1	0	11.0	11.0	0.0
	Complete Total	**2**	**2**	**0**	**15.5**	**15.5**	**0.0**
Closed	2856 Arden Way MultiFamily Development (DRSmjPRC)	1	1	0	0.1	0.1	0.0
	Beech Avenue Parcel Map (PMRDRS)	1	1	0	4.9	4.9	0.0
	Beech Hill Apartments (PSSDRS)	1	0	1	1.3	0.0	1.3

Susceptibility to Deep-Seated Landslide Class / Future Development Type and Status	Site/Location Name	Total Parcel Count	Improved Parcel Count	Unimproved Parcel Count	Total Acres	Total Improved Acres	Total Unimproved Acres
	Blossom Ridge Production Homes (DRSmajor)	1	0	1	9.2	0.0	9.2
	EVA Flight Training Academy Residence Hall (DRSmjrPRC)	1	0	1	0.0	0.0	0.0
	Closed Total	**5**	**2**	**3**	**15.6**	**5.0**	**10.5**
Close Pending	6702 Filbert Ave Subdivision (SDPCZBSPZDRS)	1	0	1	9.8	0.0	9.8
	Close Pending Total	**1**	**0**	**1**	**9.8**	**0.0**	**9.8**
Residential Total		**8**	**4**	**4**	**40.8**	**20.5**	**20.3**
Not Residential							
Complete	North Vineyard Plaza Map Extension (XPR)	1	1	0	7.7	7.7	0.0
	Complete Total	**1**	**1**	**0**	**7.7**	**7.7**	**0.0**
Closed	1100 Howe Ave Fitness Building (DRSmajor)	1	1	0	32.0	32.0	0.0
	2227 Wyda Way Minor Auto Repair Facility (DRSmjPRC)	1	0	1	1.0	0.0	1.0
	6302 22nd Street Agricultural Structure (DRSmajor)	1	1	0	4.5	4.5	0.0
	Auburn Falls Sunset Ridge Community Building (DRSmajor)	1	0	1	0.9	0.0	0.9
	Bowling Green Park Improvement Project (DRSmajor)	1	0	1	4.9	0.0	4.9
	Folsom Tire Shop Expansion (DRSmajor)	1	1	0	0.8	0.8	0.0
	Ji Dental Office	1	0	1	0.0	0.0	0.0
	Kiddie Academy (DRSmajor)	1	0	1	1.4	0.0	1.4
	Kid's Empire Antelope (DRSmjPRC)	1	1	0	1.1	1.1	0.0

Susceptibility to Deep-Seated Landslide Class / Future Development Type and Status	Site/Location Name	Total Parcel Count	Improved Parcel Count	Unimproved Parcel Count	Total Acres	Total Improved Acres	Total Unimproved Acres
	Sierra Creek Park (DRSmajor)	1	0	1	7.3	0.0	7.3
	Walmart #1881 Grocery Pickup (DRSmajor)	1	1	0	12.9	12.9	0.0
	Walmart #4309 Expansion (DRSmajor)	1	1	0	6.3	6.3	0.0
	Closed Total	**12**	**6**	**6**	**73.1**	**57.6**	**15.5**
Not Residential Total		**13**	**7**	**6**	**80.8**	**65.3**	**15.5**
VII Total		**21**	**11**	**10**	**121.6**	**85.8**	**35.8**
IX							
Not Residential							
Closed	Braden Cordova Hills (DRS-Major PRC)	1	0	1	135.8	0.0	135.8
	Closed Total	**1**	**0**	**1**	**135.8**	**0.0**	**135.8**
Not Residential Total		**1**	**0**	**1**	**135.8**	**0.0**	**135.8**
IX Total		**1**	**0**	**1**	**135.8**	**0.0**	**135.8**
Grand Total		**242**	**46**	**196**	**1,326.8**	**262.5**	**1,064.3**

Source: CGS, Sacramento County GIS

4.3.14. Levee Failure

Hazard Profile

This hazard profile contains multiple sections that detail how this hazard can affect the Sacramento County Planning Area. These sections include a hazard/problem description; description of location and extent; past occurrences of this hazard; likelihood of future occurrence; and how climate change can affect or influence this hazard.

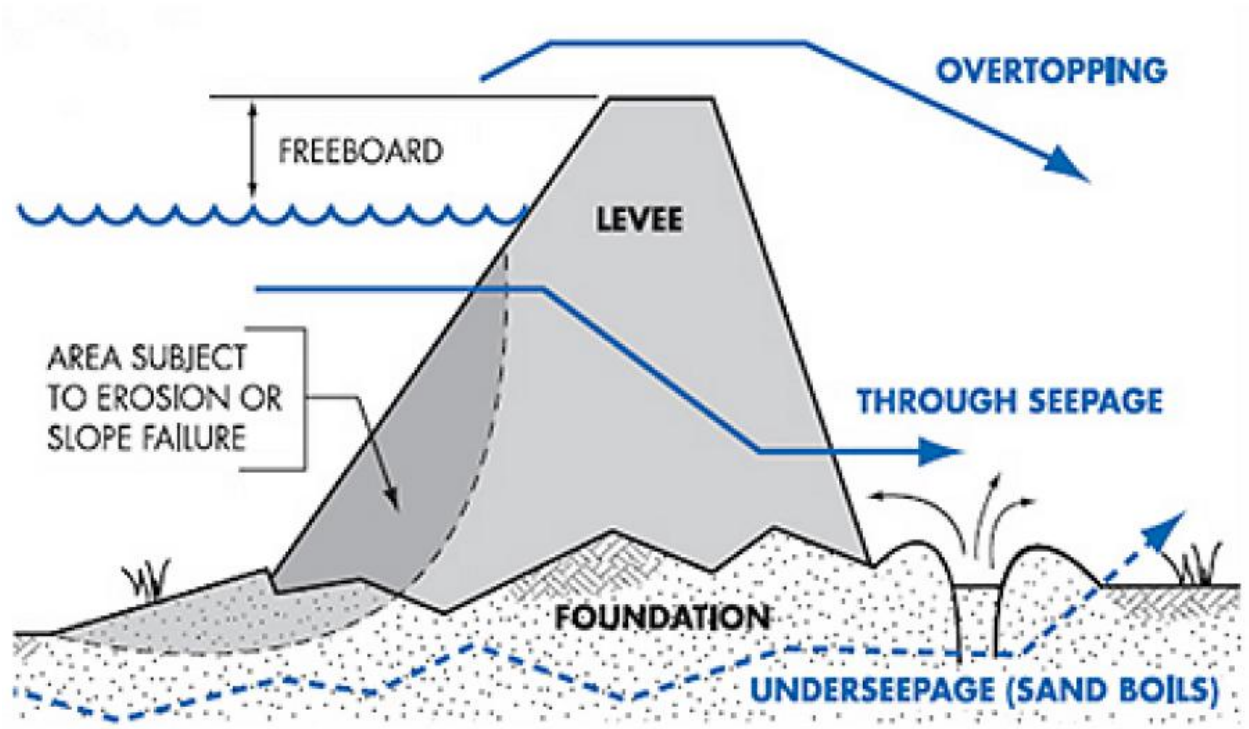
Hazard/Problem Description

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 flood events or dam failure. 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.

In addition to overtopping, levee systems can fail or be compromised in a variety of ways. Under-seepage refers to water flowing under the levee through the levee foundation materials, often emanating from the bottom of the landside slope and ground surface and extending landward from the landside toe of the levee. Through-seepage refers to water flowing through the levee prism directly, often emanating from the landside slope of the levee. Both conditions can lead to failure by several mechanisms, including excessive water pressures causing foundation heave and slope instabilities, slow progressing internal erosion, and piping leading to levee slumping. Rodents can burrow into and compromise the levee system. Erosion can also lead to levee failure. Figure 4-112 depicts many causes of levee failure.

Figure 4-112 Potential Causes of Levee Failure

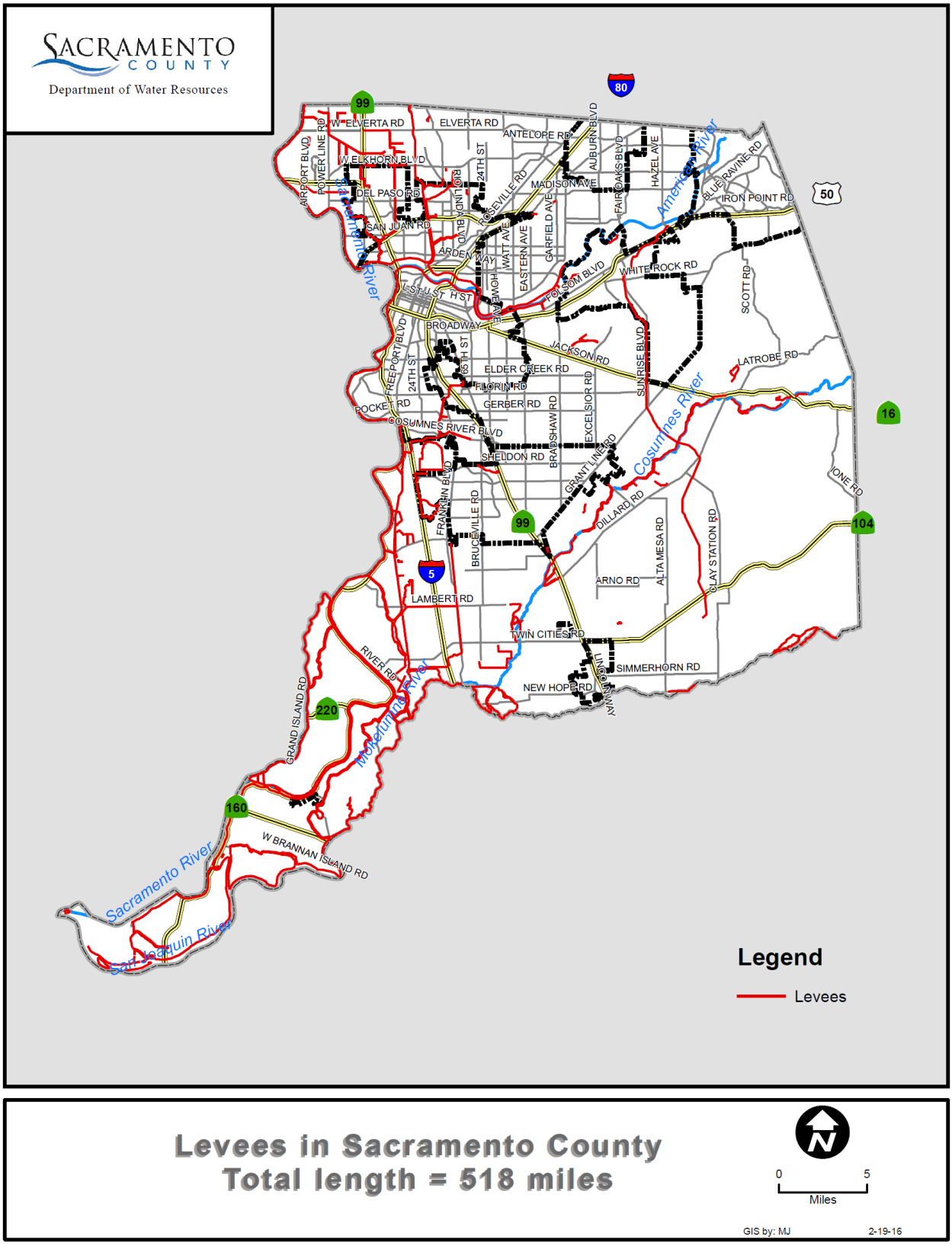


Source: USACE

Location and Extent

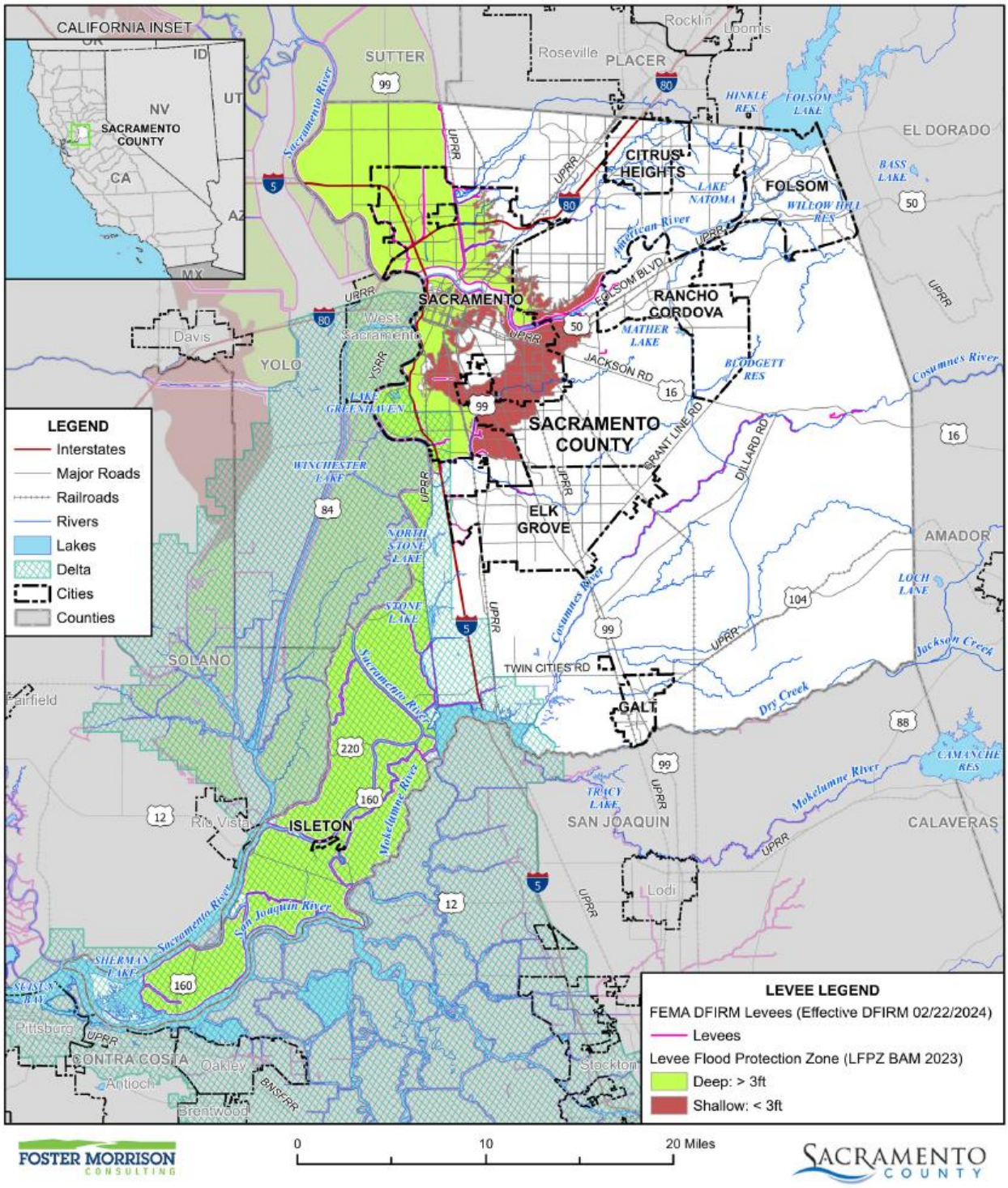
Hundreds of miles of levees are located throughout the Sacramento County Planning Area. These include both project and non-project levees providing a range of flood protection to Sacramento County communities in both agricultural and urban areas. Sacramento County's levee system can be seen in Figure 4-113.

Figure 4-113 Sacramento Planning Area – Levee Map



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. Maps showing estimated inundation depths due to a levee failure in the County are shown on Figure 4-114. 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. Geographical DFIRM A99 and X Protected by Levee flood zone extent from the FEMA DFIRMs is shown on Figure 4-115 and summarized in Table 4-115 and detailed by jurisdiction in Table 4-116. These zones were discussed previously in Table 4-89. It should be noted that 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.

Figure 4-114 Sacramento County Planning Area – Levee Flood Protection Zones

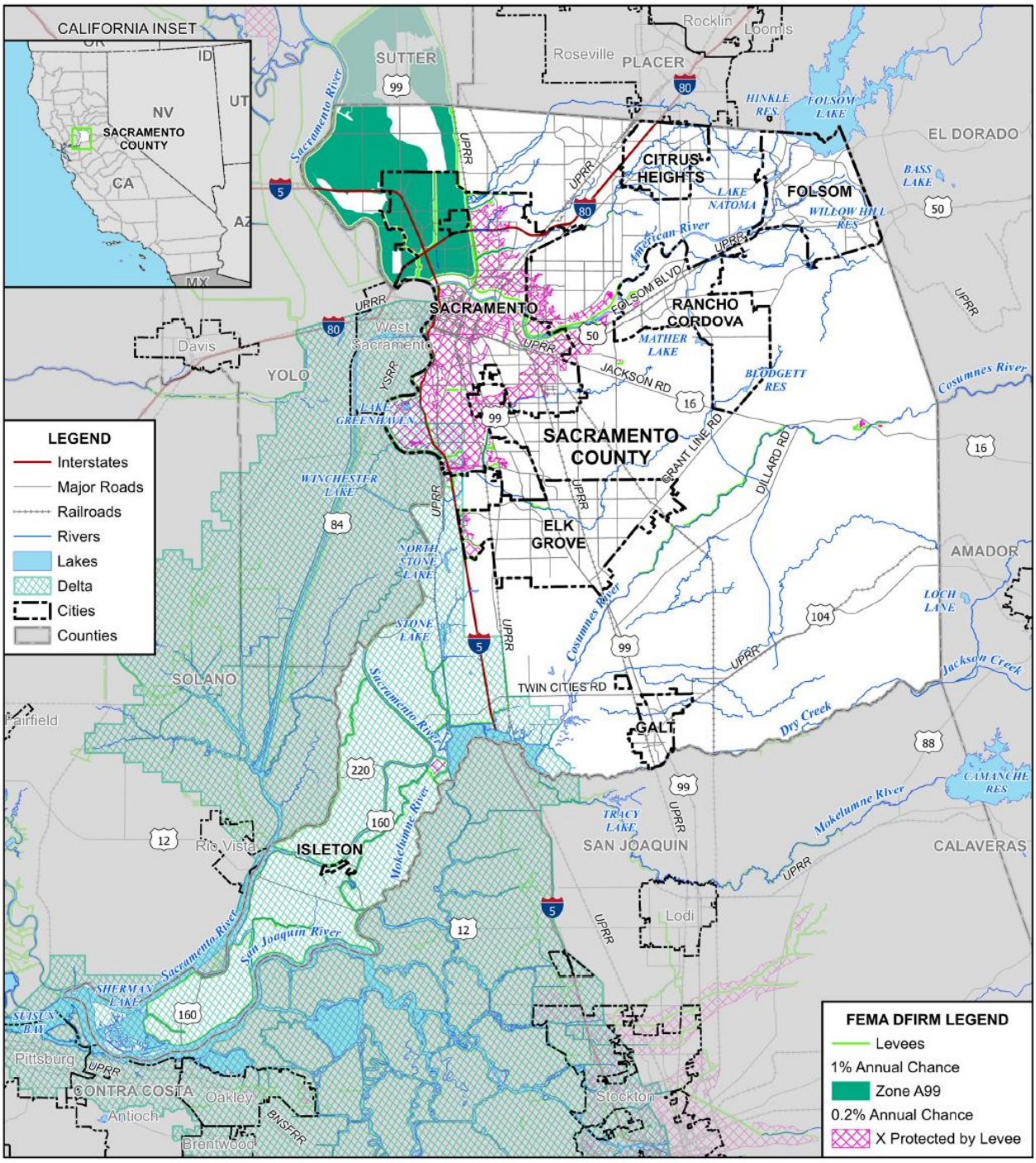


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SACRAMENTO COUNTY

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: 1/30/2026.

Figure 4-115 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 4-115 Sacramento County Planning Area – Geographical Flood Hazard Extents in FEMA DFIRM A99 and X Protected by Levee Flood Zones

DFIRM Flood Zone	Total Acres	% of Total Acres*	Improved Acres	% of Total Improved Acres*	Unimproved Acres	% of Total Unimproved Acres*
A99	28,379	4.796%	10,213	3.27%	18,165	6.491%
X Protected by Levee	28,791	4.87%	20,025	6.43%	8,767	3.13%

Source: 02/2024 DFIRM

Table 4-116 Sacramento County Planning Area – Geographical Flood Hazard Extents in FEMA DFIRM A99 and X Protected by Levee Flood Zones by Jurisdiction

DFIRM Flood Zone/ Jurisdiction	Total Acres	% of Total Acres*	Improved Acres	% of Total Improved Acres*	Unimproved Acres	% of Total Unimproved Acres*
A99						
Citrus Heights	0	0.00%	0	0.00%	0	0.00%
Elk Grove	0	0.00%	0	0.00%	0	0.00%
Folsom	0	0.00%	0	0.00%	0	0.00%
Galt	0	0.00%	0	0.00%	0	0.00%
Isleton	0	0.00%	0	0.00%	0	0.00%
Rancho Cordova	0	0.00%	0	0.00%	0	0.00%
City of Sacramento	10,178	1.720%	6,183	1.98%	3,994	1.427%
Unincorporated Sacramento County	18,201	3.076%	4,030	1.29%	14,171	5.064%
Total A99	**28,379**	**4.796%**	**10,213**	**3.27%**	**18,165**	**6.491%**
X Protected by Levee						
Citrus Heights	0	0.00%	0	0.00%	0	0.00%
Elk Grove	685	0.116%	501	0.16%	184	0.066%
Folsom	0	0.00%	0	0.00%	0	0.00%
Galt	0	0.00%	0	0.00%	0	0.00%
Isleton	0	0.00%	0	0.00%	0	0.00%
Rancho Cordova	197	0.033%	175	0.06%	22	0.008%
City of Sacramento	23,163	3.914%	15,771	5.06%	7,392	2.641%
Unincorporated Sacramento County	4,746	0.802%	3,578	1.15%	1,169	0.418%

DFIRM Flood Zone/ Jurisdiction	Total Acres	% of Total Acres*	Improved Acres	% of Total Improved Acres*	Unimproved Acres	% of Total Unimproved Acres*
Total X Protected by Levee	**28,791**	**4.87%**	**20,025**	**6.43%**	**8,767**	**3.13%**

Source: 02/2024 DFIRM

*This table represents the percentages of flood zone for the Planning Area. Percentages of flood zones for each jurisdiction are shown in their respective annexes.

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 4-117. Also, it is important to note that many of the flood disaster declarations included in Section 4.3.11 (like the December 31, 2022 event near Wilton) also may include flooding associated with levee breach or failure events.

Table 4-117 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.

Hazard Mitigation Planning Committee Events

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

Events since 2021 LHMP

The HMPC noted the following events that have occurred since the 2021 LHMP.

Late December 2022 – Early January 2023 (New Year's Eve / Cosumnes River Levee Breaches): This is the only notable actual levee failure event in Sacramento County since 2021. During the intense atmospheric river storms (part of the federally declared DR-4683-CA disaster), a privately owned levee system along the Cosumnes River (near Wilton and Sloughhouse in eastern/southern Sacramento County) experienced multiple breaches/ruptures. Reports indicate two to three major breaks along a roughly 31–34 mile stretch of levee, with at least 11 trouble spots identified.

Sacramento County declared a local emergency over "significant uncontrolled levee erosion" in an area pummeled by the 2023 winter storms. The County said its emergency proclamation came in response to Reclamation District 800 proclaiming an emergency.

The breaches caused localized flooding that inundated homes, agricultural lands, and roads (including closure of Highway 99), stranded vehicles, and prompted water rescues and evacuations in the Wilton area. This event contributed to at least three deaths in the County (vehicles swept away or related to flooding). It was described as one of the worst levee issues seen in decades in the area. The levees were privately managed (e.g., by reclamation districts funded by landowners), so the County had limited jurisdiction for proactive repairs. Emergency repairs were conducted, but the managing district faced ongoing financial strain (borrowing millions and still owing funds years later). These failures were tied to prolonged heavy rain on already saturated ground and were explicitly included in the federal disaster declaration for flooding, landslides, and related hazards.

Hundreds of agricultural parcels were inundated, with the Sacramento County Agricultural Commissioner's Office documenting total damages exceeding $38 million. Specific impacts included: sand and debris burial of cropland; destroyed irrigation pipelines, pump systems, and field infrastructure; failed pond levees and aquaculture facilities; and damaged farm equipment and storage structures. Affected commodities and acreages documented by the Ag Commissioner's Office included approximately 4,000 acres of wine grapes, 1,600 acres of processed tomatoes, plus significant acreage of alfalfa, wheat, oats, and other field crops.

Reclamation District No. 2110, McCormack-Williamson Tract, flooded during the same flood event, due to an intentional design levee degrade along the Mokelumne River. This overtopping and subsequent breach and inundation was designed to occur to minimize future catastrophic flooding impacts downstream within the north Delta region. The 2023 overtopping and breach was observed and documented throughout the flood event. This event did not impact lands within the District significantly; the landowner was already in preparation for inundation as part of the North Delta Multi-Benefit Project. Unlike the 2017 flooding where the District and landowner chose to reclaim the District, after the 2023 event, the parties decided to construct the remainder of the multi-benefit project around the permanently flooded condition to reduce costs while still achieving similar over-arching benefits for the region.

Damage, Erosion, or Near-Failures

February 2025 (Cosumnes River Levee Erosion near Rancho Murieta / Dillard Road): Sacramento County declared another local emergency due to "significant uncontrolled levee erosion" along the Cosumnes River east of Dillard Road and south of Highway 16. This area had been heavily impacted by the 2023 storms, and erosion continued or worsened. No evacuation was ordered, and the immediate threat of failure was described as low, but urgent repairs were needed. The county alerted the state for assistance.

December 2024 (Sherman Island Levee Erosion): Sacramento County declared a local state of emergency after storm damage caused significant erosion to a levee on Sherman Island (south of Rio Vista, near the Sacramento/Solano County line and in the Delta region). The island is inhabited, but the threat of full failure was assessed as low. Repairs were prioritized to protect the island from flooding.

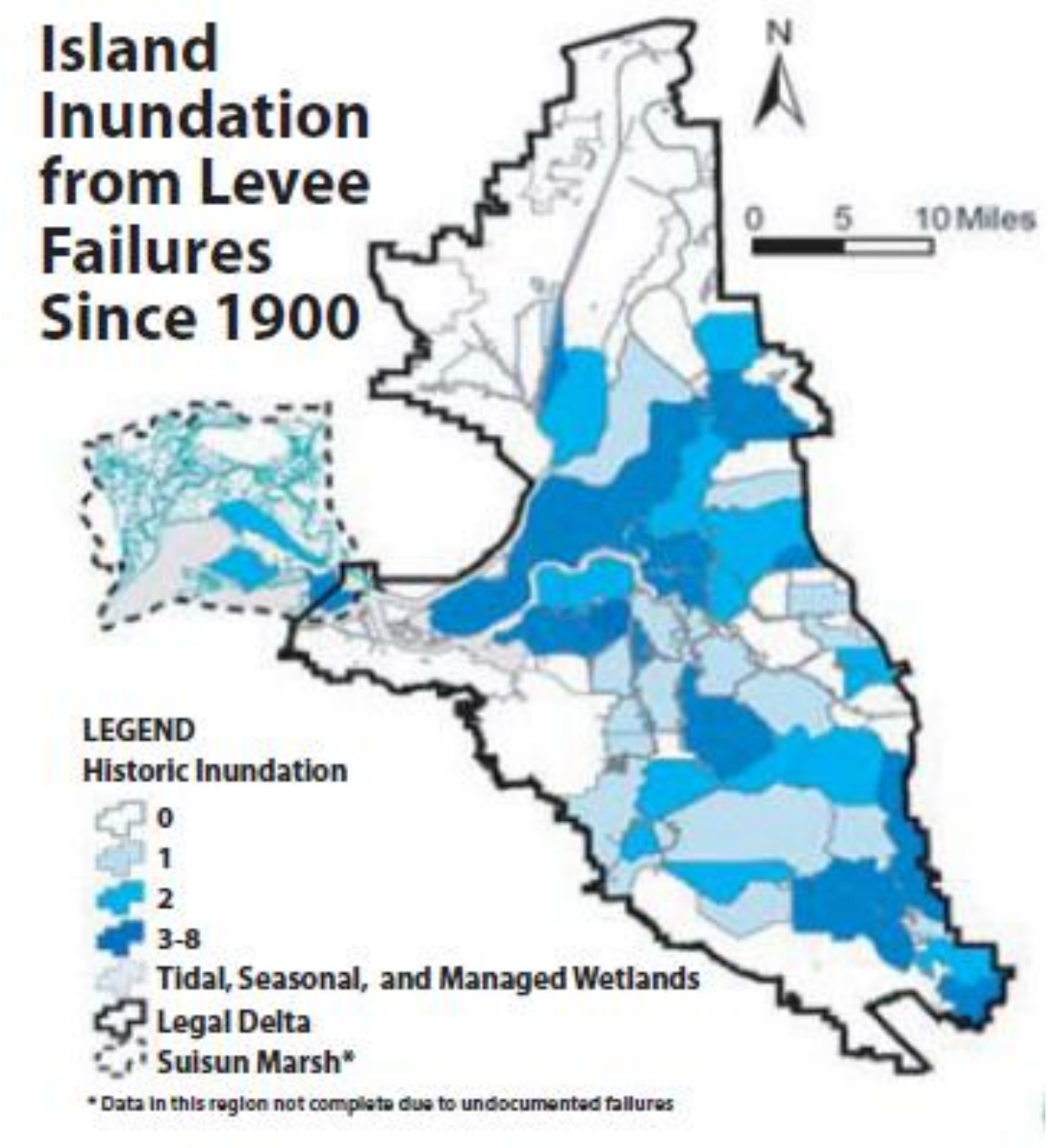
December 2022 – March 2023 (Delta-Wide): The two federally declared emergencies Delta-wide are best characterized by multiples waves of impacts. December and January were characterized as extreme

widespread localized heavy rainfall and high winds that created a significant disaster of too much rainfall mixed with power outages throughout the Delta. The Cosumnes River system flashed and peaked through the system, impacting the east and north Delta into Sacramento County. Other county RD's faced finding solutions for temporary power to minimize interior flooding risks. February through March was the long high water event through the Delta as the Sacramento and American River watersheds released flood flows through the Sacramento River Flood Control Project through the Delta. This wave of the event created additional damages related to erosion, levee seepage and saturation creating boils, additional tree fall and ongoing drainage related issues.

Events prior to 2021 LHMP

There have been about 100 levee failures and over 165 levee breaches since the early 1900s. However, most of these failures occurred in the Delta area and are not specific to portions of the Delta located inside of Sacramento County. Only 17 failures and 20 breaches occurred after 1990 due to overall improvements in the levee systems throughout the Delta. These historic numbers are not representative of future occurrences within the County, since much work has been done to the levees to decrease their flood risk. Figure 4-116 shows the levee failures since 1900.

Figure 4-116 Island Inundation from Levee Failures from 1900-Present



Source: Levee Failures in the Sacramento-San Joaquin River Delta. URS 2011. Retrieved 3/24/2026.

Some islands have been flooded and recovered multiple times. A few islands, such as Franks Tract in San Joaquin County, have never recovered. Some of the more major levee breaks in Sacramento County are detailed below.

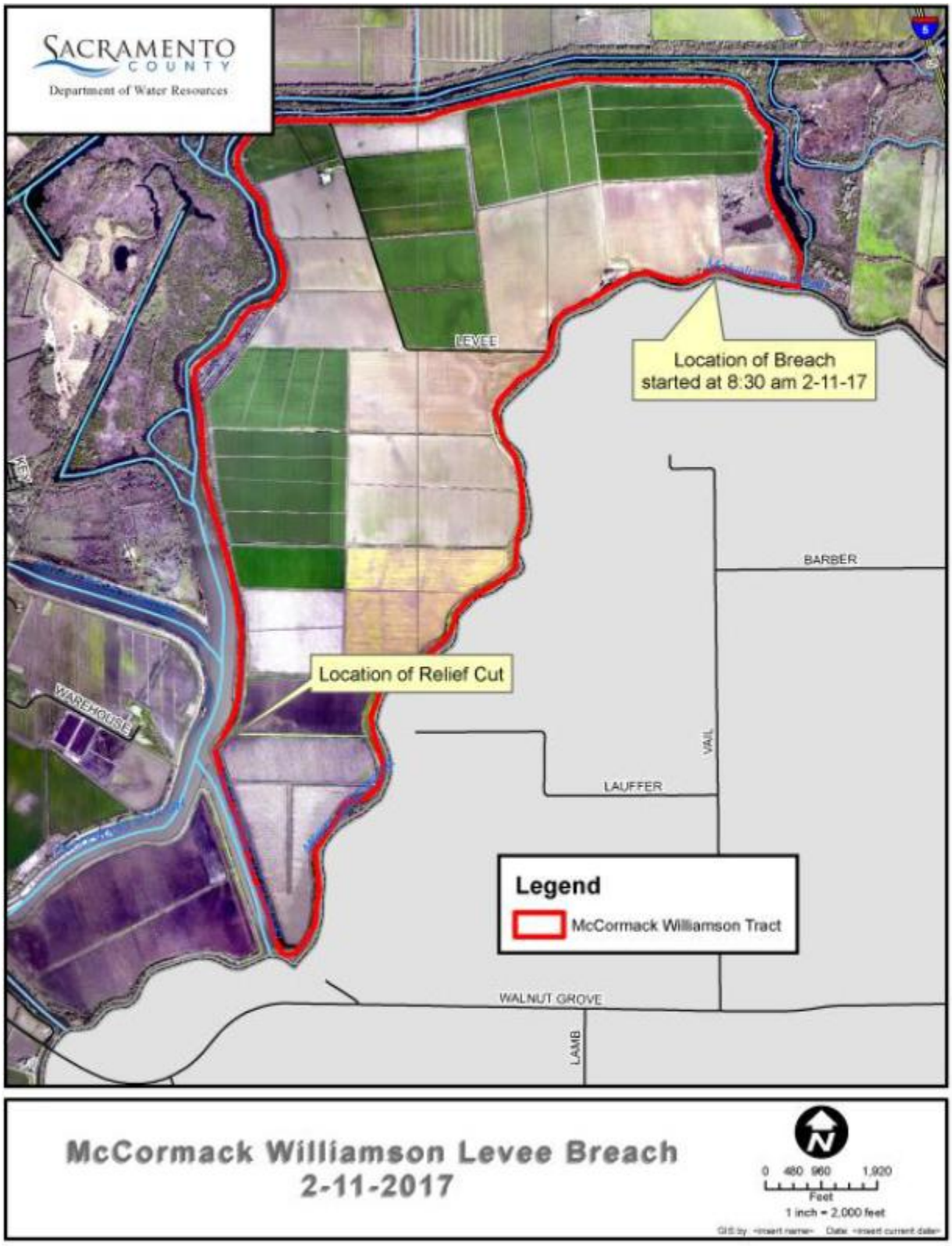
February 18, 2017: The United States Coast Guard Auxiliary provided photos of a levee with scouring in the Pearson Tract. Contacts to MBK Engineers were made regarding identifying the issue and making the necessary repair.

February 13, 2017: Mandatory evacuations were ordered due to a compromised levee at Tyler Island Bridge Road. Land between Mokelumne and Georgiana Slough had been evacuated; 645 contacts within the Sacramento Alert system. Walnut Grove was under an advisory for the possibility of an evacuation and rock was brought in by barge crane to begin repairs on the levee. Advance plans for a relief cut were identified should the levee have failed.

February 12, 2017: Road closures included 21 distinct areas throughout the southern portion of the County. RD800 reported significant damage to their levees and were able to conduct damage assessments. Results of those assessments were provided to the EOC along with any other resource requests. SMUD also reported that they had 6 homes without power in Point Pleasant area. Power was de-energized to those homes due to flooding. The Snodgrass Slough Levee was inspected for seepage and water continued to overtop Lambert Road flowing north toward Point Pleasant.

February 11, 2017: The McCormack Williamson Tract levee overtopped and failed starting at 8:30 am. The levee failed at River Mile 28 near the northeast section of the tract (see Figure 4-117). According to the RD, at the time, it could have taken at least 9 hours for the Island to fill. The RD was planning to helicopter in equipment to construct a relief cut at the southwest end of the Island. The relief cut was intended to mitigate a surge of water into the Mokelumne River/ Snodgrass Slough that would result when the downstream levee breaks. A surge had the potential to impact several of the levees in the area that protect Tyler Island, Dead Horse Island and East Walnut Grove. The RDs had staged equipment and supplies in the event of a flood fight. Tyler Island RD monitored a small levee seepage problem along the North Fork of the Mokelumne at Sta 46000. The RD had planned to work on the repair starting that Monday when the tides were lower and all repair equipment/ material was in place. Beyond that, Tyler Island was experiencing higher waters due to the McCormack Williamson relief cut and had continuous levee patrols.

Figure 4-117 Sacramento County – McCormack Williamson Levee Breach



Source: 2017 February Winter Storm After Action Report from Sacramento County OES

January 11, 2017: After atmospheric river rains struck Sacramento County and the surrounding area, flooding occurred. Independent reports from San Joaquin and Sacramento County Sheriff Deputies identified a breach in the Mokelumne River. A private levee failure within San Joaquin County continued to cause flooding to New Hope Road through March 2017.

Figure 4-118 New Hope Levee Break



Source: 2017 January Winter Storms After Action Report

December 1996 was one of the wettest Decembers on record. Watersheds in the Sierra Nevada were already saturated by the time three subtropical storms added more than 30 inches of rain in late December 1996 and Early January 1997. The third and most severe of these storms lasted from December 31, 1996 through January 2, 1997. Rain in the Sierra Nevada caused record flows that stressed the flood management system to capacity in the Sacramento River Basin and overwhelmed the system in the San Joaquin River

Basin. Levee failures due to breaks or overtopping in the Sacramento River Basin resulted in extensive damages. In the San Joaquin River Basin, dozens of levees failed throughout the river system and produced widespread flooding. The Sacramento-San Joaquin River Delta also experienced several levee breaks and levee overtopping. Affected Delta islands within Sacramento County included McCormack-Williamson Tract, Dead Horse Island and Glanville Tract.

February 19, 1986: Heavy rains and flooding affected Sacramento County and the surrounding area. 6 months of precipitation fell in 10 days in mid-February. High water content caused multiple levee failures. Two levee breaks in the same general area occurred on the 8,800 acre Tyler Island in Sacramento County. These two levee breaks were approximately 300 feet in length (see Figure 4-119). A FEMA disaster declaration was declared on February 21. The approximate cost to repair the breaks was $6 million in 2011 dollars. Details on damages to structures and crops on the islands was not available.

Figure 4-119 1986 Tyler Island Levee Breach



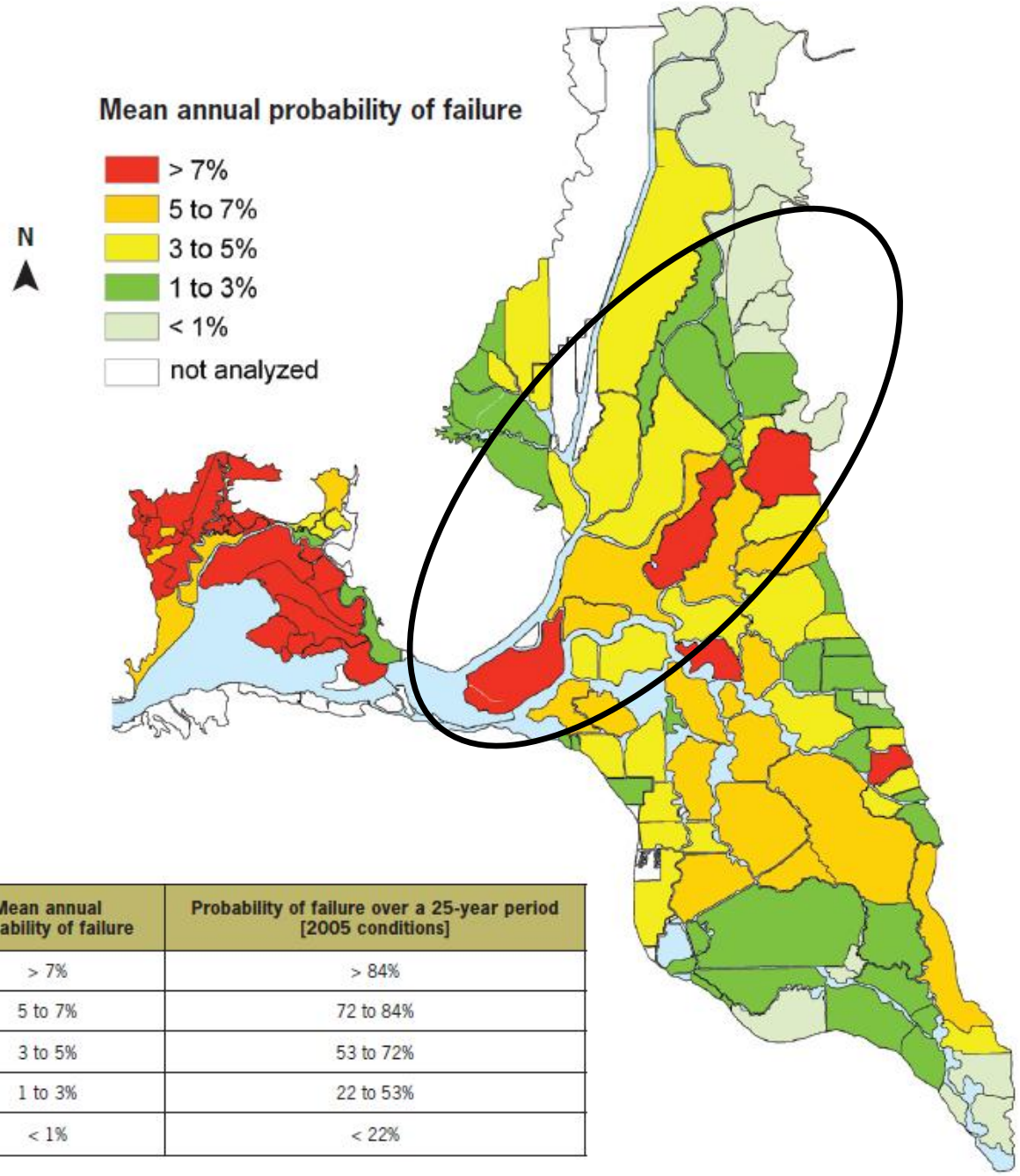
Source: California Department of Water Resources

June 21, 1972: A levee in the Brannan-Andrus Levee Maintenance District broke. 35% of the City of Isleton was inundated. A national disaster was declared June 27, and the breach was closed on July 26. Estimated damages in 2011 dollars were $234 million. The USACE repaired the break.

Likelihood of Future Occurrence

Occasional – Due to the high number of past events, and the condition of many of the aging levees in Sacramento, future levee failures will occur occasionally. This can be seen for the Delta area in Figure 4-120. However, it is important to note that numerous levee improvement projects are ongoing throughout the Sacramento County area, which will make the future occurrence of levee failure less likely. IS A NEWER IMAGE AVAILABLE?

Figure 4-120 Estimated Frequency of Levee Overtopping Under Current Conditions



Mean annual probability of failure	Probability of failure over a 25-year period [2005 conditions]
> 7%	> 84%
5 to 7%	72 to 84%
3 to 5%	53 to 72%
1 to 3%	22 to 53%
< 1%	< 22%

Source: Delta Risk Management Strategy (2009). Retrieved 3/24/2026.

It is likely that climate change will increase the chance of future occurrence as well as future impacts. More information on climate change and landslide and debris flow can be found in the next section. More information on future impacts can be found in the Future Conditions/Future Development section of the Vulnerability Assessment below.

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, such as sustained periods of heavy precipitation, increased rainfall intensity during precipitation events, and increased risk of rain-on-snow events. In addition, floods are expected to be longer and more severe. Mechanisms whereby climate change leads to an elevated flood risk include more extreme precipitation events and shifts in the seasonal timing of river flows. This threat may be particularly significant because recent estimates indicate the additional force exerted upon the levees is equivalent to the square of the water level rise. 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.

More information on climate change and flooding can be found in Section 4.3.11.

Vulnerability Assessment

Vulnerability—High

Based on historical hazard data, the miles of levees that traverse Sacramento County, and the level of protection they provide, levee failures can continue to occur in the Sacramento County Planning Area. While all levees, including accredited and unaccredited levees, pose a risk of failure, it is the older, unaccredited levees that likely have a greater potential for overtopping or breaching and pose a significant risk to communities should they fail. However, most of these unaccredited levees are primarily located in less populated, more agricultural areas of the County.

An assessment of a community's vulnerability to this hazard begins with an understanding of local exposure to unincorporated Sacramento County. This is included in the Local Concerns section below. After that, vulnerability is discussed in multiple sections that detail how this hazard can affect both the entire Sacramento County Planning Area as well as the unincorporated portions of Sacramento County. How the hazard affects the other participating jurisdictions can be found in their respective annexes to this LHMP Update. These sections below include assets at risk, impacts, and how future development may affect the vulnerability of the County to this hazard.

Local Concerns (unincorporated Sacramento County)

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

The abandoned railroad line from Freeport to south of Hood is an embankment separating Beach Stone Lakes floodplain from the area to the west toward the Sacramento River. The railroad right of way is owned by the CA Parks Department associated with the Railroad Museum. It also is the secondary protection should the Sacramento River levee fail, which is owned and maintained by the CA DWR Maintenance Area 9.

If a levee were to fail on RD 551 or RD 755 the floodwater would be in the town of Courtland in about 2 days. Measures in the Courtland Flood Risk Reduction Plan 2021 would serve to reduce the risk of damage due to flooding.

If a levee were to fail on RD 003 the floodwater would be in the town of Walnut Grove (west) in about 32 hours. Measures in the Walnut Grove West Flood Risk Reduction Plan 2021 would serve to reduce the risk of damage due to flooding.

If a levee were to fail on RD 369 the floodwater would be in the town of Locke in a few hours. Measures in the Locke Flood Risk Reduction Plan 2021would serve to reduce the risk of damage due to flooding.

There are multiple issues associated with levee failure in Sacramento County, including:

- Earthquake failure
- High water failure
- Dry weather failure
- Streambank Erosion
- Agricultural Concerns

Earthquake Failure

Seismic risk in the Delta Region is characterized as moderate-to-high because of many active faults in the San Francisco Bay Area. Figure 4-82 in Section 4.3.10 Earthquake, illustrates the locations of faults in and near the San Francisco Bay Area and the Delta Region. Area seismic activity during the last 100 years is significantly less than what was experienced during the 1800s and the first part of the 1900s. Seismic experts predict increased seismic activity in the future similar to that which occurred up to the first part of the 1900s. Seismic risk to levees stems, in part, from the risk of liquefaction. A more in depth discussion may be found in Section 4.3.10.

High Water Failure

The primary threats to Delta levees are high water surface elevations from floods or high tides, wave action due to high winds or boat wakes, and rodent damage, either as individual actions or in combination. High water levels can be produced by storm events, spring snowmelt, and/or releases from upstream reservoirs. Levees can become vulnerable to through and underseepage, as well as overtopping. Levees that may have structural issues involving poor foundations, inadequate geometry or other geotechnical issues can be at a higher risk of failure from any of the primary threats.

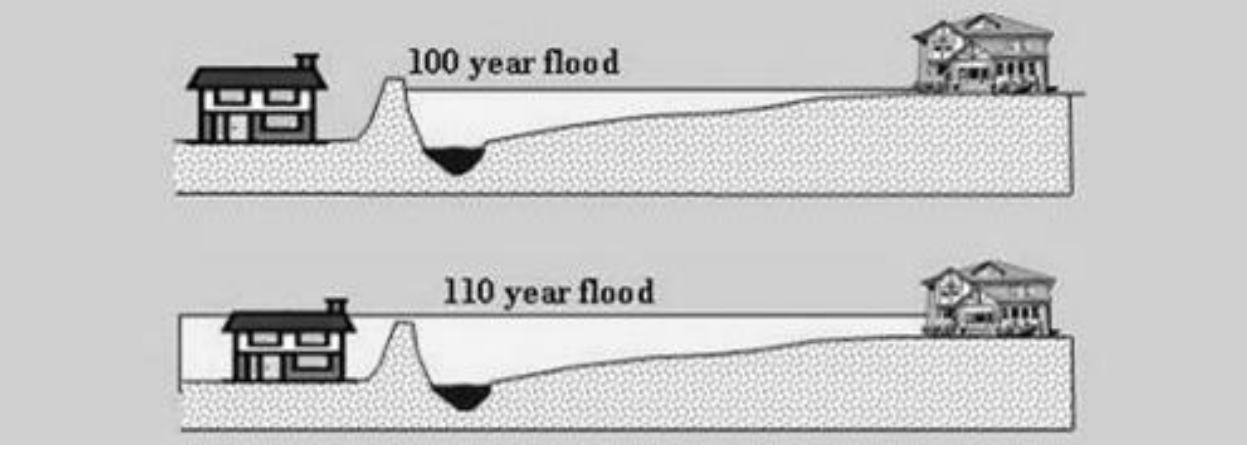
Under-seepage refers to water flowing under the levee through the levee foundation materials, often emanating from the bottom of the landside slope and ground surface and extending landward from the landside toe of the levee. Through-seepage refers to water flowing through the levee prism directly, often emanating from the landside slope of the levee. Both conditions can lead to failure by several mechanisms, including excessive water pressures causing foundation heave and slope instabilities, slow progressing internal erosion, and piping leading to levee slumping. Delta levees may seep ‘clear water’ indicating that material is not being removed from the levee or levee foundation. Inspections are the primary means by which this is evaluated.

Levees are vulnerable to high-water conditions not only while the river stages are high, but also when water levels fall at a rapid rate (rapid withdrawal). Rapid withdrawal is common when upstream releases from a reservoir stop or are reduced at a rapid rate. This sudden release in pressure from the waterside levee slopes can cause levees to slough.

Rivers that are not controlled by an upstream reservoir, such as the Cosumnes River, may be more vulnerable to overtopping.

Overtopping failure occurs when the flood water level rises above the crest of a levee. As shown in Figure 4-121, overtopping of levees can cause greater damage than a traditional flood due to the often lower topography behind the levee.

Figure 4-121 Flooding from Levee Overtopping



Source: Levees in History: The Levee Challenge. Dr. Gerald E. Galloway, Jr., P.E., Ph.D., Water Policy Collaborative, University of Maryland, Visiting Scholar, USACE, IWR.

Most levee failures in the Delta Region have occurred during winter storms and related high water conditions, often in conjunction with high tides and strong winds.

Dry Weather Failures

Dry weather, or sunny-day, failures are levee breaches that are not generally flood or seismic related. These failures typically occur between the end of the late snowmelt from the Sierras, in late May, and the beginning of the rainy season, in early October. Sunny-day failures are addressed separately from flood-induced failures to differentiate between winter and summer events. Aside from seismic events, factors that can cause levee failures in the Sacramento–San Joaquin River Delta (Delta) in the summer period are different than the factors that can cause winter failures.

Burrowing animal activities and pre-existing weaknesses in the levees and foundation are the key weak links leading to levee failures. This is the case regardless of whether the failures occur during a high-tide condition or not. Most practicing engineers, scientists, and maintenance personnel in the Delta and Suisun Marsh believe that rodents are prolific in the Delta and use levees for burrowing. As a result, they cause undue weaknesses by creating a maze of internal and interconnected galleries of tunnels. Under-seepage

and through-levee seepage are slow processes that tend to work through time by removing fines from levee and foundation material during episodes of high river levels.

Streambank Erosion

In addition to the above levee failure causes, streambank erosion can cause levees to fail. When flood waters are high, there is greater erosive capabilities of water. In addition, high winds during times of flooding can cause additional erosive pressures on levees. Streambank erosion was discussed in more detail in Section 4.3.11.

Agricultural Concerns

Sacramento County faces levee related flood risks along the Cosumnes River and in Delta fringe areas where aging levees protect low lying agricultural lands. Levee breaks, shallow floodplains, and pump station vulnerabilities are recurring hazards during major storm events. These conditions create concerns about rapid flooding, access limitations, and prolonged recovery following levee failure.

In regards to agriculture, the greatest local concerns are:

- Overtopping and under-seepage on Cosumnes River levees without adequate flood protection ratings.
- Pump station vulnerability and power supply continuity during extended outages.
- Prolonged road closures (Hwy 99, Dillard Road, Twin Cities Road) that prevent re-entry for animal care and crop salvage operations.
- Sediment and sand burial of agricultural soils following breaches, requiring multi-year recovery and remediation.

Local concerns for each of the other participating jurisdictions can be found under the Local Concerns heading in each respective jurisdictional annex to this LHMP Update.

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 for the Sacramento County Planning Area and unincorporated Sacramento County.

Additionally, for each hazard in the FEMA National Risk Index in Sacramento County, the relevant portions of the hazard analysis done by FEMA is presented below. This includes the Hazard Risk Index Rating, Expected Annual Loss Values, Exposure Values, and the Historic Loss Ratio Rating. These are presented for the Sacramento County Planning Area as a whole.

Methodology (Parcels and Structures)

The same methodology that was used in the Section 4.3.11 for Flood: 1%/0.5%/0.2% Annual Chance is used here. That methodology of DFIRM analysis is only applied to the DFIRM A99 and X Protected by Levee flood zones in the following sections.

People and Populations

All people and populations located in the levee protected areas are at some risk to levee failure related 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.

Sacramento County Planning Area residents that live in the levee protected 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 Planning Area's residential population residing within these hazard areas, the DFIRM A99 and X Protected by Levee flood zones were overlayed on the parcel layer and linked to the Assessor Data. Those residential parcels that were assigned the highest annual chance flood zones as detailed in the above methodology, were counted and multiplied by the 2020 Census Bureau average household factors for each jurisdiction. This is shown in Table 4-118. As shown, 85,943 residents live in the A99 zone, while another 225,865 reside in the X Protected by Levee zone. Note that populations located in areas adjacent to and downstream of unaccredited levees, while not mapped, are potentially vulnerable to a failure of these levees.

Table 4-118 Sacramento County Planning Area – Improved Residential Parcels and Populations in FEMA DFIRM A99 and X Protected by Levee Flood Zones by Jurisdiction

Jurisdiction	A99		X Protected by Levee	
	Improved Residential Parcels	Population at Risk	Improved Residential Parcels	Population at Risk
Citrus Heights	0	0	0	0
Elk Grove	0	0	2,577	8,246
Folsom	0	0	0	0
Galt	0	0	0	0
Isleton	0	0	0	0
Rancho Cordova	0	0	804	2,316
Sacramento	33,123	85,789	70,536	182,688
Unincorporated County	56	154	11,752	32,318
Total	**33,179**	**85,943**	**85,669**	**225,568**

Source: FEMA DFIRM 02/2024, 2025 Sacramento County Parcel/Assessor Data, 2020 US Census Bureau Average Household Size – City of Citrus Heights (2.56); City of Elk Grove (3.2); City of Folsom (2.64); City of Galt (3.07); City of Isleton (3.18); City of Rancho Cordova (2.88); City of Sacramento (2.59): Unincorporated Sacramento County (2.75).

Structures

Levee failure events can affect the built environment of the Sacramento County Planning Ares. Certain structures in the City are at risk of levee failure flooding and include those structures located within the 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.

Results are presented here first for the Sacramento County Planning Area and secondly for unincorporated Sacramento County.

Sacramento County Planning Area

Certain structures in the Sacramento County Planning Area are at risk of DFIRM levee failure flooding and primarily include those structures located within the A99 and X Protected by Levee flood zones as well as in areas adjacent to and downstream of unaccredited levees. GIS was used to determine the possible impacts of flooding on parcels and structures within the Planning Area. Table 4-96 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 Planning Area. This is shown for the A99 and X Protected by Levee flood zones.

Table 4-119 Sacramento County Planning Area – Count and Value of Parcels and Structures in FEMA DFIRM A99 and X Protected by Levee Flood Zones by Jurisdiction

Jurisdiction / Flood Zone	Total Parcel Count	Improved Parcel Count	Total Land Value	Structure Value	Estimated Contents Value	Total Value
Citrus Heights						
A99	0	0	$0	$0	$0	$0
X Protected by Levee	0	0	$0	$0	$0	$0
Citrus Heights Total	0	0	$0	$0	$0	$0
Elk Grove						
A99	0	0	$0	$0	$0	$0
X Protected by Levee	2,770	2,654	$374,381,495	$1,194,629,369	$713,717,339	$2,282,728,203
Elk Grove Total	**2,770**	**2,654**	**$374,381,495**	**$1,194,629,369**	**$713,717,339**	**$2,282,728,203**
Folsom						
A99	0	0	$0	$0	$0	$0
X Protected by Levee	0	0	$0	$0	$0	$0
Folsom Total	0	0	$0	$0	$0	$0
Galt						
A99	0	0	$0	$0	$0	$0
X Protected by Levee	0	0	$0	$0	$0	$0
Galt Total	0	0	$0	$0	$0	$0
Isleton						
A99	0	0	$0	$0	$0	$0
X Protected by Levee	0	0	$0	$0	$0	$0
Isleton Total	0	0	$0	$0	$0	$0

Jurisdiction / Flood Zone	Total Parcel Count	Improved Parcel Count	Total Land Value	Structure Value	Estimated Contents Value	Total Value
Rancho Cordova						
A99	0	0	$0	$0	$0	$0
X Protected by Levee	843	815	$78,522,240	$248,051,046	$127,008,435	$453,581,721
Rancho Cordova Total	**843**	**815**	**$78,522,240**	**$248,051,046**	**$127,008,435**	**$453,581,721**
Sacramento						
A99	36,880	33,625	$4,816,661,988	$14,129,246,626	$7,954,785,074	$26,900,693,688
X Protected by Levee	80,460	74,389	$12,203,412,577	$30,988,351,430	$20,394,036,459	$63,585,800,466
Sacramento Total	**117,340**	**108,014**	**$17,020,074,565**	**$45,117,598,056**	**$28,348,821,533**	**$90,486,494,154**
Unincorporated Sacramento County						
A99	813	329	$809,695,933	$1,990,358,630	$2,850,236,317	$5,650,290,880
X Protected by Levee	13,118	12,382	$1,992,345,614	$4,753,128,327	$2,945,368,279	$9,690,842,220
Unincorporated Sacramento County Total	**13,931**	**12,711**	**$2,802,041,547**	**$6,743,486,957**	**$5,795,604,596**	**$15,341,133,100**

Source: FEMA DFIRM 2/2024, 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

Unincorporated Sacramento County

Numerous structures in unincorporated Sacramento County are at risk of DFIRM levee failure flooding and include those structures located within the A99 and X Protected by Levee flood zones as well as in areas adjacent to and downstream of unaccredited levees. GIS was used to determine the possible impacts of flooding on parcels and structures within the unincorporated County. Table 4-120 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 unincorporated County. This is shown for the A99 and X Protected by Levee flood zones.

Table 4-120 Unincorporated Sacramento County – Count and Value of Parcels and Structures in Detailed FEMA DFIRM A99 and X Protected by Levee Flood Zones by Property Use

Flood Zone / Property Use	Total Parcel Count	Improved Parcel Count	Total Land Value	Structure Value	Estimated Contents Value	Total Value
A99						
Agricultural	130	25	$85,212,103	$9,548,188	$9,548,188	$104,308,479
Care / Health	0	0	$0	$0	$0	$0
Church / Welfare	5	5	$1,894,597	$10,569,034	$10,569,034	$23,032,665

Flood Zone / Property Use	Total Parcel Count	Improved Parcel Count	Total Land Value	Structure Value	Estimated Contents Value	Total Value
Industrial	214	186	$334,476,604	$1,767,881,564	$2,651,822,346	$4,754,180,514
Miscellaneous	73	0	$6,175,980	$0	$0	$6,175,980
Office	37	32	$29,956,656	$137,433,475	$137,433,475	$304,823,606
Public / Utilities	48	0	$0	$0	$0	$0
Recreational	9	9	$5,809,147	$5,246,745	$5,246,745	$16,302,637
Residential	60	56	$14,423,899	$39,967,983	$19,983,992	$74,375,874
Retail / Commercial	12	9	$11,435,786	$15,632,537	$15,632,537	$42,700,860
Unknown	0	0	$0	$0	$0	$0
Vacant	225	7	$320,311,161	$4,079,104	$0	$324,390,265
Zone A99 Total	**813**	**329**	**$809,695,933**	**$1,990,358,630**	**$2,850,236,317**	**$5,650,290,880**
X Protected by Levee						
Agricultural	1	1	$188,916	$149,173	$149,173	$487,262
Care / Health	17	12	$11,511,645	$65,817,899	$65,817,899	$143,147,443
Church / Welfare	33	28	$25,459,920	$97,575,540	$97,575,540	$220,611,000
Industrial	106	99	$49,584,085	$118,193,775	$177,290,663	$345,068,523
Miscellaneous	157	0	$1,124,677	$0	$0	$1,124,677
Office	189	166	$115,209,497	$316,998,260	$316,998,260	$749,206,017
Public / Utilities	41	0	$0	$0	$0	$0
Recreational	19	5	$950,517	$2,466,315	$2,466,315	$5,883,147
Residential	11,917	11,752	$1,537,463,052	$3,731,071,927	$1,865,535,964	$7,134,070,943
Retail / Commercial	322	299	$203,908,838	$419,534,466	$419,534,466	$1,042,977,770
Unknown	103	0	$0	$0	$0	$0
Vacant	213	20	$46,944,467	$1,320,972	$0	$48,265,439
X Protected by Levee Total	**13,118**	**12,382**	**$1,992,345,614**	**$4,753,128,327**	**$2,945,368,279**	**$9,690,842,220**

Source: FEMA DFIRM 2/2024, 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

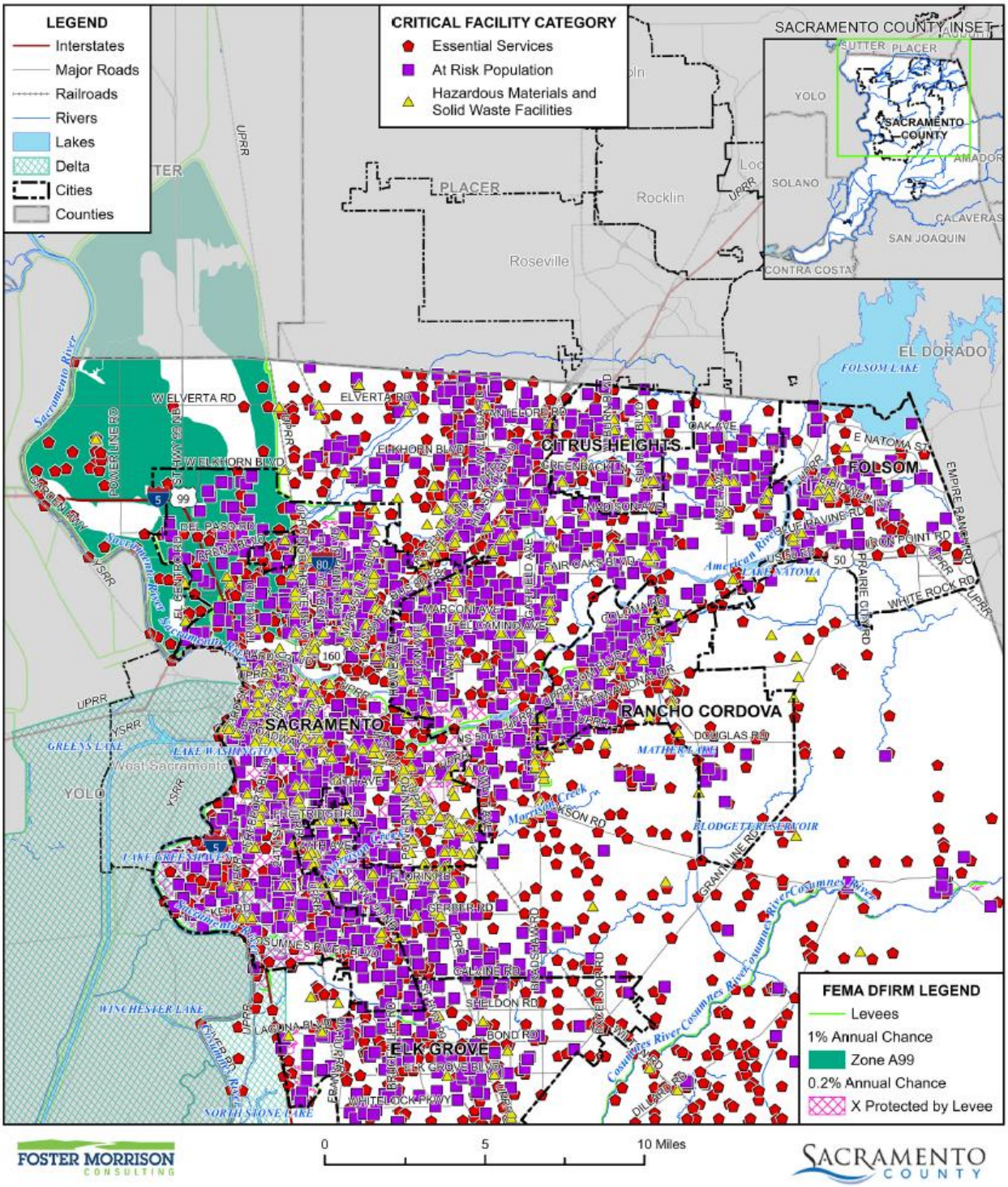
**This parcel count only includes those parcels in the 0.2% annual chance flood zone, exclusive of the 1% annual chance flood zone. The 0.2% annual chance flood, in actuality, also includes all parcels in the 1% annual chance flood zone.

Critical Facilities and Infrastructure

Flooding from levee failures presents a threat to critical facilities and infrastructure, and community lifelines. Critical facilities and infrastructure play an immensely important role in communities. As previously noted, communities rely on roads, rail corridors, and related biking and pedestrian routes for transportation, and on critical infrastructure for drinking water, wastewater service, and draining streets of rainwater. Other utilities play an important role in providing critical services to area residents. Fire, police and other emergency response facilities and functions are also critical to the well-being of the community and the ability to respond and recover from hazard events, such as levee failure flooding. 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 that cascade throughout California. The following GIS analysis identifies critical facilities and infrastructure at risk in the DFIRM A99 and X Protected by Levee flood zone.

A separate analysis was performed on the critical facility inventory in the Sacramento County Planning Area to determine critical facilities in the A99 and X Protected by Levee flood zone. Using GIS, the DFIRM flood zones were overlayed on the critical facility GIS layer. Figure 4-122 shows critical facilities in the A99 and X Protected by Levee flood zone. Table 4-121 details critical facilities in the A99 and X Protected by Levee flood zone by facility type and count for the Sacramento County Planning Area broken out by jurisdiction. Note that critical facilities located in areas adjacent to and downstream of unaccredited levees, while not mapped, are potentially vulnerable to a failure of these levees.

Figure 4-122 Sacramento County Planning Area – 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: 4/16/2026.

Table 4-121 Sacramento County Planning Area – Critical Facilities in FEMA DFIRM A99 and X Protected by Levee Flood Zones by Jurisdiction and Category

Jurisdiction / Flood Zone	Critical Facility Category	Facility Count
Citrus Heights		
Citrus Heights Total		**0**
Elk Grove		
0.2% Annual Chance Flood Hazard		
X Protected by Levee	Essential Services Facilities	11
	At Risk Population Facilities	7
	Hazardous Materials and Solid Waste Facilities	1
	X Protected by Levee Total	**19**
Elk Grove Total		**19**
Folsom		
Folsom Total		**0**
Galt		
Galt Total		**0**
Isleton		
Isleton Total		**0**
Rancho Cordova		
0.2% Annual Chance Flood Hazard		
X Protected by Levee	Essential Services Facilities	2
	At Risk Population Facilities	2
	X Protected by Levee Total	**4**
Rancho Cordova Total		**10**
Sacramento		
1% Annual Chance Flood Hazard		
Zone A99	Essential Services Facilities	114
	At Risk Population Facilities	100
	Hazardous Materials and Solid Waste Facilities	13
	Zone A99 Total	**227**
0.2% Annual Chance Flood Hazard		
X Protected by Levee	Essential Services Facilities	730
	At Risk Population Facilities	482
	Hazardous Materials and Solid Waste Facilities	151
	X Protected by Levee Total	**1,363**

Jurisdiction / Flood Zone	Critical Facility Category	Facility Count
Sacramento Total		**1,590**
Unincorporated Sacramento County		
1% Annual Chance Flood Hazard		
Zone A99	Essential Services Facilities	111
	At Risk Population Facilities	10
	Hazardous Materials and Solid Waste Facilities	7
	Zone A99 Total	**128**
0.2% Annual Chance Flood Hazard		
X Protected by Levee	Essential Services Facilities	97
	At Risk Population Facilities	81
	Hazardous Materials and Solid Waste Facilities	20
	X Protected by Levee Total	**198**
Unincorporated Sacramento County Total		**226**

Source: FEMA 02/2024 DFIRM, Sacramento County GIS

Natural, Historic, and Cultural Resources

Levee 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 wildlife 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 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 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 resources that fall in the levee flood zones would be vulnerable.

FEMA NRI Hazard Vulnerability Assessment

Levee failure is not a hazard in the FEMA NRI. As such, no hazard vulnerability assessment from the NRI is included here.

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 Sacramento County Planning Area that are in areas protected by levees. Based on the areas of the Sacramento County Planning Area surrounded by levees, including a large portion of developed areas of the County, it is evident that levee failure floods could potentially have significant impacts to the Sacramento County Planning Area, 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 Planning Area 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.

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

- Climate change is likely to exacerbate future heavy rain conditions and associated impacts and vulnerability of the County 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 County. Population growth in Sacramento County is expected to continue. There are 129 areas in the unincorporated County where development is expected to occur in the next 5 years. 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. The development will be completed to the standards set forth in the floodplain ordinance. Changes in population and population patterns may or may not increase the impacts and vulnerability of the County 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. There are 129 areas in the unincorporated County where development is expected to occur in the next 5 years. Locating new development, structures and critical facilities and infrastructure within or near areas at risk to levee

failure may put additional development at risk. County building codes are in effect to reduce this risk and should be updated as necessary to continue to address future conditions. Thus, 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 County to this hazard.

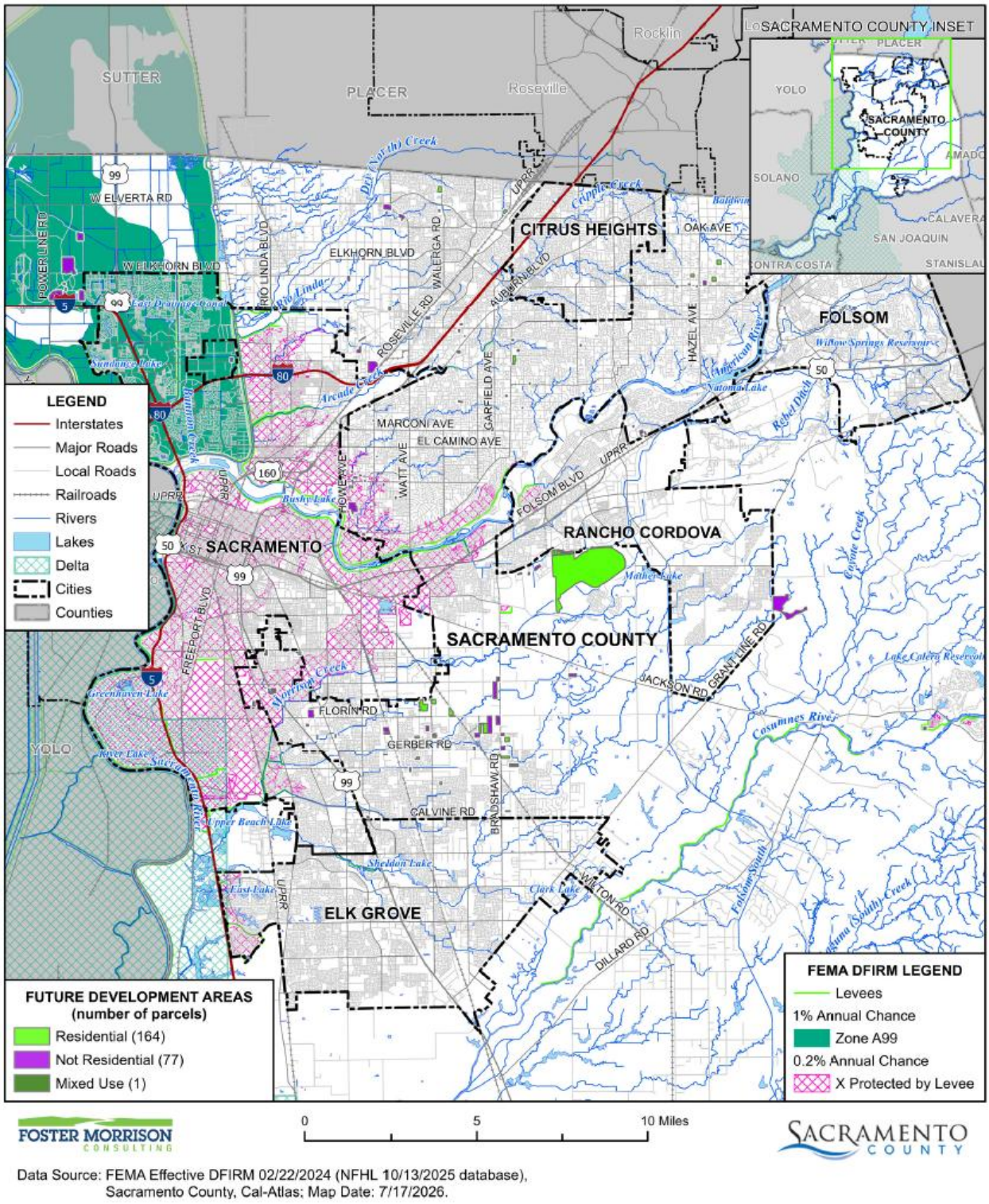
Future Development

Future development considerations should be ongoing and proactive. Ensuring that comprehensive land use planning is conducted, regulatory requirements, such as building codes and the floodplain ordinance, are followed, and varying needs for different demographic groups with intersecting identities that reside within the County are considered. can help to make for a more resilient community.

GIS Analysis

Sacramento County provided 129 future development areas which were used as the basis for the inventory of future development for the unincorporated County. These were mapped in GIS. Future development areas in DFIRM A99 and X Protected by Levee flood zones are shown on Figure 4-123 and detailed in Table 4-122. As shown, 16 future development areas falls in the A99 flood zone, and 11 fall in the X Protected by Levee flood zone.

Figure 4-123 Unincorporated Sacramento County – 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: 7/17/2026.

Table 4-122 Unincorporated Sacramento County – Future Development Areas by Type and Status in FEMA DFIRM A99 and X Protected by Levee Flood Zones with Parcels and Acres

Flood Zones / Future Development Type and Status	Site/Location Name	Total Parcel Count	Improved Parcel Count	Unimproved Parcel Count	Total Acres	Total Improved Acres	Total Unimproved Acres
1% Annual Chance Flood Hazard – Zone A99							
Not Residential							
Complete	Metro Air Park West Commercial (PMRDRS)	1	0	1	16.5	0.0	16.5
	Complete Total	**1**	**0**	**1**	**16.5**	**0.0**	**16.5**
Closed	7360 Metro Air Parkway Costco Depot (DRSmjPRC)	1	0	1	91.7	0.0	91.7
	American Tower Data Center (DRSmjPRC)	1	1	0	3.6	3.6	0.0
	ARCO Metro Air Park (UPB-DRS)	1	0	1	1.4	0.0	1.4
	Cambria Suites MAP (SPPDRSmajor)	1	0	1	1.5	0.0	1.5
	Costco Depot Parking Lot (DRSmajor)	1	0	1	1.4	0.0	1.4
	JATC Training Center Expansion (DRSmjPRC)	1	1	0	2.0	2.0	0.0
	Logisticenter at Metro Air Park Design Review	1	0	1	20.7	0.0	20.7
	MAP Buildings 17 & 18 (DRSmjPRC)	1	0	1	19.1	0.0	19.1
	MAP Commerce Center Building A (DRSmajor)	1	0	1	13.7	0.0	13.7

Flood Zones / Future Development Type and Status	Site/Location Name	Total Parcel Count	Improved Parcel Count	Unimproved Parcel Count	Total Acres	Total Improved Acres	Total Unimproved Acres
	MAP Commerce Center Building B (DRSmajor)	1	0	1	49.5	0.0	49.5
	MAP Commerce Center Building C (DRSmajor)	1	0	1	49.5	0.0	49.5
	MAP Commerce Center Building D (DRSmajor)	1	0	1	49.5	0.0	49.5
	MAP Commerce Center Building E (DRSmajor)	1	0	1	49.5	0.0	49.5
	MAP Commerce Center Building F (DRSmajor)	1	0	1	49.5	0.0	49.5
	MAP Commerce Center Building G (DRSmajor)	1	0	1	49.5	0.0	49.5
	Closed Total	**15**	**2**	**13**	**452.2**	**5.6**	**446.6**
Not Residential Total		**16**	**2**	**14**	**468.7**	**5.6**	**463.1**
1% Annual Chance Flood Hazard Total		**16**	**2**	**14**	**468.7**	**5.6**	**463.1**
0.2% Annual Chance Flood Hazard – X Protected by Levee							
Residential							
Closed	2511 Larkspur Lane Townhomes (DRSmjPRC)	1	1	0	0.4	0.4	0.0
	2856 Arden Way MultiFamily Development (DRSmjPRC)	1	1	0	0.1	0.1	0.0
	2862 Arden Way MultiFamily Development (DRSmjPRC)	1	1	0	0.3	0.3	0.0

Flood Zones / Future Development Type and Status	Site/Location Name	Total Parcel Count	Improved Parcel Count	Unimproved Parcel Count	Total Acres	Total Improved Acres	Total Unimproved Acres
	Markston Apartments (DRSmjPRC)	1	0	1	1.1	0.0	1.1
	Summer Trace Apartments (DRSmjPRC)	1	1	0	2.6	2.6	0.0
	Closed Total	**5**	**4**	**1**	**4.5**	**3.5**	**1.1**
Residential Total		**5**	**4**	**1**	**4.5**	**3.5**	**1.1**
Not Residential							
Complete	Rising South Point Parcel Map (PMRDRS)	1	1	0	3.9	3.9	0.0
	Complete Total	**1**	**1**	**0**	**3.9**	**3.9**	**0.0**
Closed	Bowling Green Park Improvement Project (DRSmajor)	1	0	1	4.9	0.0	4.9
	Crown Sacramento Phase 2 (DRSmjPRC)	1	0	1	4.0	0.0	4.0
	Rio Del Oro Plaza Parcel Map (PMRDRS)	1	1	0	1.7	1.7	0.0
	RMCC Church Addition (DRSmajor)	1	1	0	3.3	3.3	0.0
	UHaul at 47th Ave (DRS Mjr PRC)	1	0	1	5.0	0.0	5.0
	Closed Total	**5**	**2**	**3**	**18.8**	**5.0**	**13.9**
Not Residential Total		**6**	**3**	**3**	**22.7**	**8.9**	**13.9**
0.2% Annual Chance Flood Hazard Total		**11**	**7**	**4**	**27.2**	**12.3**	**14.9**
Grand Total		**27**	**9**	**18**	**496.0**	**17.9**	**478.0**

Source: FEMA 02/2024 DFIRM, Sacramento County GIS

4.3.15. Sea Level Rise

Hazard Profile

This hazard profile contains multiple sections that detail how this hazard can affect the Sacrament County Planning Area. These sections include a hazard/problem description; description of location and extent; past occurrences of this hazard; likelihood of future occurrence; and how climate change can affect or influence this hazard.

Hazard/Problem Description

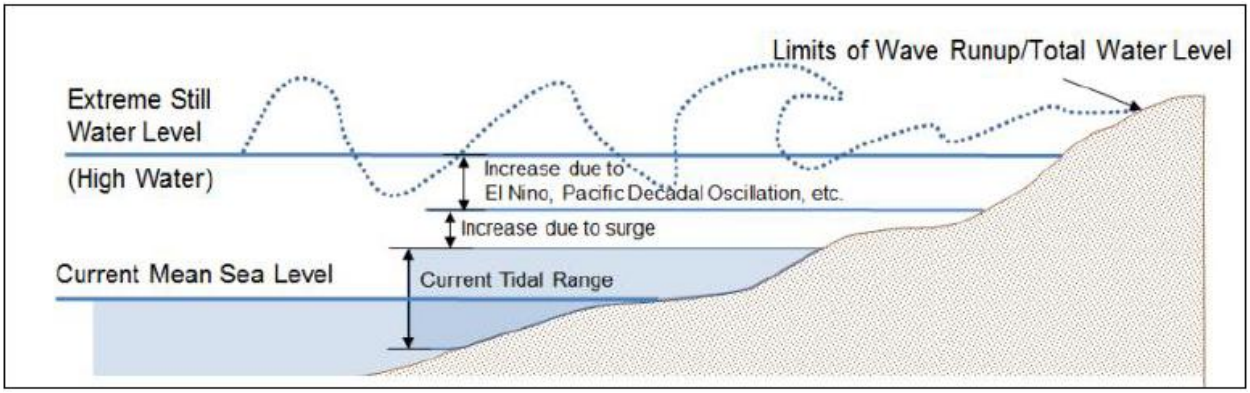
Historically, cities, towns and villages were often settled around ports and waterways along the nation's coastlines, providing individuals and families opportunities for trade, jobs and transportation, recreation and relaxation. These areas are extremely important to our nation, with great economic, 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 2017 Sacramento County Climate Vulnerability Assessment noted that sea level rise is an increase in the average level of the ocean. Global sea level rise is primarily caused by thermal expansion of warming ocean water and melting of land ice as air temperatures increase. Recent research has also focused on potential large-scale ice sheet collapse in West Antarctica, which would rapidly raise ocean levels worldwide. Regional rates of sea level rise are variable, depending on vertical land motion (i.e., uplift and subsidence), winds, and large-scale ocean circulation patterns.

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 4-124.

In 2024 the California Ocean Protection Council generated the State of California Sea Level Rise Guidance: 2024 Science and Policy Update. This guidance replaced the 2018 guidance to incorporate the latest research and revise their framework for planning purposes. Their guidance points towards a greater certainty of a Statewide average of 0.8 feet of rise projected by 2050, and 1.6 – 3.1 feet by 2100.

Figure 4-124 Additive Effects of Sea Level Rise



Source: 2023 California State Hazard Mitigation Plan

In the past decade, there have been groundbreaking studies and increased public awareness on the worldwide effects of climate change associated with global warming. Studies continue to document that global warming is continuing at progressive rates, which has been demonstrated by warmer and colder seasonal temperatures and patterns of more severe seasonal storm events. Sea level rise has accelerated in recent decades due, in part, to increasing ice loss in the world's polar regions. Latest data from the World Meteorological Organization shows that global mean sea level reached a new record high in 2023, rising an average of 4.5 millimeter per year over the period 2013 to 2023. It is projected that sea levels will continue to rise as precipitation continues to increase and ice caps continue to melt. There are number of areas in the Sacramento County Planning Area that may be dramatically impacted by sea level rise overtime.

King Tides

Effects of sea level rise are exacerbated during periods of extreme tides. Tides are long-period waves that roll around the planet as the ocean is "pulled" back and forth by the gravitational pull of the moon and the sun as these bodies interact with the Earth in their monthly and yearly orbits. According to NOAA, during full or new moons—which occur when the Earth, sun, and moon are nearly in alignment—average tidal ranges are slightly larger. This occurs twice each month. The moon appears new (dark) when it is directly between the Earth and the sun. The moon appears full when the Earth is between the moon and the sun. In both cases, the gravitational pull of the sun is "added" to the gravitational pull of the moon on Earth, causing the oceans to bulge a bit more than usual. This means that high tides are a little higher and low tides are a little lower than average. These are called spring tides, a common historical term that has nothing to do with the season of spring. Rather, the term is derived from the concept of the tide "springing forth." Spring tides occur twice each lunar month all year long, without regard to the season. Spring tides are also sometimes called (non-scientifically) king tides.

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.

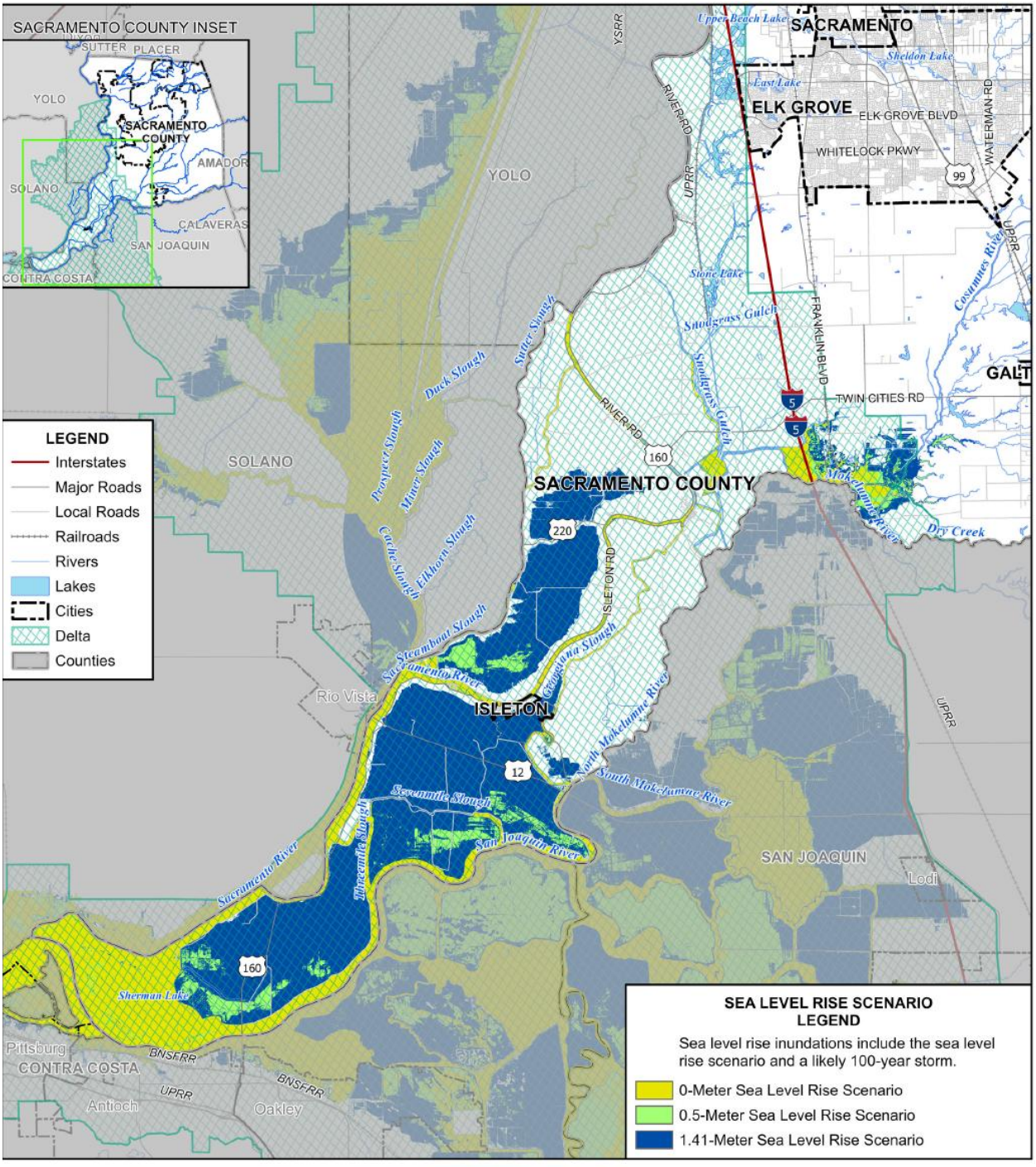
There is no scientific scale for sea level rise, other than the actual physical measurement of sea level and depth.

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

Inundations for these three scenarios are collectively shown on Figure 4-125. They are broken out for the 0-meter (Figure 4-126), 0.5 meter (Figure 4-127), and 1.41 meter (Figure 4-128) scenarios individually. Geographical extents by scenario are detailed in Table 4-123.

Figure 4-125 Sacramento County Planning Area – Sea Level Rise Scenarios (All)

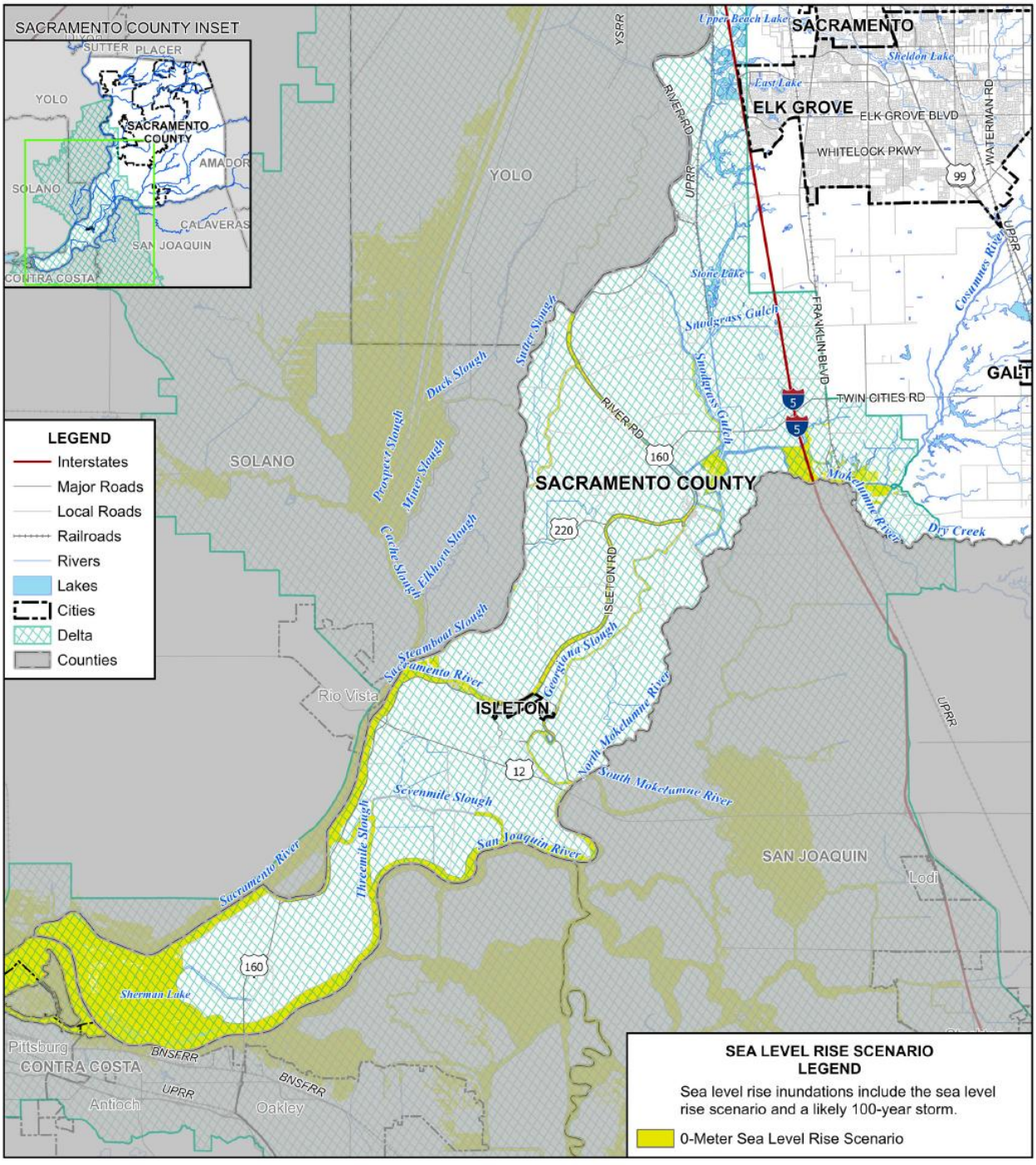


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SACRAMENTO COUNTY

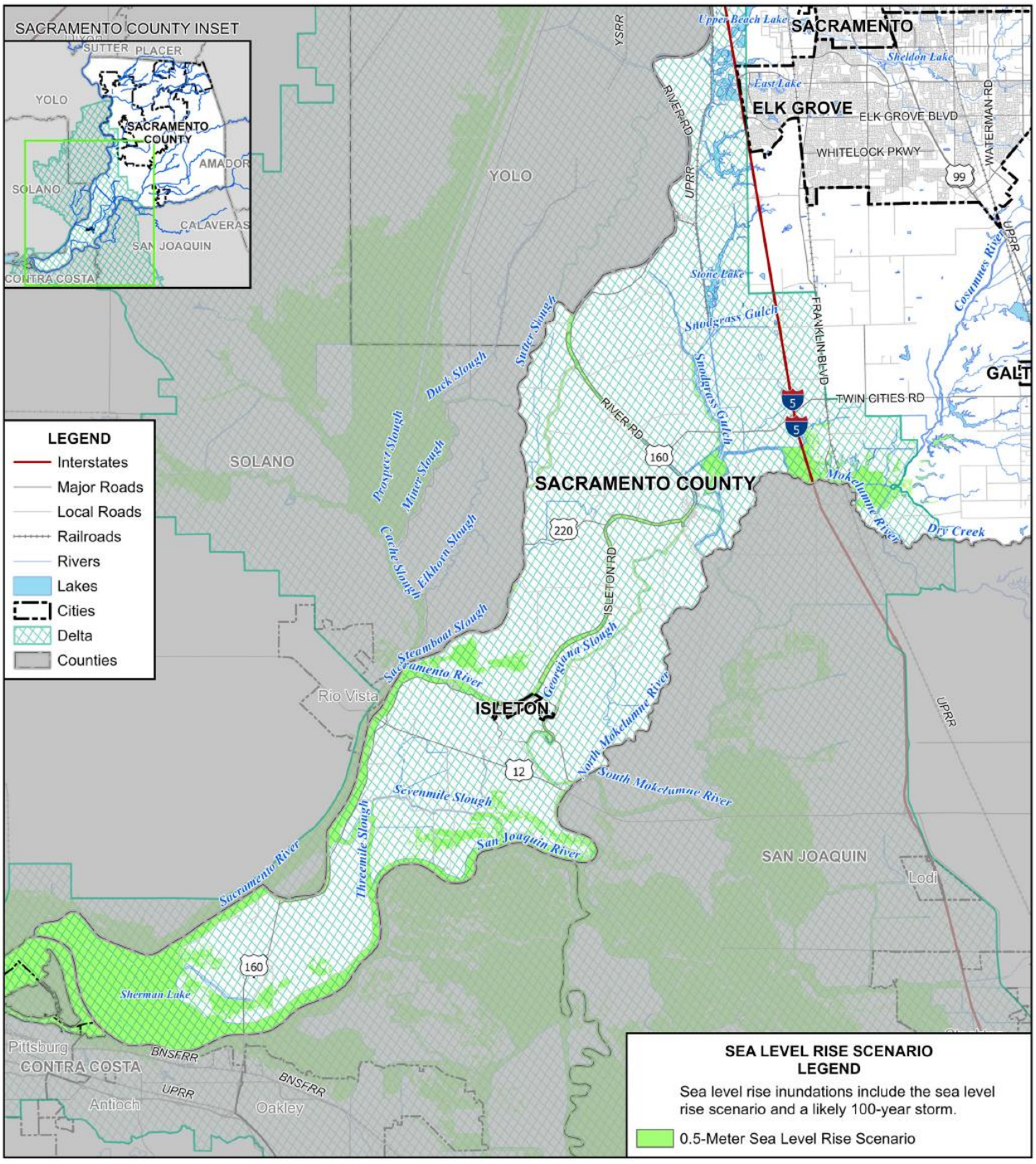
Data Source: Sacramento County Climate Action Plan 2024,
Climate Change Vulnerability Assessment 2017,
Cal-Adapt Sea Level Rise https://cmip5.cal-adapt.org/tools/slr-calflod-3d/,
San Francisco Bay, Sacramento-San Joaquin Delta and California Coastal Inundation Depth Layer Mosaics 2016
(Datasets: Bay_[0m, 0.5m, 1.41m]slr_max_blinear_snap_float)
Sacramento County, Cal-Atlas; Map Date: 4/14/2026.

Figure 4-126 Sacramento County Planning Area – Sea Level Rise 0-meter Scenario



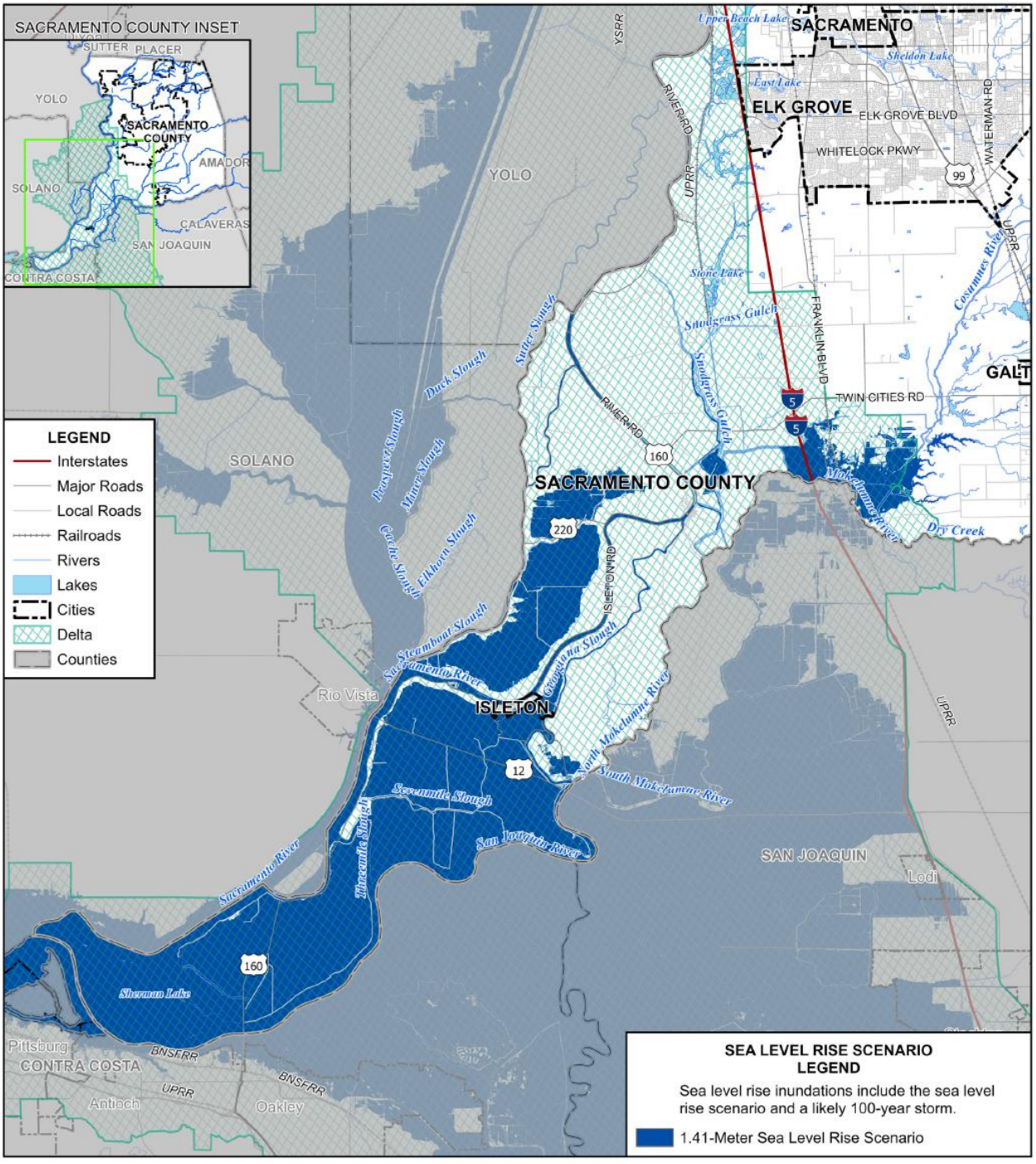
Data Source: Sacramento County Climate Action Plan 2024,
Climate Change Vulnerability Assessment 2017,
Cal-Adapt Sea Level Rise https://cmip5.cal-adapt.org/tools/slr-calflod-3d/,
San Francisco Bay, Sacramento-San Joaquin Delta and California Coastal Inundation Depth Layer Mosaics 2016
(Datasets: Bay_[0m, 0.5m, 1.41m]slr_max_blinear_snap_float)
Sacramento County, Cal-Atlas; Map Date: 4/14/2026.

Figure 4-127 Sacramento County Planning Area – Sea Level Rise 0.5-meter Scenario



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: 4/14/2026.

Figure 4-128 Sacramento County Planning Area – Sea Level Rise 1.41-meter Scenario



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: 4/14/2026.

Table 4-123 Sacramento County Planning Area – Sea Level Rise Scenario Geographical Extents by Jurisdiction

Jurisdiction / Sea Level Rise Scenario	Total Acres	% of Total Acres	Improved Acres	% of Total Improved Acres	Unimproved Acres	% of Total Unimproved Acres"
Isleton						
0-Meter Sea Level Rise Scenario	6	0.001%	0.3	0.0001%	6	0.002%
0.5-Meter Sea Level Rise Scenario	7	0.001%	1	0.0002%	7	0.002%
1.41-Meter Sea Level Rise Scenario	86	0.01%	9	0.003%	86	0.03%
Unincorporated Sacramento County						
0-Meter Sea Level Rise Scenario	5,792	1%	394	0.1%	5,792	2%
0.5-Meter Sea Level Rise Scenario	9,595	2%	1,271	0.4%	9,595	3%
1.41-Meter Sea Level Rise Scenario	41,525	7%	13,441	4%	41,525	15%

Source: Sacramento County Climate Action Plan (2024), the Sacramento County Climate Change Vulnerability Assessment (2017), Cal-Adapt, and California Coastal Inundation Depth Layer Mosaics (2016)

Past Occurrences

Disaster Declaration History

No disaster declarations have occurred specific to sea level rise, as shown on Table 4-4.

NCDC Events

The NCDC does not track sea level rise.

Hazard Mitigation Planning Committee 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

It was noted that no standalone "sea level rise flooding events" (e.g., clear high-tide inundation without storms) have been widely documented in Sacramento County proper. Instead, sea level rise has acted as a background amplifier during other hazards:

2024–2025 and 2025–2026 – Winter Seasons: Repeated atmospheric rivers and high-flow events in the Delta saw elevated water levels where coastal anomalies and sea level rise propagated inland. Studies note that relative sea level rise (including local subsidence) in parts of the Delta exceeds coastal rates (up to 10+ mm/year in some spots). King tides in early 2026 (notably in January) coincided with some storm activity, pushing higher water into the western/central Delta and amplifying localized flooding risks near Sacramento County's southern edges. There were no damages identified due to seal level rise during these winter seasons and no significant trends were identified in the Delta region.

2022–2023 – Atmospheric River Storms (DR-4683-CA): During the major winter storms, elevated coastal/Delta water levels (influenced by sea level rise) contributed to higher overall water surfaces in the Delta. This increased strain on levees, contributing to the Cosumnes River private levee breaches (as discussed earlier). The federal disaster declaration implicitly included sea level rise as a compounding factor in long-term flood/landslide risks for the region. Higher baseline levels made storm-driven flooding slightly worse than it would have been otherwise. While the long-term consideration of sea level rise does project concerns in the Delta region, related to higher tidal elevations that would lead to larger storm surge and potentially extreme impacts, there is no immediate impact beyond the Delta Pool area of the County upstream of Walnut Grove. There was no influence from seal level rise that effected a majority of the County.

2021–2022 Drought Period and Temporary Drought Barriers: Temporary barriers were installed in the Delta (including influences in 2021–2022) to manage salinity and water quality amid low outflows. These were partly needed due to rising baseline sea levels interacting with drought-reduced river flows. No direct flooding occurred, but they highlighted ongoing sea level rise driven salinity management challenges.

Events before 2021

No events prior to 2021 could be recalled.

Likelihood of Future Occurrence

Highly Likely – Studies continue to document that global warming is continuing at progressive rates, which has been demonstrated by warmer and colder seasonal temperatures and patterns of more severe seasonal storm events. It is projected that sea levels will continue to rise as precipitation continues to increase and ice caps continue to melt. This will compound coastal flooding issues. Therefore, the Planning Committee regards the likelihood of future occurrence of coastal flooding and sea level rise as highly likely.

It is likely that climate change will increase the chance of future occurrence as well as future impacts. More information on climate change and sea level rise can be found in the next section. More information on future impacts can be found in the Future Conditions/Future Development section of the Vulnerability Assessment below.

Climate Change and Sea Level Rise

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 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.

Vulnerability Assessment

Vulnerability—Medium

According to historical hazard data and hazard mapping, sea level rise is occurring in the Sacramento County Planning Area. 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 coastal flooding, coastal 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. These events may expose the coast to severe flooding and erosion; damage to coastal structures, real estate, public access, and coastal habitats; and seawater intrusion into delta areas and coastal aquifers. El Niño events exacerbate storms and coastal 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 this hazard begins with an understanding of local exposure to unincorporated Sacramento County. This is included in the Local Concerns section below. After that, vulnerability is discussed in multiple sections that detail how this hazard can affect both the entire Sacramento County Planning Area as well as the unincorporated portions of Sacramento County. How the hazard affects the other participating jurisdictions can be found in their respective annexes to this LHMP Update. These sections below include assets at risk, impacts, and how future development may affect the vulnerability of the County to this hazard.

Local Concerns (unincorporated Sacramento County)

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

General Concerns

Primary concerns in the areas of the County where sea level rise will create impacts to operations, land management and flood control are evaluating objectives to adapt to this ongoing and projected change in conditions over time. Sea level rise impacts more than just flood control, as noted; water quality impacts and increased costs to controlling water table and drainage in the Delta region are growing concerns. Adaptation in the Delta region is progressive; ongoing investment and implementation of projects to adapt to these challenges will be required, with support from the County and State agencies.

The 2017 Sacramento County Climate Vulnerability Assessment noted that the majority of Sacramento County's land area is not vulnerable to sea level rise, with approximately eight percent of the County's area considered at risk of inundation from a 1.41-m rise in sea level combined with a 100-year flood event (Cal-Adapt 2016). The low-lying land near the Sacramento River in the southwest corner of the County, including areas in the Delta and portions north near the City of Sacramento, are the primary at-risk areas. Considering a 1.41-m rise in sea level (including a 100-year flood event), and other hydrodynamic factors, the land at increased risk for sea level related flooding encompasses 51,019 acres.

Local sea level trends for the Delta region are further complicated by regional and local land subsidence. Decomposition of drained and converted marsh and peat soils within diked Delta islands have caused much of the Delta region to lie below sea level—in some places by as much as 15 to 20 feet. Continued land subsidence may increase the relative rate of locally observed sea level change for the Delta area when comparing water levels to local land elevations. Many land use practices in the County within the Delta have been transitioning away from traditional cropping patterns that required heavy annual tilling and leveling that created oxidation of peat soils. Investments in permanent crops, wetland conversion and rice continue to be evaluated on a case by case basis in many low lying areas in the County where traditional annual row cropping patterns used to dominate. Land use practices are not projecting the same rates of subsidence.

The 2024 CAP noted that the impact of sea level rise will manifest gradually over the century, and according to current projections, 8 percent of Sacramento County is at risk of inundation from a 1.41-meter rise in sea level coupled with a 100-year flood event.

Saltwater Intrusion

The portion of the County susceptible to sea level rise will face a greater threat of flooding because of the aging levees in the Delta and predicted increase in storm intensity affecting the American and Sacramento River watersheds. The 2017 Sacramento County Climate Vulnerability Assessment noted that that sea level rise will likely affect the salinity of the Sacramento-San Joaquin Delta waters.

The salinity of the Sacramento-San Joaquin Delta has historically been extremely changeable. The salt content of the Delta ebbs and flows depending on the function of a variety of variables such as tides, storms,

and river outflow. As California has developed, the freshwater demand has introduced an additional strain on the Delta that has affected water quality and ecosystem health. The Delta provides a freshwater source for the State Water Project and the Central Valley Project, which diverts approximately two thirds of the State's freshwater supply for agricultural and municipal purposes in Southern California.

Saltwater incursion into the Delta has the potential to travel as far as the lowest reaches of the Sacramento River; however, given the complex and dynamic interactions that occur within the Delta (e.g., flow regimes, freshwater diversion, ocean tides) and the uncertainty of the atmospheric conditions in the end of the century, potential impacts to water quality in the Sacramento River are difficult to predict. Sea level rise is unlikely to manifest up to 1.4 m until the end of the century, wherein temperatures may be higher, the flow rates of the Sacramento River may be less reliable, and human demand on the Delta may be greater. These conditions will continually interact and affect water quality in the Delta, and may have the potential to impact water quality in the Sacramento River.

Levee Failure

As human-made canals were interconnected, approximately 80 islands have formed in the Sacramento-San Joaquin Delta, many of which are up to 20 ft below sea level as a result of agricultural practices and subsidence. In an effort to preserve water quality in the Delta, these islands are protected by about 1,100 miles of levees of varying age and stability. Climate change-related sea level rise will likely increase pressure on fragile levees. If levee breach or failure occurs, it would pose a threat to water quality in the Delta. In the case that a levee fails and an island is inundated, the inflow of water into the island would draw salt water deeper into the Delta. With such a large portion of the state relying on the Delta as a source of fresh water, levee failure in the Delta would disrupt water supplies throughout the State.

Additional information on the local concerns in the Delta area can be found in the Delta annex to this LHMP Update. Local concerns for each of the other participating jurisdictions can be found under the Local Concerns heading in each respective jurisdictional annex to this LHMP Update.

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 for the Sacramento County Planning Area and unincorporated Sacramento County.

Additionally, for each hazard in the FEMA National Risk Index in Sacramento County, the relevant portions of the hazard analysis done by FEMA is presented below. This includes the Hazard Risk Index Rating, Expected Annual Loss Values, Exposure Values, and the Historic Loss Ratio Rating. These are presented for the Sacramento County Planning Area as a whole.

Methodology (Parcels and Structures)

GIS was used to analyze Sacramento County Planning Area assets potentially at risk to sea level rise. 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 – 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– 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

People and Populations

Sacramento County Planning Area residents that live in areas influenced by coastal hazards (like the Delta) 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 residential population within the Planning Area, the three sea level rise scenarios were overlayed on the parcel layer and linked to the Assessor data. Those residential parcel centroids that intersect the mapped sea level rise scenarios were counted and multiplied by the 2020 Census Bureau average household factors for each jurisdiction. These are shown by jurisdiction in Table 4-124.

Table 4-124 Sacramento County Planning Area – Improved Residential Parcels and Population by Sea Level Rise Scenario by Jurisdiction

Sea Level Rise Scenario/Jurisdiction	Improved Residential Parcels	Population
0-Meter		
Isleton	9	29
Unincorporated County	198	545
Total	**207**	**574**
0.5 Meter		
Isleton	9	29
Unincorporated County	233	641
Total	**242**	**670**
1.41 Meter		
Isleton	44	140
Unincorporated County	346	952
Total	**390**	**1,092**

Source: Sacramento County Climate Action Plan 2024, Climate Change Vulnerability Assessment 2017, Cal-Adapt Sea Level Rise, 2025 Sacramento County Parcel/Assessor Data, 2020 US Census Bureau Average Household Size – City of Citrus Heights (2.56); City of Elk Grove (3.2); City of Folsom (2.64); City of Galt (3.07); City of Isleton (3.18); City of Rancho Cordova (2.88); City of Sacramento (2.59): Unincorporated Sacramento County (2.75).

Structures

Certain structures in the Sacramento County Planning Area are at risk to sea level rise and primarily include those structures located in areas in and around the Delta area. GIS was used to determine the possible impacts of sea level rise on parcels and structures within the Planning Area. Table 4-125 is a summary table for the affected jurisdictions in the Planning Area. Parcel counts, land and improved values (i.e., those with a structure improvement on the parcel), estimated content replacement values, and total values in each jurisdiction are shown for each of the three sea level rise scenarios. The three scenarios in Table 4-125 are broken down in more detail for the unincorporated County by scenario and property use in Table 4-126 (for the 0-meter scenario), Table 4-127 (for the 0.5-meter scenario), and Table 4-128 (for the 1.41-meter scenario). More specific tables broken down by scenario and property use are shown in each respective jurisdictional annex to this Base Plan.

Table 4-125 Sacramento County Planning Area – Count and Value of Parcels and Structures in 0-, 0.5, and 1.41-Meter Sea Level Rise Scenario by Jurisdiction

Sea Level Rise Scenario/ Jurisdiction	Total Parcel Count	Improved Parcel Count	Total Land Value	Structure Value	Estimated Contents Value	Total Value
0-Meter Sea Level Rise Scenario						
Isleton	32	13	$3,698,449	$2,790,758	$2,750,358	$9,239,565
Unincorporated Sacramento County	963	526	$266,110,591	$270,919,166	$238,817,461	$775,847,218
0-Meter Sea Level Rise Scenario Total	**995**	**539**	**$269,809,040**	**$273,709,924**	**$241,567,819**	**$785,086,783**
0.5-Meter Sea Level Rise Scenario						
Isleton	32	13	$3,698,449	$2,790,758	$2,750,358	$9,239,565
Unincorporated Sacramento County	1,061	585	$296,803,327	$318,590,394	$284,257,488	$899,651,209
0.5-Meter Sea Level Rise Scenario Total	**1,093**	**597**	**$300,472,048**	**$321,107,381**	**$286,734,075**	**$908,313,504**
1.41-Meter Sea Level Rise Scenario						
Isleton	113	51	$10,625,942	$10,015,455	$7,071,102	$27,712,499
Unincorporated Sacramento County	1,376	771	$345,268,707	$367,306,729	$322,015,494	$1,034,590,930
1.41-Meter Sea Level Rise Scenario Total	**1,489**	**822**	**$355,894,649**	**$377,322,184**	**$329,086,596**	**$1,062,303,429**

Source: Sacramento County Climate Action Plan (CAP) 2024, Climate Change Vulnerability Assessment 2017, Cal-Adapt Sea Level Rise, UC Berkeley, San Francisco Bay, Sacramento-San Joaquin Delta and California Coastal Inundation Depth Layer Mosaics 2016, 2025 Sacramento County Parcel/Assessor Data

Table 4-126 Unincorporated Sacramento County – Count and Value of Parcels and Structures 0-meter Sea Level Rise Scenario by Property Use

Property Use	Total Parcel Count	Improved Parcel Count	Total Land Value	Structure Value	Estimated Contents Value	Total Value
Agricultural	419	270	$171,484,205	$170,123,004	$170,123,004	$511,730,213
Industrial	8	6	$7,482,215	$4,351,982	$6,527,973	$18,362,170
Miscellaneous	81	2	$522,107	$9,964	$9,964	$542,035
Office	2	2	$307,228	$194,740	$194,740	$696,708
Public / Utilities	46	0	$28	$0	$0	$28
Recreational	55	27	$12,864,631	$16,711,649	$16,711,649	$46,287,929
Residential	219	198	$61,798,499	$65,618,578	$32,809,289	$160,226,366
Retail / Commercial	12	11	$2,991,166	$12,440,842	$12,440,842	$27,872,850
Vacant	121	10	$8,660,512	$1,468,407	$0	$10,128,919
Unincorporated Sacramento County Total	**963**	**526**	**$266,110,591**	**$270,919,166**	**$238,817,461**	**$775,847,218**

Source: Sacramento County Climate Action Plan (CAP) 2024, Climate Change Vulnerability Assessment 2017, Cal-Adapt Sea Level Rise, UC Berkeley, San Francisco Bay, Sacramento-San Joaquin Delta and California Coastal Inundation Depth Layer Mosaics 2016, 2025 Sacramento County Parcel/Assessor Data

Table 4-127 Unincorporated Sacramento County – Count and Value of Parcels and Structures in 0.5-Meter Sea Level Rise Scenario by Property Use

Property Use	Total Parcel Count	Improved Parcel Count	Total Land Value	Structure Value	Estimated Contents Value	Total Value
Agricultural	443	287	$189,155,233	$210,712,083	$210,712,083	$610,579,399
Industrial	8	6	$7,482,215	$4,351,982	$6,527,973	$18,362,170
Miscellaneous	81	2	$522,107	$9,964	$9,964	$542,035
Office	2	2	$307,228	$194,740	$194,740	$696,708
Public / Utilities	49	0	$28	$0	$0	$28
Recreational	62	32	$13,276,055	$19,133,648	$19,133,648	$51,543,351
Residential	266	233	$73,559,625	$70,080,981	$35,040,491	$178,681,097
Retail / Commercial	14	13	$3,176,082	$12,638,589	$12,638,589	$28,453,260
Vacant	136	10	$9,324,754	$1,468,407	$0	$10,793,161
Unincorporated Sacramento County Total	**1,061**	**585**	**$296,803,327**	**$318,590,394**	**$284,257,488**	**$899,651,209**

Source: Sacramento County Climate Action Plan (CAP) 2024, Climate Change Vulnerability Assessment 2017, Cal-Adapt Sea Level Rise, UC Berkeley, San Francisco Bay, Sacramento-San Joaquin Delta and California Coastal Inundation Depth Layer Mosaics 2016, 2025 Sacramento County Parcel/Assessor Data

Table 4-128 Unincorporated Sacramento County – Count and Value of Parcels and Structures in 1.41-Meter Sea Level Rise Scenario by Property Use

Property Use	Total Parcel Count	Improved Parcel Count	Total Land Value	Structure Value	Estimated Contents Value	Total Value
Agricultural	545	353	$215,300,662	$236,838,251	$236,838,251	$688,977,164
Church / Welfare	2	0	$12,235	$0	$0	$12,235
Industrial	9	7	$7,721,863	$4,778,928	$7,168,392	$19,669,183
Miscellaneous	104	2	$623,898	$9,964	$9,964	$643,826
Office	2	2	$307,228	$194,740	$194,740	$696,708
Public / Utilities	56	0	$28	$0	$0	$28
Recreational	65	33	$13,329,326	$19,292,218	$19,292,218	$51,913,762
Residential	384	346	$93,153,915	$92,271,969	$46,135,985	$231,561,869
Retail / Commercial	15	13	$3,029,449	$12,375,944	$12,375,944	$27,781,337
Vacant	194	15	$11,790,103	$1,544,715	$0	$13,334,818
Unincorporated Sacramento County Total	**1,376**	**771**	**$345,268,707**	**$367,306,729**	**$322,015,494**	**$1,034,590,930**

Source: Sacramento County Climate Action Plan (CAP) 2024, Climate Change Vulnerability Assessment 2017, Cal-Adapt Sea Level Rise, UC Berkeley, San Francisco Bay, Sacramento-San Joaquin Delta and California Coastal Inundation Depth Layer Mosaics 2016, 2025 Sacramento County Parcel/Assessor Data

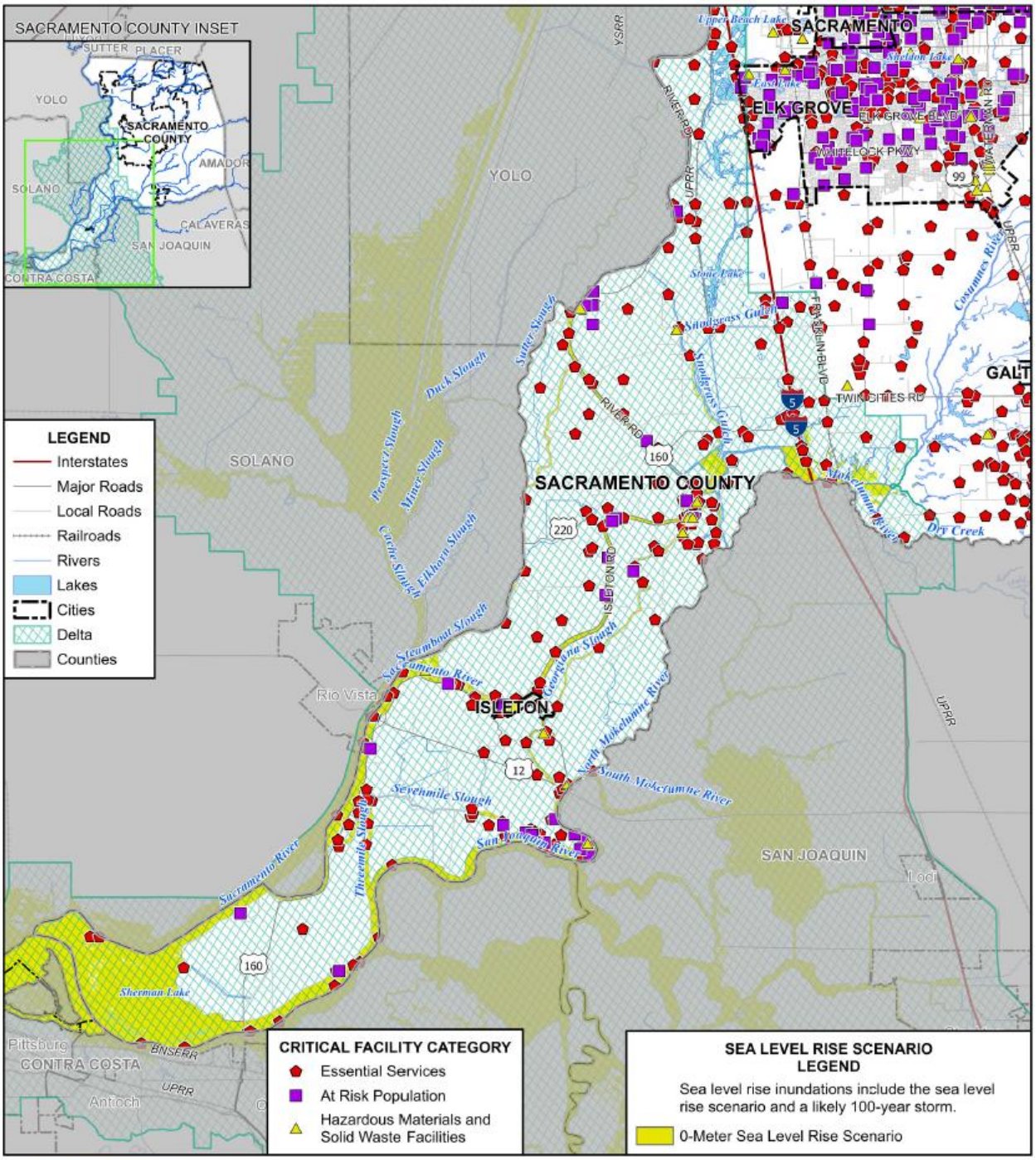
Critical Facilities and Infrastructure

Sea level rise presents a threat to critical facilities and infrastructure. Critical infrastructure plays an immensely important role in our communities. According to the 2021 *Critical Infrastructure at Risk – Sea Level Rise Planning Guidance for California's Coastal Zone* by the California Coastal Commission, communities rely on roads, rail corridors, and related biking and pedestrian routes for transportation, and on water infrastructure for drinking water, wastewater service, and draining streets of rainwater. 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 that cascade throughout California.

A GIS analysis was performed on the critical facility inventory in the Sacramento County Planning Area to determine critical facilities and infrastructure in three sea level rise scenarios. These are shown in the following Figures:

- Figure 4-129 shows critical facilities in the 0-meter sea level rise scenario. Table 4-129 details critical facilities in 0-meter sea level rise scenario by facility type and count for the Planning Area.
- Figure 4-130 shows critical facilities in the 0.5-meter sea level rise scenario. Table 4-130 details critical facilities in 0.5-meter sea level rise scenario by facility type and count for the Planning Area.
- Figure 4-131 shows critical facilities in the 1.41-meter sea level rise scenario. Table 4-131 details critical facilities in 1.41-meter sea level rise scenario by facility type and count for the Planning Area.

Figure 4-129 Sacramento County Planning Area – Critical Facilities in 0-meter Sea Level Rise Scenario



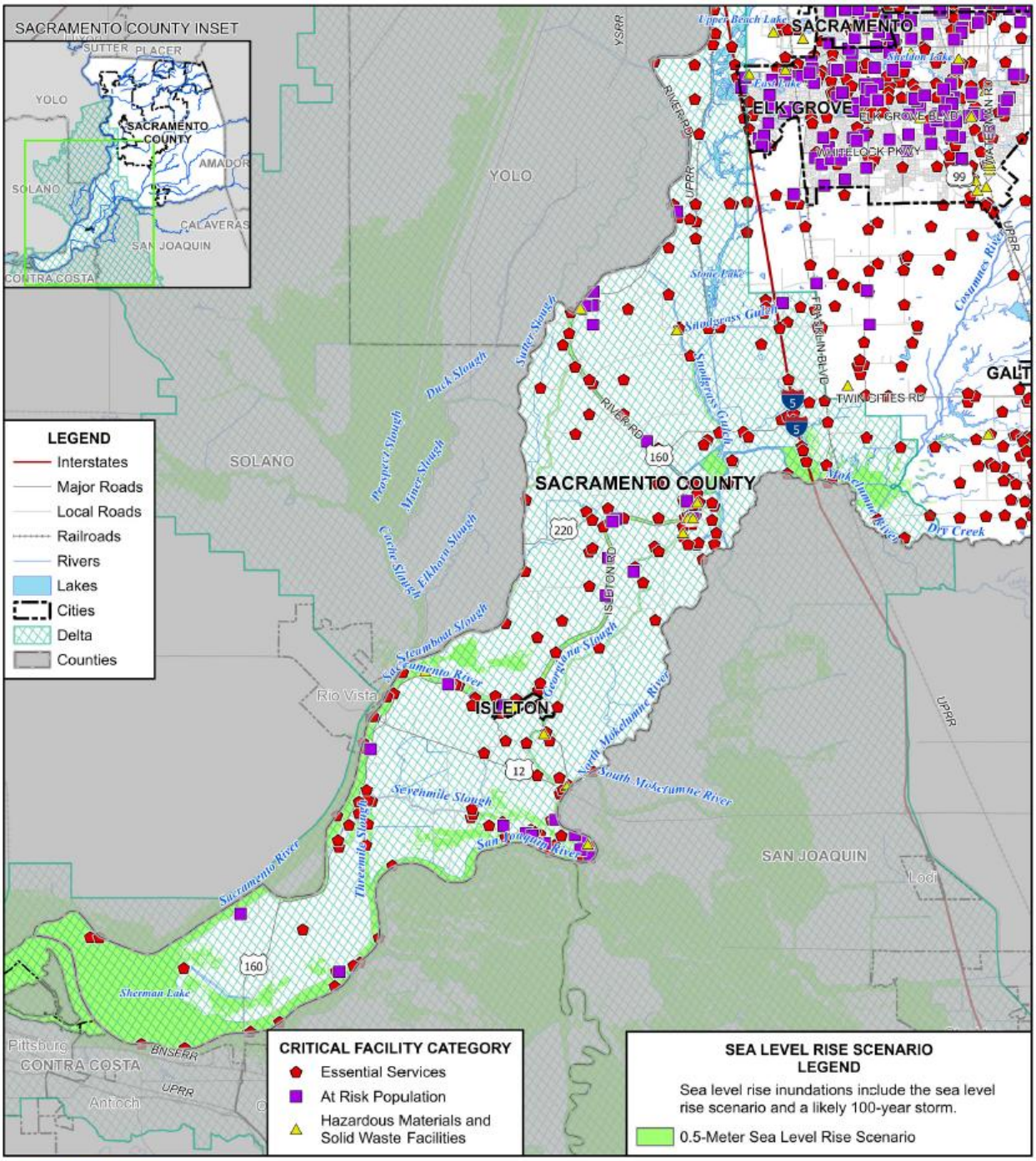
Data Source: Sacramento County Climate Action Plan 2024,
Climate Change Vulnerability Assessment 2017,
Cal-Adapt Sea Level Rise https://cmip5.cal-adapt.org/tools/slr-calflod-3d/,
San Francisco Bay, Sacramento-San Joaquin Delta and California Coastal Inundation Depth Layer Mosaics 2016
(Datasets: Bay_[0m, 0.5m, 1.41m]slr_max_blinear_snap_float)
Sacramento County, Cal-Atlas; Map Date: 4/16/2026.

Table 4-129 Sacramento County Planning Area – Critical Facilities in 0-Meter Sea Level Rise Scenario by Jurisdiction and Category

Jurisdiction / Sea Level Rise Scenario	Critical Facility Category	Facility Count
Unincorporated Sacramento County		
0-Meter Sea Level Rise Scenario	Essential Services Facilities	62
	At Risk Population Facilities	0
	Hazardous Materials and Solid Waste Facilities	2
Unincorporated Sacramento County Total		**64**
0-Meter Sea Level Rise Scenario Total		**64**

Source: Sacramento County Climate Action Plan (CAP) 2024, Climate Change Vulnerability Assessment 2017, Cal-Adapt Sea Level Rise, UC Berkeley, San Francisco Bay, Sacramento-San Joaquin Delta and California Coastal Inundation Depth Layer Mosaics 2016, Sacramento County GIS

Figure 4-130 Sacramento County Planning Area – Critical Facilities in 0.5-meter Sea Level Rise Scenario



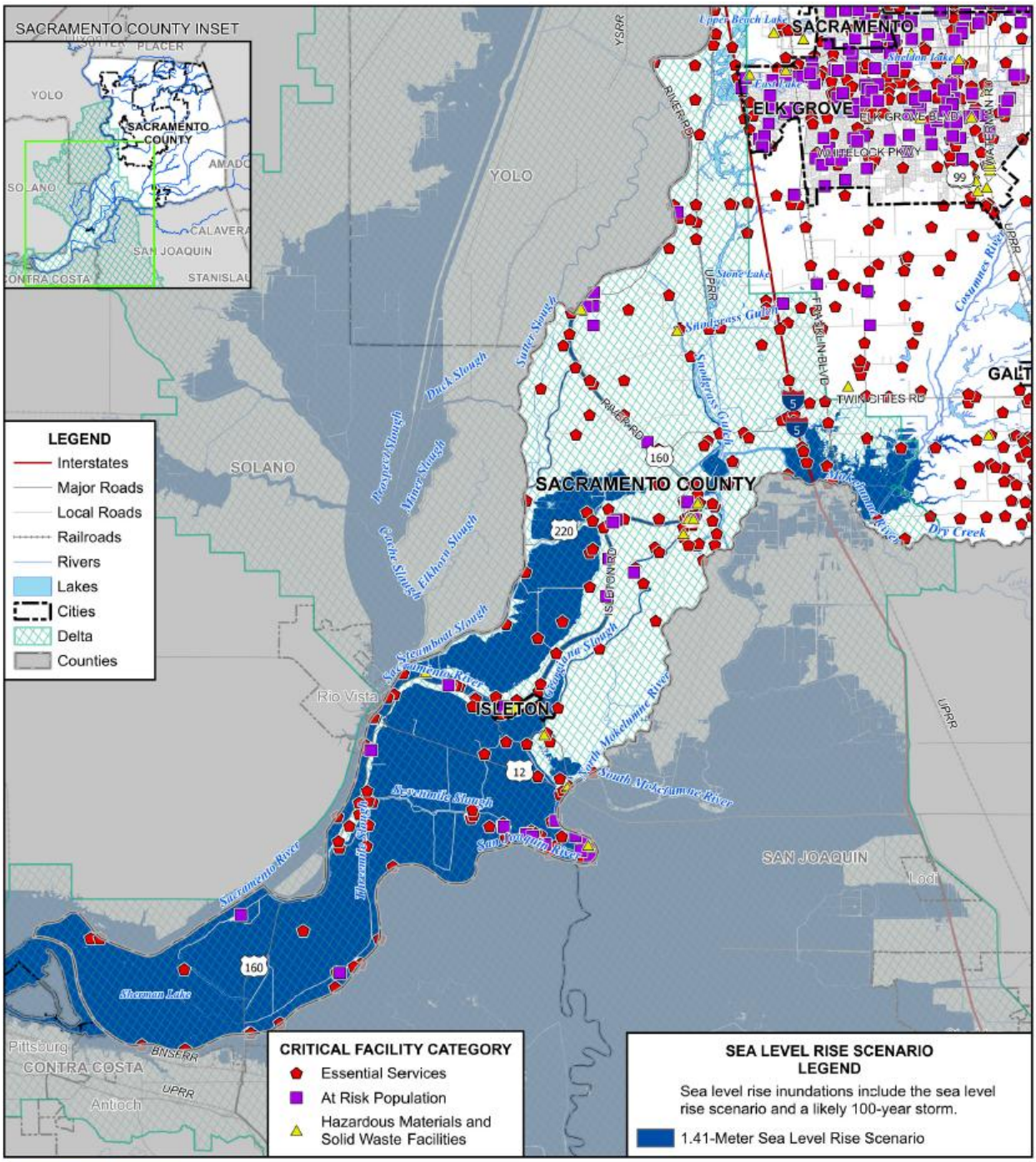
Data Source: Sacramento County Climate Action Plan 2024,
Climate Change Vulnerability Assessment 2017,
Cal-Adapt Sea Level Rise https://cmip5.cal-adapt.org/tools/slr-calflod-3d/,
San Francisco Bay, Sacramento-San Joaquin Delta and California Coastal Inundation Depth Layer Mosaics 2016
(Datasets: Bay_[0m, 0.5m, 1.41m]slr_max_blinear_snap_float)
Sacramento County, Cal-Atlas; Map Date: 4/16/2026.

Table 4-130 Sacramento County Planning Area – Critical Facilities in 0.5-Meter Sea Level Rise Scenario by Category and Jurisdiction

Jurisdiction /Sea Level Rise Scenario	Critical Facility Category	Facility Count
Unincorporated Sacramento County		
0.5-Meter Sea Level Rise Scenario	Essential Services Facilities	69
	At Risk Population Facilities	1
	Hazardous Materials and Solid Waste Facilities	2
0.5-Meter Sea Level Rise Scenario Total		**72**

Source: Sacramento County Climate Action Plan (CAP) 2024, Climate Change Vulnerability Assessment 2017, Cal-Adapt Sea Level Rise, UC Berkeley, San Francisco Bay, Sacramento-San Joaquin Delta and California Coastal Inundation Depth Layer Mosaics 2016, Sacramento County GIS

Figure 4-131 Sacramento County Planning Area – Critical Facilities in 1.41-meter Sea Level Rise Scenario



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SACRAMENTO COUNTY

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: 4/16/2026.

Table 4-131 Sacramento County Planning Area – Critical Facilities in 1.41-Meter Sea Level Rise Scenario by Category and Jurisdiction

Jurisdiction / Sea Level Rise Scenario	Critical Facility Category	Facility Count
Unincorporated Sacramento County		
1.41-Meter Sea Level Rise Scenario	Essential Services Facilities	117
	At Risk Population Facilities	8
	Hazardous Materials and Solid Waste Facilities	3
Unincorporated Sacramento County Total		**128**
0.5-Meter Sea Level Rise Scenario Total		**128**

Source: Sacramento County Climate Action Plan (CAP) 2024, Climate Change Vulnerability Assessment 2017, Cal-Adapt Sea Level Rise, UC Berkeley, San Francisco Bay, Sacramento-San Joaquin Delta and California Coastal Inundation Depth Layer Mosaics 2016, Sacramento County GIS

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. Without wetlands and other critical ecosystems, many species could lose their homes or become extinct. Large flood events exacerbated by sea level rise can affect natural, historic, and cultural resources. Any of these resources that fall in the sea level rise scenarios shown on Figure 4-126, Figure 4-127, or Figure 4-128 would be vulnerable. Sea level rise poses a predominant threat for flooding in Suisun Marsh, and persistent flooding of managed wetlands will negatively impact habitat for endangered species.

FEMA NRI Hazard Vulnerability Assessment

Sea level rise is not a hazard in the FEMA NRI, therefore no data is presented.

Impacts from Sea Level Rise

Sea level rise (both with and without storm surge) and its impacts vary by location and severity of event and will likely only affect certain areas of the County. Based on the risk assessment, it is evident that sea level rise has the potential to put lives and property at risk and could include devastating life safety, property, and economic impacts to certain areas of the Sacramento Planning Area. Impacts that are not always quantified, but can be anticipated, include:

- Injury and loss of life;
- Commercial and residential structural and property damage;
- Health hazards associated with mold and mildew, contamination of drinking water, etc.;
- 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 County 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 as 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 Sacramento County 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 growth in Sacramento County is expected to continue at a moderate pace. There are 129 areas where the unincorporated County is expected development to occur in the next 5 years. Additional growth within the sea level rise areas in the County would place additional populations at risk to sea level rise and associated additional flooding. Additional population growth would likely bring continued diversity to the County. Vulnerable population groups could face disproportionate effects from a flood and should be planned for. Changes in population and population patterns may or may not increase the impacts and vulnerability of the County 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. There are 129 areas where the unincorporated County is expected development to occur in the next 5 years. Locating new development, structures and critical facilities and infrastructure within or near areas of flood risk may put additional development at risk. Building codes are in effect to reduce this risk and should be updated as necessary to continue to address future heavy rains and storm conditions. With adherence to development standards, future losses to new development should be minimal.

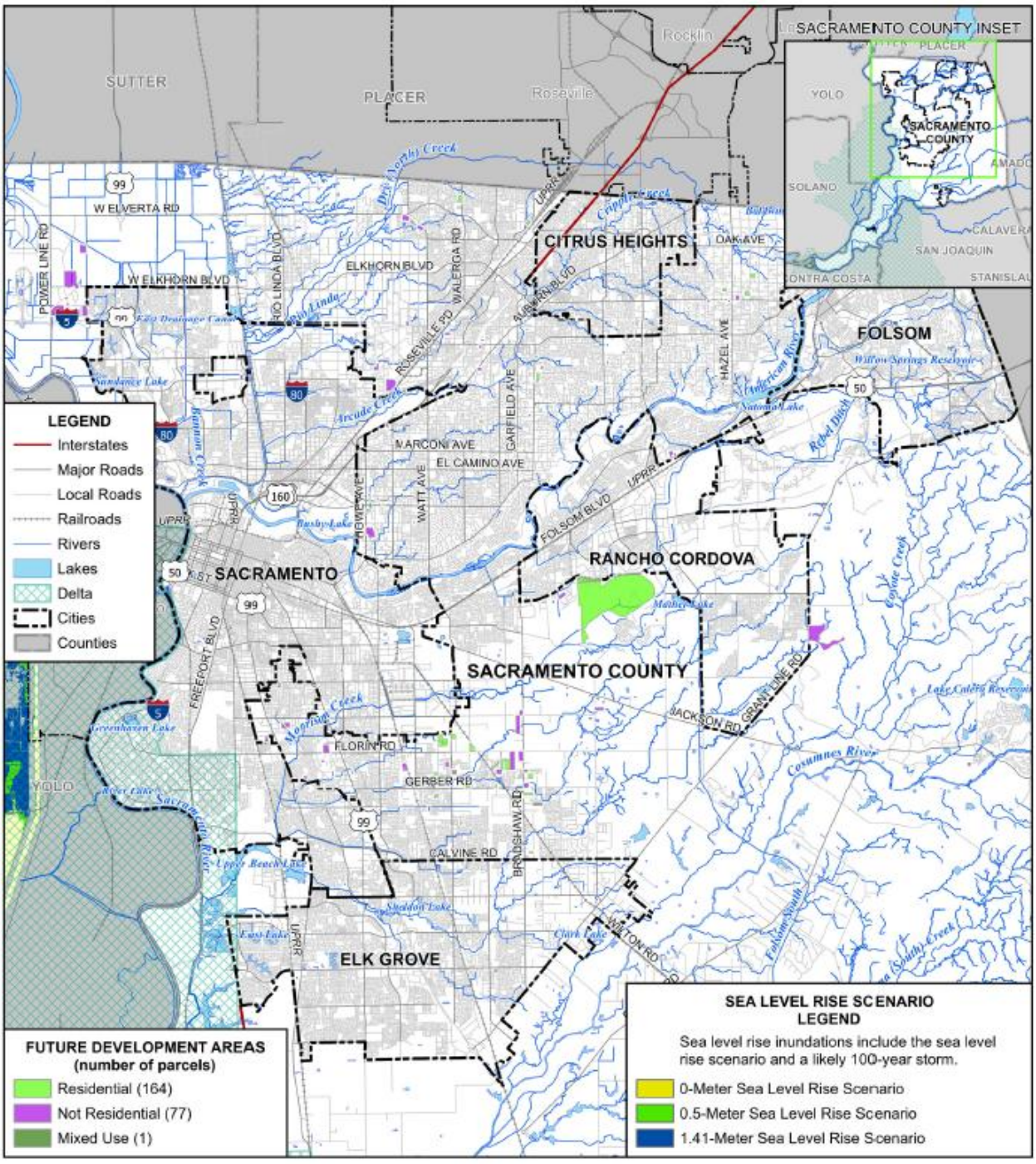
Future Development

The 2024 CAP noted that guiding development out of areas vulnerable to sea level rise will reduce future flooding impacts to people and property. Future development considerations 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 Sacramento County Planning Area. Applicable building codes and building standards should mitigate sea level rise for the County.

GIS Analysis

Sacramento County provided 129 future development areas which were used as the basis for the inventory of future development for the unincorporated County. These were mapped in GIS. Future development areas in Sea Level Rise scenarios are shown on Figure 4-108. As shown, no future development areas falls in these areas; as such, no tabular analysis is provided.

Figure 4-132 Unincorporated Sacramento County – Future Development in Sea Level Rise Scenarios



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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: 9/16/2026.

4.3.16. Subsidence

Hazard Profile

This hazard profile contains multiple sections that detail how this hazard can affect Sacramento County. These sections include a hazard/problem description; description of location and extent; past occurrences of this hazard; and how climate change can affect this hazard.

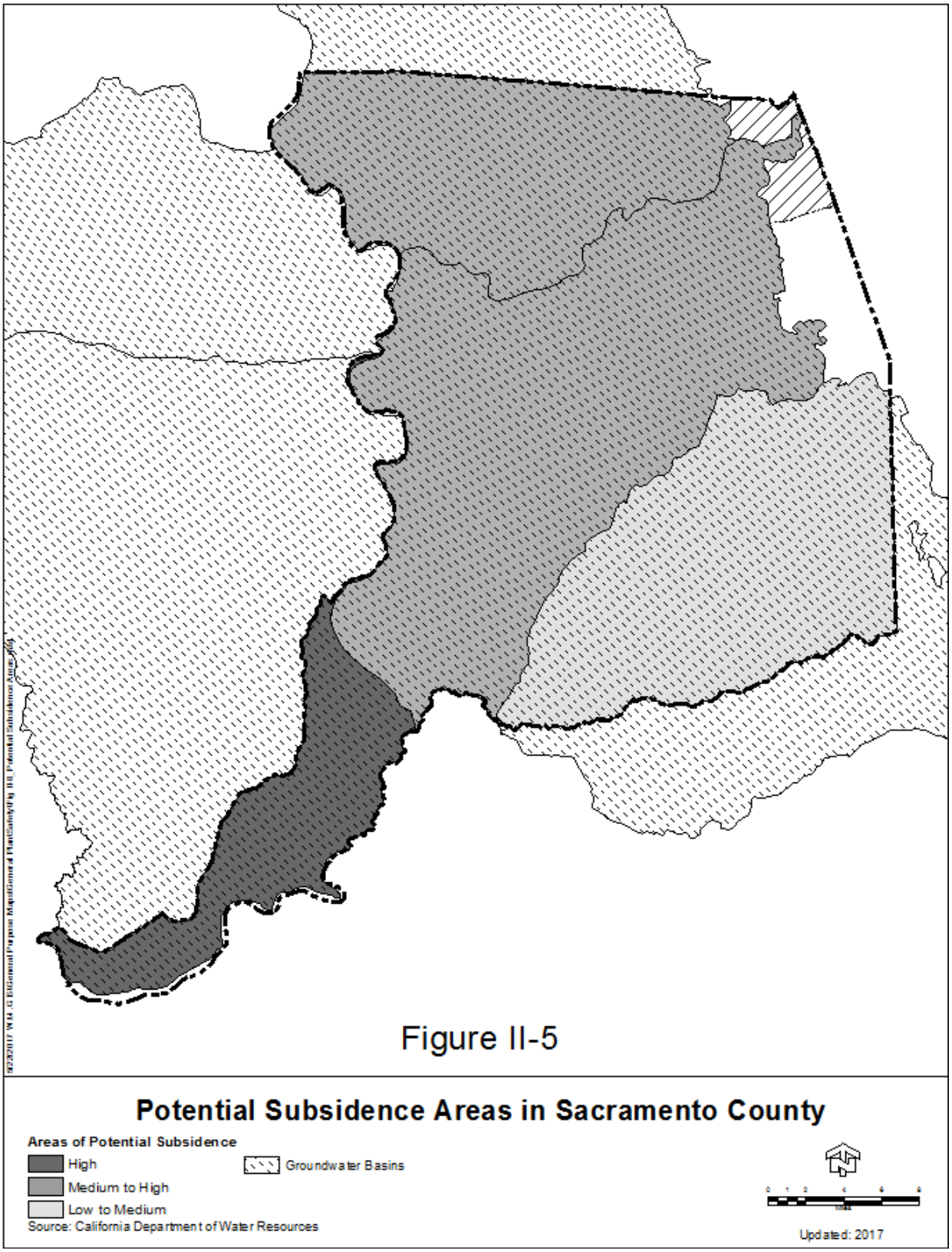
Hazard/Problem Description

Subsidence is the gradual settling or sinking of the earth's surface over manmade or natural underground voids with little or no horizontal motion. Subsidence occurs naturally and also through man-driven or technologically exacerbated circumstances. According to the Sacramento County 2022 General Plan Background Report, Sacramento County is affected by five types of subsidence: liquefaction caused by earthquake shaking, compaction by heavy structures, the erosion of peat soils, peat oxidation, and fluid withdrawal. Groundwater extraction for residential, commercial and agricultural uses causes the greatest amount of subsidence in Sacramento County.

Location and Extent

In Sacramento County, the western and southwestern portions of the County are prone to some level of subsidence, with the Delta area at high risk of subsidence. These areas are shown in Figure 4-133. There is no scientific scale used to measure subsidence. Subsidence is measured in inches or feet of elevation over time. Speed of onset of subsidence is slow, with rates of change of often less than 1" to 2" per year. The duration of subsidence is long, as it is rare for subsidence to be reversed. The potential for oxidation of organic soils still exists within the County, where farming practices still require annual operations to prepare fields for planting and harvest. Many land use practices have changed due to new cropping types, patterns, and farming practices, which are changing rates of subsidence, or stopping subsidence altogether. Lands that no longer have organic peat are no longer subsiding; lands that are permanent crops, wetlands, rice, and livestock pasture lands have also stopped subsiding at historic rates, or in some cases are slowly growing biomass in the case of restoration projects, and some rice operations.

Figure 4-133 Known and Potential Subsidence Areas in Sacramento County



Source: Sacramento County General Plan Safety Element Background Report, 2022

Past Occurrences

Disaster Declaration History

There have been no disaster declarations related to subsidence in Sacramento County.

NCDC Events

The NCDC database shows no past occurrences of subsidence.

Hazard Mitigation Planning Committee Events

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

Events since 2021 LHMP

No specific reports of notable new subsidence incidents or accelerated sinking isolated to Sacramento County. The 2020–2022 drought increased groundwater pumping regionally, which can contribute to gradual subsidence, but wet winters in 2023–2024 allowed aquifer recovery and reduced pressure in many Sacramento Valley basins.

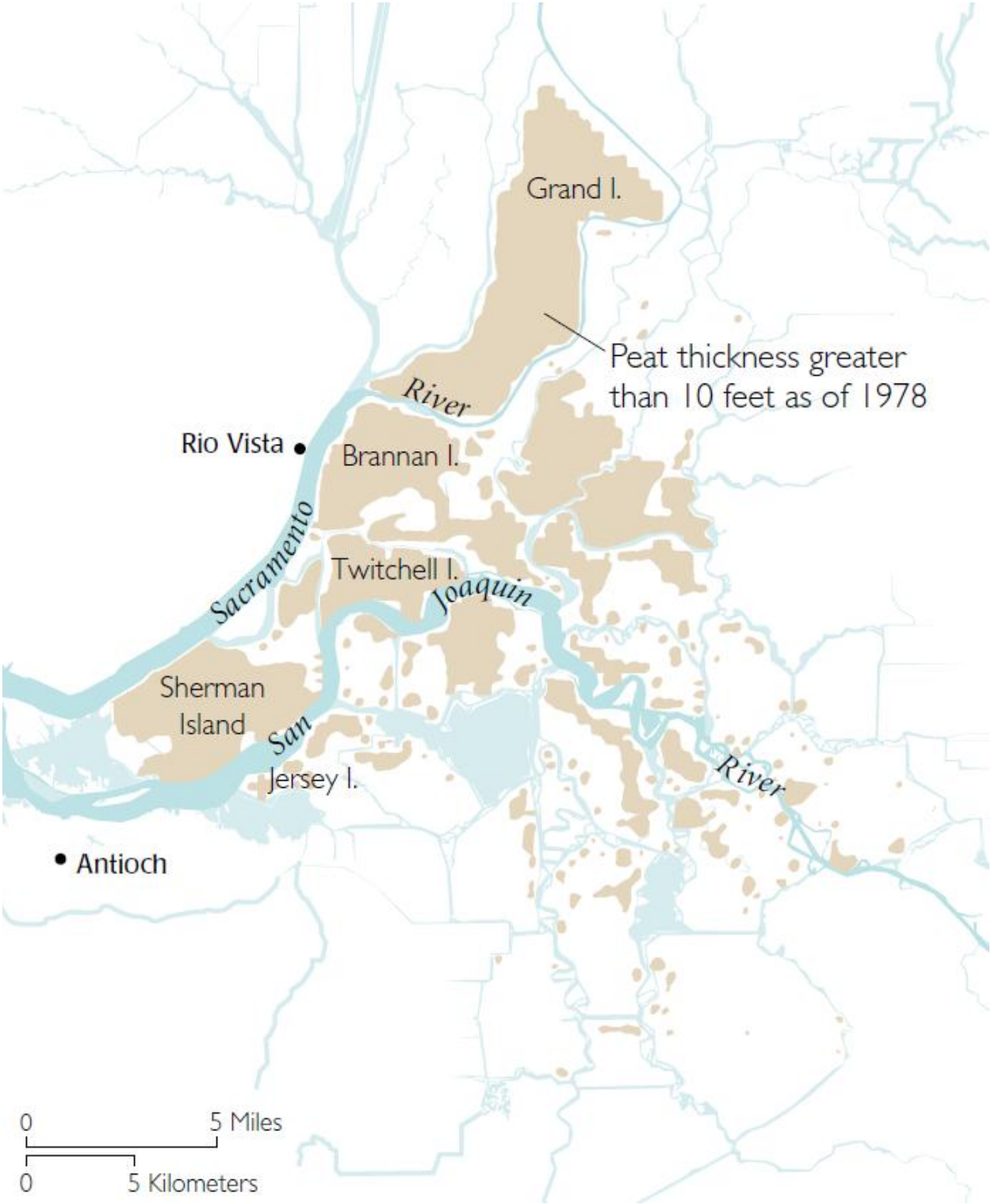
Events prior to 2021 LHMP

Subsidence has been occurring since the late 1800s, when the land in the Delta region first was converted to farmland. Reclamation projects continued, and by the 1930s the levee system was complete. The best evidence for long-term rates of subsidence comes from two sources—measurements of the exposure of transmission-line foundations on Sherman and Jersey Islands in the western Delta and repeated leveling surveys on Mildred and Bacon Islands and Lower Jones Tract in the southern Delta. The transmission lines in the western Delta were installed in 1910 and 1952. They are founded on pylons driven down to a solid substrate, so that comparison of the original foundation exposure with the current exposure allows estimates of soil loss. The southern Delta transect was surveyed 21 times between 1922 and 1981; in 1983 further surveys were precluded when Mildred Island flooded. Both data sets indicate long-term average subsidence rates of 1 to 3 inches per year, but also suggest a decline in the rate of subsidence over time, probably due to a decreased proportion of readily oxidizable peat in the near surface. In fact, rates of elevation loss measured at three selected sites in 1990 to 1992 were less than 0.4 inches per year, consistent with the inferred slowing of subsidence. However, all of these sites were near island edges, and likely underestimate the average island-wide elevation loss.

Likelihood of Future Occurrences

Highly Likely—Subsidence in Sacramento County is an ongoing concern, predominantly in the Delta area where it continues to occur on an annual basis, where oxidation of peat is still ongoing. Although changes in farming techniques and improved land use practices have slowed levels of subsidence, subsidence continues to occur. Areas with peat thickness over 10 feet have a great potential for continued subsidence. These areas are shown in Figure 4-134.

Figure 4-134 Peat Thickness Estimates



Source: California Department of Water Resources, 1998. Retrieved March 27, 2026.

Climate Change and Subsidence

Changes in precipitation, reduced snowpack, and more frequent droughts are likely to increase the demand on groundwater sources, risking overdraft, ground subsidence, and decreased water quality. Climate change may further contribute to subsidence in the County, by increasing evapotranspiration rates for agriculture and other vegetation and by increasing periods of drought, both of which can increase demand for water, accelerate groundwater pumping and the drilling of new groundwater wells and lead to further lowering of the groundwater table and increasing subsidence.

Vulnerability Assessment

Vulnerability—Medium

Historically, the County has been at risk from subsidence, primarily in the Delta region in the southeast portion of the County. Subsidence in the Delta is an ongoing concern, and is discussed in more detail in the Delta Annex to this Plan Update.

According to the Sacramento County 2022 General Plan Background Report, subsidence has created major problems for flood control, particularly in the Delta. As levees sink under their own weight and are weakened by the erosive force of water, expensive periodic rebuilding is necessary. According to the California Department of Water Resources, the Sacramento-San Joaquin Delta's peat soils are subsiding at an estimated 0.4 to 0.6 inches per year. However, according to USGS estimates, developed islands in the Central and Western Delta are subsiding at 1-3 inches per year on average. Many islands in the Delta that, at one time, were at or above sea level are now between 10 and 25 feet below sea level.

An assessment of a community's vulnerability to this hazard begins with an understanding of local exposure to unincorporated Sacramento County. This is included in the Local Concerns section below. After that, vulnerability is discussed in multiple sections that detail how this hazard can affect both the entire Sacramento County Planning Area as well as the unincorporated portions of Sacramento County. How the hazard affects the other participating jurisdictions can be found in their respective annexes to this LHMP Update. These sections below include assets at risk, impacts, and how future development may affect the vulnerability of the County to this hazard.

Local Concerns (unincorporated Sacramento County)

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

Delta Concerns

There are many concerns for the Delta area of the County. These are discussed in great detail in the Vulnerability to and Impacts from Subsidence section of the Delta annex to this LHMP Update.

Local concerns for each of the other participating jurisdictions can be found under the Local Concerns heading in each respective jurisdictional annex to this LHMP Update.

Assets at Risk

Assets at risk from subsidence include people and populations; structures; critical facilities and infrastructure; and natural, historic, and cultural resources. These are discussed in the following sections for the Sacramento County Planning Area and unincorporated Sacramento County.

Additionally, for each hazard in the FEMA National Risk Index in Sacramento County, the relevant portions of the hazard analysis done by FEMA is presented below. This includes the Hazard Risk Index Rating, Expected Annual Loss Values, Exposure Values, and the Historic Loss Ratio Rating. These are presented for the Sacramento County Planning Area as a whole.

People and Populations

People and populations are at limited risk from direct effects of subsidence. However, subsidence that affects levees in the County could have secondary impacts if levees overtop or fail due to subsidence. All people and populations located in the levee protected areas 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.

Structures

Structures in the County are at limited risk from direct effects of subsidence. However, subsidence that affects levees in the County could have secondary impacts. Certain structures in the Sacramento County Planning Area are at risk of DFIRM levee failure flooding and primarily include those structures located within the A99 and X Protected by Levee flood zones, as well as in areas where the levees are not certified or accredited. These were discussed in Section 4.3.14 above.

Critical Facilities and Infrastructure

Critical facilities and community lifelines are unlikely to experience functional downtime associated with direct impacts from subsidence due to its slow speed onset. A loss of function could be permanent based on it not being feasible to rebuild a damaged facility at a location due to the change in ground elevation. This would require relocation of these facilities, which could have cascading impacts on a region. However, subsidence that affects levees in the County could have secondary impacts.

Natural, Historic, and Cultural Resources

The largest of California's drinking water sources is the Sacramento-San Joaquin Delta and its tributaries. Land subsidence of Delta islands indirectly affects the north-to-south water transfer system, which is predicated on the available water supply (annual inflows to the Delta), the viability of aquatic species populations, and acceptable water quality in the southern Delta. The statewide water-transfer system in California is so interdependent that decreased water quality in the Delta, whether due to droughts or levee failures, might lead to accelerated subsidence in areas dependent on imported water from the Delta.

The Delta provides at least a portion of the water supply for about two-thirds of California's population, and provides a migratory pathway for four fish that are listed as endangered or threatened pursuant to the federal Endangered Species Act. Subsidence causing saltwater intrusion could affect this water supply. Any historic or cultural resources located in or near a leveed area at risk to subsidence would be at risk to flood related damages should a levee overtop or fail due to subsidence.

FEMA NRI Hazard Vulnerability Assessment

Subsidence is not a hazard in the FEMA NRI. As such, no hazard vulnerability assessment from the NRI is included here.

Impacts

According to Sacramento County, the subsided islands of the Sacramento-San Joaquin Delta are perpetually at risk of flooding in the event of levee breaks or overtopping and many have flooded in the past, causing millions of dollars in damage. As subsidence progresses, the levees must be regularly maintained and periodically raised and strengthened to support the increasing stresses on their banks. Delta island flooding can also interfere with freshwater exports from the Delta.

Subsidence has caused impacts on critical water infrastructure, including reduced conveyance capacity in local, State, and federal conveyance facilities, reduced levee heights, and damaged well casings. Throughout California, subsidence has damaged buildings, aqueducts, well casings, bridges, and highways.

As the land sinks, it can experience increased flooding and adverse impacts on sewer lines and stormwater drainage. As subsidence progresses, areas protected by levees are impacted. The levees in the Sacramento-San Joaquin Delta must be regularly maintained and periodically raised and strengthened to support the increasing stresses on them that result when the Delta islands subside. Compaction of the aquifer system may permanently decrease its capacity to store water. Subsidence can lead to damage to critical infrastructure and facilities.

Impacts to identified assets at risk to this hazard and the overall vulnerability of the County 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 as discussed in the Future Conditions/Future Development discussion below.

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 Sacramento County include the following:

- Climate change is likely to exacerbate future drought conditions which can increase vulnerability of the County to subsidence. This was discussed in greater detail in the Climate Change and Subsidence 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 County. Population growth in Sacramento County is expected to continue. There are 129 areas in the unincorporated County where development is expected to occur in the next 5 years. 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 County 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. There are 129 areas in the unincorporated County where development is expected to occur in the next 5 years. Groundwater demand/use, location of development, infrastructure, and Delta conditions can influence subsidence exposure and vulnerability. Locating new development, structures and critical facilities and infrastructure within or near areas at risk to subsidence (and accompanying levee failure) may put additional development at risk. County building codes are in effect to reduce this risk and should be updated as necessary to continue to address future conditions. Thus, 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 County to this hazard.

Future Development

Future development considerations should be ongoing and proactive. Ensuring that comprehensive land use planning is conducted, regulatory requirements, such as building codes, are followed, and varying needs for different demographic groups with intersecting identities that reside within the County are considered can help to make for a more resilient community. Future development in the County is at risk in the Delta. More information on that can be found in Annex R (Delta Annex) and the accompanying chapters.

4.3.17. Wildfire (w/Smoke and Air Quality)

Hazard Profile

This hazard profile contains multiple sections that detail how this hazard can affect the Sacramento County Planning Area. These sections include a hazard/problem description; description of location and extent; past occurrences of this hazard; likelihood of future occurrence; and how climate change can affect or influence this hazard.

Hazard/Problem Description

California is recognized as one of the most fire-prone and consequently fire-adapted landscapes in the world. The combination of complex terrain, Mediterranean climate, and productive natural plant communities, along with ample natural and aboriginal ignition sources, has created conditions for extensive wildfires. Wildland fire is an ongoing concern for the Sacramento County Planning Area. Historically, the fire season extends from early spring through late fall of each year during the hotter, dryer months. However, in recent years, the wildfire season is more of a year around event. Fire conditions arise from a

combination of high temperatures, low moisture content in the air and fuel, an accumulation of vegetation, and high winds.

Potential losses from wildfire include human life, structures and other improvements, natural and cultural resources, quality and quantity of water supplies, cropland, timber, and recreational opportunities. Economic losses could also result. Smoke and air pollution from wildfires can be a severe health hazard. In addition, catastrophic wildfire can create favorable conditions for other hazards such as flooding, landslides and mudflows, and erosion during the rainy season. Additional losses could occur if SMUD or PG&E initiates a power shutdown during extreme fire weather conditions. This is discussed in greater detail at the beginning of Section 4.3.

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.

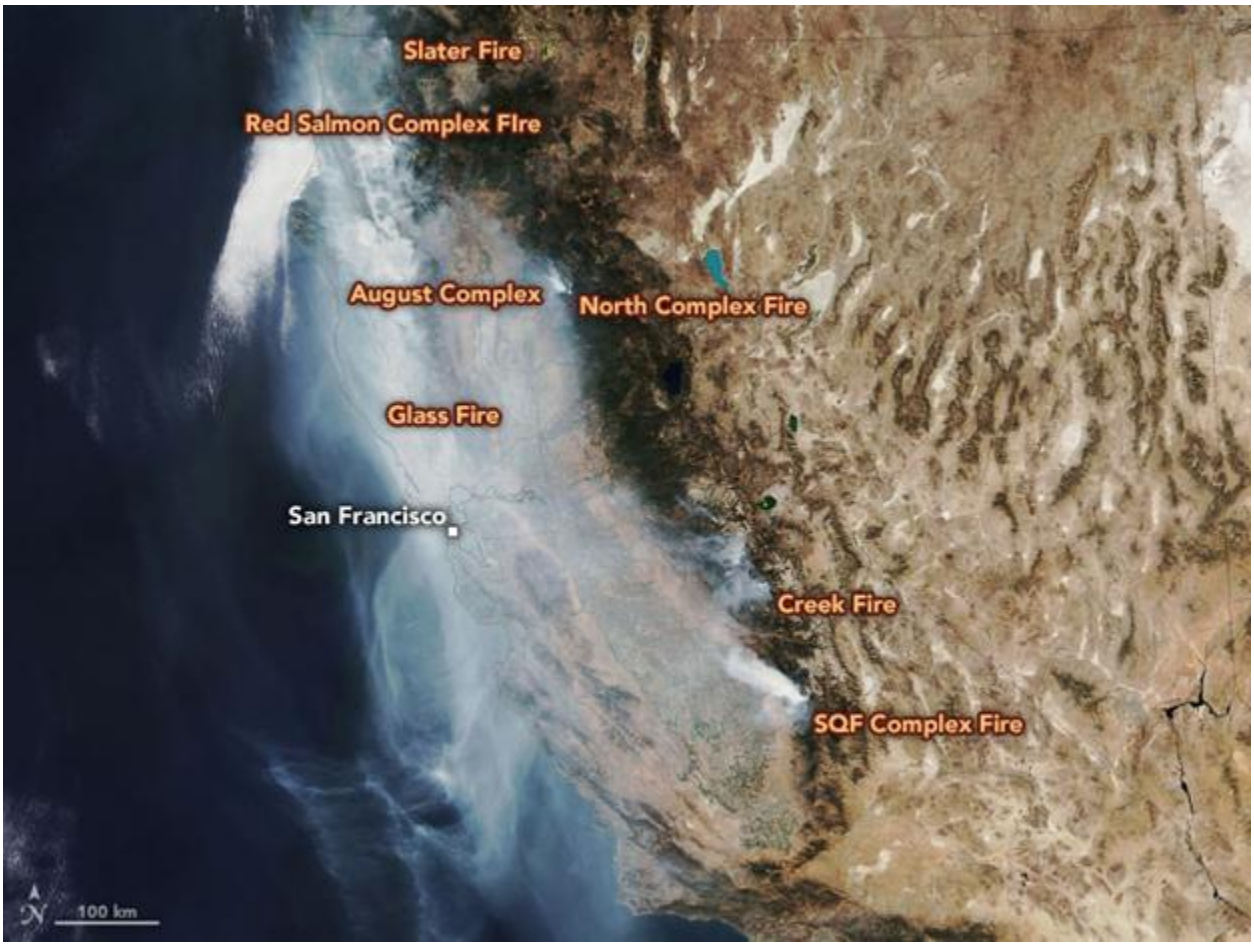
Wildfire smoke can have negative effects to those who live in or near a fire burn area. Smoke and air pollution from wildfires can be a severe health hazard. Wildfires occurring within the County and in nearby northern California communities since the 2021 LHMP Update have created significant smoke and air quality issues affecting area residents. During these times, air sensors in the County showed periods of very poor air quality.

According to FirstStreet.org, a climate risk data organization, elderly individuals are at an adversely high risk of experiencing negative health impacts from poor air quality, like worsening of heart disease and stroke, reduced lung capacity, and increase in lung disease.

The paper "Wildland fire management and air quality in the southern Sierra Nevada: Using the Lion Fire as a case study with a multi-year perspective on PM2.5 impacts and fire policy" by D. Schweizer and R. Cisneros explores the impacts of smoke from high-intensity, stand replacing fires versus lower intensity fires in the Sierra Nevada and explains that while smoke and fire mitigation is important with any fire, the extreme effects of smoke from large wildfires can be prevented by managing forests and allowing low intensity fires to burn.

In the summer of 2020, a record number of large wildfires (see Figure 4-135) occurred on the West Coast creating hazardous air quality conditions. Within California, the northern portion of the state, the coast, and the Sierra Nevada all experienced numerous, large fires including the SCU Lightning Complex, CZU August Lightning Complex, LNU Lightning Complex, SQF Complex and the Creek Fire. This occurred in 2021 during the Dixie Fire. The mixture of the smoke and typical Central Valley summer heat resulted in dangerous levels of air pollution. Outdoor events were cancelled and people were encouraged to stay inside for long periods of time. It was noted that the "Delta Breeze" often provided temporary relief by pushing smoke out of the low-lying Sacramento Valley, creating sharp air quality gradients between the valley portions of the County and the surrounding foothills.

Figure 4-135 2020 Wildfires and Smoke Causing Air Quality Issues



Source: NASA.gov. Retrieved 3/30/2026.

Location and Extent

This section is broken down into two parts: a discussion on the wildland urban interface in Sacramento County, and the Sacramento County wildfire setting.

Wildland Urban Interface

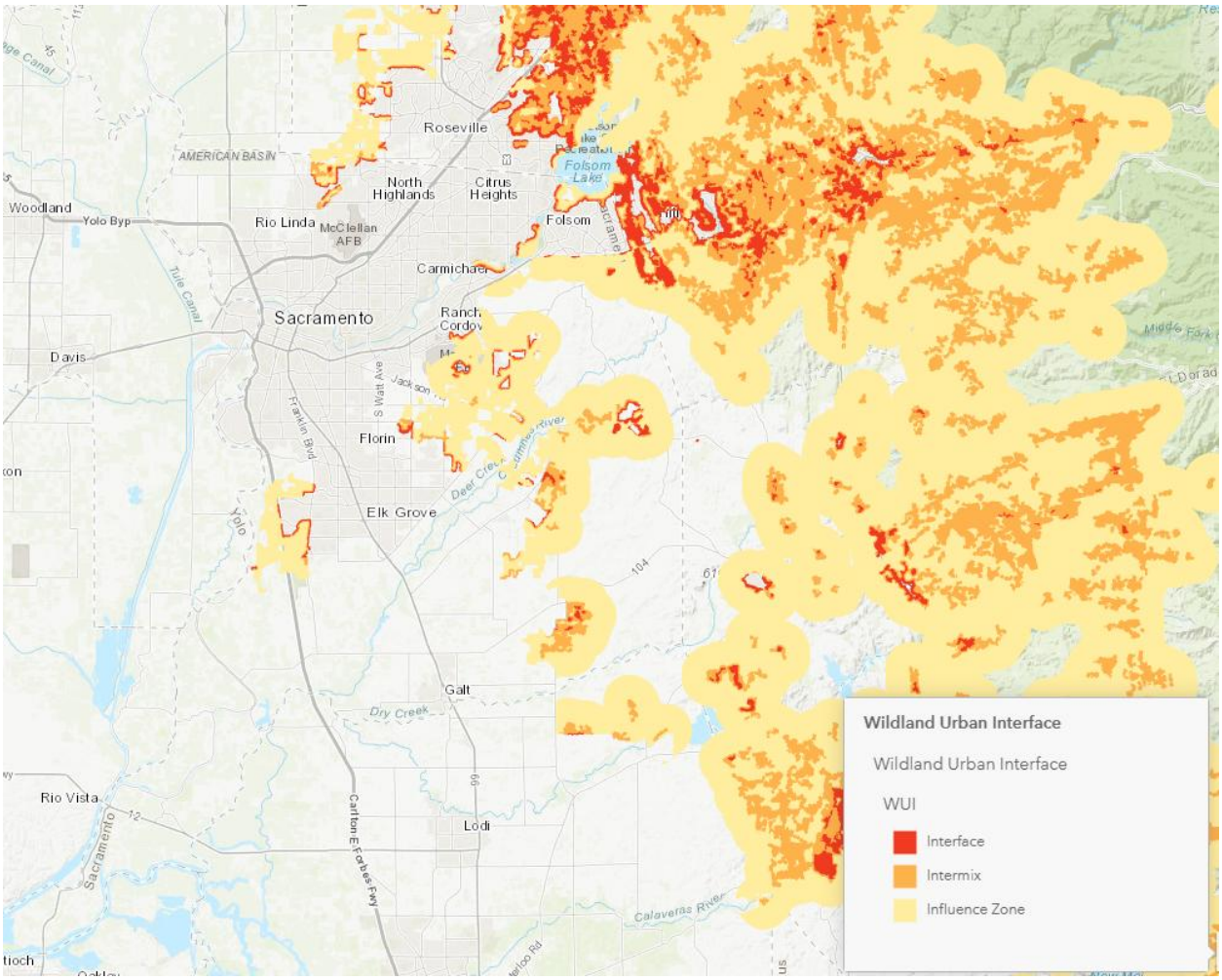
Throughout California, communities are increasingly concerned about wildfire safety as increased development in the foothills and mountain areas and subsequent fire control practices have affected the natural cycle of the ecosystem. While wildfire risk is predominantly associated with wildland urban interface (WUI) areas, significant wildfires can also occur in heavily populated areas. The wildland urban interface is a general term that applies to development adjacent to landscapes that support wildland fire. The WUI defines the community development into the foothills and mountainous areas of California. The WUI describes those communities that are mixed in with grass, brush and timbered covered lands (wildland). These are areas where wildland fire once burned only vegetation but now burns homes as well. The WUI for Sacramento County consists of communities at risk (shown in the Local Concerns section below) as well as the area around the communities that pose a fire threat.

There are two types of WUI environments. The first is the true urban interface where development abruptly meets wildland. The second WUI environment is referred to as the wildland urban intermix. Wildland urban intermix communities are rural, low density communities where homes are intermixed in wildland areas. Wildland urban intermix communities are difficult to defend because they are sprawling communities over a large geographical area with wild fuels throughout. This profile makes access, structure protection, and fire control difficult as fire can freely run through the community.

WUI fires are often the most damaging. WUI fires occur where the natural forested landscape and urban-built environment meet or intersect. Even relatively small acreage fires may result in disastrous damages. WUI fires occur where the natural forested landscape and urban-built environment meet or intermix. The damages are primarily reported as damage to infrastructure, built environment, loss of socio-economic values and injuries to people.

Figure 4-136 shows these WUI areas in red with Sacramento County in the center of the frame. This intermingling of wildland and manmade fuel has made the control of wildland fires more difficult and costly. It has also dramatically increased the danger and potential destruction caused by wildfire.

Figure 4-136 Sacramento County – WUI Areas



Source: CAL FIRE eGIS WUI21_1 Dataset. Retrieved 3/3.0/2026.

Sacramento County Wildfire Setting

As previously stated, there are areas in the County that are prone to wildfire. Wildland fires affect grass, forest, and brushlands, as well as any structures located within them. 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. Generally, there are four major factors that contribute to and sustain wildfires and allow for predictions of a given area's potential to burn. These factors include fuel, topography, weather, and human actions.

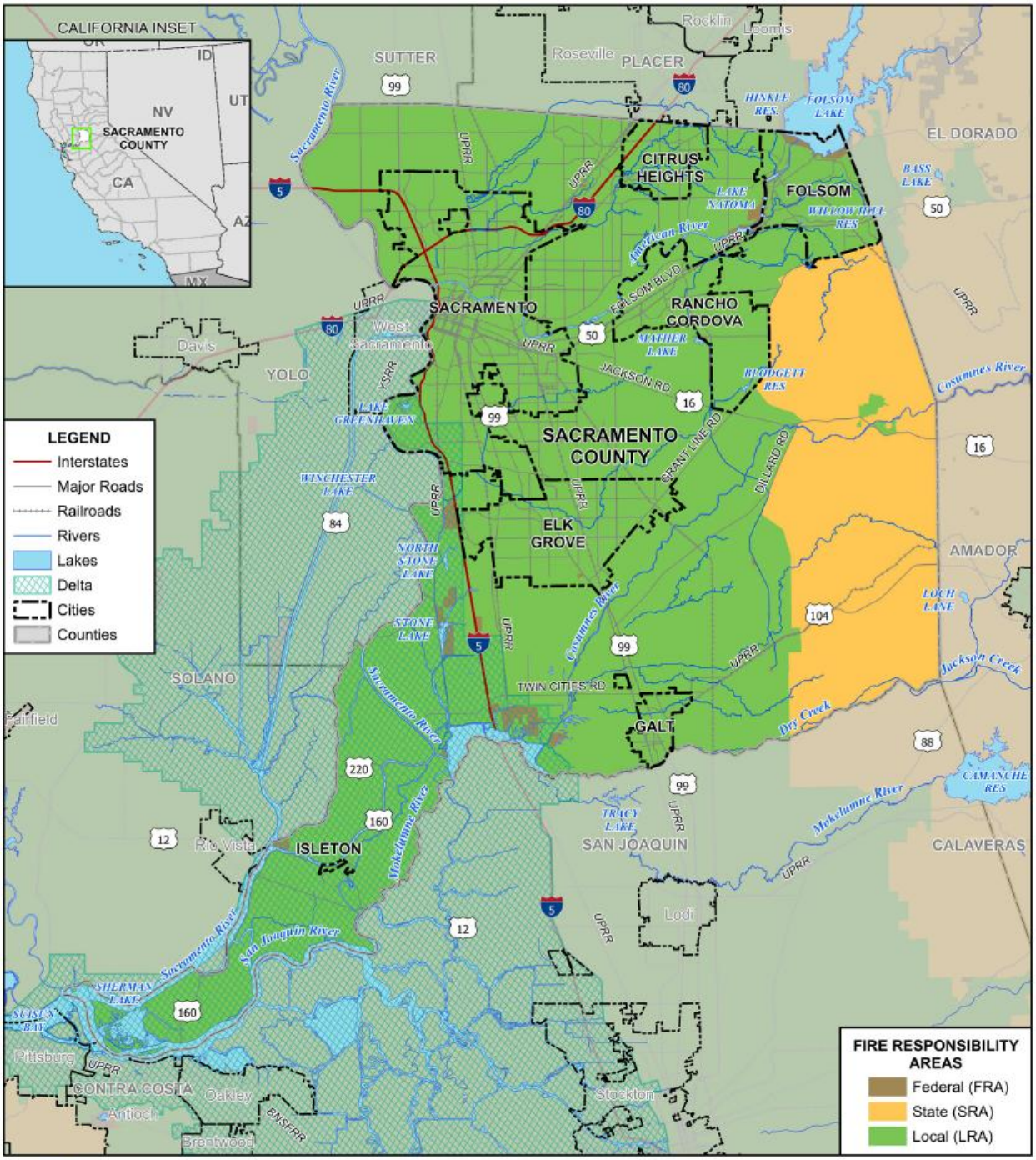
- **Fuel** – Fuel is the material that feeds a fire and is a key factor in wildfire behavior. Fuel is generally classified by type and by volume. Fuel sources are diverse and include everything from dead tree needles and leaves, twigs, and branches to dead standing trees, live trees, brush, and cured grasses. Also to be considered as a fuel source, are man-made structures and other associated combustibles. The type of prevalent fuel directly influences the behavior of wildfire. Light fuels such as grasses burn quickly and serve as a catalyst for fire spread. The volume of available fuel is described in terms of Fuel Loading. Certain areas in and surrounding Sacramento County are extremely vulnerable to fires

as a result of dense grassy vegetation combined with a growing number of structures being built near and within rural lands. In the northern portion of the County, such as Folsom, an increase in forested areas increase the risk and vulnerability of wildfire.

- **Topography** – An area's terrain and land slopes affect its susceptibility to wildfire spread. Fire intensities and rates of spread increase as slope increases due to the tendency of heat from a fire to rise via convection. The natural arrangement of vegetation throughout a hillside can also contribute to increased fire activity on slopes. Most of the Sacramento area is relatively flat, thus limiting the influence of this factor on wildfire behavior.
- **Weather** – Weather components such as temperature, relative humidity, wind, and lightning also affect the potential for wildfire. High temperatures and low relative humidity dry out the fuels that feed the wildfire creating a situation where fuel will more readily ignite and burn more intensely. Wind is the most treacherous weather factor. The greater a wind, the faster a fire will spread, and the more intense it will be. Winds can be significant at times in Sacramento County. However, it should be noted that the winds generally occur during the winter storm season, not during the summer, fire season. In addition to high winds, wind shifts can occur suddenly due to temperature changes or the interaction of wind with topographical features such as slopes or steep hillsides. Related to weather is the issue of recent drought conditions contributing to concerns about wildfire vulnerability. During periods of drought, the threat of wildfire increases.
- **Human Actions** – Most wildfires are ignited by human action, the result of direct acts of arson, carelessness, or accidents. Many fires originate in populated areas along roads and around homes, and are often the result of arson or careless acts such as the disposal of cigarettes, use of equipment or debris burning. Recreation areas that are located in high fire hazard areas also result in increased human activity that can increase the potential for wildfires to occur.

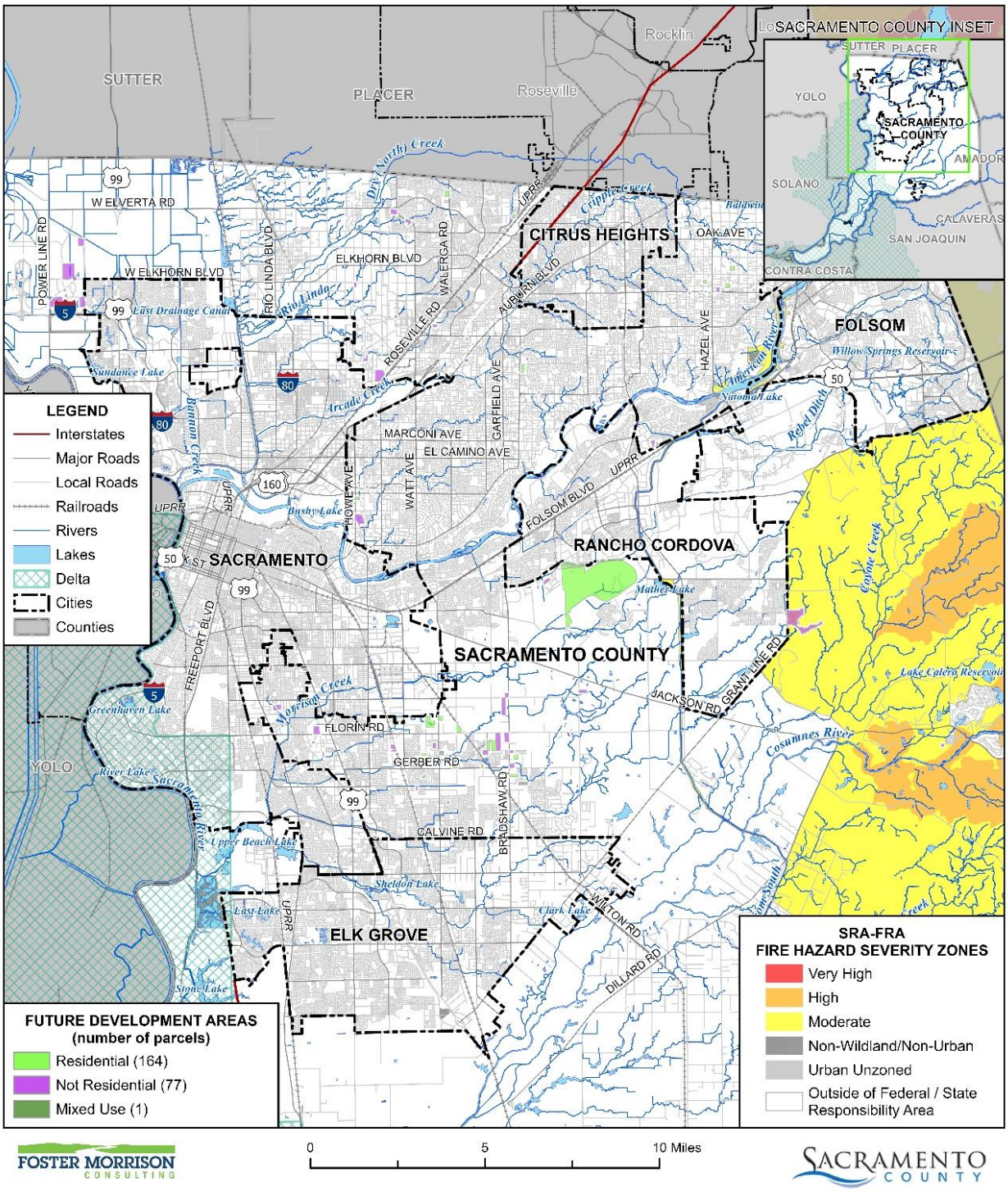
Fires can have a quick speed of onset, especially during periods of drought. Fires can burn for a short period of time, or may have durations lasting for a week or more. Wildfire can affect any area of the Planning Area; however, CAL FIRE has mapped areas in California that are at risk to wildfire. Methodologies for this analysis and maps showing the various Fire Hazard Severity Zones, which range from Urban-Unzoned to Very High, can be found in the Vulnerability Assessment below. Cal Fire Fire Hazard Severity Zones have been developed based on Fire Responsibility Areas located in the County which details the responsible fire agency for each area of the County; specifically, federal, state, and local areas. Figure 4-137 shows the Fire Responsibility Area mapping for Sacramento County. Geographic extents of CAL FIRE FHSZs in the State Responsibility Area (SRA) and Federal Responsibility Area (FRA) for the Sacramento County Planning Area be seen on Figure 4-138, summarized in Table 4-132, and detailed by jurisdiction in Table 4-133. Geographic extents of CAL FIRE FHSZs in the Local Responsibility Area (LRA) for the Sacramento County Planning Area be seen on Figure 4-139, summarized in Table 4-134, and detailed by jurisdiction in Table 4-135. Details on each jurisdiction's Fire Hazard Severity Zone extents (for both SRA/FRA and LRA) can be found in their respective annexes to this LHMP Update.

Figure 4-137 Sacramento County Planning Area – Fire Responsibility Areas



Data Source: CAL FIRE (SRA 23_1) May 1, 2023,
Sacramento County, Cal-Atlas; Map Date: 1/30/2026.

Figure 4-138 Sacramento County Planning Area – CAL FIRE SRA/FRA Fire Hazard Severity Zones



FOSTER MORRISON CONSULTING

SACRAMENTO COUNTY

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: 10/2/2026.

Table 4-132 Sacramento County Planning Area – CAL FIRE SRA/FRA Fire Hazard Severity Zones 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	1,441	0.2%	1,064	0.3%	377	0.1%
High	29,223	5%	7,566	2%	21,657	8%
Moderate	89,884	15%	24,992	8%	64,892	23%
Non-Wildland/Non-Urban	4,710	1%	6	0.0%	4,703	2%
Urban Unzoned	467	0.1%	5	0.0%	462	0.2%
Outside of Federal / State Responsibility Area	466,000	79%	278,239	89%	187,761	67%
Grand Total	**591,725**	**100%**	**311,872**	**100%**	**279,852**	**100%**

Source: CAL FIRE (FHSZ SRA 2024, FHSZ FRA 2007)

Table 4-133 Sacramento County Planning Area – CAL FIRE SRA/FRA Fire Hazard Severity Zones Geographical Extents by Jurisdiction

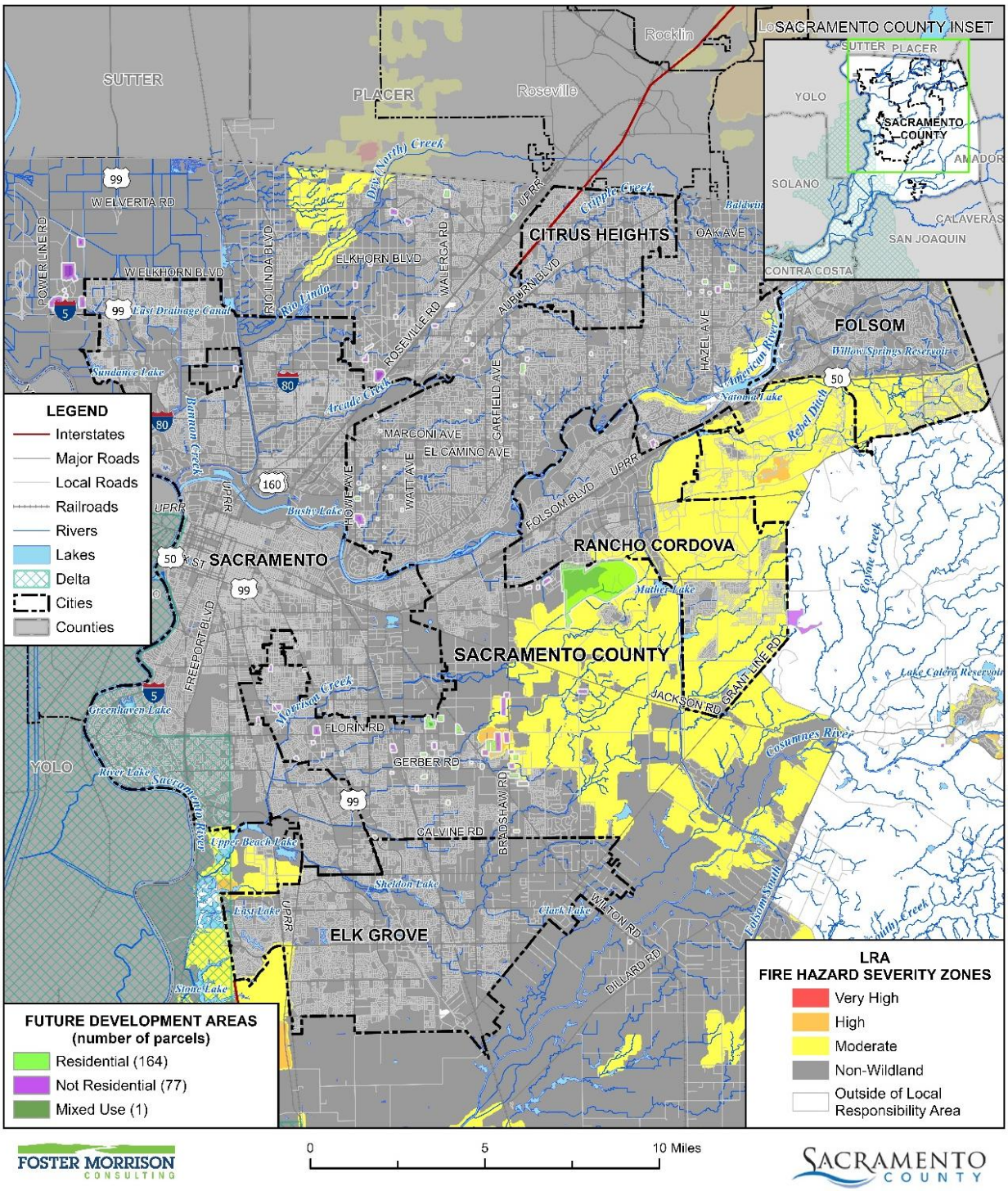
Jurisdiction / Fire Hazard Severity Zone	Total Acres	% of Total Acres	Improved Acres	% of Total Improved Acres	Unimproved Acres	% of Total Unimproved Acres
Citrus Heights						
Very High	0	0%	0	0%	0	0%
High	0	0%	0	0%	0	0%
Moderate	0	0%	0	0%	0	0%
Non-Wildland/Non-Urban	0	0%	0	0%	0	0%
Urban Unzoned	0	0%	0	0%	0	0%
Outside of Federal/State Responsibility Area	7,646	1%	6,466	2%	1,180	0.4%
Citrus Heights Total	**7,646**	**1%**	**6,466**	**2%**	**1,180**	**0.4%**
Elk Grove						
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	36	0.01%	0	0%	36	0.01%
Urban Unzoned	2	0.000%	0	0%	2	0.001%
Outside of Federal/State Responsibility Area	23,566	4%	16,387	5%	7,179	3%
Elk Grove Total	**23,604**	**4%**	**16,387**	**5%**	**7,217**	**3%**
Folsom						
Very High	0	0%	0	0%	0	0%

Jurisdiction / Fire Hazard Severity Zone	Total Acres	% of Total Acres	Improved Acres	% of Total Improved Acres	Unimproved Acres	% of Total Unimproved Acres
High	71	0.01%	0	0%	71	0.03%
Moderate	535	0.09%	1	0.0003%	534	0.2%
Non-Wildland/Non-Urban	97	0.02%	0	0%	97	0.03%
Urban Unzoned	207	0.03%	0.04	0.00001%	207	0.1%
Outside of Federal/State Responsibility Area	14,625	2%	7,131	2%	7,494	3%
Folsom Total	**15,535**	**3%**	**7,132**	**2%**	**8,403**	**3%**
Galt						
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	4,169	1%	2,268	1%	1,901	1%
Galt Total	**4,169**	**1%**	**2,268**	**1%**	**1,901**	**1%**
Isleton						
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	233	0.04%	66	0.02%	167	0.1%
Isleton Total	**233**	**0.04%**	**66**	**0.02%**	**167**	**0.1%**
Rancho Cordova						
Very High	0	0%	0	0%	0	0%
High	0	0%	0	0%	0	0%
Moderate	184	0.03%	0.002	0.000001%	184	0.1%
Non-Wildland/Non-Urban	0	0%	0	0%	0	0%
Urban Unzoned	69	0.01%	4	0.001%	65	0.02%
Outside of Federal/State Responsibility Area	19,948	3%	7,564	2%	12,384	4%
Rancho Cordova Total	**20,201**	**3%**	**7,569**	**2%**	**12,633**	**5%**
Sacramento						
Very High	0	0%	0	0%	0	0%
High	0	0%	0	0%	0	0%

Jurisdiction / Fire Hazard Severity Zone	Total Acres	% of Total Acres	Improved Acres	% of Total Improved Acres	Unimproved Acres	% of Total Unimproved Acres
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	9%	32,172	10%	19,839	7%
Sacramento Total	**52,011**	**9%**	**32,172**	**10%**	**19,839**	**7%**
Unincorporated Sacramento County						
Very High	1,441	0.2%	1,064	0.3%	377	0.1%
High	29,151	5%	7,566	2%	21,585	8%
Moderate	89,166	15%	24,991	8%	64,175	23%
Non-Wildland/Non-Urban	4,577	1%	6	0.002%	4,570	2%
Urban Unzoned	189	0.03%	1	0.0003%	188	0.1%
Outside of Federal/State Responsibility Area	343,802	58%	206,185	66%	137,617	49%
Unincorporated Sacramento County Total	**468,325**	**79%**	**239,813**	**77%**	**228,512**	**82%**
Grand Total	**591,725**	**100%**	**311,872**	**100%**	**279,852**	**100%**

Source: CAL FIRE (FHSZ SRA 2024, FHSZ FRA 2007)

Figure 4-139 Sacramento County Planning Area – CAL FIRE LRA Fire Hazard Severity Zones



Data Source: CAL FIRE (Local Responsibility Area FHSZ 3/2025 FHSZLRA25_v1_All), Sacramento County, Cal-Atlas; Map Date: 10/2/2026.

Table 4-134 Sacramento County Planning Area– CAL FIRE LRA Fire Hazard Severity Zones 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	1,236	0.2%	1,158	0.4%	78	0.0%
High	2,056	0.3%	1,239	0.4%	817	0.3%
Moderate	75,423	13%	23,800	8%	51,623	19%
Non-Wildland	387,290	66%	252,045	81%	135,245	49%
Outside of Local Responsibility Area	123,755	21%	33,459	11%	90,296	32%
Grand Total	**589,759**	**100%**	**311,700**	**100%**	**278,058.8**	**100%**

Source: CAL FIRE (LRA 2025)

Table 4-135 Sacramento County Planning Area– CAL FIRE LRA Fire Hazard Severity Zones Geographical Extents by Jurisdiction

Jurisdiction / Fire Hazard Severity Zone	Total Acres	% of Total Acres	Improved Acres	% of Total Improved Acres	Unimproved Acres	% of Total Unimproved Acres
Citrus Heights						
Very High	0	0%	0	0%	0	0%
High	0	0%	0	0%	0	0%
Moderate	0	0%	0	0%	0	0%
Non-Wildland	7,646	1%	6,466	2%	1,180	0.4%
Outside of Local Responsibility Area	2	0.0003%	1	0.0004%	0.5	0.0002%
Citrus Heights Total	**7,648**	**1%**	**6,467**	**2%**	**1,180**	**0.4%**
Elk Grove						
Very High	0	0%	0	0%	0	0%
High	25	0.004%	19	0.01%	6	0.002%
Moderate	479	0.1%	236	0.1%	242	0.1%
Non-Wildland	23,062	4%	16,132	5%	6,930	2%
Outside of Local Responsibility Area	38	0.01%	0	0%	38	0.01%
Elk Grove Total	**23,604**	**4%**	**16,387**	**5%**	**7,217**	**3%**
Folsom						
Very High	0	0%	0	0%	0	0%
High	0	0%	0	0%	0	0%
Moderate	4,768	1%	946	0.3%	3,822	1%
Non-Wildland	9,857	2%	6,185	2%	3,672	1%
Outside of Local Responsibility Area	987	0.2%	26	0.01%	961	0.3%
Folsom Total	15,612	3%	7,157	2%	8,455	3%

Jurisdiction / Fire Hazard Severity Zone	Total Acres	% of Total Acres	Improved Acres	% of Total Improved Acres	Unimproved Acres	% of Total Unimproved Acres
Galt						
Very High	0	0%	0	0%	0	0%
High	0	0%	0	0%	0	0%
Moderate	49	0.01%	0	0%	49	0.02%
Non-Wildland	4,120	1%	2,268	1%	1,852	1%
Outside of Local Responsibility Area	3	0.0005%	0.01	0.000004%	3	0.001%
Galt Total	**4,172**	**1%**	**2,268**	**1%**	**1,904**	**1%**
Isleton						
Very High	0	0%	0	0%	0	0%
High	0	0%	0	0%	0	0%
Moderate	0	0%	0	0%	0	0%
Non-Wildland	233	0.04%	66	0.02%	167	0.1%
Outside of Local Responsibility Area	0	0%	0	0%	0	0%
Isleton Total	**233**	**0.04%**	**66**	**0.02%**	**167**	**0.1%**
Rancho Cordova						
Very High	0	0%	0	0%	0	0%
High	0	0%	0	0%	0	0%
Moderate	11,202	2%	1,841	1%	9,361	3%
Non-Wildland	8,746	1%	5,724	2%	3,023	1%
Outside of Local Responsibility Area	253	0.04%	4	0.001%	249	0.09%
Rancho Cordova Total	**20,201**	**3%**	**7,569**	**2%**	**12,633**	**5%**
Sacramento						
Very High	0	0%	0	0%	0	0%
High	0	0%	0	0%	0	0%
Moderate	45	0.01%	10	0.003%	36	0.01%
Non-Wildland	51,966	9%	32,162	10%	19,804	7%
Outside of Local Responsibility Area	2	0.0004%	0	0%	2	0.001%
Sacramento Total	**52,014**	**9%**	**32,172**	**10%**	**19,842**	**7%**
Unincorporated Sacramento County						
Very High	1,236	0.2%	1,158	0.4%	78	0.03%
High	2,031	0.3%	1,220	0.4%	811	0.3%
Moderate	58,879	10%	20,766	7%	38,113	14%
Non-Wildland	281,660	48%	183,043	59%	98,617	35%
Outside of Local Responsibility Area	122,469	21%	33,427	11%	89,043	32%
Unincorporated Sacramento County Total	**466,27**	**79%**	**239,614**	**77%**	**226,661**	**82%**

Jurisdiction / Fire Hazard Severity Zone	Total Acres	% of Total Acres	Improved Acres	% of Total Improved Acres	Unimproved Acres	% of Total Unimproved Acres
Grand Total	**589,759**	**100%**	**311,700**	**100%**	**278,059**	**100%**

Source: CAL FIRE (LRA 2025)

Post-Wildfire Landslides and Debris Flows

Post-wildfire landslides and debris flows are a concern in the State of California, though the fires and associated post fire landslides often occur in areas that are less populated. Fires that burn in hilly areas remove vegetation that holds hillsides together during rainstorms. Once that vegetation is removed, the hillside may be compromised, resulting in landslides and debris flows. Mapping of these areas has been ongoing on a case-by-case basis since 2012. A search of the USGS Emergency Assessment of Post-Fire Debris Flow Hazards showed no events in Sacramento County, likely due to the relatively flat topography of the County. As such, no mapping is presented here.

Past Occurrences

Disaster Declaration History

A search of FEMA and Cal OES disaster declarations shows four state and three federal disaster declarations. These are shown in Table 4-136.

Table 4-136 Sacramento County – Federal and State Disaster Declaration from Wildfire 1950-2025

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

Source: Cal OES, FEMA

NCDC Events

The NCDC has tracked wildfire events in the County dating back to 1993. The 15 events in Sacramento County in the database are shown in Table 4-137.

*Table 4-137 NCDC Wildfire Events in Sacramento County 1993 to 1/1/2026**

Event Type	Number of Events	Deaths	Deaths (indirect)	Injuries	Injuries (indirect)	Property Damage	Crop Damage
Dense Smoke	2	0	0	0	0	$0	$0
Wildfire	13	2	1	2	0	$5,000,000	$0
Total	**15**	**2**	**1**	**2**	**0**	**$5,000,000**	**$ 0**

Source: NCDC

*Deaths, injuries, and damages are for the entire event, and may not be exclusive to the County.

CAL FIRE Events

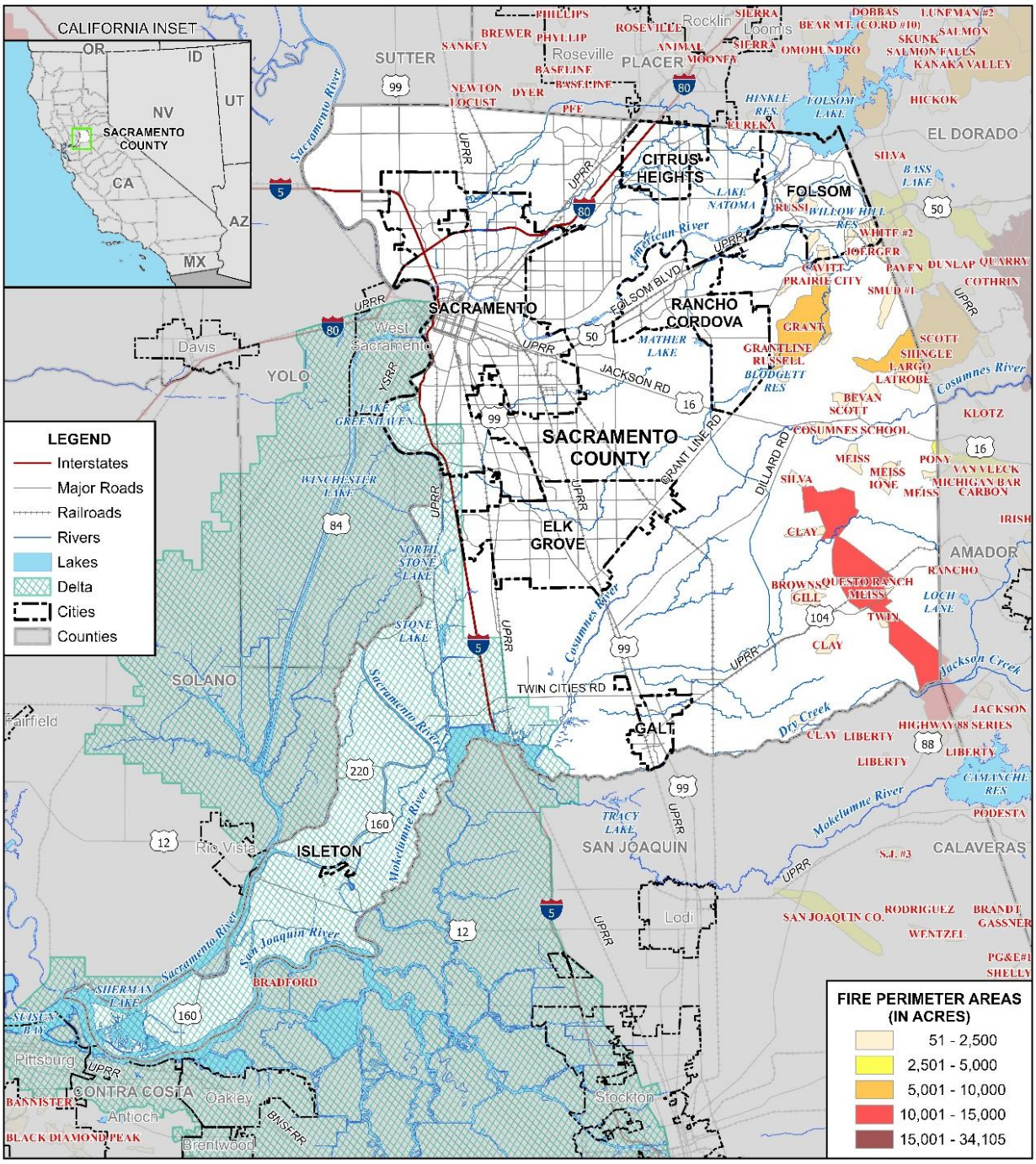
CAL FIRE, USDA Forest Service Region 5, Bureau of Land Management (BLM), the National Park Service (NPS), Contract Counties and other agencies jointly maintain a comprehensive fire perimeter GIS layer for public and private lands throughout the state. The data covers fires back to 1878 (though the first recorded incident for the County was in 1917). For the National Park Service, Bureau of Land Management, and US Forest Service, fires of 10 acres and greater are reported. For CAL FIRE, timber fires greater than 10 acres, brush fires greater than 50 acres, grass fires greater than 300 acres, and fires that destroy three or more residential dwellings or commercial structures are reported. CAL FIRE recognizes the various federal, state, and local agencies that have contributed to this dataset, including USDA Forest Service Region 5, BLM, National Park Service, and numerous local agencies.

Fires may be missing altogether or have missing or incorrect attribute data. Some fires may be missing because historical records were lost or damaged, fires were too small for the minimum cutoffs, documentation was inadequate, or fire perimeters have not yet been incorporated into the database. Also, agencies are at different stages of participation. For these reasons, the data should not be used for statistical or analytical purposes.

The data provides a reasonable view of the spatial distribution of past large fires in California. Using GIS, fire perimeters that intersect Sacramento County were extracted and are listed in Table 4-138. There are 111 fires recorded in this database for Sacramento County. Each of them was tracked by CAL FIRE. Many more small fires likely have occurred but were not included in the analysis.

Figure 4-140 shows fire history for the Sacramento County Planning Area, colored by the size of the acreage burned. This map contains fires from 1950 to 2025, while the detailed tables of wildfires (greater than 50 acres) shown in Table 4-138 (sorted by acreage burned inside the County) contain fires from 1910 to 2025.

Figure 4-140 Sacramento County Wildfire History – CAL FIRE 1950 to 2025



Data Source: CAL FIRE Fire History (firep24_1) 4/2025,
Sacramento County, Cal-Atlas; Map Date: 10/2/2026.

Table 4-138 Sacramento County – CAL FIRE Wildfire History Summary 1910-2025 by Acres Burned

Wildfire Name	Year	Date	Cause Description	Total Wildfire Acres	Wildfire Acres Within County
Meiss	1981	6/14/1981	Miscellaneous	84,754	11,404
Scott	1996	8/2/1996	Arson	61,796	2,451
Grant	2020	6/12/2020	Equipment Use	25,311	5,062
Joerger Series	1981	6/18/1981	Equipment Use	16,762	570
Joerger	1964	7/10/1964	Unknown / Unidentified	15,143	680
Latrobe	2017	7/26/2017	Debris	6,341	1,074
Van Vleck	1968	6/22/1968	Unknown / Unidentified	5,331	146
Prairie City	1981	9/21/1981	Arson	2,965	593
Bevan	2001	6/23/2001	Equipment Use	2,748	687
Questo Ranch	1950	6/19/1950	Unknown / Unidentified	2,634	878
Roadside #31 Series	1962	10/4/1962	Unknown / Unidentified	2,113	349
Scott	2004	4/4/2004	Unknown / Unidentified	1,827	609
Russell	1973	6/18/1973	Unknown / Unidentified	1,631	408
Clay	2020	7/29/2020	Smoking	1,480	740
Largo	2017	7/30/2017	Arson	1,428	238
Pony	2002	6/12/2002	Electrical Power	1,405	59
Cavitt	1950	9/13/1950	Unknown / Unidentified	1,357	339
Grantline	1974	6/7/1974	Unknown / Unidentified	1,243	311
SMUD #1	1992	6/21/1992	Electrical Power	1,179	752
Cosumnes School	1974	6/7/1974	Unknown / Unidentified	1,165	582
Meiss	2020	8/13/2020	Miscellaneous	1,018	509
Michigan Bar	1980	7/29/1980	Unknown / Unidentified	848	157
White Rock Series	1986	7/20/1986	Arson	848	566
Unknown	1931	(blank)	Unknown / Unidentified	741	120
Gill	1976	6/20/1976	Unknown / Unidentified	715	715

Wildfire Name	Year	Date	Cause Description	Total Wildfire Acres	Wildfire Acres Within County
Ione	2015	7/2/2015	Arson	715	358
Locust	2015	7/27/2015	Arson	644	54
Twin	2002	6/8/2002	Arson	643	322
Shingle	2018	7/4/2018	Arson	632	84
Meiss	1983	8/28/1983	Equipment Use	603	603
Russi	1950	6/6/1950	Unknown / Unidentified	534	533
Clay	2001	7/31/2001	Arson	526	526
Clay	1983	7/6/1983	Equipment Use	405	405
Rancho	2016	6/28/2016	Vehicle	372	20
White Rock	1983	7/14/1983	Miscellaneous	338	169
Scott	2016	(blank)	Unknown / Unidentified	260	87
Silva	1981	6/20/1981	Arson	248	248
White	2002	7/1/2002	Vehicle	242	81
Twin	2005	9/26/2005	Vehicle	207	104
Dyer	2020	7/6/2020	Playing with Fire	195	0.3
White #2	2002	10/10/2002	Unknown / Unidentified	170	170
Grant	2022	7/14/2022	Arson	146	73
Grant	2024	6/12/2024	Vehicle	120	120
Meiss	2024	8/11/2024	Vehicle	88	88
Browns	2019	8/2/2019	Miscellaneous	84	84
Boys	2016	9/11/2016	Equipment Use	80	40
Michigan #4	2001	7/31/2001	Arson	55	55
Grant	2018	6/29/2018	Vehicle	51	51

Source: CAL FIRE (April 2025)

Hazard Mitigation Planning Committee Events

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

Events since 2021 LHMP

The HMPC noted the following events that have occurred since the 2021 LHMP.

In **2022**, no major wildfires burned inside Sacramento County. Nearby fires (e.g., Mosquito Fire in Placer/El Dorado counties, ~76,000 acres in September 2022) brought significant smoke and poor air quality to Sacramento for extended periods.

Caldor Fire (**August–October 2021**): Burned 221,835 acres primarily in El Dorado County (and parts of Alpine/Amador). It came close enough to affect eastern Sacramento County with heavy smoke, reduced visibility, and unhealthy air quality for days/weeks. Over 1,300 structures were destroyed elsewhere, but Sacramento felt mainly air quality and evacuation ripple effects.

River Fire (**August 2021**): Started near the Placer/Nevada County line (foothills northeast of Sacramento). It burned 2,619 acres, destroyed 142 structures, damaged 21 more, injured 4 people (2 civilians, 2 firefighters), and forced evacuations of over 7,000 residents. This was one of the more destructive fires close to the Sacramento region that year. It was human-caused (started in a campground area).

Other 2021 activity: Numerous smaller grass fires and the broader Northern California fire season produced widespread smoke over the Sacramento Valley. Sacramento County saw increased calls for urban fires along the American River Parkway, linked partly to encampments (cigarettes, campfires).

In addition to these events, the Sacramento County Air Quality Management District noted poor air quality from wildfires within and outside of the County since 2021. The following dates were flagged as potential wildfire impacts since 2021:

- 7/11/2024 – 7/13/2024
- 7/2/2024 – 7/5/2024
- 9/19/2023 – 9/24/2023
- 8/29/2023 – 9/1/2023
- 7/8/2023 – 7/19/2023
- 9/9/2022 – 9/12/2022
- 9/5/2021 – 9/6/2021
- 8/15/2021 – 8/30/2021
- 8/6/2021 – 8/7/2021
- 7/28/2021

Events prior to 2021 LHMP

August 2021 – Wildfires occurred in the area. The Dixie Fire burned to the northeast of the County, torching almost 1,000,000 acres. While no wildfires affected Sacramento County, wildfire smoke from the fires affected the County. An example can be seen on Figure 4-141.

Figure 4-141 Dixie Fire Wildfire Smoke in Sacramento County

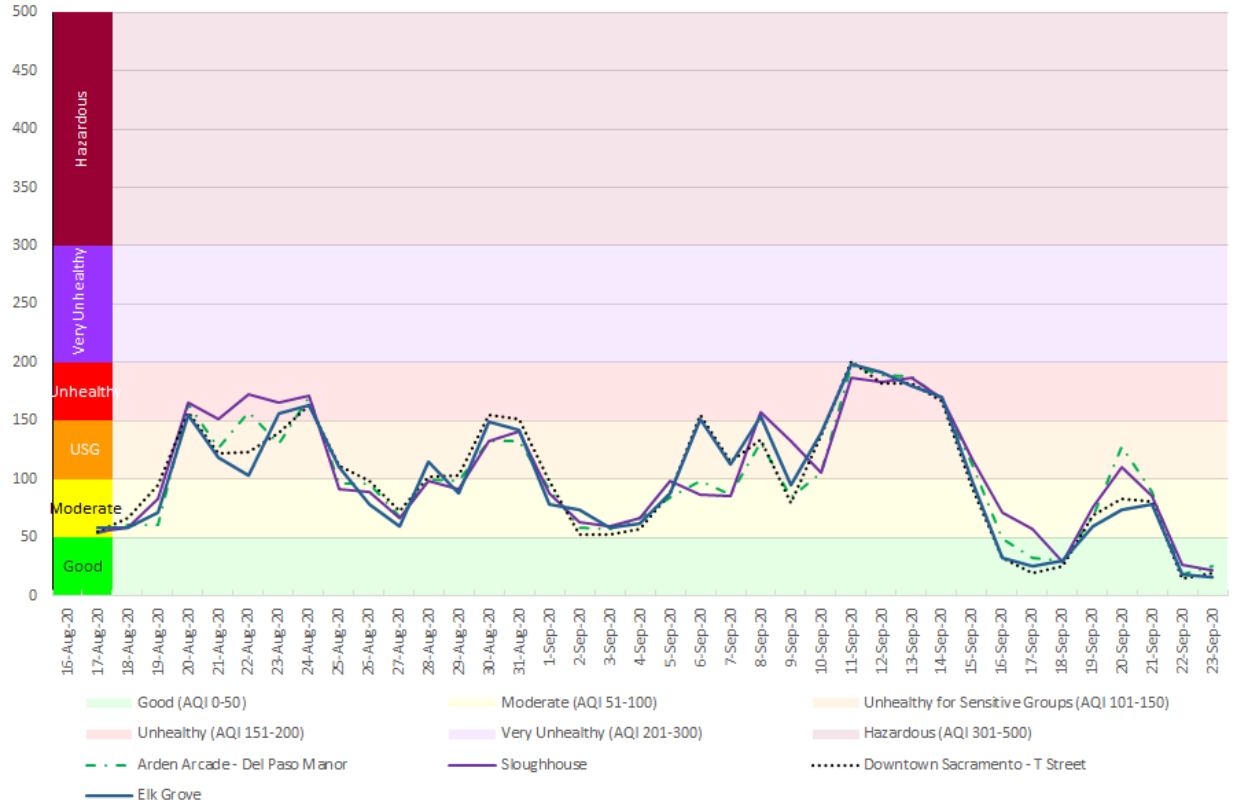


Source: Sacramento County DWR

June 2021 – A wildfire charred Bushy Lake Restoration Project outside Cal Expo not long after it burned earlier this month. According to a June 23, 2021 article from the Sacramento Bee, the 130-acre fire started at one of the American River Parkway's many homeless camps. The fire at Bushy Lake points to a troubling rise in fires caused by homeless people in the parkway. The fires associated with homeless camps are a growing statewide problem that firefighters warn is only going to get more dangerous as California and the Sacramento region enter one of the driest fire seasons in modern history. Just a few weeks into fire season, park rangers say close to 60 fires have started in the parkway this year. That's more than half the number of fires that started in the parkway all of last year, a season that already saw an alarming rise in the number of parkway fires.

August/September 2020 – Extreme heat struck the County. As the heat event ended, multiple wildfires around northern California were ignited by dry lightning. Sacramento County received smoke into the valley that was not pushed out by light winds. The cities of Folsom and Sacramento converted their cooling centers to cleaner air spaces to serve the public unable to get into an indoor space to escape the smoke. Air quality during this time can be seen in Figure 4-142.

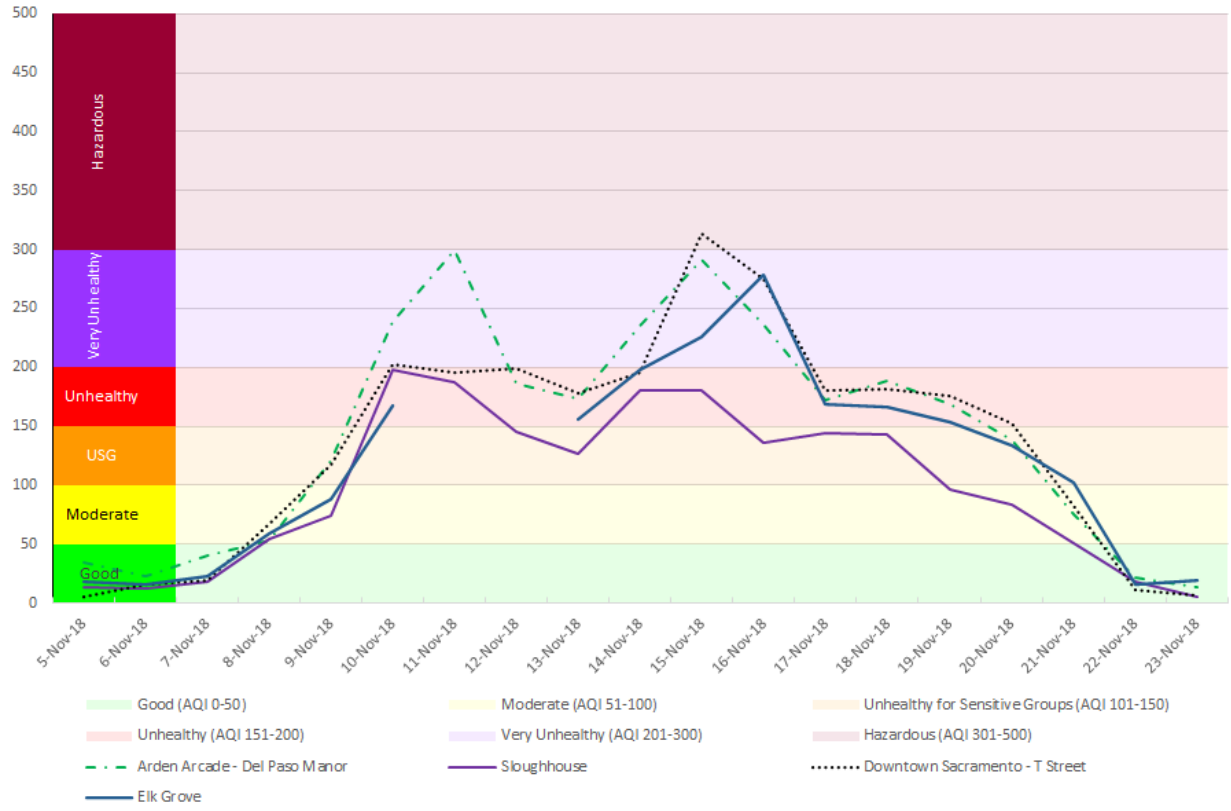
Figure 4-142 Sacramento County – 2020 Wildfire Smoke Air Quality Readings at Sacramento Stations



Source: Sacramento County OES

2018 Camp Fire – Though the Camp Fire burned in Butte County, wildfire smoke affected Sacramento County. Air Quality Index figures for the County during and after the Camp Fire can be seen in Figure 4-143.

Figure 4-143 Sacramento County – 2018 Wildfire Smoke Air Quality Readings at Sacramento Stations



Source: Sacramento County OES

June 9, 2015 – A 25-acre fire in Elk Grove occurred. A grass fire that started about 1:30 p.m. at Bond and Waterman roads was driven by high, shifting winds. It quickly spread toward homes that border the field to the east and south. The fire damaged one Elk Grove home and prompted evacuation of several other residences before it was contained.

July 2015 NOAA (fires regional to Sacramento County) – Rocky Fire burned 69,000 acres in Lake, Yolo & Colusa Counties. 43 homes and 53 outbuildings were destroyed.

September/October 2014 – King Fire. While the King Fire did not burn ground in Sacramento County, it did affect the County. Production from the Upper American River Hydroelectric Power Plant was disrupted for 2 weeks, requiring an additional unbudgeted $37 million for replacement power, by far the largest cost compared to the approximately $4M in immediate physical damage.

Late 1850s: The worst fire in Sacramento history leveled nine-tenths of the City.

Likelihood of Future Occurrence

Highly Likely — Sacramento County faces a serious wildland fire threat every year. Fires will continue to occur on an annual basis throughout the Sacramento County Planning Area. The threat of wildfire and

potential losses are constantly increasing as human development and population increase and the wildland urban interface areas expand.

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

Climate Change and Wildfire

Climate change and its effects on wildfire is discussed by three sources for Sacramento County:

- 2024 Sacramento County CAP
- 2026 American, Bear, and Cosumnes Watersheds Resilience Plan
- Sacramento Metro Fire District CWPP (2014)
- Cal-Adapt

2024 Sacramento County CAP

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.

Within the County, the foothill areas in the east are most susceptible to wildfire, though grassland fires can also ignite in open spaces and parkway areas (e.g., American River Parkway). Potential wildfires both inside and outside of the boundaries of the County can result in an array of direct and indirect potential impacts. The risk of direct exposure of populations and the built environment to wildfire is especially worrisome for those who reside in the wildland-urban interface in the eastern portion of the County. Direct exposure can result in severe injuries to populations and can cause significant damage to residential and nonresidential buildings, critical facilities, roadways, and bridges. Additionally, smoke and air pollution linked to wildfires can be a severe human health hazard, potentially leading to cognitive impairment, premature births, and eye and respiratory illnesses, and exacerbating other pre-existing conditions. Further, wildfires can result in the closure of roadways and/or damage to transportation infrastructure, leading to reduced availability of recreational opportunities within the County. Hiking and mountain biking trails and campsites may become inaccessible or damaged by wildfire activity, impeding recreational use and the associated tourism revenue that may accompany it (County of Sacramento 2017, 2022). The potential impacts of wildfire presented here are not meant to be all-encompassing, as there is an array of additional potential impacts.

2026 American, Bear, and Cosumnes Watersheds Resilience Plan

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.

Sacramento Metro Fire District CWPP

The 2014 Sacramento Metropolitan Fire District's CWPP also predicts an overall increase in the frequency and intensity of wildfires as a result of the changes associated with climate change.

Cal-Adapt

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. Showing the absolute and change in extreme weather across heat, precipitation, and fire weather over the potential futures in California allows individuals, planners, researchers, and interested parties to examine the general shape of climate projections. Cal-Adapt has created maps to show the change in median annual # of days with Fosberg fire weather index (FFWI). The FFWI is based on changes in temperature, wind, and humidity. A FFWI value of 50 or greater indicates significant fire weather conditions. Future fire weather estimates from Cal-Adapt for the Sacramento County Planning are shown in Figure 4-144. These images show the average expected value for the chosen metric and at the selected Global Warming Level (GWL). The upper image shows the mean number of extreme heat days under the 1.5°F GWL, while the lower images shows the 3.0°F GWL. Darker red areas show areas on more intense fire weather index.

Figure 4-144 Sacramento County – Absolute Median Annual Number of Days with Fosberg Fire Weather Index Value Greater than 50 (# of Days) in 1.5°F and 3.0°F GWL Scenarios



Source: Cal-Adapt. Retrieved 4/1/2026

Vulnerability Assessment

Vulnerability—High

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

An assessment of a community's vulnerability to this hazard begins with an understanding of local exposure to unincorporated Sacramento County. This is included in the Local Concerns section below. After that, vulnerability is discussed in multiple sections that detail how this hazard can affect both the entire Sacramento County Planning Area as well as the unincorporated portions of Sacramento County. How the hazard affects the other participating jurisdictions can be found in their respective annexes to this LHMP Update. These sections below include assets at risk, impacts, and how future development may affect the vulnerability of the County to this hazard.

Local Concerns (unincorporated Sacramento County)

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

General Concerns

In some areas of the County, large concentrations of highly flammable brush located in flat open spaces are also quite susceptible to wildland fire. Also at risk are the "river bottoms" or those areas along the American River Parkway. In the County, there are eucalyptus groves where increased fire risk occurs (these are in the Very High FHSZs in the southeast portion of the County). The County is working to select tree species that are wildfire-resistant and/or can thrive in fire hazard severity zones will help mitigate wildfire risk while allowing the County to continue to expand tree planting efforts that result in improved air quality and urban heat island mitigation

Some problem areas include fires coming down from Placer County into Sacramento County in the northeast corner of the County around Folsom. There are often light flashy fires that can burn quickly but resolve themselves when fuels burn themselves out.

Wildfires can cut off the limited egress routes and residents and businesses need to identify areas of refuge that can protect people from approaching fire. Sacramento County's unincorporated communities in and adjacent to CAL FIRE-designated High and Very High Fire Hazard Severity Zones (FHSZ) face elevated wildfire risk, and the General Plan Safety Element (SA-23 through SA-29) identifies fire hazard as a priority risk. Vulnerable households, including lower-income residents, seniors, and limited-English speaking populations, may face heightened wildfire risk in these areas.

Smoke and Air Quality Concerns

The Sacramento Air Quality Management District monitors air quality in the County (lower air quality scores are better). Under federal and state standards there is monitoring by the District of PM2.5 and ozone. PM2.5 is the main component of wildfires, but ozone also can be an issue that compounds air quality problems during extreme heat that is often present during wildfire events. When the District monitors air quality, temperature and wind speed data are reviewed. When wildfires are occurring and are likely influencing the air quality readings, the District makes a note that a wildfire is occurring. These are called exceptional events, and air quality readings can soar during these times.

The Sacramento Metropolitan Air Quality Management District noted that wildfire smoke impacts populations for days and weeks at a time. The County has no control on what wildfires burn or for how long. Poor air quality poses a health risk to all individuals. However, children, adolescents, pregnant women, the elderly, the immunocompromised and those with pre-existing chronic diseases and lung conditions are especially vulnerable to the compounding detrimental health impacts of poor air quality events. Wildfire smoke creates and often exacerbates poor air quality situations:

- Of the many harmful components that exist in wildfire smoke, one of the most dangerous is particulate matter (PM), specifically fine PM (PM2.5). The microscopic particles of PM2.5 are so fine that they are inhaled deep into the lungs and cross the blood-air barrier to enter the bloodstream. Short-term exposure over hours or days can lead to increased asthma attacks, acute bronchitis, increased susceptibility to respiratory infections and can lead to an increased risk of heart attack for individuals with lung disease.
- Ground-level ozone is another air pollutant of concern because it is a strong irritant that can cause constriction of the airways, forcing the respiratory system to work harder to provide oxygen. It can also cause other health problems including aggravated respiratory disease such as emphysema, bronchitis and asthma, lung damage, wheezing, chest pain, dry throat, headache, nausea, reduced resistance to infection, increased fatigue and weakened athletic performance. While ozone is typically seen at its highest levels during the summer, wildfire plumes can increase ozone formation. With an increased number of prolonged wildfire smoke events impacting populations near and far from fire epicenters, it has become imperative to understand the health impact from acute and extended exposure to wildfire smoke.

Regional Parks Concerns

Regional Parks noted concerns with life safety issues for property owners adjacent to Regional Parks open space parcels, park visitors, park facilities, loss of habitat, park closures, and air quality health concerns for park users when fires do occur. There are also concerns for erosion and the associated water pollution and impacts to aquatic habitat in post-wildfire areas.

Communities at Risk

The National Fire Plan is a cooperative, long-term effort between various government agency partners with the intent of actively responding to severe wildland fires and their impacts to communities while ensuring sufficient firefighting capacity for the future. For purposes of the National Fire Plan, CAL FIRE generated a list of California communities at risk for wildfire. The intent of this assessment was to evaluate the risk

to a given area from fire escaping off federal lands. Three main factors were used to determine the wildfire threat in the wildland-urban interface areas of California: fuel hazards, probability of fire, and areas of suitable housing density that could create wildland urban interface fire protection strategy situations. The preliminary criteria and methodology for evaluating wildfire risk to communities is published in the Federal Register, January 4, 2001. The National Fire Plan identifies 13 "Communities at Risk" in Sacramento County. These are shown in Table 4-139.

Table 4-139 Sacramento County Communities at Risk to Wildfire

Communities at Risk to Wildfire				
Fair Oaks	Folsom	Galt	Isleton	La Riviera
Mather Air Force Base	North Highlands	Orangevale	Rancho Cordova	Rancho Murieta
Rio Lino	Rosemont	Sacramento		

Source: CAL FIRE. Retrieved 7/1/2026.

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 for the Sacramento County Planning Area and unincorporated Sacramento County.

Additionally, for each hazard in the FEMA National Risk Index in Sacramento County, the relevant portions of the hazard analysis done by FEMA is presented below. This includes the Hazard Risk Index Rating, Expected Annual Loss Values, Exposure Values, and the Historic Loss Ratio Rating. These are presented for the Sacramento County Planning Area as a whole.

Methodology (Parcels and Structures)

As part of the Fire and Resource Assessment Program (FRAP), the State Fire Marshall was mandated to map areas of significant fire hazards based on fuels, terrain, weather, and other relevant factors, including areas where winds have been identified as a major cause of wildfire spread. These zones, referred to as Fire Hazard Severity Zones (FHSZs), include non-wildland/non-urban, moderate, high, and very high FHSZs. The FHSZ map evaluates hazard, not risk. Hazard is based on the physical conditions that create a likelihood and expected fire behavior over a 30-50 year period without considering mitigation measures such as home hardening, recent wildfire, or fuel reduction efforts. Risk is the potential damage a fire can do to an area under existing conditions, accounting for any modification such as fuel reduction projects, defensible space, and ignition resistant building construction.

Effective April 1, 2024, CAL FIRE updated its Fire Hazard Severity Zone (FHSZ) maps for the State Responsibility Area (SRA) to provide updated map zones based on new science in local climate data and improved fire assessment modeling. The FHSZ model for wildland fire has two key elements: probability of an area burning and expected fire behavior under extreme fuel and weather conditions. The factors considered in determining fire hazard within wildland areas are fire history, flame length, terrain, local weather, and the potential fuel over a 50-year period. Outside of wildlands, the model considers factors that might lead to buildings being threatened, including terrain, weather, urban vegetation cover, blowing

embers, proximity to wildland, fire history and fire hazard in nearby wildlands. FHSZs are not a structure loss model, as key information regarding structure ignition (such as roof type, etc.) is not included.

The new FHSZ mapping will create more accurate zone designations that can direct the implementation of mitigation strategies in areas where hazards warrant these investments. The FHSZ mapping program is still ongoing with new mapping in the LRA completed in March of 2025. Note: the FHSZ data for the Federal Responsibility Area has not been updated since 2007.

For the Sacramento County Planning Area, two separate analyses were performed: one for the combined SRA/FRA datasets and one for the LRA dataset. Specifically, the following datasets were utilized for the SRA/FRA analysis and contained all FHSZ hazard classes from Very High to non-wildland/non-urban: CAL FIRE State Responsibility Area (FHSZSRA_23_3) April 2024 and CAL FIRE Federal/ Areas: (Adopted SRA FHSZ 11/2007 - fhszs06_3_6). The following LRA dataset was used for the LRA FHSZ analysis: CAL FIRE Local Responsibility Area (FHSZLRA25_Phase3_v1) released in March 2025.

Since it is possible for any given parcel to intersect with multiple categories for purposes of this analysis, the parcel polygon was used to determine which FHSZ to assign to each parcel. In some cases, there are parcels in multiple fire hazard severity zones. For the purposes of this analysis, if multiple fire hazard zone intersected any portion of a parcel polygon, the entire parcel was considered to be in the highest fire risk category. The parcels were segregated and analyzed in this fashion for the entire Planning Area.

Once the CAL FIRE fire hazard severity zones were intersected, land and improved (structure) values from the Assessor data were included for each parcel and estimated content replacement values were added to the analysis. Improved parcels include those with improved structure values identified in the Sacramento County Assessor's database.

This methodology is used below for the FHSZ analysis of people and populations, structures, and critical facilities at risk as well as with respect to future development areas.

People and Populations

All populations are at some vulnerability 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
- Seniors (65 and older)
- Individuals with disabilities
- Individuals' dependent on medical equipment
- Individuals who exercise or recreate outdoors
- Individuals who work outdoors
- Individuals with impaired mobility

Sacramento County Planning Area residents that live in CAL FIRE FHSZs 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 wildfire events. To further evaluate the impact to the residential population within the Planning Area, CAL FIRE's FHSZ layers were overlayed on the parcel layer and linked to the Assessor data. Those residential parcel centroids that intersect the mapped SRA/FRA layers were counted and multiplied by the 2020 Census Bureau average household factors for each jurisdiction. These are shown by jurisdiction in Table 4-140. Those residential parcel centroids that intersect the mapped LRA layers were counted and multiplied by the 2020 Census Bureau average household factors for each jurisdiction. These are shown by jurisdiction in Table 4-141.

Table 4-140 Sacramento County Planning Area – Improved Residential Parcels and Population by CAL FIRE SRA/FRA Fire Hazard Severity Zone by Jurisdiction

Jurisdiction	Very High		High		Moderate	
	Improved Residential Parcels	Population at Risk	Improved Residential Parcels	Population at Risk	Improved Residential Parcels	Population at Risk
Citrus Heights	0	0	0	0	0	0
Elk Grove	0	0	0	0	0	0
Folsom	0	0	0	0	1	3
Galt	0	0	0	0	0	0
Isleton	0	0	0	0	0	0
Rancho Cordova	0	0	0	0	0	0
Sacramento	0	0	0	0	0	0
Unincorporated County	79	217	210	578	657	1,807
Total	**79**	**217**	**210**	**578**	**658**	**1,810**

Source: CAL FIRE, 2025 Sacramento County Parcel/Assessor Data, 2020 US Census Bureau Average Household Size – City of Citrus Heights (2.56); City of Elk Grove (3.2); City of Folsom (2.64); City of Galt (3.07); City of Isleton (3.18); City of Rancho Cordova (2.88); City of Sacramento (2.59): Unincorporated Sacramento County (2.75).

Table 4-141 Sacramento County Planning Area – Improved Residential Parcels and Population by CAL FIRE LRA Fire Hazard Severity Zone by Jurisdiction

Jurisdiction	Very High		High		Moderate	
	Improved Residential Parcels	Population at Risk	Improved Residential Parcels	Population at Risk	Improved Residential Parcels	Population at Risk
Citrus Heights	0	0	0	0	0	0
Elk Grove	0	0	0	0	1,027	3,286
Folsom	0	0	0	0	5,514	14,557
Galt	0	0	0	0	0	0
Isleton	0	0	0	0	0	0
Rancho Cordova	0	0	0	0	4,619	13,303
Sacramento	0	0	0	0	0	0
Unincorporated County	59	162	744	2,046	4,061	11,168

Jurisdiction	Very High		High		Moderate	
	Improved Residential Parcels	Population at Risk	Improved Residential Parcels	Population at Risk	Improved Residential Parcels	Population at Risk
Total	**59**	**162**	**744**	**2,046**	**15,221**	**42,314**

Source: CAL FIRE, 2025 Sacramento County Parcel/Assessor Data, 2020 US Census Bureau Average Household Size – City of Citrus Heights (2.56); City of Elk Grove (3.2); City of Folsom (2.64); City of Galt (3.07); City of Isleton (3.18); City of Rancho Cordova (2.88); City of Sacramento (2.59): Unincorporated Sacramento County (2.75).

Structures

Large wildfire events can affect the built environment of the Sacramento County Planning Area. All structures have some risk to wildfire. This section is presented in two sections: SRA/FRA Fire Hazard Severity Zone Analysis and LRA Fire Hazard Severity Zone Analysis.

For the following analysis, the SRA/FRA and LRA fire responsibility area layers were overlaid with the parcel data as described above and further broken out by property use and included information on both land and improved values. It should be noted that fire does not just affect structural values, fire can also affect land values. As such the Assessor's land values and all parcels were accounted for in this analysis to represent total County values at risk. However, it is highly unlikely the whole County will ever be on fire at once.

SRA/FRA Fire Hazard Severity Zone Analysis

The Sacramento County Planning Area parcel inventory and associated values by FRA and SRA are provided in Table 4-142. Table 4-142 shows FRA and SRA 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 unincorporated County. This is broken down further for the unincorporated County in Table 4-143, adding property use categories. Details on each jurisdiction's SRA/FRA Fire Hazard Severity Zones and property use types can be found in their respective annexes to this LHMP Update.

Table 4-142 Sacramento County Planning Area – Count and Value of Parcels and Structures by CAL FIRE SRA/FRA Fire Hazard Severity Zones by Jurisdiction

Jurisdiction / Fire Hazard Severity Zone	Total Parcel Count	Improved Parcel Count	Total Land Value	Structure Value	Estimated Contents Value	Total Value
Citrus Heights						
Outside of Federal / State Responsibility Area	25,949	24,885	$3,188,797,972	$10,609,996,768	$5,763,037,652	$19,561,832,392
Citrus Heights Total	**25,949**	**24,885**	**$3,188,797,972**	**$10,609,996,768**	**$5,763,037,652**	**$19,561,832,392**

Jurisdiction / Fire Hazard Severity Zone	Total Parcel Count	Improved Parcel Count	Total Land Value	Structure Value	Estimated Contents Value	Total Value
Elk Grove						
Non-Wildland/Non-Urban	3	0	$30	$0	$0	$30
Urban Unzoned	1	0	$10	$0	$0	$10
Outside of Federal / State Responsibility Area	60,364	55,371	$8,368,074,436	$22,515,598,268	$12,985,847,821	$43,869,520,525
Elk Grove Total	**60,368**	**55,371**	**$8,368,074,476**	**$22,515,598,268**	**$12,985,847,821**	**$43,869,520,565**
Folsom						
High	4	0	$0	$0	$0	$0
Moderate	24	1	$318,391	$732,233	$366,117	$1,416,741
Outside of Federal / State Responsibility Area	30,086	27,121	$5,949,184,593	$15,867,390,932	$9,457,468,789	$31,274,044,314
Folsom Total	**30,114**	**27,122**	**$5,949,502,984**	**$15,868,123,165**	**$9,457,834,905**	**$31,275,461,054**
Galt						
Outside of Federal / State Responsibility Area	9,194	7,892	$957,863,330	$2,460,939,232	$1,437,483,106	$4,856,285,668
Galt Total	**9,194**	**7,892**	**$957,863,330**	**$2,460,939,232**	**$1,437,483,106**	**$4,856,285,668**
Isleton						
Outside of Federal / State Responsibility Area	527	330	$31,604,337	$59,856,684	$38,265,993	$129,727,014
Isleton Total	**527**	**330**	**$31,604,337**	**$59,856,684**	**$38,265,993**	**$129,727,014**
Rancho Cordova						
Moderate	6	0	$50	$0	$0	$50
Urban Unzoned	3	2	$72,102	$318,484	$477,726	$868,312
Outside of Federal / State Responsibility Area	28,202	24,133	$4,143,880,627	$10,220,503,018	$7,170,341,419	$21,534,725,064
Rancho Cordova Total	**28,211**	**24,135**	**$4,143,952,779**	**$10,220,821,502**	**$7,170,819,145**	**$21,535,593,426**

Jurisdiction / Fire Hazard Severity Zone	Total Parcel Count	Improved Parcel Count	Total Land Value	Structure Value	Estimated Contents Value	Total Value
Sacramento						
Outside of Federal / State Responsibility Area	158,989	145,962	$21,994,252,779	$59,295,379,262	$38,597,477,657	$119,887,109,698
Sacramento Total	**158,989**	**145,962**	**$21,994,252,779**	**$59,295,379,262**	**$38,597,477,657**	**$119,887,109,698**
Unincorporated Sacramento County						
Very High	113	88	$28,202,417	$33,288,126	$21,127,431	$82,617,974
High	620	260	$141,496,130	$198,952,887	$137,320,319	$477,769,336
Moderate	1,389	762	$340,745,621	$371,227,524	$235,726,063	$947,699,208
Non-Wildland/Non-Urban	38	0	$110	$0	$0	$110
Urban Unzoned	13	0	$18	$0	$0	$18
Outside of Federal / State Responsibility Area	183,584	169,354	$24,810,499,575	$58,826,527,168	$36,443,099,876	$120,080,126,619
Unincorporated Sacramento County Total	**185,757**	**170,464**	**$25,320,943,871**	**$59,429,995,705**	**$36,837,273,688**	**$121,588,213,264**
Grand Total	**499,109**	**456,161**	**$69,954,992,528**	**$180,460,710,586**	**$112,288,039,965**	**$362,703,743,079**

Source: CAL FIRE (FHSZ SRA 2024, FRA 2007), 2025 Sacramento County Parcel/Assessor's Data

Table 4-143 Unincorporated Sacramento County – Count and Value of Parcels and Structures by CAL FIRE SRA/FRA Fire Hazard Severity Zones by Property Use

Fire Hazard Severity Zone	Total Parcel Count	Improved Parcel Count	Total Land Value	Structure Value	Estimated Contents Value	Total Value
Very High						
Agricultural	14	3	$7,597,677	$9,223,963	$9,223,963	$26,045,603
Residential	80	79	$17,587,157	$23,806,936	$11,903,468	$53,297,561
Vacant	19	6	$3,017,583	$257,227	$0	$3,274,810
Very High Total	**113**	**88**	**$28,202,417**	**$33,288,126**	**$21,127,431**	**$82,617,974**
High						
Agricultural	175	32	$57,529,316	$20,082,150	$20,082,150	$97,693,616
Industrial	5	3	$3,235,621	$11,814,939	$17,722,409	$32,772,969

Fire Hazard Severity Zone	Total Parcel Count	Improved Parcel Count	Total Land Value	Structure Value	Estimated Contents Value	Total Value
Miscellaneous	44	0	$4,130	$0	$0	$4,130
Office	1	1	$795,906	$1,950,000	$1,950,000	$4,695,906
Recreational	7	2	$5,000,313	$3,352,726	$3,352,726	$11,705,765
Residential	223	210	$47,972,246	$133,919,630	$66,959,815	$248,851,691
Retail / Commercial	7	7	$7,802,258	$27,253,219	$27,253,219	$62,308,696
Vacant	158	5	$19,156,340	$580,223	$0	$19,736,563
High Total	**620**	**260**	**$141,496,130**	**$198,952,887**	**$137,320,319**	**$477,769,336**
Moderate						
Agricultural	281	84	$91,938,117	$80,477,882	$80,477,882	$252,893,881
Church / Welfare	2	1	$344,299	$4,091,246	$4,091,246	$8,526,791
Industrial	19	4	$19,804,341	$2,636,210	$3,954,315	$26,394,866
Miscellaneous	172	1	$105,901	$6,400	$6,400	$118,701
Office	2	1	$557,756	$2,342,588	$2,342,588	$5,242,932
Public / Utilities	6	0	$10	$0	$0	$10
Recreational	11	3	$2,506,151	$8,826,122	$8,826,122	$20,158,395
Residential	676	657	$147,037,437	$272,055,019	$136,027,510	$555,119,966
Vacant	220	11	$78,451,609	$792,057	$0	$79,243,666
Moderate Total	**1,389**	**762**	**$340,745,621**	**$371,227,524**	**$235,726,063**	**$947,699,208**

Source: CAL FIRE (FHSZ SRA 2024, FRA 2007), 2025 Sacramento County Parcel/Assessor's Data

LRA Fire Hazard Severity Zone Analysis

The Sacramento County Planning Area parcel inventory and associated values by LRA are provided in Table 4-144. Table 4-144 shows LRA 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 unincorporated County. This is broken down further for the unincorporated County in Table 4-145, adding property use categories. Details on each jurisdiction's LRA Fire Hazard Severity Zones and property use types can be found in their respective annexes to this LHMP Update.

Table 4-144 Sacramento County Planning Area – Count and Value of Parcels and Structures by CAL FIRE LRA Fire Hazard Severity Zone by Jurisdiction

Fire Hazard Severity Zone	Total Parcel Count	Improved Parcel Count	Total Land Value	Structure Value	Total Value
Citrus Heights					
Non-Wildland	25,949	24,885	$3,188,797,972	$10,609,996,768	$13,798,794,740
Citrus Heights Total	**25,949**	**24,885**	**$3,188,797,972**	**$10,609,996,768**	**$13,798,794,740**

Fire Hazard Severity Zone	Total Parcel Count	Improved Parcel Count	Total Land Value	Structure Value	Total Value
Elk Grove					
High	8	4	$7,071,830	$83,301,318	$90,373,148
Moderate	1,190	1,064	$199,137,388	$655,222,344	$854,359,732
Non-Wildland	59,166	54,303	$8,161,865,218	$21,777,074,606	$29,938,939,824
Outside of Local Responsibility Area	4	0	$40	$0	$40
Elk Grove Total	**60,368**	**55,371**	**$8,368,074,476**	**$22,515,598,268**	**$30,883,672,744**
Folsom					
Moderate	7,004	5,611	$1,608,444,827	$4,194,396,107	$5,802,840,934
Non-Wildland	23,082	21,510	$4,340,739,766	$11,672,994,825	$16,013,734,591
Outside of Local Responsibility Area	28	1	$318,391	$732,233	$1,050,624
Folsom Total	**30,114**	**27,122**	**$5,949,502,984**	**$15,868,123,165**	**$21,817,626,149**
Galt					
Moderate	1	0	$0	$0	$0
Non-Wildland	9,193	7,892	$957,863,330	$2,460,939,232	$3,418,802,562
Galt Total	**9,194**	**7,892**	**$957,863,330**	**$2,460,939,232**	**$3,418,802,562**
Isleton					
Non-Wildland	527	330	$31,604,337	$59,856,684	$91,461,021
Isleton Total	**527**	**330**	**$31,604,337**	**$59,856,684**	**$91,461,021**
Rancho Cordova					
Moderate	7,501	4,856	$1,259,787,758	$2,432,089,114	$3,691,876,872
Non-Wildland	20,701	19,277	$2,884,092,869	$7,788,413,904	$10,672,506,773
Outside of Local Responsibility Area	9	2	$72,152	$318,484	$390,636
Rancho Cordova Total	**28,211**	**24,135**	**$4,143,952,779**	**$10,220,821,502**	**$14,364,774,281**
Sacramento					
Moderate	10	3	$19,649,114	$61,592,040	$81,241,154
Non-Wildland	158,979	145,959	$21,974,603,665	$59,233,787,222	$81,208,390,887
Sacramento Total	**158,989**	**145,962**	**$21,994,252,779**	**$59,295,379,262**	**$81,289,632,041**
Unincorporated Sacramento County					
Very High	83	75	$18,283,832	$30,941,526	$49,225,358
High	896	767	$146,045,627	$301,755,492	$447,801,119
Moderate	6,146	4,384	$1,050,767,513	$1,859,355,041	$2,910,122,554

Fire Hazard Severity Zone	Total Parcel Count	Improved Parcel Count	Total Land Value	Structure Value	Total Value
Non-Wildland	176,459	164,128	$23,595,402,603	$56,634,475,109	$80,229,877,712
Outside of Local Responsibility Area	2,173	1,110	$510,444,296	$603,468,537	$1,113,912,833
Unincorporated Sacramento County Total	**185,757**	**170,464**	**$25,320,943,871**	**$59,429,995,705**	**$84,750,939,576**
Grand Total	**499,109**	**456,161**	**$69,954,992,528**	**$180,460,710,586**	**$250,415,703,114**

Source: CAL FIRE (FHSZ LRA 2025), 2025 Sacramento County Parcel/Assessor Data

Table 4-145 Unincorporated Sacramento County – Count and Value of Parcels and Structures by CAL FIRE LRA Fire Hazard Severity Zones by Property Use

Fire Hazard Severity Zone	Total Parcel Count	Improved Parcel Count	Total Land Value	Structure Value	Estimated Contents Value	Total Value
Very High						
Agricultural	15	14	$2,813,501	$7,032,174	$7,032,174	$16,877,849
Miscellaneous	1	0	$2,974	$0	$0	$2,974
Public / Utilities	1	0	$0	$0	$0	$0
Residential	59	59	$13,528,778	$23,861,268	$11,930,634	$49,320,680
Vacant	7	2	$1,938,579	$48,084	$0	$1,986,663
Very High Total	**83**	**75**	**$18,283,832**	**$30,941,526**	**$18,962,808**	**$68,188,166**
High						
Agricultural	21	12	$8,652,150	$5,607,289	$5,607,289	$19,866,728
Care / Health	1	0	$0	$0	$0	$0
Industrial	1	1	$55	$21,999,945	$32,999,918	$54,999,918
Miscellaneous	27	0	$460,530	$0	$0	$460,530
Public / Utilities	2	0	$0	$0	$0	$0
Recreational	3	2	$1,117,023	$743,640	$743,640	$2,604,303
Residential	789	744	$112,935,054	$267,604,659	$133,802,330	$514,342,043
Retail / Commercial	6	4	$4,147,509	$4,936,676	$4,936,676	$14,020,861
Vacant	46	4	$18,733,306	$863,283	$0	$19,596,589
High Total	**896**	**767**	**$146,045,627**	**$301,755,492**	**$178,089,852**	**$625,890,971**
Moderate						
Agricultural	428	240	$207,688,424	$240,086,865	$240,086,865	$687,862,154
Care / Health	9	6	$4,773,431	$1,920,193	$1,920,193	$8,613,817

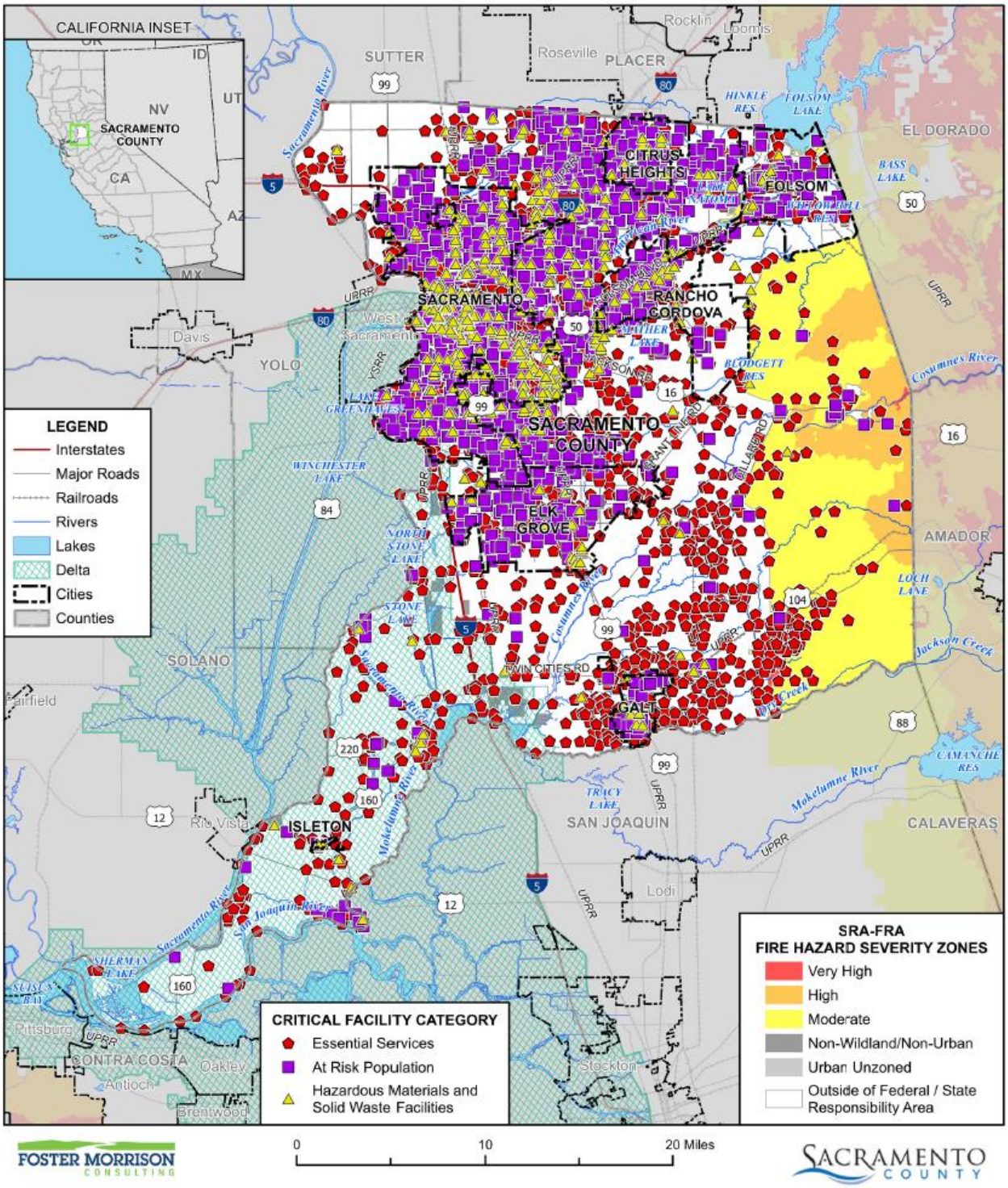
Fire Hazard Severity Zone	Total Parcel Count	Improved Parcel Count	Total Land Value	Structure Value	Estimated Contents Value	Total Value
Church / Welfare	5	5	$2,788,989	$43,072,207	$43,072,207	$88,933,403
Industrial	99	24	$40,944,362	$102,682,376	$154,023,564	$297,650,302
Miscellaneous	353	0	$1,325,398	$0	$0	$1,325,398
Office	5	3	$7,069,925	$22,349,888	$22,349,888	$51,769,701
Public / Utilities	36	0	$20	$0	$0	$20
Recreational	16	6	$11,440,447	$2,851,906	$2,851,906	$17,144,259
Residential	4,235	4,061	$625,730,703	$1,439,598,973	$719,799,487	$2,785,129,163
Retail / Commercial	12	11	$8,249,956	$4,838,844	$4,838,844	$17,927,644
Vacant	948	28	$140,755,858	$1,953,789	$0	$142,709,647
Moderate Total	**6,146**	**4,384**	**$1,050,767,513**	**$1,859,355,041**	**$1,188,942,954**	**$4,099,065,508**

Source: CAL FIRE (FHSZ LRA 2025), 2025 Sacramento County Parcel/Assessor Data

Critical Facilities and Infrastructure

Wildfire presents a threat to critical facilities and infrastructure. A separate analysis was performed on the critical facility inventory in the Sacramento County Planning Area to determine critical facilities in fire hazard severity zones. This was done for both SRA/FRA and LRA fire hazard severity zones. Using GIS, the SRA/FRA and LRA fire hazard severity zones were overlayed on the critical facility GIS layer. Figure 4-145 shows critical facilities, as well as the SRA/FRA fire hazard severity zones. Table 4-146 details critical facilities by SRA/FRA fire hazard severity zone by facility category and count for the Planning Area, while Table 4-147 details critical facilities by SRA/FRA fire hazard severity zone by facility category, type, and count for the unincorporated County. Figure 4-146 shows critical facilities, as well as the LRA fire hazard severity zones. Table 4-148 details critical facilities by LRA fire hazard severity zone by facility category and count for the Planning Area, while Table 4-149 details critical facilities by LRA fire hazard severity zone by facility category, type, and count for the unincorporated County.

Figure 4-145 Sacramento County Planning Area – Critical Facilities in 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: 4/16/2026.

Table 4-146 Sacramento County Planning Area – Critical Facilities in SRA/FRA Fire Hazard Severity Zones by Jurisdiction and Category

Jurisdiction /Fire Hazard Severity Zones	Critical Facility Category	Facility Count
Folsom		
High	Essential Services Facilities	3
	Total	**3**
Moderate	Essential Services Facilities	1
	Total	**1**
Non-Wildland/Non-Urban	Essential Services Facilities	4
	At Risk Population Facilities	1
	Total	**5**
Urban Unzoned	Essential Services Facilities	3
	Total	**3**
Folsom Total		**12**
Rancho Cordova		
Moderate	Essential Services Facilities	3
	Total	**3**
Urban Unzoned	Essential Services Facilities	2
	Total	**2**
Rancho Cordova Total		**5**
Unincorporated Sacramento County		
Very High	Essential Services Facilities	18
	Total	**18**
High	Essential Services Facilities	34
	At Risk Population Facilities	3
	Total	**37**
Moderate	Essential Services Facilities	154
	At Risk Population Facilities	6
	Hazardous Materials and Solid Waste Facilities	3
	Total	**163**
Non-Wildland/Non-Urban	Essential Services Facilities	59
	Hazardous Materials and Solid Waste Facilities	1
	Total	**60**
Urban Unzoned	Essential Services Facilities	2
	Hazardous Materials and Solid Waste Facilities	2
	Total	**4**
Unincorporated Sacramento County Total		**282**

Jurisdiction /Fire Hazard Severity Zones	Critical Facility Category	Facility Count
Grand Total		**299**

Source: CAL FIRE, Sacramento County GIS

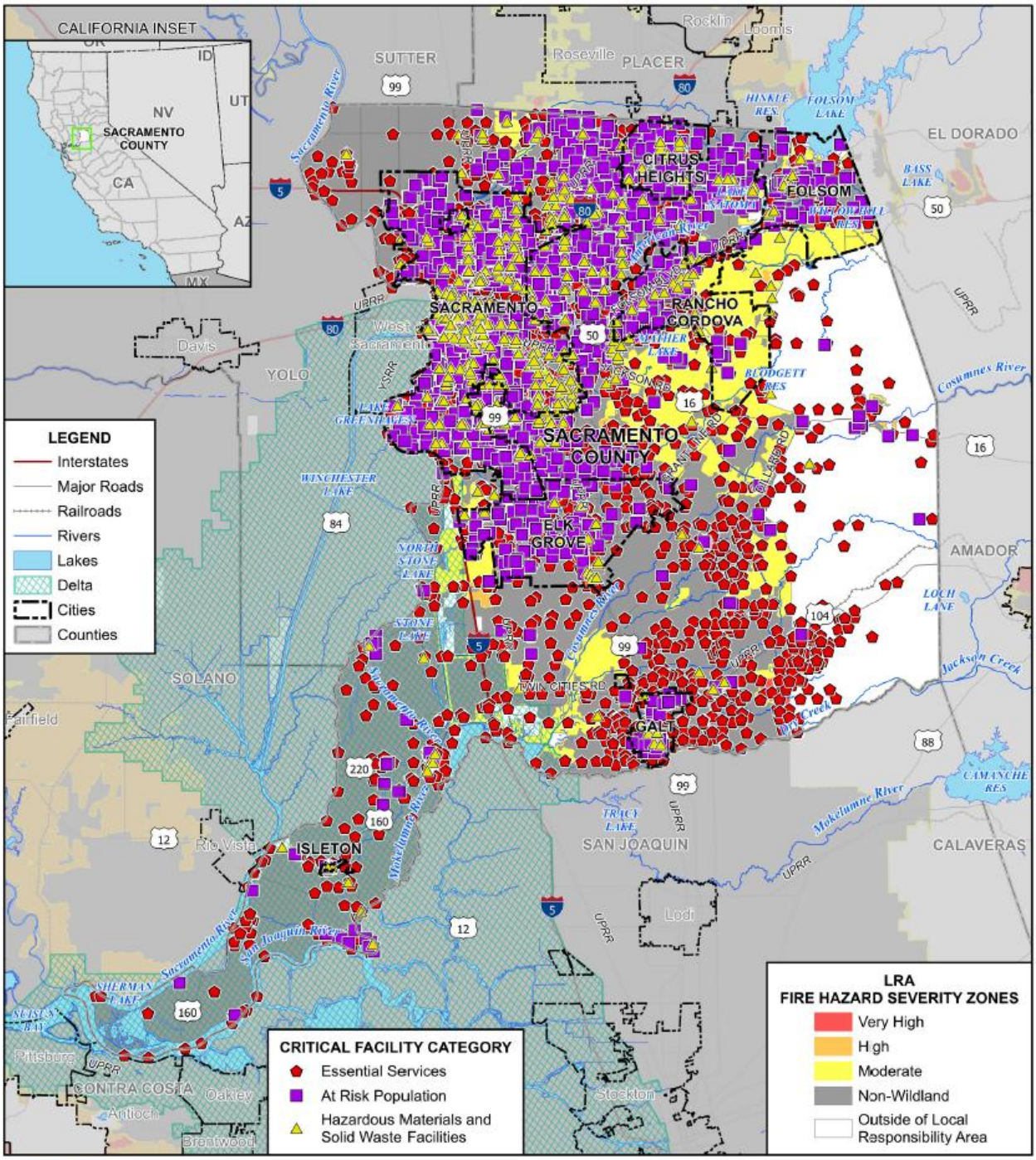
Table 4-147 Unincorporated Sacramento County – Critical Facilities in SRA/FRA Fire Hazard Severity Zones by Category and Type

Fire Hazard Severity Zones	Critical Facility Category / Type	Facility Count
Very High	***Essential Services Facilities***	
	Microwave Service Towers	15
	Water Well	3
	Essential Services Facilities Total	***18***
	Total	**18**
High	***Essential Services Facilities***	
	Cellular Tower	2
	Emergency Evacuation Center	1
	FDIC Insured Banks	1
	Microwave Service Towers	20
	Water Well	10
	Essential Services Facilities Total	***34***
	At Risk Population Facilities	
	Day Care Center	1
	School	2
	At Risk Population Facilities Total	***3***
	Total	**60**
Moderate	***Essential Services Facilities***	
	Cellular Tower	4
	Emergency Evacuation Center	1
	EMS Stations	1
	Fire Station	1
	Microwave Service Towers	86
	Power Plants	3
	Water Well	58
	Essential Services Facilities Total	154
	At Risk Population Facilities	
	Day Care Center	1
	Places of Worship	1
	School	4

Fire Hazard Severity Zones	Critical Facility Category / Type	Facility Count
	At Risk Population Facilities Total	***6***
	Hazardous Materials and Solid Waste Facilities	
	EPA ER TRI Facility	1
	Solid Waste Facility	2
	Hazardous Materials and Solid Waste Facilities Total	***3***
	Total	**163**
Non-Wildland/Non-Urban	***Essential Services Facilities***	
	Bridge	2
	Microwave Service Towers	55
	Power Plants	1
	Water Well	1
	Essential Services Facilities Total	***59***
	Hazardous Materials and Solid Waste Facilities	
	Solid Waste Facility	1
	Hazardous Materials and Solid Waste Facilities Total	***1***
	Total	**60**
Urban Unzoned	***Essential Services Facilities***	
	Bridge	1
	Water Well	1
	Essential Services Facilities Total	***2***
	Hazardous Materials and Solid Waste Facilities	
	Leaky Underground Storage Tank	2
	Hazardous Materials and Solid Waste Facilities Total	***2***
	Total	**4**
Unincorporated Sacramento County Total		**282**

Source: CAL FIRE, Sacramento County GIS

Figure 4-146 Sacramento County Planning Area – 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: 4/16/2026.

Table 4-148 Sacramento County Planning Area – Critical Facilities in LRA Fire Hazard Severity Zones by Jurisdiction and Category

Jurisdiction /Fire Hazard Severity Zones	Critical Facility Category	Facility Count
Citrus Heights		
Non-Wildland	Essential Services Facilities	76
	At Risk Population Facilities	108
	Hazardous Materials and Solid Waste Facilities	12
	Total	**196**
Citrus Heights Total		**196**
Elk Grove		
Moderate	Essential Services Facilities	7
	At Risk Population Facilities	1
	Hazardous Materials and Solid Waste Facilities	1
	Total	**9**
Non-Wildland	Essential Services Facilities	311
	At Risk Population Facilities	171
	Hazardous Materials and Solid Waste Facilities	17
	Total	**499**
Elk Grove Total		**508**
Folsom		
Moderate	Essential Services Facilities	27
	At Risk Population Facilities	2
	Total	**29**
Non-Wildland	Essential Services Facilities	114
	At Risk Population Facilities	86
	Hazardous Materials and Solid Waste Facilities	10
	Total	**210**
Folsom Total		**239**
Galt		
Non-Wildland	Essential Services Facilities	118
	At Risk Population Facilities	40
	Hazardous Materials and Solid Waste Facilities	11
	Total	**169**
Galt Total		**169**
Isleton		
Non-Wildland	Essential Services Facilities	9
	At Risk Population Facilities	4
	Hazardous Materials and Solid Waste Facilities	3

Jurisdiction /Fire Hazard Severity Zones	Critical Facility Category	Facility Count
	Total	**16**
Isleton Total		**16**
Rancho Cordova		
Moderate	Essential Services Facilities	28
	At Risk Population Facilities	2
	Hazardous Materials and Solid Waste Facilities	1
	Total	**31**
Non-Wildland	Essential Services Facilities	188
	At Risk Population Facilities	150
	Hazardous Materials and Solid Waste Facilities	19
	Total	**357**
Rancho Cordova Total		**388**
Sacramento		
Non-Wildland	Essential Services Facilities	1,284
	At Risk Population Facilities	843
	Hazardous Materials and Solid Waste Facilities	249
	Total	**2,376**
Sacramento Total		**2,376**
Unincorporated Sacramento County		
Very High	Essential Services Facilities	16
	Total	**16**
High	Essential Services Facilities	16
	At Risk Population Facilities	3
	Total	**19**
Moderate	Essential Services Facilities	186
	At Risk Population Facilities	16
	Hazardous Materials and Solid Waste Facilities	11
	Total	**213**
Non-Wildland	Essential Services Facilities	2,064
	At Risk Population Facilities	922
	Hazardous Materials and Solid Waste Facilities	160
	Total	**3,146**
Unincorporated Sacramento County Total		**3,394**
Grand Total		**7,286**

Source: CAL FIRE, Sacramento County GIS

Table 4-149 Unincorporated Sacramento County – Critical Facilities in LRA Fire Hazard Severity Zones by Category and Type

Fire Hazard Severity Zones	Critical Facility Category / Type	Facility Count
Very High	***Essential Services Facilities***	
	Microwave Service Towers	12
	Water Well	4
	Essential Services Facilities Total	***16***
	Total	**16**
High	***Essential Services Facilities***	
	Bridge	1
	EMS Stations	1
	Fire Station	2
	Microwave Service Towers	3
	Water Well	9
	Essential Services Facilities Total	***16***
	At Risk Population Facilities	
	Day Care Center	1
	Mobile Home Parks	1
	School	1
	At Risk Population Facilities Total	***3***
	Total	**19**
Moderate	***Essential Services Facilities***	
	Bridge	20
	Cellular Tower	2
	EMS Stations	4
	FDIC Insured Banks	1
	Fire Station	5
	Microwave Service Towers	50
	Port Facilities	1
	Power Plants	5
	Sewage Treatment Plant	1
	Water Well	97
	Essential Services Facilities Total	***186***
	At Risk Population Facilities	
	Places of Worship	9
	School	7
	At Risk Population Facilities Total	***16***
	Hazardous Materials and Solid Waste Facilities	

Fire Hazard Severity Zones	Critical Facility Category / Type	Facility Count
	EPA ER TRI Facility	1
	EPA ER TSCA Facility	1
	Leaky Underground Storage Tank	2
	Solid Waste Facility	7
	Hazardous Materials and Solid Waste Facilities Total	***11***
	Total	**213**
Non-Wildland	***Essential Services Facilities***	
	Airport	3
	Bridge	28
	Cellular Tower	15
	Emergency Evacuation Center	52
	EMS Stations	43
	FDIC Insured Banks	57
	Fire Station	49
	Hospital or Urgent Care	4
	Law Enforcement	26
	Microwave Service Towers	776
	Port Facilities	45
	Power Plants	31
	Public Transit Stations	7
	Pump Station	7
	Sandbag Site	3
	Sewage Treatment Plant	3
	State Government Buildings	3
	Water Well	912
	Essential Services Facilities Total	***2,064***
	At Risk Population Facilities	
	Colleges, Universities, and Professional Schools	12
	Community Center	4
	Day Care Center	137
	Mobile Home Parks	64
	Places of Worship	404
	School	301
	At Risk Population Facilities Total	***922***
	Hazardous Materials and Solid Waste Facilities	
	EPA ER FRP Facility	2

Fire Hazard Severity Zones	Critical Facility Category / Type	Facility Count
	EPA ER TRI Facility	20
	Leaky Underground Storage Tank	125
	Solid Waste Facility	12
	Waste Transfer Station	1
	Hazardous Materials and Solid Waste Facilities Total	***160***
	Total	**3,146**
Unincorporated Sacramento County Total		**3,394**

Source: CAL FIRE, Sacramento County GIS

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 Planning Area, 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 affected and are often more vulnerable due to their older age, construction type, and lack of fire prevention infrastructure such as sprinklers.

FEMA NRI Hazard Vulnerability Assessment

The FEMA NRI was queried for additional specific data on Sacramento County's vulnerability to Wildfire. The NRI contains data and analysis for 18 separate natural hazards, including wildfire. According to the NRI, there have been 0 wildfire events during the 2021 data set with 0.25% annual chance per year. As shown in Table 4-150, wildfires could cause a total of $2,892,735 in expected annual losses, with a historic loss rating of relatively low. Wildfire has a relatively high rating for both social vulnerability and community resilience, with a risk index score of 94.1 out of 100.

Table 4-150 Sacramento County Planning Area – Wildfire Vulnerability Ratings from FEMA NRI

NRI Hazard	Hazard Risk Index Rating	Expected Annual Loss Values (total)	Exposure Value (total)	Historic Loss Ratio Rating
Wildfire	94.1	$2,892,735	$169,863,232,338	Relatively Low

Source: FEMA NRI Report, retrieved 10/8/2025.

*Hazard Risk Index is calculated using data for only a single hazard type, and reflect a communities expected annual loss value, community risk factors, and the adjustment factor used to calculate the risk value.

**Expected annual loss represents the average economic loss in dollars resulting from natural hazards each year.

***Exposure is a natural hazard consequence factor that is the representative value of buildings, populations, or agriculture potentially exposed to a natural hazard occurrence.

Additional information on the FEMA NRI can be found in Section 4.2 and Appendix G.

Impacts from Wildfire

Potential impacts from wildfire include loss of life and injuries; damage to structures (commercial, industrial, and residential) and other improvements, natural and cultural resources, croplands, and timber; and loss of recreational opportunities. Wildfires can cause short-term and long-term disruption to the Sacramento County Planning Area. Fires can have devastating effects on watersheds through loss of vegetation and soil erosion, which may impact the Planning Area 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 Planning Area; smoke and air pollution from wildfires can be a severe health hazard. Smoke impacts may come from wildfires outside the Planning Area, as well as from within.

Although the physical damages and casualties arising from wildland-urban interface 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. Recently, the threat of wildfire, combined with the potential for high winds, heat, and low humidity, has caused PG&E to initiate a PSPS (SMUD has had no PSPS events) which can also significantly impact a community through loss of services, business closures, and other impacts associated with loss of power for an extended period. 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

Wildfire smoke can also 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 nearby northern California communities have created significant air pollution affecting area residents. Planning Area residents have been affected by wildfire smoke and poor air quality, from fires both within the County and from those much further away.

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

- Climate change is likely to exacerbate future wildfire conditions and associated impacts and vulnerability of the County to wildfire. This was discussed in greater detail in the Climate Change and Wildfire 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 County. Population growth in Sacramento County is expected to continue. There are 129 areas where the unincorporated County is expected development to occur in the next 5 years. Additional growth within the WUI and other high fire hazard severity areas of the County would place additional populations at risk to wildfire. Additional population growth would likely bring continued diversity to the County. 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 County 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. There are 129 areas where the unincorporated County is expected development to occur in the next 5 years. Locating new development, structures and critical facilities and infrastructure within or near areas of wildfire risk may put additional development at risk. However, County building codes are in effect to reduce this risk and should be updated as necessary to continue to address future wildfire conditions. It should be noted that most of the growth in the County is occurring in areas outside the moderate or higher fire hazard severity zones. Thus, 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 County to this hazard.

Future Development

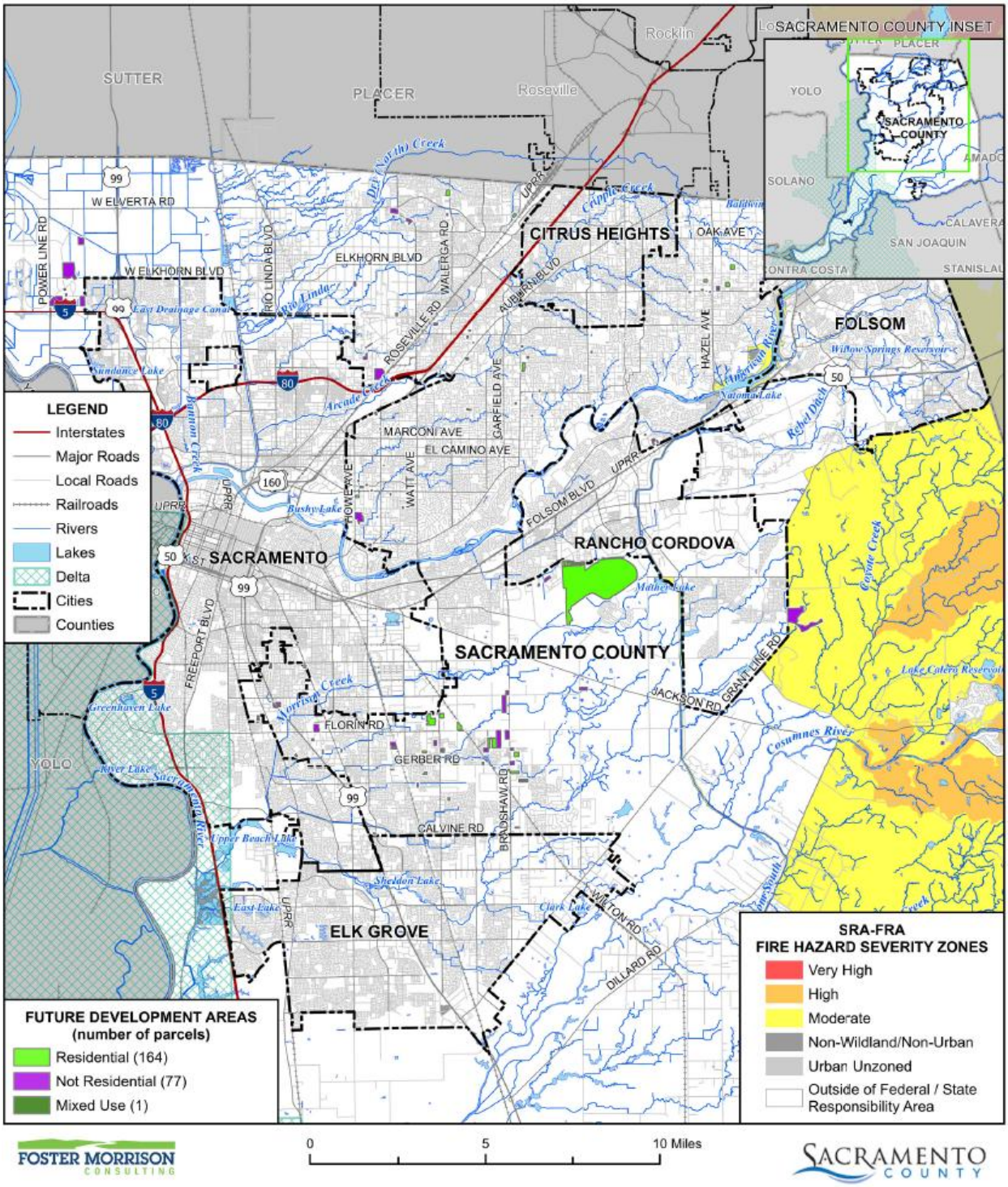
Population growth and development in Sacramento County is on the rise. Additional growth and development within the WUI or high fire risk areas of the County would place additional assets at risk to wildfire. As such, future development considerations should be ongoing and proactive. Ensuring that comprehensive 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 County are considered can help to make for a more resilient community.

GIS Analysis

Sacramento County provided 129 future development areas which were used as the basis for the inventory of future development for the unincorporated County. These were mapped in GIS. Future development

areas in SRA/FRA FHSZs are shown on Figure 4-147 and detailed in Table 4-151. As shown, 3 future development areas Moderate or higher SRA/FRA FHSZ. Future development areas in LRA FHSZs are shown on Figure 4-148 and detailed in Table 4-152. As shown, 12 future development areas Moderate or higher LRA FHSZ.

Figure 4-147 Unincorporated Sacramento County – Future Development in SRA/FRA FHSZs



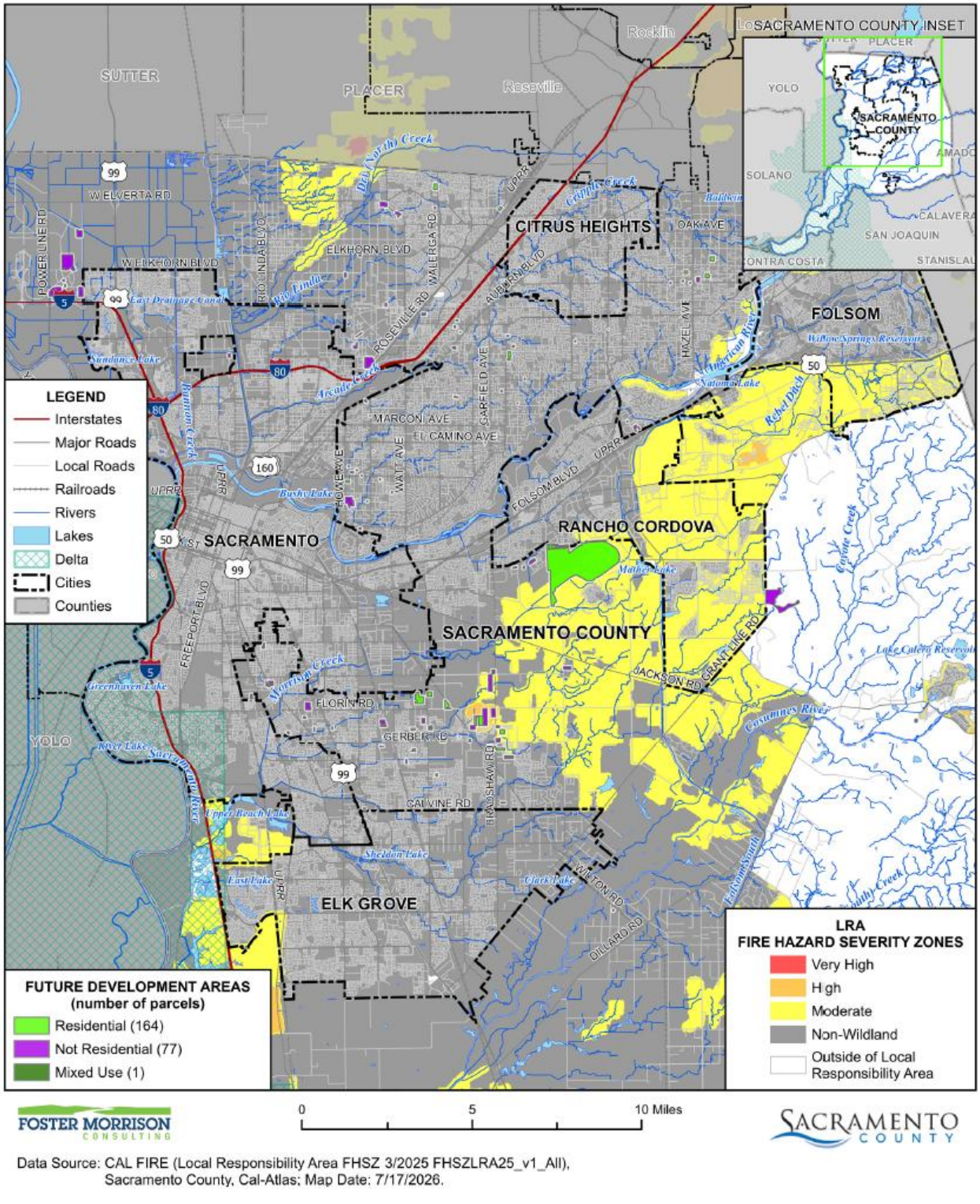
Data Source: CAL FIRE (State Responsibility Area: FHSZSRA_23_3) April 2024,
CAL FIRE (Federal Responsibility Area: Draft c20fhszl06_1), September 2007,
Sacramento County, Cal-Atlas; Map Date: 7/17/2026.

Table 4-151 Unincorporated Sacramento County – Future Development in Moderate or Higher SRA/FRA FHSZs by Parcels and Acres

Fire Hazard Severity Zone / Future Development Type and Status	Site/Location Name	Total Parcel Count	Improved Parcel Count	Unimproved Parcel Count	Total Acres	Total Improved Acres	Total Unimproved Acres
Moderate							
Residential							
Closed	Murieta Hills East Unit 1 Lots 125 & West Unit 1 Lots 16 (DRSmajor)	1	0	1	0.2	0.0	0.2
	Closed Total	**1**	**0**	**1**	**0.2**	**0.0**	**0.2**
Residential Total		**1**	**0**	**1**	**0.2**	**0.0**	**0.2**
Not Residential							
Closed	Braden Cordova Hills (DRS-Major PRC)	1	0	1	135.8	0.0	135.8
	RMCC Church Addition (DRSmajor)	1	1	0	3.3	3.3	0.0
	Closed Total	**2**	**1**	**1**	**139.1**	**3.3**	**135.8**
Not Residential Total		**2**	**1**	**1**	**139.1**	**3.3**	**135.8**
Moderate Total		**3**	**1**	**2**	**139.3**	**3.3**	**136.0**

Source: CAL FIRE, Sacramento County GIS

Figure 4-148 Unincorporated Sacramento County – Future Development in LRA FHSZs



Data Source: CAL FIRE (Local Responsibility Area FHSZ 3/2025 FHSZLRA25_v1_All), Sacramento County, Cal-Atlas; Map Date: 7/17/2026.

Table 4-152 Unincorporated Sacramento County – Future Development by Type and Status in Moderate or Higher LRA FHSZs with Parcels and Acres

Fire Hazard Severity Zone / Future Development Type and Status	Site/Location Name	Total Parcel Count	Improved Parcel Count	Unimproved Parcel Count	Total Acres	Total Improved Acres	Total Unimproved Acres
High							
Residential							
Closed	Morvai 102 Production Homes (DRSmajor)	1	0	1	23.2	0.0	23.2
	Morvai 70 Production Homes (DRSmajor)	1	0	1	13.5	0.0	13.5
	Sierra Gardens (DRSMajor)	1	0	1	40.0	0.0	40.0
	Closed Total	**3**	**0**	**3**	**76.6**	**0.0**	**76.6**
Residential Total		**3**	**0**	**3**	**76.6**	**0.0**	**76.6**
Not Residential							
Closed	FlorinBradshaw Commercial (RZBSDPUPBSPPDRS)	1	0	1	18.5	0.0	18.5
	Nottoli Community Dog Park Renovations	1	0	1	9.6	0.0	9.6
	Sierra Gardens Open Space Landscaping & Walls	1	0	1	40.0	0.0	40.0
	Closed Total	**3**	**0**	**3**	**68.1**	**0.0**	**68.1**
Not Residential Total		**3**	**0**	**3**	**68.1**	**0.0**	**68.1**
High Total		**6**	**0**	**6**	**144.7**	**0.0**	**144.7**
Moderate							
Residential							
Closed	EVA Flight Training Academy Residence Hall (DRSmjrPRC)	1	0	1	0.0	0.0	0.0
	Vineyard Glen Oxform	1	0	1	10.1	0.0	10.1
	Closed Total	**2**	**0**	**2**	**10.1**	**0.0**	**10.1**
Residential Total		**2**	**0**	**2**	**10.1**	**0.0**	**10.1**
Not Residential							
Complete	North Vineyard Plaza Map Extension (XPR)	1	1	0	7.7	7.7	0.0
	Complete Total	**1**	**1**	**0**	**7.7**	**7.7**	**0.0**

Fire Hazard Severity Zone / Future Development Type and Status	Site/Location Name	Total Parcel Count	Improved Parcel Count	Unimproved Parcel Count	Total Acres	Total Improved Acres	Total Unimproved Acres
Closed	6350 Bradshaw Road Rezone (CZBGPBDRS)	1	1	0	6.2	6.2	0.0
	Elder Creek Rd Truck Parking (DRSmajorPRC)	1	0	1	31.5	0.0	31.5
	Vineyard Glen Murphy	1	0	1	3.7	0.0	3.7
	Closed Total	**3**	**1**	**2**	**41.4**	**6.2**	**35.2**
Not Residential Total		**4**	**2**	**2**	**49.1**	**13.9**	**35.2**
Moderate Total		**6**	**2**	**4**	**59.3**	**13.9**	**45.3**

Source: CAL FIRE, Sacramento County GIS

4.4 Capability Assessment

Thus far, the planning process has identified the natural hazards posing a threat to the Sacramento County Planning Area and described, in general, the vulnerability of the County to these risks. The next step is to assess what loss prevention mechanisms are already in place. This part of the risk assessment is the capability assessment. Combining the capability assessment with the with the hazard identification and vulnerability assessment provides an overview of the County's net vulnerability to hazards and disasters, and more accurately focuses the goals, objectives, and proposed actions of this Plan.

This section presents the County's mitigation capabilities that are applicable to the unincorporated County. These are in addition to, and supplement, the many plans, reports, and technical information reviewed and used for this LHMP Update as identified in Chapter 3 and in Chapter 4.

This assessment is divided into four sections: regulatory mitigation capabilities are discussed in Section 4.4.1; administrative and technical mitigation capabilities are discussed in Section 4.4.2; fiscal mitigation capabilities are discussed in Section 4.4.3; and mitigation education, outreach, and partnerships are discussed in Section 4.4.4.

4.4.1. Sacramento County's Regulatory Mitigation Capabilities

Table 4-153 lists planning and land management tools typically used by local jurisdictions to implement hazard mitigation activities and indicates those that are in place in unincorporated Sacramento County. Excerpts from applicable policies, regulations, and plans and program descriptions follow to provide more detail on existing mitigation capabilities.

Table 4-153 Sacramento County 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 County has a Five-Year Capital Improvement Plan (CIP) that is prepared by the County Executive's Office. It is updated annually. New projects added to the CIP are examined for consistency with the General Plan including the LHMP which will be adopted by reference into the Safety Element. The projects contained within the CIP are dependent upon the individual departments. Water Resources has a storm drain system capital improvement plan
Climate Change Adaptation Plan	Y 2024	The County completed the adopted Communitywide Climate Action Plan (CAP) and its Climate Adaptation and Resilience Strategy, which summarizes the County's vulnerability assessment and establishes adaptation measures to reduce climate-related risk and build resilience.
Community Wildfire Protection Plan	Y 2014	Sacramento Metropolitan Fire District Community Wildfire Protection Plan
Comprehensive/Master Plan	Y 2017	Plan addresses hazards and identifies projects and mitigation actions for them. See the discussion below this table.
Continuity of Operations Plan	Y 2020	Plan addresses natural and man-made hazards.
Economic Development Plan	Y	The Planning and Environmental Review Division maintains the General Plan which has an Economic Development Element, but many of the items identified within the Element are the responsibility of the Office of Economic Development. The Element does not address hazards.
Land Use Plan	Y	As part of the General Plan.
Local Emergency Operations Plan	Y 2017	County Emergency Operations. This plan contains numerous annexes for hazards, support and function.
Stormwater Management Plan	Y	Hydrology Standards 1996; update in process to consider recent historic storms and climate change Stormwater Guidance Manual
Transportation Plan	Y	The Planning and Environmental Review Division maintains the General Plan which has Circulation Element (including a Transportation Plan), but many of the items identified within the Element are the responsibility of SACDOT. The Element does not address hazards, but does include a policy to reduce the heat island effect.
Other	Y	This LHMP will be the 4th multi-jurisdictional LHMP developed by Sacramento County as the lead, since 2005.
Land Use Planning and Ordinances	**Y/N**	**Is the ordinance an effective way to reduce hazard impacts? Is the ordinance adequately administered and enforced?**
Acquisition of land for open space and public recreation use	Y	Land acquisition is on-going for purposes of flood control, species conservation, open space preservation and recreation.
Building code	Y	Version/Year: 2025 CBC

Flood insurance rate maps	Y	County maintains a library of past and current FIRMS.
Floodplain ordinance	Y	Minor revisions in 2024 and 2025 were reviewed by FEMA Region 9. Additional revisions were completed in 2017 and 2025. The floodplain ordinance can be found at www.stormready.org.
Natural hazard-specific ordinance (stormwater, steep slope, wildfire)	Y	Improvement Standards
Subdivision ordinance	Y	County Code Title 22 Land Development is the County's subdivision ordinance. The ordinance does not address hazards.
Zoning ordinance	Y	Generally, the zoning ordinance separates hazardous land uses from sensitive land uses and addresses risks e.g. flood, erosion and traffic. The zoning ordinance contains a Flood (F) Combining Zoning District and Tributary Standards, and Natural Streams (NS) Combining Zoning District to reduce the impacts of flood hazards. Additionally, the ordinance contains a Parkway Corridor (PC) Combining Zoning District to ensure that bluff development does not create erosion or geologic instability.
Other	Y	Evacuation Plan
	Y	The South Sacramento Habitat Conservation Plan is a regional approach to addressing issues related to urban development, habitat conservation and agricultural protection.
	Y	Regional Watershed Management plan recently updated and appended to this LHMP.
How can these capabilities be expanded and improved to reduce risk?		
Implement and monitor the 2024 Communitywide CAP; integrate applicable 2026 LHMP findings/actions into the Safety Element update; coordinate LHMP action-status reporting with relevant County implementation/reporting efforts; maintain current public hazard mapping; and identify clear leads, partners, funding, schedules, and performance measures for mitigation actions.		

PLANS AND ORDINANCES TO BE ADDED. WILL BE DONE IN COORDINATION WITH APPENDIX A. SEE https://waterresources.saccounty.gov/us/en/drainage/stormwater-quality/drainage-development-resources.html#gsc.tab=0

Extreme Heat Emergencies Hazard Annex (2025)

The Extreme Heat Emergencies Hazard Annex establishes a coordinated framework to reduce the impacts of extreme heat through advance planning, clearly defined responsibilities, and early protective actions. It identifies risk-based response criteria and supports coordinated action across the Sacramento Operational Area before and during extreme heat events.

The annex strengthens the ability of County departments, local jurisdictions, special districts, and community partners to protect vulnerable populations, coordinate resources, and reduce the health and safety impacts of extreme heat. Implementation is coordinated by SacOES consistent with SEMS, NIMS, and the Sacramento County Emergency Operations Plan.

Extreme Cold and Freeze Hazard Annex (2025)

The Extreme Cold and Freeze Hazard Annex establishes a coordinated framework to reduce the impacts of extreme cold and freezing conditions through advance planning, clearly defined responsibilities, and early protective actions. It identifies risk-based response criteria and supports coordinated action across the Sacramento Operational Area before and during extreme cold and freeze events.

The annex strengthens the ability of County departments, local jurisdictions, special districts, and community partners to protect vulnerable populations, coordinate resources, and reduce the health and safety impacts of extreme cold and freezing conditions. Implementation is coordinated by SacOES consistent with SEMS, NIMS, and the Sacramento County Emergency Operations Plan.

Sacramento County Catastrophic Housing Assessment (2024)

The Sacramento County Catastrophic Housing Assessment provides an updated foundation for reducing the impacts of severe housing disruption following a major or catastrophic disaster. The assessment evaluates existing housing conditions, disaster-related vulnerabilities, available housing resources, regulatory and procedural barriers, and factors that may support or hinder post-disaster housing recovery.

The assessment strengthens the County's ability to anticipate housing needs, identify gaps and constraints, and develop strategies for temporary and permanent post-disaster housing. Its findings, stakeholder input, and lessons from previous disasters provide the initial framework for development of a comprehensive Sacramento County Catastrophic Housing Plan and future housing recovery actions.

Sacramento-San Joaquin Delta Flood Emergency Framework (2025)

Utilizing the California Department of Water Resourced Delta Round 2 Grant funding, SacOES in coordination with Delta partners developed the Sacramento-San Joaquin Delta Flood Emergency Framework establishes a coordinated regional approach to prepare for, respond to, and recover from significant flood events affecting multiple counties within the Legal Delta. The Framework consists of three integrated plans: Volume 1 – Delta Flood Emergency Preparedness and Assessment Measures Plan, addressing flood hazards, historical incidents, preparedness measures, and recommended actions; Volume 2 – Delta Flood Emergency Operations and Response Plan/Framework, addressing multi-jurisdictional response, levee emergencies, supply centers, and resource coordination; and Volume 3 – Delta Flood Emergency Recovery Plan/Framework, addressing post-flood recovery, infrastructure repair, equipment, and material needs.

Sacramento County Drought Resilience Plan

The Sacramento County Drought Resilience Plan (DRP) responds to requirements of Senate Bill (SB) 552 (Hertzberg) to identify and implement measures that help small water suppliers and rural communities reduce their risks of inadequate water supplies during a water shortage event. A water shortage event can include those caused by droughts or other emergencies such as wildfires, earthquakes, floods and other local emergencies. This plan was prepared to assist two types of water systems within the jurisdiction of the County: domestic wells, as defined in California Health and Safety Code Section 116275(n) and Section 10609.51(d); and state small water systems, as defined in HSC Section 116275(n) and California Water

Code Section 10609.51(m). Preparation and implementation of this plan is led by the County's Office of Emergency Services in close coordination with the County's Department of Water Resources.

4.4.2. Sacramento County's Administrative/Technical Mitigation Capabilities

Table 4-154 identifies the County personnel responsible for activities related to mitigation and loss prevention in the County.

Table 4-154 Sacramento County Administrative/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	
Civil Engineer, including dam and levee safety	Y	County DWR –drainage unit has six staff that are licensed Civil Engineers who are all educated in hazards & mitigation. Staffing is adequate. There are currently six certified floodplain managers in the County.
Community Planner	Y	The Office of Planning and Environmental Review has multiple planners assigned to maintenance of the General Plan and plan checking.
Emergency Manager	Y	The Office of Emergency Services shall be headed by the Chief of Emergency Services which position is designated as the Deputy Director of Emergency Services. There are two Emergency Operations Coordinators and one Assistant Emergency Operations Coordinator assigned to the office.
Floodplain Administrator	Y	There are five CFMs in DWR and all staff are knowledgeable with the Floodplain Ordinance. Coordination between departments is effective and is ongoing for all permitted uses in the floodplain.
GIS Coordinator	Y	Inside multiple departments.
Planning Commission	N	
Other	Y	Sacramento County is a large County with multiple staff from numerous departments all playing a role, to different degrees, in natural hazard mitigation. The Sustainability Manager is responsible for overseeing the implementation of CAP measures, updating communitywide and local government operations GHG inventories, and tracking emissions reduction progress. This includes oversight of climate adaptation measures that address flooding, extreme heat, sea level rise, drought, and wildfires.

Technical	Y/N	Has capability been used to assess/mitigate risk in the past?
Grant writing	Y	
Hazard data and information	Y	Documented through this LHMP, and the County's EOP and annexes. Also as on file with County OES.
GIS analysis		
Mutual aid agreements	Y	Multiple mutual aid agreements between county and state and local entities.
Other	Y	Dam Failure
How can these capabilities be expanded and improved to reduce risk?		
Expand technical capability through shared, regularly maintained GIS hazard layers; establish data owners, update cycles, metadata, and appropriate access; and develop a repeatable hazard-screening process to support development review, capital and emergency planning, grant development, and LHMP monitoring. Consider additional staff training in applicable hazard-analysis, benefit-cost, climate-projection, and accessible-mapping tools.		

4.4.3. Sacramento County's Fiscal Mitigation Capabilities

Table 4-155 identifies financial tools or resources that the County could potentially use to help fund mitigation activities.

Table 4-155 Sacramento County 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	Sacramento County has a Storm Water Utility that serves to make improvements to the existing storm drainage systems. The Sacramento County Water Agency has trunk drainage developer impact fee programs that fund installation of drainage systems serving 30(+) acre watershed.
Community Development Block Grant	Y	
Federal funding programs (non-FEMA)		
Fees for water, sewer, gas, or electric services	Y	
Impact fees for new development	Y	
State funding programs	Y	CA DWR provided funding for the Small Communities Grant Projects to identify flood risk reduction measures for these 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?
Stormwater utility fee	Y	Sacramento County stormwater utility fees are charged to property owners in the unincorporated county to fund the maintenance, operation, and improvement of drainage systems, flood control, and water quality programs.
Other		FEMA Hazard Mitigation Grant Program, FEMA
How can these capabilities be expanded and improved to reduce risk?		
Consider expanding Countywide grant capacity by maintaining an updated inventory of hazard-mitigation funding opportunities; developing grant-ready scopes, maps, cost estimates, benefit-cost information, and match strategies for priority LHMP actions; and tracking applications and awards. Identify appropriate departmental leads and coordinate through SacOES and implementing departments.		

4.4.4. Sacramento County Mitigation Education, Outreach, and Partnerships

Table 4-156 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 4-156 Sacramento County Mitigation Education, Outreach, and Partnerships

Program/Organization	In Place Y/N	How widespread are each of these in your community?
Community newsletters	Y	A StormReady newsletter sent to all residents through their utility bill. Targeted flood preparedness newsletters are sent to those in higher flood risk areas.

Program/Organization	In Place Y/N	How widespread are each of these in your community?
Hazard awareness campaigns (such as Firewise, Storm Ready, Severe Weather Awareness Week, school programs, public events)	Yes	Non-profit organizations and government agencies Countywide do ongoing public education for preparedness on the topics of fire, flood and water use. Capital Region Climate Readiness Collaborative could be used to inform mitigation activities and communicate hazard-related information. The County maintains a StormReady program and does public outreach regularly though radio, website, local events and the County's public counter. 2024 Communitywide Climate Action Plan (CAP), including its Climate Adaptation and Resilience Strategy, as a post-2021 County mitigation effort. The CAP identifies climate vulnerabilities and establishes adaptation and resilience measures addressing climate-related hazards.
Local news		
Organizations that interact with underserved and vulnerable communities	Yes	Non-profits such as La Familia, WIC (Dept of Public Health) and food programs exist that could be used to implement mitigation activities or communicate hazard information. They currently are not being used in this capacity. Other groups such as the Environmental Justice Coalition for Water could assist.
Social media		

Program/Organization	In Place Y/N	How widespread are each of these in your community?
How can these capabilities be expanded and improved to reduce risk?		
Social media to connect with most vulnerable populations in various languages (some rural areas do not have broadband, many do not watch tv/cable to get messages) Coordinate with public and mental health departments, service providers and organizations in providing information and utilizing their communication tools to connect with clients 2-1-1 is an effective resource in some areas but not all. Need to make it more robust so people know to use it and that it has reliable and timely information. Utilize neighborhood associations, schools, community watch groups to distribute information. Utilize "NextDoor" site to convey information Develop a county-wide communications and outreach program consistent with Policy EJ-2 and its supporting implementation measure: EJ-2. The County supports an equitable and comprehensive approach to civic engagement and public outreach on all aspects of County governance and delivery of services. Implementation Measures (Countywide) The County of Sacramento will create a comprehensive Community Outreach Strategy that serves as a framework for all departments to participate in meaningful two-way communication with the public on all aspects of County governance and delivery of services. (Public Information Office, Planning and Environmental Review with support from all operating departments) Other areas for improvement include: Conducting more emergency management exercises; Continue local hazard mapping efforts; Conduct more creative outreach efforts such as hazard warning signs – "if the levee breaks – water will be this high".		

4.4.5. Other Mitigation Efforts

In addition to the tables above, unincorporated Sacramento County noted the following mitigation efforts, most of which have been implemented since the 2021 LHMP.

Multi-Hazard

The American River Parkway Natural Resources Management Plan (NRMP) is intended to provide relevant and defensible information to the Sacramento County Department of Regional Parks (Regional Parks) for making informed decisions for managing, maintaining, and enhancing Parkway resources. In general, the NRMP provides an understanding of existing Parkway resources, the effects of disturbances such as flood, fire, invasive species, and human impacts, as well as opportunities for protections and enhancements. The NRMP advises resource management for promoting healthy ecosystems and resource protections, while balancing concurrent Parkway goals of flood control, recreational opportunities, and public safety.

The NRMP is intended to be a comprehensive, high level document detailing the County's plan to conserve preserve, and rehabilitate Parkway natural resources; the regulatory requirements that guide and constrain Parkway management; the existing conditions of the Parkway, including biological resources, physical resources, cultural resources, recreational opportunities, and built infrastructure; activities that affect the health and integrity of Parkway resources; and recommended management actions and implementation measures to achieve the County's goals and objectives.

Sacramento County Agricultural Commissioner Ag Pass Program: The Ag Pass Program, administered by the Agricultural Commissioner's Office, provides credentialed agricultural operators with structured access (upon Incident Commander approval) to evacuation zones during declared emergencies, including flood events. The program includes annual training requirements, liability coordination, and coordination with County OES and law enforcement. This program directly reduces economic losses from extended farm access closures by facilitating safe, timely re-entry for animal caretakers and crop managers.

The Climate Emergency Mobilization Task Force (CEMTF) established by the Board in 2022 and the 2024 Climate Emergency Response Plan (CERP), as applicable. Describe these as County climate/resilience initiatives rather than hazard-specific projects.

Aquatic Nuisance Species

The WMA coordinated a series of funded eradication projects directly relevant to Sacramento County. Sacramento-Placer Weed Management Area (WMA) – Red Sesbania Control Projects (2005–2011):

- **2005-2008**: Dry Creek Watershed Red Sesbania Eradication Project – A multi-year project targeting Red Sesbania along Dry Creek in Sacramento and Placer Counties, establishing baseline survey methods and treatment protocols.
- **2008-2010**: Robla Sesbania Eradication Project (RSEP) – Funded project addressing infestations across 14 miles of waterways in the north Sacramento area, including Robla Creek, Magpie Creek, and Steelhead Creek.
- **2010**: American River Parkway / Folsom State Park – River system below Lake Natoma cleared of Red Sesbania.
- **2011**: Control of Regrowth of High Priority Invasive Plants within the American River Parkway and Lake Natoma (Folsom State Recreation Area).
- **2011**: Control of Red Sesbania along Steelhead and Robla Creeks.

Four-County Aquatic Weed Detection and Outreach Proposal (2026): A regional program proposal pending USDA APHIS Section 7721 Community Development Set-Aside (CDS) funding designates Sacramento County as part of a multi-county hotspot for aquatic weed pressure across the American, Bear, Feather, and Yuba River systems. Priority target species include Water Hyacinth, Hydrilla, Brazilian Elodea, Giant Salvinia, Alligatorweed, and Aquatic Primrose.

Delta Interagency Invasive Species Coordination Team (DIISC): Sacramento County participates in the DIISC Team, a multi-agency body that meets quarterly to coordinate regional aquatic nuisance species monitoring, early-detection and rapid-response planning, and climate-linked invasive species risk assessment for the Sacramento-San Joaquin Delta system.

Flood/Localized Flood

Home Elevation and Floodplain Restoration: The County Department of Water Resources noted that numerous home elevations have occurred, as well as the demolition of a flood-prone property and floodplain restoration in multiple areas of the County via FEMA's Hazard Mitigation Grant Program and Pre-Disaster Mitigation grants.

Regional Parks Evacuation Plan (dated May 2019): includes evacuation scenarios for its parks. These scenarios are based on how much river flow in cubic feet per second is occurring or how high the river is at I Street. There are plans for:

- 10,000 cfs or I Street at 22'
- 20,000 cfs
- 30,000 cfs or I Street at 25'
- 50,000 cfs
- 75,000 cfs
- 100,000 cfs

There are separate plans for each scenario as to equipment removal and park closures. Regional Parks tracks trail floodings. These are related to the scenarios above and are shown on Figure 4-149.

Figure 4-149 American River Bike Trail Flooding

STATION	LOCATION	ELEVATION	FLOODING FLOWS
36	Discovery Park, Tiscornia Park	25'	10,000
35	Discovery Park, Garden Hwy Entrance Road	20'	10,000
34	Discovery Park, Urrutia Entrance Road	25'	10,000
32	Del Paso Blvd. Trestle	25'	10,000
29	Bushy Lake, middle of state land /power poles	30'	10,000
25	Old Campus Commons Bike Trail	30'	10,000
18	Arden Bar, fishing pier	35.6'	10,000
26	Campus Commons/Guy West Bridge	32'	20,000
27	Campus Commons Golf Course	31.8'	30,000
20	Arden Bar, trail downstream of fishing pier	40'	30,000
17	River Bend, well & pump site	45'	40,000
5	Upper Sunrise, upstream old F.O. Bridge	80'	40,000
24	500' up river of Watt Avenue	39'	50,000
15	River Bend Park, center of park	57.7'	50,000
13	2300' up river of Cordova Comm. Park	66.4'	70,000
10	Rossmoor Bar, last parking lot	75'	70,000
23	Estates Drive Access	45'	80,000
16	River Bend Park, 800' inside park	50'	80,000
8	Lower Sunrise,2nd restroom downstream	81'	80,000
6	Lower Sunrise at Low Level Bridge	85'	90,000
4	Upper Sunrise, upstream picnic area	90'	90,000
22	Rio Americano H.S. access & bike trail	45'	100,000
12	Rossmoor Bar lower fields	72'	120,000
19	Arden Bar, at concrete slab bridge	55'	130,000
7	Lower Sunrise, 1st restroom downstream	87.5'	130,000
11	Rossmoor Bar, bike trail intersection	75'	140,000
3	Upper Sunrise, bike trail & park road	100'	160,000
Flows above 160,000 cfs will overtop levees and the city of Sacramento should be evacuated.			
2	Upper Sunrise, last Hazel Parking Lot	105'	200,000
14	400' up river of Cordova Comm Pk westmost	71.4'	230,000
9	Rossmoor Bar, 700 downstream 1st p.l.	90'	300,000
1	Upper Sunrise, behind Nimbus Hatchery	120'	400,000

Notes:

1. From approximately Guy West Bridge (Station 26) downstream it is possible to have flooding to the elevations shown due to backwater effect from the Sacramento River, even though flows in the American River might be quite small.

Source: Sacramento County Regional Parks

Severe Weather: Extreme Temperatures

Sacramento County Agricultural Commissioner - Ag Pass Program: This departmental program facilitates structured, credentialed re-entry of agricultural operators into evacuation zones during wildfire,

flood, and severe storm emergencies. Annual training sessions, liability coordination, and law enforcement integration are maintained by the Agricultural Commissioner's Office. This is the primary severe-weather response planning mechanism under the Ag Commissioner's direct administration.

Cal/OSHA Heat Illness Prevention Standard (Title 8, Section 3395): The Agricultural Commissioner's Office coordinates with Cal/OSHA and California Department of Pesticide Regulation (CDPR) on agricultural employer compliance monitoring during Excessive Heat Warnings. Growers are required to provide water, shade, and cool-down periods; the Ag Commissioner's Office issues outreach during heat advisory periods.

Extreme Heat Action Plan (2022) – Extreme heat threatens public health and safety; economic prosperity; and communities and natural systems. It also poses profoundly disproportionate consequences for the most vulnerable among us. This plan outlines a strategic and comprehensive set of state actions to address extreme heat, and serves as an update to the "Preparing California for Extreme Heat Guidance and Recommendations" report released in 2013. The substance and organization of this plan was guided by extensive public input, collected over the course of 2021 and 2022, including through five public listening sessions, ten regional workshops, and numerous consultations with California Native American tribes.

Wildfire

Wildfire Smoke Air Pollution Emergency Plan for Sacramento (2022) – The Wildfire Smoke Air Pollution Emergency Plan for Sacramento was created to serve local public agencies, businesses and communities within Sacramento County. It was developed in coordination with the Sacramento Public Health Officer and in consultation with the Sacramento County Office of Emergency Services, Sacramento County Office of Education, local school districts, local businesses and the following jurisdictions and respective emergency services personnel within Sacramento County:

- City of Citrus Heights
- City of Elk Grove
- City of Folsom
- City of Galt
- City of Isleton
- City of Rancho Cordova
- City of Sacramento

Vegetation Management: The Sacramento County Department of Regional Parks (Regional Parks) conducts vegetation management annually with the primary objective of reducing fuel loads and the risk of wildfire throughout the Regional Parks system to protect resources and conservation values within and adjacent to various Regional Parks. The methods utilized to manage vegetation include mowing, string-trimming, disking, herbicide, pruning, grazing, and prescribed/training burns. These management activities facilitate quick fire suppression by targeting fire fuel reduction that contributes to damaging and uncontrollable fire behaviors (e.g., fire intensity, rate of spread, and canopy/crown spread), which will help to reduce the number and size of wildfires within the Parkway.

Other agencies may also contribute to the management of vegetation, including flood control agencies and electrical utilities purveyors, which also contribute to lowering the fire risk. For example, within the

American River Parkway local flood control maintaining agencies (e.g., American River Flood Control District, City of Rancho Cordova, etc.,) maintain levees by mowing and applying herbicide and the electric companies (e.g., PG&E, Sacramento Municipal Utility District, and the Western Area Power Association) also address fuels loads along the electric utility corridor.

Air Quality

Urban Heat Island Study (2025): The Sacramento Metropolitan Air Quality Management District previously conducted a study to model the Urban Heat Island (UHI) effect at the local and regional scale for the six-county Sacramento Area Council of Governments region and used the model findings to develop an Urban Heat Island Mitigation Plan specific to the transportation sector. Local jurisdictions in Sacramento County are currently implementing new land use policies and design standards based on recommendations from the UHI Mitigation Plan. To continue to understand and combat extreme heat at the hyperlocal level in the Sacramento region, the Sac Metro Air District procured a MaRTy mobile biometeorological cart developed by researchers from Arizona State University's (ASU) SHaDE Lab. The District is currently using MaRTy to reduce heat exposure at several bus stops in the Sacramento area.

School Air Quality Activity Recommendations – The County noted that many of its schools use CA Dept of Education Air quality Index and Activity Recommendations during times of smoke or poor air quality. Those include the following:

Air Quality Index (AQI) & Activity Recommendation

Activity	AQI 0-50 Good	AQI 51-100 Moderate	AQI 101-150* Unhealthy for Sensitive Groups	AQI 151-200 Unhealthy	AQI 201-300** Very Unhealthy	AQI 301-500** Hazardous
Recess	No restrictions	For students with lung or heart conditions, monitor conditions and consider moving to indoor recess as needed.	Exercise indoors or avoid vigorous outdoor activities.	No outdoor activity. All activities should be moved indoors.	No outdoor activity. All activities should be moved indoors.	No outdoor activity. All activities should be moved indoors.
P.E. (Physical Education Class)	No restrictions	For students with lung or heart conditions, consider accommodations or moving PE inside.	Exercise indoors or avoid vigorous outdoor activities.	No outdoor activity. All activities should be moved indoors.	No outdoor activity. All activities should be moved indoors.	No outdoor activity. All activities should be moved indoors.
Athletic Practice & Training	No restrictions	For students with lung or heart conditions, monitor health and accommodate appropriately.	Exercise indoors or avoid vigorous outdoor activities.	No outdoor activity. All activities should be moved indoors.	No outdoor activity. All activities should be moved indoors.	No outdoor activity. All activities should be moved indoors.
Scheduled Sporting Event	No restrictions	Monitor students' health and conditions and adjust as needed.	Hold event indoors or avoid vigorous outdoor activities.	Reschedule or relocate the activity or move it indoors.	Reschedule or relocate the activity or move it indoors.	Reschedule or relocate the activity or move it indoors.

*__AQI above 100:__ All children are considered sensitive to the health effects of air pollution because their lungs and immune systems are still developing. Children with lung or heart conditions may require extra precautions. Schools **may consider moving exercise indoors**. Indoor exercise should be conducted in areas that **have better air quality than outdoors**. For guidance on creating a clean air space indoors, see section "Recommendations for Ensuring Cleaner Air at school" of this document.

**__AQI above 200:__ School districts may consider school closures based on site-by-site concerns. To be eligible for a waiver from the State Superintendent of Public Instruction, due to emergency conditions (https://www.cde.ca.gov/fg/aa/pa/j13a.asp), poor air quality must be shown to be caused by an emergency event such as a wildfire. A School Emergency Reporting System (https://www.cde.ca.gov/ls/ep/) report should also be done if a school is closed due to poor air quality.

Note: See section "**Considerations for School Districts**" from the California Department of Education: *Before You Make a Decision to Close a School*.

Source: CA Dept of Education

U.S. EPA Climate Pollution Reduction Grants Program, Comprehensive Capital Region Climate Priorities Plan: Sac Metro Air District is also the lead agency for the U.S. EPA's Climate Pollution Reduction Grants program. Working with their partners, it developed a regional climate action plan that focuses on communities disproportionately affected by poor air quality. The Comprehensive Capital Region Climate Priorities Plan includes 26 greenhouse gas reduction measures related to energy, transportation, the built environment, and natural and working lands to address climate pollution and improve air quality. We also created an implementation roadmap to advance these measures in our region.

Regional forecasting: The Sacramento Air Quality District conducts regional forecasting for ozone, as part of the Spare the Air season. If the forecast looks to be above trigger levels, the AQD will call a Spare the Air Day allowing users to access the information and make informed decisions about outdoor air quality and activities. Schools and sports teams use this frequently as do others that may be exposed to poor air quality.

Burn Ban Plan: As part of the State Implementation Plan (SIP) and in coordination with SACOG, forecasting is done for Stage 1 or Stage 2 Burn Ban requirements. Most of this is done in the winter months

(outside of primary wildfire season) when particulates are higher. This is a policy, not a regulation. Also, as part of the SIP, messages go out to encourage actions that reduce emissions, on a voluntary basis.

Smoke Centers: AQD coordinates with County OES and Public Health. If forecast looks bad, the County and each City may open smoke centers, call off school, or other closures may occur.

4.5 Natural Hazards Summary

As detailed in the hazard identification section, those hazards identified as a high or medium significance in Table 4-157 are considered priority hazards for mitigation planning. Those hazards that occur infrequently or have little or no impact in the Sacramento County Planning Area were determined to be of low significance and not considered a priority hazard. Significance was determined based on the hazard profile, focusing on key criteria such as frequency, extent, and resulting damage, including deaths/injuries and property, natural and cultural resources, and economic damage. The ability of a jurisdiction to reduce losses through implementation of existing and new mitigation measures was also considered as to the significance of a hazard. This assessment was used to prioritize those hazards of greatest significance in the Sacramento County Planning Area, enabling the County and participating jurisdictions to focus resources where they are most needed.

Note: Though initially considered priority hazards, after review of the risk assessment and possible mitigation actions, landslide and subsidence were moved to low priority hazards for mitigation strategy purposes. No direct mitigation actions will be sought for these two hazards. More information can be found in Chapter 5.

Table 4-157 Hazard Identification and Initial Determination of Priority Hazards

Hazard	Likelihood of Future Occurrence	Vulnerability	Priority Hazard
Aquatic Nuisance Species (plant/animal)	Occasional	Medium	Y
Climate Change (sea level rise)	Highly Likely	Medium	Y
Dam Failure	Occasional	High	Y
Drought & Water Shortage (w/tree mortality)	Likely	Medium	Y
Earthquake (w/subhazards)	Occasional	Extremely High	Y
Flood: 1%/0.5%/0.2% annual chance	Occasional/Unlikely	High	Y
Flood: Localized Stormwater	Highly Likely	Medium	Y
Landslides, Mudslides, and Debris Flow	Occasional	Medium/Low	N
Levee Failure	Occasional	High	Y
Severe Weather: Extreme Cold and Freeze	Highly Likely	Medium	Y
Severe Weather: Extreme Heat	Highly Likely	Medium	Y
Severe Weather: Heavy Rains and Storms (Hail, Lightning, Wind)	Highly Likely	Medium	Y
Severe Weather: High Winds and Tornadoes	Highly Likely	Medium	Y
Subsidence	Likely	Medium	N

Hazard	Likelihood of Future Occurrence	Vulnerability	Priority Hazard
Wildfire (with smoke and air quality)	Highly Likely	High	Y

Chapter 5 Mitigation Strategy

44 CFR §201.6(c)(3) and §201.7(c)(3): [The plan shall include] a mitigation strategy that provides the jurisdiction's blueprint for reducing the potential losses identified in the risk assessment, based on existing authorities, policies, programs and resources, and its ability to expand on and improve these existing tools.

This section describes the mitigation strategy process and mitigation action plan for this 2026 Sacramento County LHMP Update. It describes how the all participating jurisdictions met the following requirements from the 10-step planning process:

- Planning Step 6: Set Goals
- Planning Step 7: Review Possible Activities
- Planning Step 8: Draft an Action Plan

5.1 Mitigation Strategy: Overview

The results of the planning process, the risk assessment, the goal setting, the identification of mitigation actions, and the hard work of the HMPC led to the mitigation strategy and mitigation action plan for this LHMP Update. As part of the LHMP Update process, a comprehensive review and update of the mitigation strategy portion of the 2021 LHMP was conducted. Some of the initial goals from the previous LHMP was refined and reaffirmed, some goals were deleted, and others were added. The end result was a new set of goals, to reflect the completion of or progress towards the 2021 actions, the updated risk assessment, and the new priorities of participating jurisdictions and this 2026 LHMP Update.

To support the updated mitigation strategy including updated goals, the mitigation actions from 2021 LHMP were reviewed and assessed for their value in reducing risk and vulnerability to the Sacramento County Planning Area from identified hazards and further evaluated for their inclusion in this LHMP Update (See Chapter 2 What's New). Section 5.2 below identifies the new goals of this 2026 LHMP Update and Section 5.4 details the new mitigation action plan.

Taking all the above into consideration, the participating jurisdictions and HMPC developed the following umbrella mitigation strategy for this LHMP Update:

- Communicate the hazard information collected and analyzed through this planning process as well as mitigation success stories so that the community better understands what can happen where and what they themselves can do to be better prepared.
- Implement the mitigation action plan recommendations of this Plan.
- Use existing rules, regulations, policies, and procedures already in place.
- Monitor multi-objective management opportunities so that funding opportunities may be shared and packaged, and broader constituent support may be garnered.

5.1.1. Continued Compliance with NFIP

Given the nature and extent of the flood hazard in the Sacramento County Planning Area, an emphasis will be placed on continued compliance with the National Flood Insurance Program (NFIP) by all communities. The jurisdictional annexes for Sacramento County and the seven incorporated communities, as the eight eligible NFIP communities, provide an overview of their flood management programs and continued compliance with the NFIP. For Sacramento County and the cities of Sacramento and Citrus Heights, the three participating CRS communities, this Chapter 5 for Sacramento County and the annexes for the two cities, also include descriptions of their CRS programs. While the 24 participating districts are not eligible NFIP (or CRS) communities, many of their mitigation actions and projects contain measures to promote effective floodplain management throughout the Sacramento County Planning Area.

Sacramento County's Flood Management Program

Sacramento County has participated in the Regular Phase of the NFIP since 1979. Since then, the County has administered floodplain management regulations that meet the minimum requirements of the NFIP and include higher regulatory standards in many areas as part of the County's participation in the CRS program.

The County will continue to manage their floodplains in continued compliance with the NFIP. An overview of the County's NFIP status and floodplain management program is discussed in Table 5-1.

Table 5-1 Sacramento County NFIP Status

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)?	Sacramento County – Department of Water Resources – Floodplain Management and Hydrology Section. No, the County Floodplain Administrator does not serve in any other roles.
Is the Community FPA or NFIP Coordinator a Certified Floodplain Manager?	No. In-progress. National Disaster & Emergency Management University's E0273: Managing Floodplain Development Through the NFIP & E0278L National Flood Insurance Program – Community Rating System have been taken by floodplain management staff.
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)	Floodplain Management reviews and approves permits.
What are the barriers to running an effective NFIP program in the community, if any?	Public awareness and understanding of flood hazards and regulations.
Insurance Summary	
How many NFIP policies are in the community? What is the total premium and coverage?	4,202 policies $2,100,935 in premiums $1,233,271,000 in coverage

NFIP Topic	Comments
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?	1,824 paid losses $26,737,272 in paid claims 145 substantial damage claims
How many structures (residential and non-residential) are exposed to flood risk within the community?	8,937 in 1% annual chance floodplain 35,938 in 0.2% annual chance floodplain
Are there Repetitive Loss (RL) and Severe Repetitive Loss Properties (SRL) structures in the community?	404 RL 5 SRL Property uses for these can be found in Section 4.3.11.
Describe any areas of flood risk with limited NFIP policy coverage	Per the 2025 PPI Annual Report, overall policies in forces have gone down. Specific affected areas could not be determined.
How does the community teach property owners or other stakeholders about the importance flood insurance?	Annual newsletters to residents, targeted newsletters to those in higher risk areas, County Building Assistance Center support, website, billboards, radio ads, and social media posts.
What digital sources (like the FEMA Map Service Center, National Flood Hazard Layer) or non-regulatory tools does the community use?	In addition to FEMA's Map Service Center and National Flood Hazard Layer, the County provides access to a County-hosted public GIS online flood map viewer: https://generalmap.gis.saccounty.gov/JSViewer/FEMA.html#
Compliance History	
Is the community in good standing with the NFIP?	Yes
Are there any outstanding compliance issues (i.e., current violations)?	Yes. Currently in-progress of correcting.
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?	Sacramento County – Department of Water Resources – Floodplain Management and Hydrology Section. Substantial Damage/Improvement process is outlined in the Floodplain Management Ordinance. In brief, substantial improvements are calculated off the cumulative cost calculated for the preceding five years from the date of the building permit application. An improvement in which the cumulative cost equals or exceeds 50 percent of the market value of the building is deemed a substantial improvement and must meet current Floodplain Management Ordinance requirements.
When was the most recent Community Assistance Visit (CAV) or Community Assistance Contact (CAC)?	May 28, 2025
Is a CAV or CAC scheduled or needed?	No.
Regulation	
When did the community enter the NFIP?	Emergency Entry 3/31/1972 Regular Entry 3/15/1979
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?	Yes. Current Floodplain Management Ordinance became effective on June 19, 2025.
Has the community adopted the latest effective FIRM? Date adopted?	Yes. Effective Date of February 22, 2024.

NFIP Topic	Comments
How does the community enforce local floodplain regulations and monitor compliance?	Outlined in the Floodplain Management Ordinance. The chief enforcement is by rejecting building permits that do not meet or exceed or standards.
Do floodplain development regulations meet or exceed FEMA or State minimum requirements? If so, in what ways?	Exceed FEMA and State requirements. More details are in the Floodplain Management Ordinance, with the most significant item requiring structures to be elevated 1.5' above
How are Letters of Map Change (LOMCs) tracked and compiled?	LOMCs are maintained within FEMA's Map Service Center, with digital and paper copies of files available internally.
Provide an explanation of the permitting process.	Clearly outlined in the floodplain ordinance. This process is strictly enforced.
Community Rating System	
Does the community participate in CRS? If so, what is the community's CRS Class Ranking?	Class 2
What categories and activities provide CRS points and how can the class be improved?	Sacramento County actively maintains programs that satisfy or surpass all CRS activities in the 300s, 400s, 500s and some 600s. These programs are regularly improved by staff for completeness. The County is trying to improve upon credits for Activity 630.
Does the plan include CRS planning requirements?	Yes, in accordance with the CRS Activity 510 requirements of the 2025 CRS Coordinator's Manual

Source: FEMA/Sacramento County

The Community Rating System (CRS) was created in 1990. Sacramento County has been in the CRS program since 1992. The program is designed to recognize floodplain management activities that go 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, Sacramento County is currently ranked Class 2 community, which gives a 40% premium discount for all NFIP policies in the Regular Program in Sacramento County, including policies within and outside of the Special Flood Hazard Area (SFHA).Sacramento County is one of very few CRS Class 2 communities, ranking them among one of the top CRS communities in California and the nation.

The activities credited by the CRS provide direct benefits to Sacramento County 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.

Based on their May 2025 Verification Visit and resulting 2025 Verification Report, the activities that Sacramento County implements and receives CRS credits include:

- **Activity 310 – Elevation Certificates:** The Water Resources Department maintains elevation certificates for new and substantially improved buildings. Copies of elevation certificates are made available upon request. Elevation Certificates are also kept for post-FIRM and pre-FIRM buildings. (67 points)

- **Activity 320 – Map Information Service:** Credit is provided for furnishing inquirers with basic flood zone information from the community's latest Flood Insurance Rate Map (FIRM). Credit is also provided for the community furnishing additional FIRM information, information about problems not shown on the FIRM, and historical flood information. The service is publicized annually and records are maintained. (90 points)
- **Activity 330 – Outreach Projects:** Credit is provided for informational outreach projects that include brochures in public buildings, general outreach projects that include mailer to the entire community, posts on social media and community events, and priority audience messages that include letters to repetitive loss areas and flood prone properties. These projects are disseminated annually. Credit is also provided for having a pre-flood plan for public information. Credit is enhanced by having a Program for Public Information (PPI), and by having the information disseminated by stakeholders outside the local government. (333 points)
- **Activity 340 – Hazard Disclosure:** Credit is provided for the local real estate agents disclosure of flood hazards to prospective buyers. Credit is also provided for state regulations requiring disclosure of flood hazards. Real estate agents provide a brochure advising prospective buyers about insurance and checking property flood hazards. Credit is enhanced by having a PPI. (62 points)
- **Activity 350 – Flood Protection Information:** Documents relating to floodplain management are available in the reference section of the Sacramento Public Library. Credit is also provided for floodplain information displayed on the community's website. Credit is enhanced by having a PPI. (93 points)
- **Activity 360 – Flood Protection Assistance:** Credit is provided for offering one-on-one advice regarding property protection and making site visits before providing advice. Credit is enhanced by having a PPI. (85 points)
- **Activity 370 – Flood Insurance Promotion:** Credit is provided for assessing the community's current level of flood insurance coverage and assessing shortcomings. Credit is also provided for development and implementation of a coverage improvement plan. Credit for implementing a coverage improvement plan is enhanced by having a PPI and stakeholder involvement. (125 points)
- **Activity 410 – Floodplain Mapping:** Credit is provided for conducting and adopting flood studies for areas not included on the FIRM and that exceed minimum mapping standards. (37 points)
- **Activity 420 – Open Space Preservation:** Credit is provided for preserving expanses of the Special Flood Hazard Area (SFHA) as open space and preserving open space land in a natural state. Credit is also provided for regulations and incentives that minimize development in the SFHA. Credit is enhanced by having a PPI. (781 points)
- **Activity 430 – Higher Regulatory Standards:** Credit is provided for enforcing regulations that require development limitations, freeboard for new and substantial improvement construction, foundation protection, cumulative substantial improvement, enclosure limits and local drainage protection. Credit is also provided for the enforcement of building codes, a BCEGS Classification of 4/4 or better, state mandated regulatory standards, and regulations administration. (438 points)
- **Activity 440 – Flood Data Maintenance:** Credit is provided for maintaining and using digitized maps in the day-to-day management of the floodplain. Credit is also provided for establishing and maintaining a system of benchmarks and maintaining copies of all previous FIRMs and Flood Insurance Study Reports. (182 points)
- **Activity 450 – Stormwater Management:** The community enforces regulations for stormwater management, low impact development, soil and erosion control, and water quality. Credit is also provided for watershed master planning. (273 points)
- **Section 502 – Repetitive Loss Category:** Sacramento County has over 50 repetitive loss properties and is a Category C community for CRS purposes. The community is required to submit either a Repetitive Loss Area Analysis or Floodplain Management Plan. (No credit points are applicable to this section)
- **Activity 510 – Floodplain Management Planning:** Credit is provided for the adoption and implementation of the Sacramento County Local Hazard Mitigation Plan. A progress report must be

submitted on an annual basis and updated every five years. Credit is also provided for conducting a repetitive loss area analysis. (545 points)

- **Activity 520 – Acquisition and Relocation:** Credit is provided for acquiring and relocating buildings from the community's regulatory floodplain. (76 points)
- **Activity 530 – Flood Protection:** Credit is provided for buildings that have been elevated to protect them from flood damage. (160 points)
- **Activity 540 – Drainage System Maintenance:** A portion of the community's drainage system is inspected regularly throughout the year and maintenance is performed as needed. Credit is also provided for listing problem sites that are inspected more frequently, for implementing an ongoing Capital Improvements Program, and for maintaining storage basins. The community enforces a regulation prohibiting dumping in the drainage system and annually publicizes the regulation. Credit is enhanced by having a PPI. (354 points)
- **Activity 610 – Flood Warning Program:** Credit is provided for a program that provides timely identification of impending flood threats, disseminates warnings to appropriate floodplain residents, and coordinates flood response activities. Credit is also provided for the designation as a Storm Ready Community by the National Weather Service. (263 points)
- **Activity 620 – Levees:** Credit is provided for maintaining levees, having a warning system, a response operation, and critical facilities planning (177 points)
- **Activity 630 – Dams:** Credit is provided for a State Dam Safety Program. (37 points)
- **Activity 710 – County Growth Adjustment:** All credit in the 400 series is multiplied by the growth rate of the county to account for growth pressures. The growth rate for Sacramento County, CA is 1.06.

5.1.2. Integration of Mitigation with Post Disaster Recovery and Mitigation Strategy Funding Opportunities

Hazard mitigation actions are essential to weaving long-term resiliency into all community recovery efforts so that at-risk infrastructure, development, and other community assets are stronger and more resilient for the next severe storm event. 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 applied to recovery helps communities become more resilient and sustainable. It is often most efficient to fund eligible infrastructure mitigation through FEMA's Public Assistance mitigation program if the asset was damaged in a storm event. Mitigation work can be added to project worksheets if they can be proven to be cost-beneficial.

Integration of mitigation into post disaster recovery efforts should be considered by all communities as part of their post disaster redevelopment and mitigation policies and procedures. Post-disaster redevelopment and mitigation policies and procedures are evaluated and updated as part of the Emergency Operations Plan (EOP) updates and other emergency management plans for each community.

These EOP's and other emergency management documents, through its policies and procedures, seek 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. Mitigation is emphasized as a major component of recovery efforts.

Mitigation Strategy Funding Opportunities

An understanding of the various funding streams and opportunities enable the communities to match identified 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 HMA Grants

Cal OES administers four main types of HMA grants: (1) Hazard Mitigation Grant Program, (2) Pre-Disaster Mitigation Program, (3) Flood Mitigation Assistance Program, and (4) Building Resilient Infrastructure and Communities. Eligible applicants for the HMA include state and local governments, certain private non-profits, and federally recognized Indian tribal governments. While private citizens cannot apply directly for the grant programs, they can benefit from the programs if they are included in an application sponsored by an eligible subapplicant.

FEMA Public Assistance Section 406 Mitigation

The Robert T. Stafford Disaster Relief and Emergency Assistance Act provides FEMA the authority to fund the restoration of eligible facilities that have sustained damage due to a presidentially declared disaster. The regulations contain a provision for the consideration of funding additional measures that will enhance a facility's ability to resist similar damage in future events.

Community Development Block Grants

The California Department of Housing and Community Development administers the State's Community Development Block Grant (CDBG) program with funding provided by the U.S. Department of Housing and Urban Development. The program is available to all non-entitlement communities that meet applicable threshold requirements. All projects must meet one of the national objectives of the program – projects must benefit 51 percent low- and moderate-income people, aid in the prevention or clearance of slum and blight, or meet an urgent need. Grant funds can generally be used in federally declared disaster areas for CDBG eligible activities including the replacement or repair of infrastructure and housing damaged during, or as a result of, the declared disaster.

Small Business Loans

SBA offers low-interest, fixed-rate loans to disaster victims, enabling them to repair or replace property damaged or destroyed in declared disasters. It also offers such loans to affected small businesses to help them recover from economic injury caused by such disasters. Loans may also be increased up to 20 percent of the total amount of disaster damage to real estate and/or leasehold improvements to make improvements that lessen the risk of property damage by possible future disasters of the same kind.

Increased Cost of Compliance

Increased Cost of Compliance (ICC) coverage is one of several resources for flood insurance policyholders who need additional help rebuilding after a flood. It provides up to $30,000 to help cover the cost of

mitigation measures that will reduce flood risk. ICC coverage is a part of most standard flood insurance policies available under NFIP.

5.2 Goals and Objectives

Requirement 44 CFR §201.6(c)(3)(i) and §201.7(c)(3)(i): [The hazard mitigation strategy shall include a] description of mitigation goals to reduce or avoid long-term vulnerabilities to the identified hazards.

Up to this point in the planning process, the participating jurisdictions, along with the HMPC, have organized resources, assessed hazards and risks, and documented mitigation capabilities. The resulting goals and mitigation actions were developed based on these tasks. The HMPC held a series of meetings and exercises designed to achieve a collaborative mitigation strategy as described further throughout this section. Appendix C documents the information covered in these mitigation strategy meetings, including information on the goals development and the identification and prioritization of mitigation alternatives by the HMPC.

During the goal-setting meeting, the HMPC reviewed the results of the hazard identification, vulnerability assessment, and capability assessment. This analysis of the risk assessment identified areas where improvements could be made and provided the framework for the HMPC to formulate planning goals and to develop the mitigation strategy for the Sacramento County Planning Area.

Goals were defined for the purpose of this mitigation plan as broad-based public policy statements that:

- Represent basic desires of the community;
- Encompass all aspects of community, public and private;
- Are nonspecific, in that they refer to the quality (not the quantity) of the outcome;
- Are future-oriented, in that they are achievable in the future; and
- Are time-independent, in that they are not scheduled events.

Goals are stated without regard to implementation. Implementation cost, schedule, and means are not considered. Goals are defined before considering how to accomplish them so that they are not dependent on the means of achievement. Goal statements form the basis for objectives and actions that will be used as means to achieve the goals.

HMPC members were provided with the list of goals from the 2021 LHMP as well as a list of other sample goals to consider. The committee was told that they could use, combine, or revise the statements provided or develop new ones, keeping the risk assessment in mind. Each member was asked to provide three goal statements. Goal statements were collected and grouped into similar themes and provided to the HMPC. Some of the statements were determined to be better suited as actual mitigation actions and were set aside for later use. Edits and refinements to these new goals were provided by the HMPC until the team came to consensus on the final goals and objectives for this 2026 LHMP Update.

Based on the risk assessment review and goal setting process, the HMPC identified the following goals, which provide the direction for reducing future hazard-related losses within Sacramento County Planning Area.

5.2.1. 2026 Sacramento County LHMP Goals

Goals for the 2026 Sacramento County LHMP Update are as follows:

GOAL 1: Minimize risk and vulnerability of the Sacramento County community to natural hazards; protect lives; and reduce damages and losses to property, public health and safety, the economy, and the environment, by planning and implementing whole community risk reduction and resilience strategies.

GOAL 2: Improve the region's social, economic, and operational resilience to climate related hazard impacts for both the existing built environment and future development to promote a more sustainable community.

GOAL 3: Protect critical facilities, infrastructure, utilities, and services from hazard impacts, to include: hardening and other efforts to establish redundancy, reliability, and operational continuity; to prevent or minimize losses; and to facilitate community recovery.

GOAL 4: Increase public education, awareness, and preparedness for natural hazards to minimize hazard related losses and to promote self-reliance, utilizing effective outreach and communication strategies to reach all populations before, during, and after a hazard event or disaster.

GOAL 5: Increase community capabilities and leverage interagency and public-private collaboration and resources to mitigate losses and to be prepared for, respond to, and recover from a hazard event or disaster.

GOAL 6: Apply the best available science and authoritative data and make better use of technology and shared resources to design, implement, and prioritize risk reduction measures that enhance resilience to natural hazards and climate change impacts.

GOAL 7: Assure conformance to federal and state hazard mitigation initiatives to maximize opportunities for mitigation implementation and to maintain FEMA program(s) eligibility.

5.3 Identification and Analysis of Mitigation Actions

Requirement: 44 CFR §201.6(c)(3)(ii) and §201.6(c)(3)(ii): [The mitigation strategy shall include a] section that identifies and analyzes a comprehensive range of specific mitigation actions and projects being considered to reduce the effects of each hazard, with particular emphasis on new and existing buildings and infrastructure.

In order to identify and select mitigation actions to support the mitigation goals, each hazard identified in Section 4.1 was evaluated at the completion of the risk assessment as part of a second prioritization process to determine which hazards were priorities for mitigation strategy planning. Only those hazards that were determined to be a priority hazard for each participating jurisdiction were considered further in the development of hazard-specific mitigation actions. Those hazards not considered a priority for mitigation strategy development were eliminated from further consideration because the risk of a hazard event to the participating jurisdiction is unlikely, the vulnerability of the participating jurisdiction is low, or capabilities are already in place to mitigate negative impacts. Further, the resulting mitigation strategy presented in this chapter focuses on those mitigation actions that each jurisdiction has the authority, resources, and capacity to consider for implementation over the next 5-years covered by this LHMP Update. Table 5-2 provides a listing of priority hazards by jurisdiction to be addressed in the mitigation strategy portion of this Plan.

Table 5-2 Sacramento County Planning Area: Mitigation Action Priority Hazards by Jurisdiction

Hazard	Sacramento County*	City of Citrus Heights	City of Elk Grove	City of Folsom	City of Galt
Aquatic Nuisance Species (plant/animal)	X			X	
Climate Change	X	X	X	X	X
Dam Failure	X	X	X	X	
Drought & Water Shortage (w/tree mortality)	X	X	X	X	X
Earthquake (w/subhazards)	X		X		
Flood: 1%/0.5%/0.2% annual chance	X	X	X	X	X
Flood: Localized Stormwater	X	X	X	X	X
Landslides, Mudslides, and Debris Flow					
Levee Failure	X		X		
Sea Level Rise	X				
Severe Weather: Extreme Cold and Freeze	X	X	X	X	
Severe Weather: Extreme Heat	X	X	X	X	
Severe Weather: Heavy Rains and Storms (Hail, Lightning, Wind)	X	X	X	X	X
Severe Weather: High Winds and Tornadoes	X	X		X	

Hazard	Sacramento County*	City of Citrus Heights	City of Elk Grove	City of Folsom	City of Galt
Subsidence					
Wildfire (with smoke and air quality)	X	X	X	X	X

*Though initially considered to be priority hazards of concern for the County in Chapter 4, after a review of the risk assessment and after a review of possible mitigation actions, it was determined that landslide and subsidence would be considered low priority hazards. No mitigation action will be pursued directly for these hazards.

Table 5-3 Sacramento County Planning Area: Mitigation Action Priority Hazards by Jurisdiction (continued)

Hazard	City of Isleton	City of Rancho Cordova	City of Sacramento	ARFCD	BALMD
Aquatic Nuisance Species (plant/animal)			X		
Climate Change	X	X	X		
Dam Failure		X	X		X
Drought & Water Shortage (w/tree mortality)		X	X		
Earthquake (w/subhazards)			X		
Flood: 1%/0.5%/0.2% annual chance	X	X	X	X	X
Flood: Localized Stormwater	X	X	X		X
Landslides, Mudslides, and Debris Flow					
Levee Failure	X		X	X	X
Sea Level Rise	X		X		X
Severe Weather: Extreme Cold and Freeze			X		
Severe Weather: Extreme Heat		X	X		
Severe Weather: Heavy Rains and Storms (Hail, Lightning, Wind)	X	X	X	X	X
Severe Weather: High Winds and Tornadoes		X	X		
Subsidence					
Wildfire (with smoke and air quality)		X	X		

Table 5-4 Sacramento County Planning Area: Mitigation Action Priority Hazards by Jurisdiction (continued)

Hazard	CHWD	CCSD/Fire	GHAD	LRCCD	SCWA
Aquatic Nuisance Species (plant/animal)					X
Climate Change					X

Hazard	CHWD	CCSD/Fire	GHAD	LRCCD	SCWA
Dam Failure	X		X		X
Drought & Water Shortage (w/tree mortality)	X	X			X
Earthquake (w/subhazards)	X		X		X
Flood: 1%/0.5%/0.2% annual chance		X	X		X
Flood: Localized Stormwater			X		X
Landslides, Mudslides, and Debris Flow					
Levee Failure		X	X		X
Sea Level Rise			X		
Severe Weather: Extreme Cold and Freeze					
Severe Weather: Extreme Heat		X			
Severe Weather: Heavy Rains and Storms (Hail, Lightning, Wind)			X	X	X
Severe Weather: High Winds and Tornadoes					X
Subsidence			X		
Wildfire (with smoke and air quality)		X			

Table 5-5 Sacramento County Planning Area: Mitigation Action Priority Hazards by Jurisdiction (continued)

Hazard	SMFD	SASD	SRPD	TRUSD	RD3
Aquatic Nuisance Species (plant/animal)					
Climate Change	X	X	X		
Dam Failure	X	X	X		
Drought & Water Shortage (w/tree mortality)	X		X	X	
Earthquake (w/subhazards)	X				
Flood: 1%/0.5%/0.2% annual chance	X	X	X	X	X
Flood: Localized Stormwater	X		X	X	X
Landslides, Mudslides, and Debris Flow				X	
Levee Failure	X	X	X	X	X
Sea Level Rise		X			
Severe Weather: Extreme Cold and Freeze	X			X	
Severe Weather: Extreme Heat	X		X	X	
Severe Weather: Heavy Rains and Storms (Hail, Lightning, Wind)	X		X	X	X

Hazard	SMFD	SASD	SRPD	TRUSD	RD3
Severe Weather: High Winds and Tornadoes	X		X		
Subsidence				X	
Wildfire (with smoke and air quality)	X	X	X	X	

Table 5-6 Sacramento County Planning Area: Mitigation Action Priority Hazards by Jurisdiction (continued)

Hazard	RD 341	RD 349	RD 369	RD 551	RD 554	RD 556
Aquatic Nuisance Species (plant/animal)						
Climate Change						
Dam Failure			X		X	X
Drought & Water Shortage (w/tree mortality)						
Earthquake (w/subhazards)	X					
Flood: 1%/0.5%/0.2% annual chance	X	X	X	X	X	X
Flood: Localized Stormwater		X	X	X	X	X
Landslides, Mudslides, and Debris Flow						
Levee Failure	X	X	X	X	X	X
Sea Level Rise	X		X		X	X
Severe Weather: Extreme Cold and Freeze						
Severe Weather: Extreme Heat						
Severe Weather: Heavy Rains and Storms (Hail, Lightning, Wind)	X	X	X	X	X	X
Severe Weather: High Winds and Tornadoes	X					
Subsidence						
Wildfire (with smoke and air quality)						

Table 5-7 Sacramento County Planning Area: Mitigation Action Priority Hazards by Jurisdiction (continued)

Hazard	RD 563	RD 800	RD 1000	RD 1002	RD 1601	RD 2111
Aquatic Nuisance Species (plant/animal)						
Climate Change			X			
Dam Failure				X		

Hazard	RD 563	RD 800	RD 1000	RD 1002	RD 1601	RD 2111
Drought & Water Shortage (w/tree mortality)						
Earthquake (w/subhazards)						
Flood: 1%/0.5%/0.2% annual chance	X	X	X	X	X	X
Flood: Localized Stormwater	X			X	X	
Landslides, Mudslides, and Debris Flow						
Levee Failure	X	X	X	X	X	X
Sea Level Rise						
Severe Weather: Extreme Cold and Freeze						
Severe Weather: Extreme Heat						
Severe Weather: Heavy Rains and Storms (Hail, Lightning, Wind)	X	X	X	X		X
Severe Weather: High Winds and Tornadoes			X			
Subsidence	X				X	
Wildfire (with smoke and air quality)						

It is important to note, however, that all the Hazards addressed in this LHMP are included in the multi-hazard public education and awareness mitigation actions as well as in other multi-hazard, emergency management actions, and other hazard-specific actions, providing benefits to all participating jurisdictions to this 2026 LHMP Update.

Once it was determined which hazards warranted the development of specific mitigation actions, the participating jurisdictions and HMPC analyzed viable mitigation options that supported the identified goals. The HMPC was provided with the following list of categories of mitigation actions, which originate from the Community Rating System:

- Prevention
- Property protection
- Structural projects
- Natural resource protection
- Emergency services
- Public information

The HMPC was provided with examples of potential mitigation actions for each of the above categories. The HMPC was also instructed to consider both future and existing buildings in considering possible mitigation actions. A facilitated discussion then took place to examine and analyze the options. Appendix C provides a detailed review and discussion of the six mitigation categories to assist in the review and identification of possible mitigation activities or projects. Also utilized in the review of possible mitigation measures is FEMA's publication on Mitigation Ideas, by hazard type. Prevention type mitigation

alternatives were discussed for each of the priority hazards. This was followed by a brainstorming session that generated a list of preferred mitigation actions by hazard.

5.3.1. Prioritization Process

Once the mitigation actions were identified, the HMPC was provided with several decision-making tools, including FEMA's recommended prioritization criteria, STAPLEE sustainable disaster recovery criteria; Smart Growth principles; and others, to assist in deciding why one recommended action might be more important, more effective, or more likely to be implemented than another. STAPLEE stands for the following:

- **Social:** Does the measure treat people fairly? (e.g., different groups, different generations)
- **Technical:** Is the action technically feasible? Does it solve the problem?
- **Administrative:** Are there adequate staffing, funding, and other capabilities to implement the project?
- **Political:** Who are the stakeholders? Will there be adequate political and public support for the project?
- **Legal:** Does the jurisdiction have the legal authority to implement the action? Is it legal?
- **Economic:** Is the action cost-beneficial? Is there funding available? Will the action contribute to the local economy?
- **Environmental:** Does the action comply with environmental regulations? Will there be negative environmental consequences from the action?

In accordance with the DMA requirements, an emphasis was placed on the importance of a benefit-cost analysis in determining action priority. Other criteria used to assist in evaluating the benefit-cost of a mitigation action includes:

- Contribution of the action to save life or property
- Availability of funding and perceived cost-effectiveness
- Available resources for implementation
- Ability of the action to address the problem

The initial list of mitigation actions from the 2021 LHMP and new actions identified during this planning process were reviewed and prioritized using the criteria (alternatives and selection criteria) in Appendix C.

With these criteria in mind, the HMPC were each given a set of nine colored dots, three each of red, blue, and green. The dots were assigned red for high priority (worth five points), blue for medium priority (worth three points), and green for low priority (worth one point). The HMPC was asked to use the dots to prioritize actions with the above criteria in mind. The point score for each action was totaled. Appendix C contains the total score given to each identified mitigation action.

The process of identification and analysis of mitigation alternatives allowed the HMPC to come to consensus and to prioritize recommended mitigation actions. During the voting process, emphasis was placed on the importance of a benefit-cost review in determining project priority; however, this was not a quantitative analysis. The team agreed that prioritizing the actions collectively enabled the actions to be ranked in order of relative importance and helped steer the development of additional actions that meet the more important objectives while eliminating some of the actions which did not garner much support.

Benefit-cost was also considered in greater detail in the development of the Mitigation Action Plan detailed below in Section 5.4. The cost-effectiveness of any mitigation alternative will be further considered in greater detail through performing benefit-cost project analyses when seeking FEMA mitigation grant funding for eligible actions associated with this 2026 LHMP Update.

Recognizing the limitations in prioritizing actions from multiple jurisdictions and departments and the regulatory requirement to prioritize by benefit-cost to ensure cost-effectiveness, the participating jurisdictions and HMPC decided to pursue actions that contributed to saving lives and property as first and foremost, with additional consideration given to the benefit-cost aspect of a project. This process drove the development of a determination of a high, medium, or low priority for each mitigation action, and a comprehensive prioritized mitigation action plan for the Sacramento County Planning Area.

Note: Though initially considered to be priority hazards of concern for the County in Chapter 4, after a review of the risk assessment and after a review of possible mitigation actions, it was determined that landslide and subsidence would be considered low priority hazards. No mitigation action will be pursued directly for these hazards in Section 5.4 below.

5.4 Mitigation Action Plan

Requirement 44 CFR §201.6(c)(3)(iii) and §201.7(c)(3)(iii): [The mitigation strategy section shall include] an action plan describing how the actions identified in section (c)(3)(ii) will be prioritized, implemented, and administered by the local jurisdiction. Prioritization shall include a special emphasis on the extent to which benefits are maximized according to a cost benefit review of the proposed projects and their associated costs.

This mitigation action plan was developed to present the recommendations developed by the HMPC for how the Sacramento County Planning Area can reduce the risk and vulnerability of people, property, critical facilities and infrastructure, and natural and cultural resources to future disaster losses. Emphasis was placed on both future and existing development. This mitigation action plan summarizes who is responsible for implementing each of the prioritized actions as well as when and how the actions will be implemented. Each action summary also includes a discussion of the benefit-cost review conducted to meet the regulatory requirements of the Disaster Mitigation Act.

Table 5-8 identifies all mitigation actions for participating jurisdictions to this LHMP Update. For each mitigation action item included in Table 5-8, a detailed mitigation implementation strategy has been developed. The detailed descriptions for each mitigation action are included in each respective jurisdictional annex to this LHMP.

The mitigation action plan summarized below contains both new action items developed for this 2026 LHMP Update as well as old actions that were yet to be completed from the 2021 LHMP. Table 5-8 indicates whether the action is new or from the 2021 LHMP and Chapter 2 contains the details for each 2021 mitigation action item indicating whether a given action item has been completed, deleted, or deferred.

As described throughout this 2026 LHMP Update, the Sacramento County Planning Area has many risks and vulnerabilities to identified hazards. Although many possible mitigation actions, as detailed in Appendix C, were brainstormed and prioritized during the mitigation strategy meetings, the resulting mitigation strategy presented in this Chapter 5 of this LHMP focuses only on those mitigation actions that are both reasonable and realistic for the communities to consider for implementation over the next 5-years covered by this 2026 Update. Thus, only a portion of the actions identified in Appendix C have been carried forward into the mitigation strategy presented in Table 5-8. Although many good ideas were developed during the mitigation action brainstorming process, the reality of determining which priority actions to develop and include in this LHMP Update came down to the actual priorities of communities, individuals and departments based in part on department direction, staffing, and available funding. The overall value of the mitigation action table in Appendix C is that it represents a wide-range of mitigation actions that can be consulted and developed for this LHMP Update during annual plan reviews and the formal 5-year update process.

It is also important to note that the participating jurisdictions have numerous existing, detailed action descriptions, which include benefit-cost estimates, in other planning documents, such as stormwater and drainage plans, flood and watershed management plans, drought plans, climate plans, and capital improvement budgets and reports. These actions are considered to be part of this LHMP, and the details, to avoid duplication, should be referenced in their original source document. The HMPC also realizes that

new needs and priorities may arise as a result of a disaster or other circumstances and reserves the right to support new actions, as necessary, as long as they conform to the overall goals of this LHMP Update.

Further, it should be clarified that the actions included in this mitigation strategy are subject to further review and refinement; alternatives analyses; and reprioritization due to funding availability and/or other criteria. 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.

It should be noted that many of the projects submitted by each jurisdiction in Table 5-8 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 public outreach actions, as well as many of the emergency services, and other actions, apply to all hazards regardless of hazard priority. Collectively, this 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 2026 LHMP Update.

Table 5-8 Sacramento County Planning Area Mitigation Actions

Action Title	New Action/ Previous Action	Address Current Development	Address Future Development	Continued NFIP Compliance	Mitigation Type
Sacramento County					
Multi-Hazard Actions					
Action 1. Enhance Public Education and Awareness of Natural Hazards and Public Understanding of Disaster Preparedness	Previous Action	X	X	X	Prevention Public Information
Action 2. Integrate Local Hazard Mitigation Plan into Safety Element of General Plan	Previous Action	X	X		Prevention
Action 3. Evacuation Planning Countywide	Previous Action	X	X	X	Emergency Services
Action 4. Expand Broadband/Wifi Access	Previous Action	X	X		Emergency Services
Action 5. Rancho Murieta Resilience Plan	New Action	X	X		Prevention
Action 6. LU-1: Climate-Resilient Development Standards — Land Use Policy	New Action	X	X	X	Prevention Property Protection Natural Resource Protection
Action 7. EJ-1: Vulnerable Community Integration -- Equity Protocol (PER Lead)	New Action	X	X		Prevention Public Information
Action 8. Critical Facility Inventory and GIS Mapping Updates and Maintenance	New Action	X	X	X	Prevention Public Information Property Protection
Action 9. Establish Local Resilience Hubs with Backup Power	New Action	X	X		Emergency Services Public Information
Climate Change Actions					
Action 10. Implement and improve telecommuting and remote work access for County operations	Previous Action	X	X		Prevention
Action 11. Implement the actions contained within the Sacramento County Climate Action Plan	Previous Action	X	X	X	Prevention Property Protection Structural Projects Natural Resource Protection Public Information
Drought and Water Shortage Actions					
Action 12. AG-1: Unincorporated Agricultural Lands Climate Resilience -- General Plan Amendment	New Action	X	X		Prevention Property Protection Natural Resource Protection Public Information

Action Title	New Action/ Previous Action	Address Current Development	Address Future Development	Continued NFIP Compliance	Mitigation Type
Action 13. DR-1 Drought Resilience and Water Supply Planning Coordination	New Action	X	X		Prevention Property Protection Natural Resource Protection
Action 14. Implement the Actions Included in the 2025 Sacramento County Drought Resilience Plan	New Action	X	X		Prevention Property Protection Natural Resource Protection
Earthquake Actions					
Action 15. EQ-1: Seismic Vulnerability Assessment & Building Retrofit Program	New Action	X	X		Property Protection Structural Projects
Flood: 1%/0.5%/0.2% Annual Chance; Flood; Localized Stormwater; Dam Failure; Levee Failure; Severe Weather: Heavy Rains and Storms Actions					
Action 16. Acquire Floodprone Properties	Previous Action	X	X	X	Property Protection
Action 17. Maintain/ Improve Railroad Embankment Levee (from south of Freeport to south of Hood, a reach owned by California Parks and Recreation Department)	Previous Action	X	X	X	Property Protection Structural Projects
Action 18. Flood Risk Mitigation for Mobilehomes and Recreational Vehicles	Previous Action	X	X	X	Property Protection
Action 19. Plan for Public Information	Previous Action	X	X	X	Public Information
Action 20. Mitigation of Repetitive Loss Flood Areas and Properties	Previous Action	X	X	X	Property Protection Structural Projects Natural Resource Protection
Action 21. Flood Risk Mapping/ Watershed Modeling	Previous Action	X	X	X	Prevention Property Protection
Action 22. Storm Ready	Previous Action	X	X	X	Prevention Property Protection
Action 23. Alder Creek Flood Hazard Mitigation	Previous Action	X	X	X	Property Protection Structural Projects Natural Resource Protection
Action 24. Beach Stone Lakes Area Flood Risk Reduction Program	Previous Action	X	X	X	Property Protection Structural Projects Natural Resource Protection
Action 25. Protect Critical Facilities From Flooding	Previous Action	X	X	X	Property Protection Structural Projects Natural Resource Protection Emergency Services

Action Title	New Action/ Previous Action	Address Current Development	Address Future Development	Continued NFIP Compliance	Mitigation Type
Action 26. Dam Safety	Previous Action	X	X	X	Prevention Property Protection Structural Projects
Action 27. Implement Delta Small Communities Projects	Previous Action	X	X	X	Prevention Property Protection Structural Projects Natural Resource Protection
Action 28. Elevate Homes to Reduce Flood Risk	Previous Action	X	X	X	Property Protection
Action 29. Flood Emergency Management Exercises	Previous Action	X	X	X	Emergency Services
Action 30. Flood Evacuation Mapping	Previous Action	X	X	X	Prevention Emergency Services Public Information
Action 31. Floodproofing Non-Residential Structures	Previous Action	X	X	X	Property Protection
Action 32. Update Hydrology Standards	Previous Action	X	X	X	Prevention Property Protection
Action 33. Maintain/ Improve Sacramento River East Levee (from south of Freeport to south of Hood, a reach owned and operated by California Department of Water Resources Maintenance Area 9)	Previous Action	X	X	X	Property Protection Structural Projects
Action 34. Implement Storm Drain Capital Improvement Plan	Previous Action	X	X	X	Prevention Property Protection Structural Projects Natural Resource Protection
Action 35. Cosumnes River Watershed Multi-benefit Projects	Previous Action	X	X	X	Property Protection Structural Projects Natural Resource Protection
Action 36. Urban Levee Monitoring	Previous Action	X	X	X	Prevention Property Protection
Action 37. Movable Bridge Maintenance	Previous Action	X	X	X	Structural Projects Emergency Services
Action 38. Scour Countermeasures	Previous Action	X	X	X	Prevention Property Protection
Action 39. Wilton Area Roadway Resiliency Project	Previous Action	X	X	X	Structural Projects Emergency Services
Action 40. FL-1: Floodplain Open Space Preservation and Green Infrastructure, Development Approvals	New Action	X	X	X	Property Protection Natural Resource Protection

Action Title	New Action/ Previous Action	Address Current Development	Address Future Development	Continued NFIP Compliance	Mitigation Type
Action 41. Support Sea-Level Rise Data Analysis to Protect Critical Infrastructure and Guide Future Development	New Action	X	X		Property Protection Natural Resource Protection
Severe Weather: Extreme Heat Actions					
Action 42. Cool Surfaces Measure / Cool City Strategy	New Action	X	X		Prevention Property Protection
Action 43. EH-2: Urban Heat Island (UHI) Mapping and General Plan / Land Use Integration	New Action	X	X		Prevention Property Protection
Wildfire Actions					
Action 44. Home Hardening, Defensible Space and Vegetation Management; Development of Areas of Refuge	New Action	X	X		Prevention Property Protection Natural Resource Protection Emergency Services
Action 45. Wildfire Fighting - Support	New Action	X	X		Emergency Services
Action 46. Wildfire Suppression	New Action	X	X		Emergency Services
Action 47. Rural Southern Sacramento County System Mapping/Vulnerability Assessments and Stream/Swale Channel Maintenance	New Action	X	X		Prevention Property Protection Natural Resource Protection
Action 48. Community Chipper Days	New Action	X	X		Prevention Property Protection Natural Resource Protection
Action 49. Community Wildfire Preparedness and Education Program	New Action	X	X		Prevention Property Protection Natural Resource Protection
Action 50. State Route 16 Evacuation and Transportation Resilience Study	New Action	X	X		Prevention Property Protection Natural Resource Protection
Action 51. Implementation of Evacuation Study Mitigation Recommendations	New Action	X	X		Prevention Property Protection Natural Resource Protection
Action 52. Ongoing Fuels Reduction and Vegetation Maintenance	New Action	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 53. Community Evacuation Brochure and Route Education	New Action	X	X		Prevention Property Protection Natural Resource Protection
Action 54. Home Hardening and Defensible Space Education	New Action	X	X		Prevention Property Protection Natural Resource Protection
Action 55. Annual Public Preparedness and Mitigation Events	New Action	X	X		Prevention Property Protection Natural Resource Protection
City of Citrus Heights Actions					
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. Critical Facility (City Hall) Generator Project	Previous Action	X	X		Property Protection Emergency Services
Action 4. Neighborhood Storm Drain Master Plans – Phase IV: Neighborhood Areas 1, 2, and 3 (planned for a future year); Phase III: Neighborhood Areas 5, 6, and 11 (planned for a future year)	Previous Action	X	X	X	Prevention Property Protection Structural Projects Natural Resource Protection
Action 5. Implement Storm Drain Master Plan Projects	Previous Action	X	X	X	Prevention Property Protection Structural Projects Natural Resource Protection
Action 6. Develop Climate Adaptation Plan (CAP)	New Action	X	X	X	Prevention Property Protection Natural Resource Protection
Action 7. Corrugated Metal Pipes (CMP) Storm Drain Replacement Project	Previous Action	X	X	X	Property Protection Structural Projects Natural Resource Protection
Action 8. Creek Maintenance and Restoration Project	Previous Action	X	X	X	Property Protection Natural Resource Protection

Action Title	New Action/ Previous Action	Address Current Development	Address Future Development	Continued NFIP Compliance	Mitigation Type
Action 9. Off System Evacuation Routes. Increase pedestrian and bicycle evacuation routes by constructing regional bike/pedestrian trail infrastructure and expanding connection to neighborhoods (particularly in vulnerable areas).	Previous Action	X	X	X	Emergency Services
Action 10. Tree Planting/Canopy Preservation and Enhancement Project	Previous Action	X	X		Property Protection Natural Resource Protection
Action 11. Interconnected Transportation System Project	Previous Action	X	X		Emergency Services
Action 12. Green Streets and Low Impact Development (LID) Project	New Action	X	X		Prevention Property Protection
Action 13. Trash Racks and Debris Cages Project	Previous Action	X	X	X	Prevention Property Protection
Action 14. Reduce the Urban Heat Island Effect (UHIE)	New Action	X	X		Prevention Property Protection Natural Resource Protection
Action 15. Purchase Personal Protection Equipment for Field Staff	New Action	X	X		Prevention Emergency Services
Action 16. Wildfire Fuel Reduction Project	New Action	X	X		Property Protection Natural Resource Protection
Action 17. Disaster Preparedness Exercise to Test Operational & Emergency Plans	New Action	X	X		Emergency Services
Action 18. Develop Plan for Folsom Dam Failure Specific to Citrus Heights	New Action	X	X	X	Prevention Property Protection Emergency Services
Action 19. Bridge and Roadway Retrofit Projects	Previous Action	X	X	X	Structural Projects Emergency Services
Action 20. Landscape and Irrigation Modifications	New Action	X	X		Prevention Property Protection Natural Resource Protection
Action 21. Develop a Firewise USA Community Plan	New Action	X	X		Prevention Property Protection Natural Resource Protection
Action 22. Acquire Floodplain and Floodprone Parcels and Designate as Open Space	New Action	X	X	X	Prevention Property Protection Natural Resource Protection
Action 23. Cable Trellis w/ Vines Shading Project	Previous Action	X	X		Prevention Property Protection

Action Title	New Action/ Previous Action	Address Current Development	Address Future Development	Continued NFIP Compliance	Mitigation Type
City of Elk Grove Actions					
Action 1. Integrate Local Hazard Mitigation Plan into Safety Element of General Plan	Previous Action	X	X		Prevention
Action 2. Develop and implement a public education campaign focused on hazard awareness, household preparedness, emergency supply kits, family communication plans, etc.	New Action	X	X	X	Prevention Public Information
Action 3. Improve public understanding of evacuation procedures, evacuation zones, routes, transportation assistance options, potential shelter locations, and re-entry procedures	New Action	X	X	X	Prevention Emergency Services Public Information
Action 4. Mutual Aid Agreements	Previous Action	X	X	X	Prevention Emergency Services
Action 5. Update and Implement City of Elk Grove Storm Drainage Master Plan (SDMP)	Previous Action	X	X	X	Prevention Property Protection Structural Projects Natural Resource Protection
Action 6. Create a Climate-Smart Stormwater Management System	Previous Action	X	X	X	Prevention Property Protection Structural Projects Natural Resource Protection
Action 7. Implement a Comprehensive and Climate-Smart Green Infrastructure Strategy	Previous Action	X	X	X	Prevention Property Protection Natural Resource Protection
Action 8. Upgrade the City's Laguna West Levee System to Mitigate Climate-Related Flood Impacts	Previous Action	X	X	X	Property Protection Structural Projects
Action 9. Establish a Resilient Pedestrian and Bicycle Infrastructure Network	Previous Action	X	X		Structural Projects Emergency Services
Action 10. Adopt an Ordinance for Post-Disaster Recovery and Reconstruction	New Action	X	X	X	Prevention
Action 11. Identify Locations for and Implement Large-Scale, Low-Maintenance Rain or Pollinator Gardens	New Action	X	X		Prevention Property Protection Natural Resource Protection
Action 12. Reduce Exposure to Extreme Heat and Mitigate the Urban Heat Island Effect	New Action	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 13. Expand the Urban Tree Canopy	New Action	X	X		Prevention Property Protection Natural Resource Protection
Action 14. Annual Storm Drain System Repair and Upgrade	New Action	X	X	X	Prevention Property Protection Structural Projects Natural Resource Protection
Action 15. Whitelock Parkway/State Route 99 Interchange Project (WTR009)	New Action	X	X		Structural Projects Emergency Services
Action 16. Lotz and Promenade Parkway Project (WTR096)	New Action	X	X		Structural Projects Emergency Services
Action 17. Laguna Creek Erosion Repairs Project	New Action	X	X	X	Prevention Property Protection Natural Resource Protection
Action 18. Fish Hatchery Site Restoration	New Action	X	X	X	Natural Resource Protection
Action 19. Updating Drainage Improvement Standards and Adopt the updated County Hydrology	New Action	X	X	X	Prevention Property Protection
Action 20. Laguna Creek Erosion Repairs Project	New Action	X	X	X	Prevention Property Protection Natural Resource Protection
Action 21. Install staff gages at detention basins	New Action	X	X	X	Prevention Property Protection
Action 22. Old Town Area Streetscape Phase 2	New Action	X	X	X	Prevention Property Protection Natural Resource Protection
Action 23. Drone for Storm Monitoring	New Action	X	X	X	Prevention Emergency Services
Action 24. Develop an extreme weather outreach strategy	New Action	X	X	X	Prevention Emergency Services
Action 25. Update the City Emergency Operations Plan and provide training to city personnel	New Action	X	X		Prevention Emergency Services
City of Folsom Actions					
Action 1. Integrate Local Hazard Mitigation Plan into Safety Element of General Plan	Previous Action	X	X		Prevention

Action Title	New Action/ Previous Action	Address Current Development	Address Future Development	Continued NFIP Compliance	Mitigation Type
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. Aquatic Nuisance Management Program	New Action	X	X		Prevention Property Protection Natural Resource Protection
Action 4. Phase 1 Water Vision Implementation	New Action	X	X		Prevention Property Protection
Action 5. Redevelopment Area Drainage Improvements	Previous Action	X	X	X	Prevention Property Protection Structural Projects Natural Resource Protection
Action 6. Stormwater Basin Maintenance and Operation Project	Previous Action	X	X	X	Prevention Property Protection Natural Resource Protection
Action 7. Stormwater Utility Fee	Previous Action	X	X	X	Prevention Property Protection
Action 8. Fuel Reduction and Modification	Previous Action	X	X		Prevention Property Protection Natural Resource Protection
Action 9. Weed Abatement Program	Previous Action	X	X		Prevention Property Protection Natural Resource Protection
City of Isleton Actions					
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. Support climate change mitigation laws	Previous Action	X	X		Prevention Property Protection
Action 4. Levee Reinforcement Projects	Previous Action	X	X	X	Property Protection Structural Projects Natural Resource Protection

Action Title	New Action/ Previous Action	Address Current Development	Address Future Development	Continued NFIP Compliance	Mitigation Type
Action 5. Implement IFIP (Isleton Flood Improvement Plan)	Previous Action	X	X	X	Prevention Property Protection Structural Projects Natural Resource Protection
Action 6. Create and activate IFMA (Isleton Flood Management Agency)	Previous Action	X	X	X	Prevention
Action 7. Storm Water Runoff Rehabilitation Project	Previous Action	X	X	X	Prevention Property Protection Natural Resource Protection
Action 8. Wastewater Treatment Plant Pond Levee Elevation Raise to 200-year Flood Standard	Previous Action	X	X	X	Property Protection Structural Projects
City of Galt Actions					
Action 1. NEED ACTIONS					
City of Rancho Cordova Actions					
Action 1. Integrate Local Hazard Mitigation Plan into Safety Element of General Plan	Previous Action	X	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. Sunrise Blvd Widening Kiefer to Jackson	Previous Action	X	X		Emergency Services
Action 4. Roundabout Implementation	Previous Action	X	X		Emergency Services
Action 5. Disaster Training for Staff	Previous Action	X	X		Emergency Services
Action 6. Update/Maintain Emergency Operations Plans (EOPs)	Previous Action	X	X	X	Emergency Services
Action 7. Developing and maintaining a database to track community vulnerability	Previous Action	X	X	X	Prevention Emergency Services
Action 8. Landscape Ordinance and Model Water Efficient Landscape Ordinance Implementation	Previous Action	X	X		Prevention Property Protection Natural Resource Protection
Action 9. Porous Pavement and Vegetative Buffers	Previous Action	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 10. Channel Vegetation Management, Debris Removal, Erosion Control Projects	Previous Action	X	X	X	Prevention Property Protection Natural Resource Protection
Action 11. Implement Projects in the Stormwater Capital Improvement Program Master Plan	Previous Action	X	X	X	Prevention Property Protection Structural Projects Natural Resource Protection
Action 12. Sunrise Blvd & Monier Circle Drainage Improvements	Previous Action	X	X	X	Prevention Property Protection Structural Projects Natural Resource Protection
Action 13. Preparedness for Evacuations for Various Acute Hazards	Previous Action	X	X	X	Emergency Services
Action 14. Wildfire Weed Reduction and Resiliency	Previous Action	X	X		Prevention Property Protection Natural Resource Protection
Action 15. Implement Climate Action and Adaptation Plan Strategy Adaptation-1: Improve resilience to increased temperature and extreme heat	New Action	X	X		Prevention Property Protection Natural Resource Protection
Action 16. Inspect, Replace, or Concrete-Line Corrugated Metal Pipe Culverts	New Action	X	X	X	Prevention Property Protection Structural Projects Natural Resource Protection
Action 17. Levee sensitivity analysis	New Action	X	X	X	Prevention Property Protection
Action 18. Implement projects in the Rancho Cordova Active Transportation Plan (2026)	New Action	X	X	X	Prevention Structural Projects Emergency Services
Action 19. Replace Undersized Drainage Laterals to Meet Current Drainage Standards	New Action	X	X	X	Prevention Property Protection Structural Projects Natural Resource Protection
Action 20. Add Stream and Flow Gauges at Critical Creek Locations Citywide	New Action	X	X	X	Prevention Property Protection
Action 21. White Rock Underground Detention Project	New Action	X	X	X	Property Protection Structural Projects
Action 22. Coordination with Dam Owners/ Operators	New Action	X	X	X	Emergency Services

Action Title	New Action/ Previous Action	Address Current Development	Address Future Development	Continued NFIP Compliance	Mitigation Type
City of Sacramento Actions					
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 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 Title	New Action/ Previous Action	Address Current Development	Address Future Development	Continued NFIP Compliance	Mitigation Type
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 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 Title	New Action/ Previous Action	Address Current Development	Address Future Development	Continued NFIP Compliance	Mitigation Type
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
American River Flood Control District					
Action 31. Hazardous Vegetation Removal	New Action	X	X	X	Prevention Property Protection Natural Resource Protection
Action 32. Emergency Rock Revetment Stockpile	Previous Action	X	X	X	Prevention Property Protection Natural Resource Protection
Action 33. Back-up Power Supply	New Action	X	X	X	Prevention Property Protection Natural Resource Protection
Citrus Heights Water District					
Action 34. Construct Additional Wells with Aquifer Storage and Recovery (ASR) Technology	Previous Action	X	X		Prevention
Action 35. Construction of a New Storage Tank	Previous Action	X	X		Structural Projects
Cosumnes Community Services District/Fire					
Action 1. Critical Facilities Resilience and Continuity of Operations Enhancement Program	New Action	X	X		Prevention Property Protection Structural Projects Emergency Services
Action 2. Wildfire, Drought, and Extreme Heat Resilience Program	New Action	X	X		Prevention Property Protection Structural Projects Natural Resource Protection
Action 3. Flood and Levee Failure Emergency Preparedness and Critical Facility Protection Program	New Action	X	X	X	Prevention Property Protection Structural Projects Emergency Services
Los Rios Community College District					
Action 4. Continually monitor trees for removal of overgrown and dead branches	Previous Action	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 5. New building design criteria for HVAC	New Action	X	X		Prevention Property Protection
Action 6. Preventative Maintenance for all roof drains	Previous Action	X	X		Prevention Property Protection
Action 7. Preventative Maintenance and inspections for storm water drainage systems	Previous Action	X	X	X	Prevention Property Protection
Reclamation District 800					
Action 1. Reclamation District No. 800 Flood Safety Plan	New Action	X	X	X	Prevention Property Protection Emergency Services
Action 2. Rancho Murieta Erosion Repair Project	New Action	X	X	X	Prevention Property Protection Natural Resource Protection
Action 3. Flood Fight Supplies	New Action	X	X	X	Prevention Property Protection Emergency Services
Reclamation District 1000					
Action 1. Asset Management Plan Update	Previous Action	X	X	X	Prevention Property Protection Structural Projects Emergency Services
Action 2. Corporation Yard Improvements	Previous Action	X	X	X	Prevention Property Protection
Action 3. Waterside Levee Inspection Capability	Previous Action	X	X	X	Prevention Property Protection Natural Resource Protection
Action 4. Emergency Generators for Plants 2, 3, 4, 5, 6 and 8	Previous Action	X	X	X	Prevention Emergency Services
Action 5. Plant 8 Improvements	Previous Action	X	X	X	Prevention Structural Projects
Action 6. Expanded SCADA System	Previous Action	X	X	X	Prevention Property Protection
Action 7. Update Emergency Operations Plan and Staffing	Previous Action	X	X	X	Prevention Emergency Services
Action 8. Expanded Pumping Plant Security Systems	New Action	X	X	X	Prevention Property Protection Emergency Services
Action 9. Enhanced Protection of District Infrastructure from Unauthorized Encampments	New Action	X	X	X	Prevention Property Protection

Action Title	New Action/ Previous Action	Address Current Development	Address Future Development	Continued NFIP Compliance	Mitigation Type
Action 10. Culvert Replacement Program	New Action	X	X	X	Prevention Property Protection Structural Projects Natural Resource Protection
Sacramento County Water Agency					
Action 1. Flood Hazard Mitigation	Previous Action	X	X	X	Prevention Property Protection Structural Projects Natural Resource Protection
Action 2. Improve Water Supply Portfolio	Previous Action	X	X		Prevention Property Protection Structural Projects Natural Resource Protection
Action 3. Seismic Upgrades and Inspections	Previous Action	X	X		Prevention Property Protection Structural Projects
Action 4. Backup Power Generation	New Action	X	X	X	Prevention Emergency Services
Action 5. Invasive Mussel Mitigation	New Action	X	X	X	Prevention Property Protection Natural Resource Protection
Sac Metro Fire District					
Action 6. Station Hardening and Facility Resilience	Previous Action	X	X		Prevention Property Protection Structural Projects
Action 7. Backup Power and Utility Redundancy	New Action	X	X		Prevention Property Protection Structural Projects
Action 8. Wildfire and WUI Mitigation	New Action	X	X		Property Protection Natural Resource Protection
Action 9. Flood and Levee Preparedness	New Action	X	X	X	Property Protection Natural Resource Protection
Action 10. Community Outreach and Education	New Action	X	X	X	Property Protection Natural Resource Protection
Action 11. Operational Continuity and Logistics	New Action	X	X		Property Protection Natural Resource Protection
Action 12. Hazard-Specific Training and Exercises	New Action	X	X	X	Property Protection Natural Resource Protection

Action Title	New Action/ Previous Action	Address Current Development	Address Future Development	Continued NFIP Compliance	Mitigation Type
Action 13. Grant and Funding Strategy	New Action	X	X		Property Protection Natural Resource Protection
SacSewer					
Action 1. Complete and Implement I&I Policy	Previous Action	X	X	X	Prevention Property Protection
Action 2. EchoWater BioGeneration Facility	Previous Action	X	X		Prevention Property Protection Structural Projects
Action 3. Reduction of Fire Hazard of the Bufferlands	Previous Action	X	X		Prevention Property Protection Natural Resource Protection
Action 4. Update GHG Emissions Inventory	Previous Action	X	X		Prevention Property Protection
Action 5. Energy Management Plan	New Action	X	X		Prevention Property Protection
Action 6. Evaluate the Adaptation Strategies Suggested within the Climate Adaptation and Resiliency Plan	New Action	X	X	X	Prevention Property Protection Natural Resource Protection
Action 7. Installation of Backup Generators for Collection System Pump Stations (where applicable and feasible)	New Action	X	X	X	Prevention Property Protection Structural Projects
Action 8. Decommissioned Pipeline Abandonment Removal	New Action	X	X		Prevention Property Protection Structural Projects
Southgate Regional Park District					
Action 1. Drought Mitigation Action/Drought Contingency Plan	Previous Action	X	X		Prevention Property Protection Natural Resource Protection
Action 2. Flood Mitigation/Land Acquisition & Multi-jurisdictional Cooperation	Previous Action	X	X	X	Prevention Property Protection
Action 3. Conservation Easements	Previous Action	X	X		Prevention Property Protection
Action 4. Storm Water Management Practices – Implement Storm Water Management Practices as identified in the Stormwater Quality Design Manual	Previous Action	X	X	X	Prevention Property Protection Structural Projects Natural Resource Protection
Action 5. Tree Management	Previous Action	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 6. Integrate Local Hazard Mitigation Plan into District Master Plan	Previous Action	X	X		Prevention
Action 7. South Sacramento-Florin Cool Parks, Healthy Community Project	New Action	X	X		Prevention Property Protection Natural Resource Protection
Action 8. Green Initiatives	New Action	X	X		Prevention Property Protection Natural Resource Protection
Twin Rivers Unified School District					
Action 1. Districtwide Flood, Stormwater, and Drainage Resilience Program	Previous Action	X	X	X	Prevention Property Protection Structural Projects Natural Resource Protection
Action 2. Districtwide Drought, Water, and Extreme Temperature Resilience Improvements	Previous Action	X	X		Prevention Property Protection Structural Projects Natural Resource Protection
Action 3. Districtwide Wildfire, Smoke, Tree Mortality, and Vegetation Risk Reduction Program	Previous Action	X	X		Prevention Property Protection Natural Resource Protection
Brannan Andrus Levee Maintenance District and Reclamation Districts 317, 407, and 2067					
Action 4. NEED ACTIONS					
Reclamation District 3					
Action 1. Pumpstation Retrofit Project along Unit 1 Steamboat Slough Levee Old and New Pumpstations	Previous Action	X	X	X	Prevention Property Protection Structural Projects Natural Resource Protection
Action 2. Seepage Rehabilitation Project along Unit 1 Steamboat Slough Levee at multiple locations	Previous Action	X	X	X	Prevention Property Protection Natural Resource Protection
Action 3. Pumpstation Retrofit Project along Unit 2 Sacramento River Levee at Ryde Pumpstations	Previous Action	X	X	X	Prevention Property Protection Structural Projects Natural Resource Protection

Action Title	New Action/ Previous Action	Address Current Development	Address Future Development	Continued NFIP Compliance	Mitigation Type
Reclamation District 341					
Action 4. San Joaquin River Setback Levee (previously referred to as San Joaquin River Multi-Benefit Project)	Previous Action	X	X	X	Prevention Property Protection
Action 5. San Joaquin River Multi-Benefit Project	Previous Action	X	X	X	Prevention Property Protection
Reclamation District 349					
ction 1. Pumpstation Retrofit Project along Unit 3 Sutter Slough Levee Pumpstations	Previous Action	X	X	X	Prevention Property Protection Structural Projects Natural Resource Protection
Reclamation District 369					
Action 1. Levee Improvement Projects	Previous Action	X	X	X	Prevention Property Protection Structural Projects Natural Resource Protection
Action 2. Rock Slope Protection	Previous Action	X	X	X	Prevention Property Protection Structural Projects Natural Resource Protection
Action 3. Backup Power Project	Previous Action	X	X	X	Prevention Property Protection Structural Projects Natural Resource Protection
Action 4. Repairs to Existing Pumping Station	New Action	X	X	X	Prevention Property Protection Structural Projects Natural Resource Protection
Action 5. Address Unsafe Encroachments	Previous Action	X	X	X	Prevention Property Protection Structural Projects Natural Resource Protection
Reclamation District 551					
Action 1. Pumpstation Retrofit Project along RD 551 Back Levee	Previous Action	X	X	X	Prevention Property Protection Structural Projects Natural Resource Protection

Action Title	New Action/ Previous Action	Address Current Development	Address Future Development	Continued NFIP Compliance	Mitigation Type
Action 2. Pumpstation Retrofit Project: RD 551 Lake Lift Pumpstation	Previous Action	X	X	X	Prevention Property Protection Structural Projects Natural Resource Protection
Action 3. Pumpstation Retrofit Project along Unit 1 Sacramento River Levee Pumpstations	Previous Action	X	X	X	Prevention Property Protection Structural Projects Natural Resource Protection
Action 4. Seepage Rehabilitation Project along Unit 1 Sacramento River Levee: LM 0.1 – 0.9	Previous Action	X	X	X	Prevention Property Protection Natural Resource Protection
RD 554					
Action 1. Levee Improvement Projects	Previous Action	Y	Y	N	Prevention Property Protection Structural Projects Natural Resource Protection
Action 2. Rock Slope Protection	Previous Action	Y	Y	N	Prevention Property Protection Structural Projects Natural Resource Protection
Action 3. Backup Power Project	New Action	Y	Y	N	Prevention Property Protection Natural Resource Protection
Action 4. Repairs to Existing Pumping Station	New Action	Y	Y	N	Prevention Property Protection Structural Projects Natural Resource Protection
Action 5. Address Unsafe Encroachments	Previous Action	Y	Y	N	Prevention Property Protection Natural Resource Protection
Action 6. Interior Drainage Improvements	Previous Action	Y	Y	N	Prevention Property Protection Structural Projects Natural Resource Protection
Action 7. Cross Levee Protection	New Action	Y	Y	N	Prevention Property Protection Natural Resource Protection

Action Title	New Action/ Previous Action	Address Current Development	Address Future Development	Continued NFIP Compliance	Mitigation Type
RD 556					
Action 1. Levee Improvement Projects	Previous Action	X	X	X	Prevention Property Protection Natural Resource Protection
Action 2. Rock Slope Protection	Previous Action	X	X	X	Prevention Property Protection Natural Resource Protection
Action 3. Backup Power Project	New Action	X	X	X	Prevention Property Protection Natural Resource Protection
Action 4. Repairs to Existing Pumping Station	New Action	X	X	X	Prevention Property Protection Natural Resource Protection
Action 5. Address Unsafe Encroachments	Previous Action	X	X	X	Prevention Property Protection Natural Resource Protection
Action 6. Interior Drainage Improvements	Previous Action	X	X	X	Prevention Property Protection Natural Resource Protection
Action 7. Relief Cut Plan	New Action	X	X	X	Prevention Property Protection Natural Resource Protection
Action 8. Cross Levee Protection	New Action	X	X	X	Prevention Property Protection Natural Resource Protection
Reclamation District 563					
Action 1. Rock Slope Protection Project	Previous Action	X	X	X	Prevention Property Protection Natural Resource Protection
Action 2. Levee Geometry Levee Improvement Project	Previous Action	X	X	X	Prevention Property Protection Structural Projects Natural Resource Protection
Action 3. Levee Seepage Repair Project	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 4. Backup Power Generator Project	Previous Action	X	X	X	Prevention Property Protection Emergency Services
Reclamation District 1002					
Action 1. Levee Improvement Projects	Previous Action	X	X	X	Prevention Property Protection Natural Resource Protection
Action 2. Rock Slope Protection	Previous Action	X	X	X	Prevention Property Protection Natural Resource Protection
Action 3. Backup Power Project	New Action	X	X	X	Prevention Property Protection Natural Resource Protection
Action 4. Repairs to Existing Pumping Station	New Action	X	X	X	Prevention Property Protection Natural Resource Protection
Action 5. Address Unsafe Encroachments	Previous Action	X	X	X	Prevention Property Protection Natural Resource Protection
Action 6. Interior Drainage Improvements	Previous Action	X	X	X	Prevention Property Protection Natural Resource Protection
Action 7. Relief Cut Plan	New Action	X	X	X	Prevention Property Protection Natural Resource Protection
Action 8. Railroad Berm Protection	New Action	X	X	X	Prevention Property Protection Natural Resource Protection
Reclamation District 1601					
Action 1. Levee Improvement Project	Previous Action	X	X	X	Prevention Property Protection Structural Projects Natural Resource Protection
Action 2. Rock Slope Protection Project	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 3. San Joaquin River Setback Levee	Previous Action	X	X	X	Prevention Property Protection Structural Projects Natural Resource Protection
Action 4. Backup Power Project	Previous Action	X	X	X	Prevention Property Protection Emergency Services
Reclamation District 2111					
Action 1. Rock Slope Protection Project	Previous Action	X	X	X	Prevention Property Protection Natural Resource Protection
Action 2. Levee Improvement Projects	Previous Action	X	X	X	Prevention Property Protection Structural Projects Natural Resource Protection
Action 3. Siphon Project	Previous Action	X	X	X	Prevention Property Protection
Action 4. Backup Power Project	Previous Action	X	X	X	Prevention Property Protection Emergency Services
Action 5. Flood Safety Plan Updates, Training, and Exercises	Previous Action	X	X	X	Prevention Emergency Services
Delta Region Geologic Hazard Abatement District					
Action 1. Expand efforts to provide community based flood insurance.	New Action	X	X	X	Prevention Property Protection Natural Resource Protection
Action 2. Obtain funding to support the long-term management of the DR-GHAD.	New Action	X	X		Prevention Property Protection Natural Resource Protection
Action 3. Conduct education and outreach to the community on new options for flood insurance.	New Action	X	X	X	Prevention Property Protection Natural Resource Protection
Action 4. Provide support to the City of Isleton and BALMD in efforts to obtain funding for levee maintenance.	New Action	X	X	X	Prevention Property Protection Natural Resource Protection
Action 5. Continue efforts to expand the community based insurance program to the entire Delta	New Action	X	X	X	Prevention Property Protection Natural Resource Protection

5.4.1. Sacramento County Mitigation Actions

Multi-Hazard Mitigation Actions

Action 1. Enhance Public Education and Awareness of Natural Hazards and Public Understanding of Disaster Preparedness

Hazards Addressed: Multi-hazard (Aquatic Invasive Species, Climate Change, Dam Failure, Drought & Water shortage, Earthquake, Floods: 1%/0.5%/0.2% annual chance, Floods: Localized Stormwater, Levee Failure, Sea Level Rise, Severe Weather: Extreme Cold and Freeze, Severe Weather: Extreme Heat, Severe Weather: Heavy Rains and Storms, Subsidence, and Wildfire)

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

Issue/Background (Problem Statement): Sacramento County plays 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 County will work with 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 and will consider:

- Using a variety of information outlets, including websites, local radio stations, news media, schools, and local, public sponsored events;
- Creating and distributing (where applicable) brochures, leaflets, water bill inserts, websites, and public service announcements;
- Displaying public outreach information in County office buildings, libraries, and other public places and events;
- Developing public-private partnerships and incentives to support public education activities.

Other Alternatives: Continue public information activities currently in place.

Existing Planning Mechanism(s) through which Action Will Be Implemented: Existing County outreach programs will be reviewed for effectiveness and leveraged and expanded upon to reach the broader region.

Responsible Office/Partners: Sacramento County OES, County Public Information Office (PIO), DWR, incorporated communities, and other jurisdictions

Project 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. by specific type): County General Fund, California's State Homeland Security Program (SHSP)

Timeline: To be initiated within 5 years and ongoing/annual public awareness campaign

Project Priority (High, Medium, Low): Medium

Action 2. Integrate Local Hazard Mitigation Plan into Safety Element of General Plan

Hazards Addressed: Multi-hazard (Aquatic Invasive Species, Climate Change, Dam Failure, Drought & Water shortage, Earthquake, Floods: 1%/0.5%/0.2% annual chance, Floods: Localized Stormwater, Levee Failure, Sea Level Rise, Severe Weather: Extreme Cold and Freeze, Severe Weather: Extreme Heat, Severe Weather: Heavy Rains and Storms, Subsidence, and Wildfire)

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: Sacramento County Planning Department and planning departments for each incorporated jurisdiction.

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 (General Funds, Staff Time)

Timeline: In conjunction with and/or within 1 year of adoption of the 2026 Sacramento County Multi-Jurisdictional LHMP Update

Project Priority: High

Action 3. Evacuation Planning Countywide

Hazards Addressed: Multi-hazard

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

Issue/Background (Problem Statement): Sacramento's unique geography and riverine systems make evacuation difficult and constrained by bridges and other elements. Refining the evacuation zones is necessary to study and identify corridors for improvement and/or provide identification of areas where rapid or early evacuation may be necessary. Sacramento County's unincorporated Wildland-Urban Interface (WUI) communities may also experience evacuation route constraints due to limited roadway network redundancy and roadside fuel loading. In portions of eastern Sacramento County, some roadways serve as both a primary evacuation route and a fire apparatus ingress route, which may present operational challenges during simultaneous evacuations and emergency response.

Project Description: The evacuation zone mapping and hazard threat assessment will help in the county's compliance with SD 99 and AB 747 regarding evacuation corridor capacity and multiple community egress. Once the elements are studied, they may be applied to zone mapping criteria. Following mapping, an awareness campaign to inform residents of their relative risk and familiarize them with their zones and primary routes of travel will be necessary. The software that would be used is Zonehaven or similar GIS-based product that can integrate with the county's alerting system. This will include incorporating CAL FIRE Fire Hazard Severity Zone (FHSZ) maps in the County Parcel Viewer and evaluating evacuation routes in WUI areas to identify potential constraints and improvement opportunities; considering WUI Evacuation Route Standards for new development in FHSZ areas, evaluated in coordination with SacOES and DOT; evaluating opportunities to improve evacuation route directional signage in WUI communities consistent with County evacuation mapping; and, where supported by available funding and departmental priorities, evaluating potential evacuation route improvements and identifying priority capital improvement opportunities. At a high level, this effort will also identify wildfire-prone WUI communities with constrained or limited evacuation route redundancy, consider whether any residential areas lack at least two viable evacuation routes, and evaluate evacuation route capacity, safety, and viability under a range of emergency scenarios, including compatibility with simultaneous emergency responder access, consistent with the Board of Forestry and Fire Protection's Safety Element review criteria; findings will help inform future Safety Element, circulation, and capital improvement planning.

Other Alternatives: Increase capacity of corridors used for evacuation. Additional alternatives considered for this action: Public education about existing routes only, without infrastructure improvements, was not advanced because physical roadway constraints cannot be resolved through education alone. New development standards only, without addressing existing route deficiencies, were not advanced because existing roadway constraints would remain unaddressed in developed communities. No action was not advanced given documented evacuation congestion and corridor capacity risk. Increasing capacity of corridors

used for evacuation, as identified above, remains the preferred direction alongside evacuation zone mapping, WUI route assessment, and signage improvements.

Existing Planning Mechanism(s) through which Action Will Be Implemented: Emergency Operations Plan, Evacuation Annex, technological improvements for push-publication of real-time GIS data to public, SACOG corridor capacity studies, MARAC Region IV Evacuation Guidelines, General Plan Safety Element (SA-33 through SA-36), 2024 Climate Action Plan, County Evacuation Zone Maps (CAL FIRE, 2023), CAL FIRE Fire Prevention Standards, Sacramento County Subdivision and Land Division Ordinance, Sacramento County Capital Improvement Plans.

Responsible Office/Partners: Sacramento County OES, Sacramento County Department of Transportation (DOT), Sacramento County Planning & Environmental Review (PER), California Highway Patrol, local fire protection districts, CAL FIRE, and Sacramento Regional Transit (SacRT)

Benefits (Losses Avoided): Improvements to corridors and/or capacities to evacuate greater numbers of people. Improvement to the resiliency of corridors to allow more of the community to shelter-in-place for certain disaster types

Potential Funding (Local Budgets, Grant Funds, etc. by specific type): Roadway improvement funding, capital improvement program funding, FEMA Hazard Mitigation Grant Program (HMGP), FEMA Pre-Disaster Mitigation (PDM), CAL FIRE Wildfire Prevention Grants (Proposition 4 and GGRF), California Transportation Commission (CTC) Active Transportation Program, FHWA/Caltrans Highway Safety Improvement Program (HSIP), Proposition 4 (Wildfire Resilience)

Timeline: Within 5 years Full phased timeline for this action: Short-term (0-1 yr): Evaluate incorporation of CAL FIRE FHSZ maps in the County Parcel Viewer; identify priority WUI communities for additional evacuation route assessment; and coordinate with partner agencies regarding future planning efforts (e.g., WUI Evacuation Route Standards). Mid-term (1-3 yrs): If supported through available funding and departmental priorities, evaluate potential evacuation route improvements, identify priority capital improvement opportunities, and consider directional signage enhancements where appropriate; continue evacuation zone mapping, hazard threat assessment, and Zonehaven (or similar GIS-based) integration with the county's alerting system, along with the public awareness campaign on zones and primary routes of travel. Long-term (3-5 yrs): Continue coordination with partner agencies to support long-term evacuation planning efforts and, where appropriate, advance recommendations through established County planning and capital improvement processes, consistent with the overall 5-year action timeline.

Project Priority (High, Medium, Low): High

Action 4. Expand Broadband/Wifi Access

Hazards Addressed: Multi-hazard

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

Issue/Background (Problem Statement): The COVID-19 Pandemic has brought to light disparities in access to broadband and Wi-Fi within communities.

Project Description: Wifi and broadband access would be distributed at strategically identified county facilities. The installation of additional towers in the Sacramento-San Joaquin Delta would address existing coverage gaps that disadvantage that community from receiving timely safety information.

Other Alternatives: Partner with companies installing 5G and explore additional wireless alternatives.

Existing Planning Mechanism(s) through which Action Will Be Implemented: None identified.

Responsible Office/Partners: Sacramento County OES, Sacramento County Department of General Services (DGS), Sacramento County Department of Technology (DTECH), Sacramento County Regional Parks

Benefits (Losses Avoided): Improvements to areas of the county without adequate coverage. This will foster more rapid technology that uses automated alert and warning such as Shake Alert, Alert Notifications, Levee Failure and Flash Flood Warnings or other sensor technologies used to study conditions for potential future mitigation or provide warning.

Potential Funding (Local Budgets, Grant Funds, etc. by specific type): FEMA HMGP, California Advanced Services Fund (CASF)

Timeline: Within 1- 5 years

Project Priority (High, Medium, Low): High

Action 5. Rancho Murieta Resilience Plan

Hazards Addressed: Multi-Hazard – Project will identify wildfire and flooding hazards that affect emergency vehicle egress and resident evacuation along State Route 16 (closed emergency evacuation routes, damaged infrastructure, loss of capacity, etc.).

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

Issue/Background (Problem Statement): Rancho Murieta is disproportionately exposed and vulnerable to both wildfire and flooding phenomena and needs to be prepared for an increasing number of events. There are very limited existing facilities available to respond in the event of a disaster. The sole fire station in the community, Sacramento Fire District Station 59, has limited capacity, and there are only three evacuation routes, each with limited traffic capacity. The population of the community is expected to grow from 6,000 to 9,000 because of the approved and planned developments. It is critical to address infrastructure needs now due to the community's existing vulnerability.

Project Description: The Rancho Murieta Resilience Plan is a data-driven approach to making a more resilient Rancho Murieta. Recent wildfires and flooding in areas surrounding Rancho Murieta revealed improvements needed in the transportation system that would improve community safety. SacDOT must make informed decisions on infrastructure needs to better facilitate evacuation and emergency response during future wildfire and flooding events. To that end, Sacramento County will engage important stakeholders in developing the Rancho Murieta Resilience Plan, likely including the established Rancho

Murieta Fire Safe Council, various County agencies, California Department of Forestry and Fire Protection (CAL FIRE), the Miwok Native American tribe, and more.

Other Alternatives: No Action

Existing Planning Mechanism(s) through which Action Will Be Implemented: The final resilience plan will be prepared to align with the California State Adaptation Strategy, CalSTA's Climate Action Plan for Transportation Infrastructure, OPR's Integrated Climate Adaptation and Resiliency Program (ICARP) program, SACOG climate adaptation strategies, and Sacramento County's Climate Action Plan.

Responsible Office/Partners: Sacramento County Department of Transportation

Project Benefits (Losses Avoided): The identified improvements in the final resilience plan will reflect the highest combined benefits in terms of climate vulnerability reduction, mobility enhancement, community support, and general feasibility based on planning level information.

Potential Funding (Local Budgets, Grant Funds, etc. by specific type): The alignment with the planning mechanisms above supports eligibility for future grant and other funding opportunities, including PROTECT program grants and additional state or federal resilience funding.

Timeline: The Rancho Murieta Resilience Plan will be completed by spring of 2027.

Project Priority: High

Action 6. LU-1: Climate-Resilient Development Standards — Land Use Policy

Hazard Addressed: Multi-Hazard: Extreme Heat, Wildfire, Flood, Wildfire Smoke — Land Use Planning

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

Issue/Background (Problem Statement): Sacramento County's current land use and development standards address individual hazards separately, with no integrated framework addressing multiple climate hazards simultaneously. For discretionary projects, all relevant land use entities are involved and may provide comments and conditions consistent with their roles and applicable regulatory documents. It is typically non-discretionary actions — such as Design Review, building permits, and some grading — that are not associated with a discretionary project and therefore may be handled in a more siloed manner without an integrating framework. The 2024 CAP (TEMP-04, TEMP-07) identifies cool roof, cool pavement, and cooling center strategies as climate adaptation priorities. Communities in the unincorporated County may experience multiple forms of climate vulnerability including urban heat island effects, wildfire smoke, and flood exposure. SB 379 and the 2024 CAP provide policy direction for considering a multi-departmental Climate Resilience Ordinance.

Project Description: Consider evaluating the feasibility of a multi-departmental Climate Resilience Ordinance, with a particular focus on non-discretionary development that is not subject to the coordinated conditions associated with discretionary project review. If determined to be appropriate, actions may consider:

(1) Climate Vulnerability Overlay: Evaluate the use and development of a GIS-based Climate Vulnerability Layer that may integrate available data such as urban heat island (UHI) indices, CAL FIRE Fire Hazard Severity Zones (FHSZ), FEMA floodplain designations, wildfire smoke exposure zones, and disadvantaged community boundaries consistent with the Environmental Justice Element and CalEnviroScreen 5.0, and Cal-Adapt 5th Assessment Climate Projections, to identify areas that may benefit from enhanced climate standards;

(2) Cool Design Standards: Consider evaluating and establishing standards for new development and substantial renovations consistent with 2024 CAP measures TEMP-04 (cool roof technologies) and TEMP-07 (cool pavement and reduced paved surfaces), as identified in the adopted CAP. The appropriate regulatory vehicle would be determined through coordination with PER's Current Planning and Zoning Administration, County Counsel, and other appropriate County departments/sections;

(3) Green Infrastructure and Low Impact Development (LID): Consider whether green infrastructure measures (e.g., bioswales, permeable pavement) may be appropriate as potential planning or development considerations (e.g., conditions of approval) for applicable development projects, in coordination with DWR;

(4) Air Quality Design Considerations: In coordination with SMAQMD, consider whether enhanced air filtration or ventilation measures may be appropriate for new sensitive-receptor buildings in areas with elevated wildfire smoke exposure, consistent with applicable CAP adaptation measures; and,

(5) Flood-Resilient Site Design: Consider and evaluate flood-resilient site design guidelines for new development in or near floodplain areas. This effort may incorporate and build upon standards already established in the County Floodplain Management Ordinance and could explore opportunities to encourage freeboard beyond minimum National Flood Insurance Program(NFIP) requirements consistent with climate-intensified flood projections. Any overlap with the existing Floodplain Management Ordinance provisions would be evaluated to avoid duplication.

Other Alternatives:

Alt. 1: Address standards hazard-by-hazard through separate code amendments — not advanced; may not adequately address multiple climate hazards through a coordinated framework.

Alt. 2: Adopt voluntary guidelines without any standards — not advanced; voluntary approaches may result in inconsistent application in high-risk areas.

Alt. 3: No action — not appropriate given increasing climate-vulnerable development applications.

Existing Planning Mechanism(s) through which Action Will Be Implemented: Sacramento County 2024 Climate Action Plan (TEMP-04, TEMP-07, and related adaptation measures); General Plan Safety Element; General Plan Conservation and Open Space Element; General Plan Environmental Justice Element; Sacramento County Zoning Code; Sacramento County Design Guidelines; CBC Chapter 7A (WUI Construction); SB 379; County Floodplain Management Ordinance (NFIP compliance); CalEnviroScreen 5.0; Cal-Adapt 5th Assessment Climate Projections; SMAQMD.

Responsible Office/Partners:

Lead: Sacramento County Planning & Environmental Review (PER) — with the lead implementation section (e.g. Zoning Administration, Long Range, etc.) to be determined based on the scope and regulatory approach of any future work

Partners: PER; Building Permits & Inspection (BPI); DOT Engineering; SMAQMD; Sacramento County Office of Emergency Services (SacOES); CAL FIRE; Sacramento County Water Agency (SCWA) / Department of Water Resources (DWR); County Counsel.

Project Benefits (Losses Avoided): May reduce cumulative climate exposure for new development across multiple hazard types; may support cool design in vulnerable communities consistent with 2024 CAP measures; may reduce stormwater runoff through green infrastructure; may support future evaluation of climate-informed planning approaches where appropriate; potential FEMA CRS credit opportunities.

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

- FEMA BRIC Program (planning and regulatory standards development)
- CAL FIRE Wildfire Prevention Grants
- Strategic Growth Council — Transformative Climate Communities
- SMAQMD Planning Grant
- FEMA HMGP Planning
- California OPR Technical Assistance
- Sacramento County General Fund / PER Operating Budget (staff time)

Timeline:

Short-term (0–12 months): Convene cross-departmental working group (PER, Zoning, Building, Engineering, SMAQMD, OES) to evaluate potential regulatory approaches, implementation considerations, departmental roles, and funding opportunities..

Mid-term (1–3 yrs): If supported through available funding and Board direction, evaluate potential ordinance concepts; develop draft standards; conduct stakeholder and community outreach; and prepare recommendations for future Board consideration, as appropriate.

Long-term (3–5 yrs): Adopt and implement standards (if adopted); monitor progress and evaluate outcomes if adopted.

Project Priority: HIGH — Supports 2024 CAP adaptation measures; SB 379 policy consistency; CRS credit opportunity.

Action 7. EJ-1: Vulnerable Community Integration -- Equity Protocol (PER Lead)

Hazard Addressed: Environmental Justice / Vulnerable Communities -- All Hazards

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

Issue/Background (Problem Statement): Sacramento County's 2021 LHMP included limited spatial analysis connecting identified vulnerable communities with individual mitigation actions. Sacramento County's Environmental Justice (EJ) Element and CalEnviroScreen 5.0 serve as the primary planning tools for identifying disadvantaged communities and assessing community vulnerability in the unincorporated area. The LCI Vulnerable Communities Platform (lci.ca.gov) provides an additional spatial equity dataset that may be considered as a supplemental layer planning resource alongside the adopted EJ Element and CalEnviroScreen 5.0. SB 379 requires applicable General Plan Safety Element updates to specifically address climate vulnerability and adaptation, including consideration of vulnerable communities. The 2024 CAP also requires equity-centered planning.

Project Description: Consider evaluating and developing a Vulnerable Community Integration Planning Framework to support PER's LHMP and Safety Element planning work. Actions may include:

(1) Evaluate available vulnerability and hazard datasets, including the Environmental Justice Element, CalEnviroScreen 5.0, the LCI Vulnerable Communities Platform, and applicable Cal-Adapt 5th Assessment hazard projections, to identify potential areas of overlapping community and hazard vulnerability;

(2) Consider using the resulting analysis to evaluate how proposed LHMP mitigation actions may serve communities experiencing elevated hazard and socioeconomic vulnerability and to identify potential planning gaps.;

(3) Evaluate whether vulnerability information may appropriately inform future PER planning or discretionary project-review practices, subject to applicable law, adopted County policy, departmental procedures, and future management or Board direction.;

(4) Evaluate the inclusion of appropriate vulnerability and equity mapping in a future General Plan Safety Element update, consistent with SB 379, the adopted Environmental Justice Element, and applicable County planning processes;

(5) Support multilingual, accessible, and culturally responsive outreach for LHMP-related public engagement, particularly in communities experiencing elevated vulnerability, in coordination with appropriate departments and community partners.

Other Alternatives:

Alt. 1: Use Environmental Justice Element and CalEnviroScreen 5.0 only, without considering additional datasets -- not advanced as the sole analytical approach; supplemental resources such as the LCI VCP adds current compound vulnerability data that complements the adopted EJ Element and CalEnviroScreen resources.

Alt. 2: Address equity considerations only in the CAP, not in the LHMP -- not advanced; integrating available vulnerability information into hazard-mitigation planning may improve consistency among the LHMP, Safety Element, Environmental Justice Element, and CAP and may support applicable federal and state planning requirements.

Alt. 3: Qualitative equity narrative without spatial screening -- not advanced; appropriate spatial analysis may provide a more transparent and useful basis for evaluating community vulnerability and informing future mitigation priorities.

Existing Planning Mechanism(s) through which Action Will Be Implemented: LCI Vulnerable Communities Platform (lci.ca.gov); CalEnviroScreen 5.0 (OEHHA); Cal-Adapt 5th Assessment; SB 379 (2023); Sacramento County 2024 CAP; CAP Climate Vulnerability Assessment (Ascent Environmental, 2017); Sacramento County General Plan EJ and Safety Element; FEMA LHMP Requirements (44 CFR Part 201); OPR General Plan Guidelines (2020).

Responsible Office / Partners:

Lead: Sacramento County Planning & Environmental Review (PER) -- Long-Range Planning

Partners: Sacramento County Office of Emergency Services (SacOES); Sacramento County Public Health (SCPH); and other departments involved in community engagement and emergency planning; Community-Based Organizations (CBOs); and Department of Technology/GIS staff.

Project Benefits (Losses Avoided): May improve consideration of community vulnerability within LHMP and Safety Element planning; may support consistency with applicable FEMA and SB 379 planning expectations; may help identify potential gaps in the geographic distribution of mitigation actions; may improve transparency and community engagement; may provide a repeatable framework for future planning updates; and may support alignment with adopted Environmental Justice Element and CAP equity objectives.

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

- LCI VCP and Cal-Adapt data publicly available at no cost
- FEMA BRIC Program (equity integration is a scoring factor)
- Strategic Growth Council Transformative Climate Communities grants
- CDPH Office of Health Equity Climate Grants
- OPR SB 379 Technical Assistance (no cost)

Timeline:

Short-term (0-6 months): Compile and review available equity and hazard datasets, including the Environmental Justice Element, CalEnviroScreen 5.0, applicable Cal-Adapt projections, and supplemental resources; evaluate data compatibility and potential analytical approaches; and share preliminary findings with applicable working groups.

Short to Mid-term (6-18 months): If determined to be methodologically appropriate, develop a multi-hazard equity overlay and use it to evaluate the geographic distribution and community relevance of proposed LHMP mitigation actions.

Mid-term (1-2 yrs): Evaluate opportunities to incorporate appropriate vulnerability information into a future Safety Element update(GP-1), as appropriate; and consider developing consistent multilingual and

culturally responsive outreach practices in coordination with appropriate County departments and community partners.

Long-term (3+ yrs): If supported through future management or Board direction, applicable law, and departmental priorities, evaluate whether vulnerability information may appropriately inform additional PER planning processes. Periodically review and update the datasets used in the framework as new information becomes available.

Project Priority: HIGH -- Supports equitable hazard-mitigation planning, future Safety Element climate-adaptation efforts, coordination with the adopted Environmental Justice Element and CAP, and improved consideration of vulnerable communities across PER-led LHMP actions.

Action 8. Critical Facility Inventory and GIS Mapping Updates and Maintenance

Hazards Addressed: Multi-Hazard (priority and non priority hazards)

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

Issue/Background (Problem Statement): As part of the 2021 LHMP Update project, Sacramento County Office of Emergency Services (OES) obtained a variety of new Critical Facility datasets to create an updated critical facility and infrastructure GIS layer and database to support emergency management efforts within the County. These datasets, comprised of federal, state, and local data, were consolidated and mapped in 2020/2021 to support the 2021 Sacramento County LHMP. The GIS datasets and GIS layer were provided to County GIS in 2021 with recommendations for updating and maintaining this data in a coordinated effort with the incorporated communities and other key stakeholders.

Specifically, it was recommended that the County use the 2021 GIS critical facility and infrastructure database as a starting point to work with County OES, County GIS, incorporated communities, and other key stakeholders to validate and refine the data to establish a locally vetted, working critical facility database and GIS layer moving forward that would provide a consistent layer to be used by all Sacramento County jurisdictions.

Once a final critical facility database is established, County OES and GIS departments will conduct periodic maintenance and updating of this data with key jurisdictions and stakeholders to keep it current and usable for future projects and to ensure a consistent database for use by all Sacramento County jurisdictions.

Project Description: Sacramento County OES and GIS departments will work with incorporated communities and other key stakeholders to update the 2021 critical facility and infrastructure database and GIS layer. Maintenance of this GIS data and layer will be done as needed.

Other Alternatives: No action; each jurisdiction continues to their own critical facility and infrastructure layers.

Existing Planning Mechanism(s) through which Action Will Be Implemented: County OES program and Emergency Management Plans and Data

Responsible Office/Partners: Sacramento County OES and Sacramento County GIS, in conjunction with emergency management and GIS departments from incorporated communities and other key stakeholders

Project Benefits (Losses Avoided): Life Safety, property protection. Reduced risk to critical facilities in the County from natural hazard events and future disasters.

Potential Funding: Local Budgets (General Fund, Staff time); FEMA grants (HMGP, BRIC), other funding to be identified

Timeline: To be initiated in 1-2 years and ongoing (periodic updates)

Project Priority (H, M, L): Medium

Action 9. Establish Local Resilience Hubs with Backup Power

Hazards Addressed: Severe Weather: Extreme Cold and Freeze, Severe Weather: Extreme Heat, Severe Weather: Heavy Rains and Storms, Severe Weather: High Winds and Tornadoes, Climate Change, Flood: 1%/0.5%/0.2% Annual Chance, Flood: Localized Stormwater, Dam Failure, Levee Failure, Wildfire, Sea Level Rise

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

Issue/Background (Problem Statement): Due to climate change, the county will experience increasingly severe weather events. As Sacramento begins to experience temperature extremes and more frequent storm systems, the likelihood of those weather events being combined with a widespread loss of power is increased. Extreme temperatures are harmful to public health while both extreme heat and high winds can increase stress on the electric grid, leading to blackouts. Power outages during extreme heat events would leave homeowners and residents without options to adequately cool their homes. For those with all-electric homes, power outages during the winter extreme weather events could leave residents without options to adequately heat their home. During these events, support is needed for displaced, homeless, or otherwise vulnerable individuals who lack public health information, access to essential and emergency resources, and/or adequate shelter.

When certain extreme heat temperature thresholds are met, the County Office of Emergency Services (OES) activates communitywide cooling centers. Because OES does not own or operate community cooling centers, it requests activation from partner entities. Sacramento County Department of Homeless Services and Housing (DHSH) activates Weather Respite Centers for the unhoused during both extreme heat and cold events. However, many of these sites can quickly reach capacity and most lack sufficient backup power.

Project Description: This project would identify and upgrade existing facilities to act as community resilience hubs. These spaces can serve as community connectors, providing public health education, healthcare services, and access to healthy food and clean water. They function as resource hubs during normal conditions and offer safe respite during extreme weather events and natural disasters. The facilities should be upgraded with solar power, battery backup, and microgrid capabilities to ensure that the centers could

maintain operations during power outages. Over time, they may also incorporate community gardens and be located near farmers markets.

Other Alternatives: 211 Sacramento County services, building code requirements to ensure new construction homes are self-sufficient and provide stable indoor temperatures during long-term power outages combined with severe weather.

Existing Planning Mechanism(s) through which Action Will Be Implemented: Severe Weather Cold and Freeze Emergency Plan, General Plan, building codes, County Climate Action Plan

Responsible Office/Partners: Sacramento County OES, Sacramento County Department of General Services (DGS), Sacramento County Department of Homeless Services and Housing (DHSH), resilience hub property owners/managers

Project Benefits (Losses Avoided): These hubs help reduce deaths, illness, displacement, and crisis incidents by providing protection from environmental hazards and public health risks. Facility batteries could be charged by the onsite solar systems, thereby reducing demand on grid infrastructure.

Potential Funding (Local Budgets, Grant Funds, etc. by specific type): County Capital Improvement Program Funds; FEMA HMGP, FEMA BRIC funding, California Climate Resiliency Grants, such as ICARP Adaptation Planning Grants, and Community Resilience Centers Program

Timeline: Within 1- 5 years

Project Priority (High, Medium, Low): High

Climate Change Actions

Action 10. Implement and improve telecommuting and remote work access for County operations

Hazards Addressed: Climate Change

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

Issue/Background (Problem Statement): The majority of Sacramento County local government operations greenhouse gas (GHG) emissions are from employee commuting. Allowing for remote work can result in significant, measurable decreases in traffic, air pollution, and GHG emissions. Post COVID-19 pandemic, the ability to work remotely, whether from home or alternative work locations, has proven feasible, and will remain as a component of business and government operations. Providing more resources to support the ability to remotely work and decentralize government operations will provide lasting public health, climate, and national security benefits.

Project Description: This project could include high-speed broadband access, computer hardware, backbone infrastructure, and software solutions.

Other Alternatives: Return to the pre-COVID model of centralized government operations.

Existing Planning Mechanism(s) through which Action Will Be Implemented: This action could be implemented through changes to internal County policies such as information technology, purchasing, and capital improvements. The action would also be coordinated with labor organizations and their agreements. This action is consistent with and supportive of measures and policies in the County Climate Action Plan.

The action would dovetail with existing programs such as the State Homeland Security Program (SHSP) and the Urban Area Security Initiative (UASI).

Responsible Office/Partners: Sacramento County Executive Office, Sacramento County Department of Technology (DTECH), Sacramento County Department of Personnel Services (DPS), Sacramento County OES, Sacramento County Planning & Environmental Review (PER), Sacramento County Department of General Services (DGS)

Benefits (Losses Avoided): This action would reduce the effects of climate change through the reduction of GHG emissions associated with employee commute trips. This action has the added co-benefit of reducing public health risks from communicable diseases by allowing for safe distances. It also supports dispersed personnel and decentralized infrastructure and services; thus making the community more resilient to natural or man-made disasters by minimizing the target footprint and assuring a pathway for continuity of operations.

Potential Funding (Local Budgets, Grant Funds, etc. by specific type): FEMA hazard mitigation grant program grants, California Advanced Services Fund (CASF). Local, state, and private funding. Other grants, incentives, and donations, including in-kind services

Timeline: 1-3 years

Project Priority (High, Medium, Low): Medium

Action 11. Implement the actions contained within the Sacramento County Climate Action Plan

Hazards Addressed: Climate Change, Multi-hazard

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

Issue/Background (Problem Statement): In recent decades, human activities (e.g., burning of fossil fuels for transportation and energy, increasing rates of deforestation and development) have contributed to elevated atmospheric greenhouse gas (GHG) concentrations. Human-caused emissions of GHGs above natural ambient concentrations are responsible for intensifying the greenhouse effect, leading to a trend of unnatural warming of the Earth's climate, known as global climate change, or global warming. Global climate change has a number of adverse effects on natural resources and the human population.

The climate change effects that apply to the Sacramento region include: (1) more severe or frequent flooding events; (2) increased temperatures and more severe extreme heat events; (3) sea level rise; (4) increases in the frequency and severity of wildfire events; and (5) more intense or prolonged periods of drought. These changes can cause a wide variety of secondary consequences, including human health and safety risks, economic disruptions, diminished water supply, shifts in ecosystem function and habitat qualities, and difficulties with provision of basic services, many of which Sacramento County is currently experiencing.

In response, the County developed a Climate Action Plan (CAP) in 2024 to provide a comprehensive roadmap to achieve carbon neutrality and increase climate resilience. The CAP includes measures and actions that can be taken to address the urgent need to both mitigate and adapt to climate change.

Project Description: This project would include the implementation of the GHG reduction and adaptation measures and actions contained within Sacramento County's CAP. There are 66 measures (or broad strategies) and 265 specific actions in the CAP, with each action supporting the achievement of a measure. Actions can include polices, programs, incentives, plans, codes, studies, capital improvements, education and outreach, and data tracking processes, among others.

The CAP GHG reduction measures generally cover the following themes:

- Enhance carbon sequestration by promoting carbon farming and expanding the urban forest
- Decarbonize existing and new buildings
- Support zero carbon electricity
- Increase zero emissions vehicles and equipment
- Reduce vehicle miles traveled, promote active transportation and transit, and increase infill
- Increase organic waste diversion and landfill gas capture
- Improve energy and water efficiency

The CAP adaptation measures generally cover the following themes:

- Study the impacts of climate change hazards on local resources (e.g., agriculture and water supply)
- Identify vulnerable areas and assets (e.g., areas vulnerable to flooding or fire)
- Develop new plans to address vulnerabilities

- Protect critical infrastructure against climate hazards (e.g., utilities)
- Expand climate resiliency services in environmental justice communities (e.g., cooling centers)
- Encourage use of resilient technologies across the county (e.g., cool roofs/pavements)
- Develop new infrastructure to respond to hazards and use green infrastructure solutions (e.g., tree shade, replanting, etc.)
- Increase water efficiency and conservation
- Coordinate and improve emergency preparedness systems
- Improve emergency evacuation routes
- Expand education and outreach on hazards and responses
- Partner with other agencies on climate adaptation efforts
- Integrate climate change impacts into future planning processes
- Continue to monitor local impacts of climate change

Other Alternatives: Manage climate impacts in isolation by addressing each emission source and hazard separately rather than through a unified, comprehensive planning approach.

Existing Planning Mechanism(s) through which Action Will Be Implemented: Updates to the General Plan, Zoning Code, Design Guidelines, Building Code, Stormwater Design, and County Code. Changes to internal County policies such as purchasing, capital improvements, and fleets.

Responsible Office/Partners: DGS, PER, DWR, SacDOT, SacOES, BP&I, SMUD, Regional Parks, SMAQMD, non-governmental and community-based organizations.

Project Benefits (Losses Avoided): Because climate change exacerbates most other hazards, the benefits of this mitigation action include those associated with most other mitigation actions in the LHMP. Additionally, the centralized and coordinated all-hazards approach of addressing climate change through this mitigation action will provide economies of scale, multiple co-benefits, and the policy and legal framework to assure that climate adaptation, resiliency, and meaningful GHG reductions occur.

Potential Funding (Local Budgets, Grant Funds, etc. by specific type): FEMA hazard mitigation grant program, General Fund, Capital Improvement Program funding, enterprise funds, staff time, Community Development Block Grants, CDFA Healthy Soils Program, SMUD rebates, CalTrans Active Transportation Program.

Timeline: Within 5 years then ongoing

Project Priority (High, Medium, Low): High

Drought and Water Shortage Actions

Action 12. AG-1: Unincorporated Agricultural Lands Climate Resilience -- General Plan Amendment

Hazard Addressed: Drought / Extreme Heat / Flood / Subsidence -- Unincorporated Agricultural Land Use

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

Issue / Background (Problem Statement): Sacramento County's unincorporated areas include extensive agricultural lands that may be affected by multiple climate hazards, including worsening drought, more frequent extreme heat, changing precipitation patterns, and localized land subsidence associated with groundwater extraction. The CAP Climate Vulnerability Assessment (2017) identifies these climate-related risks affecting Sacramento Valley agriculture. The Sacramento County General Plan Agricultural Element provides an opportunity to further consider climate resilience as part of future planning efforts. The 2021 LHMP did not include a dedicated agricultural land use mitigation action. Farmworker communities in unincorporated areas may experience increased exposure to heat, air quality, and economic challenges, consistent with the Environmental Justice Element and CalEnviroScreen 5.0.

Project Description: Consider evaluating opportunities to develop an Agricultural Lands Climate Resilience Framework to help inform future Agricultural Element planning efforts. Actions may include:

(1) Conducting an agricultural vulnerability review using Cal-Adapt 5th Assessment projections for the Sacramento Valley;

(2) Evaluate potential Agricultural Element policy updates related to water-efficient irrigation, farmworker resilience, soil health, and flood-adaptive agricultural practices, as appropriate;

(3) Aligning Agricultural Element planning efforts with applicable Groundwater Sustainability Plans (SGMA), as appropriate;

(4) Coordinate with the Sacramento County Agricultural Commissioner and other appropriate partners regarding outreach to agricultural stakeholders.

Other Alternatives

Alt. 1: Address agricultural risk only through SGMA groundwater planning -- not advanced; SGMA covers groundwater only and does not address heat, flood, subsidence, or farmworker equity.

Alt. 2: Voluntary agricultural resilience program with no General Plan amendment -- not advanced; General Plan policies provide the legal framework needed to coordinate with SGMA, CDFA, and water agencies.

Alt. 3: No action -- not appropriate; compounding hazards create increasing economic, food security, and community health risks.

Existing Planning Mechanism(s) through which Action Will Be Implemented: Sacramento County General Plan Agricultural Element; SGMA Groundwater Sustainability Plans; Sacramento County 2024 CAP; CAP Climate Vulnerability Assessment (Ascent Env., 2017); Environmental Justice Element; CalEnviroScreen 5.0; LCI Vulnerable Communities Platform (supplemental); Cal-Adapt 5th Assessment; CDFA programs; UC Cooperative Extension Sacramento County; OSHA Heat Illness Prevention (Title 8 CCR 3395); Sacramento County 2021 LHMP.

Responsible Office / Partners

Lead: Sacramento County Planning & Environmental Review (PER)

Partners: Sacramento County Agricultural Commissioner; DWR; CDFA; County Social Services; Sacramento County OES.

Project Benefits (Losses Avoided): May reduce economic losses from crop failure and farmworker heat illness; may reduce groundwater overdraft; may improve Delta agricultural land resilience; may improve farmworker health for communities identified through the EJ Element; may support alignment of agricultural land use with SGMA goals; and may support General Plan completeness for SB 379 climate adaptation compliance.

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

- CDFA Climate Catalyst Fund (agricultural climate resilience planning)
- USDA NRCS Environmental Quality Incentives Program (EQIP)
- FEMA BRIC Program (planning projects)
- UC Cooperative Extension (technical assistance)
- SGMA Grant Program
- CDFW Agricultural Conservation Easement Program

Timeline:

Short-term (0-12 months): Review Cal-Adapt projections for Sacramento Valley; engage Agricultural Commissioner; identify priority at-risk agricultural areas.

Mid-term (1-3 yrs): If supported through available funding and Board direction, evaluate potential Agricultural Element policy updates; conduct public outreach process; and coordinate SGMA alignment, as appropriate.

Long-term (3-5 yrs): Continue coordination with partner agencies; monitor implementation of adopted planning efforts as appropriate, and periodically evaluate agricultural resilience planning priorities.

Project Priority (High, Medium, Low): MEDIUM -- Compound climate exposure for unincorporated agricultural areas; farmworker equity obligation; fills General Plan gap for SB 379.

Action 13. DR-1: Drought Resilience and Water Supply Planning Coordination

Hazard Addressed: Drought -- Water Supply Reliability, Groundwater Sustainability, Reduced Sierra Nevada Snowpack, and Land Use Resilience

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

Issue / Background (Problem Statement): Sacramento County's unincorporated communities and agricultural lands may experience increased drought-related risk associated with reduced Sierra Nevada snowpack, longer dry periods, changing precipitation patterns, and more frequent multi-year drought cycles. The adopted 2024 CAP identifies water supply reliability and conservation as a key climate adaptation priority. Groundwater conditions within portions of the unincorporated County are addressed through Groundwater Sustainability Plans developed by the relevant Groundwater Sustainability Agencies. Because water service and groundwater management responsibilities are distributed among multiple independent agencies and water purveyors, opportunities may exist to strengthen coordination between County land use planning and available water supply information. Lower-income households, outdoor workers, and agricultural communities dependent on vulnerable domestic water systems may experience disproportionate drought impacts, consistent with the Environmental Justice Element and CalEnviroScreen 5.0. The County does not have direct authority over independent water agencies, groundwater sustainability agencies, or purveyors; the County-agency coordination on land use matters occurs primarily on an ad hoc basis tied to individual project touch points rather than through a systematic, scheduled process.

Project Description: Consider evaluating opportunities to improve the integration of drought resilience and available water-supply information into County land-use, General Plan, agricultural, and facility-planning efforts, while coordinating with the independent agencies and water purveyors responsible for water supply and drought management. Actions may include:

(1) Coordinating, as appropriate, with Sacramento County Water Agency (SCWA), applicable groundwater sustainability agencies, and other water purveyors regarding available drought, groundwater, and water supply planning information that may inform County land-use and General Plan planning;

(2) Evaluate whether additional County planning guidance or development-review practices related to water-efficient landscaping and irrigation may be appropriate, consistent with applicable state law, adopted County requirements, and the responsibilities of affected water purveyors.;

(3) Support coordination with water purveyors, community-based organizations, and appropriate County departments regarding drought-preparedness and water-conservation information for Environmental Justice Communities and other potentially vulnerable areas.;

(4) Evaluate opportunities to incorporate appropriate drought, groundwater sustainability, and water supply reliability information into a future General Plan Safety Element update (GP-1) and other applicable County planning efforts;

(5) Coordinate with SacOES, applicable water purveyors, SCWA where applicable, and other agencies responsible for drought emergency planning to better understand drought emergency planning

responsibilities and identify opportunities for consistency with County emergency and land use planning where appropriate.

(6) Evaluate opportunities to support drought resilience and water efficiency in County-owned facilities and landscapes, in coordination with the Department of General Services, SCWA where applicable, and the water purveyor serving each facility.

Other Alternatives:

Alt. 1: Rely solely on state, regional, and water-agency drought and groundwater management programs without considering County land use coordination -- not advanced; County land use decisions directly affect long term water demand and may benefit from consideration of available groundwater and water supply planning information.

Alt. 2: Rely solely on voluntary conservation programs administered by water purveyors without considering broader land-use and General Plan coordination -- not advanced; conservation programs and County planning efforts serve different but complementary roles in supporting long-term drought resilience.

Alt. 3(Continue current ad hoc, project-by-project coordination without a formalized schedule): not advanced; relying solely on informal or project-specific touch points does not provide a systematic mechanism for tracking annually shifting agency priorities driven by precipitation and hydrologic conditions.

Alt. 4: No additional County planning coordination -- not advanced; opportunities to incorporate drought resilience into future General Plan, land-use, agricultural, and County facility planning would remain limited.

Alt. 5 (No additional coordination framework): not appropriate; without a formalized process, opportunities to align County land-use planning with current water-supply and drought conditions communicated by partner agencies may be missed.

Existing Planning Mechanism(s) through which Action Will Be Implemented: Sacramento County 2024 CAP (Water Conservation and Supply Reliability measures); General Plan Safety Element; General Plan Agricultural Element; General Plan Environmental Justice Element; 2021 LHMP; applicable Groundwater Sustainability Plans; applicable Urban Water Management Plan; State Model Water Efficient Landscape Ordinance (MWELO); DWR California Water Plan; Cal-Adapt 5th Assessment Climate Projections; CalEnviroScreen 5.0; and the LCI Vulnerable Communities Platform as a supplemental panning resource (Note: The County's Model Water Efficient Landscape Ordinance (MWELO) already establishes water-efficient landscaping evaluation requirements; this action would build on, not duplicate, that existing ordinance.) DWR's "Cosumnes River Watershed Multi-benefit Projects" action (capital groundwater recharge and floodplain expansion), complementary DWR-led engineering mechanism.)

Responsible Office / Partners

Lead for General Plan and land use planning components: Sacramento County Planning & Environmental Review (PER)

Partners: SCWA where applicable; Sacramento County Office of Emergency Services (SacOES); Sacramento County Agricultural Commissioner; Department of General Services; applicable Groundwater Sustainability Agencies; cities; special districts, private or mutual water providers, and other water purveyors serving the unincorporated area; Sacramento County Department of Water Resources (DWR); community-based organizations serving vulnerable populations. The County does not have authority to direct the operations, funding, or conservation programs of these independent water agencies and purveyors; the County's role is limited to convening and formalizing coordination, not administering water supply or conservation operations.

Note: Water supply, conservation, groundwater management, and drought-response responsibilities vary by service area and agency. This action is intended to support County land-use and General Plan coordination and does not establish County authority over independent water purveyors or Groundwater Sustainability Agencies. Lead responsibility for individual actions should be confirmed based on geography, agency jurisdiction, and the nature of the proposed effort.

Project Benefits (Losses Avoided): May improve coordination between County land-use planning and applicable water-supply and groundwater sustainability efforts; may help inform General Plan, agricultural, and County facility resilience planning; may support consideration of drought-related impacts affecting Environmental Justice Communities and other vulnerable areas; may improve interagency understanding of drought-planning responsibilities; and may advance applicable 2024 CAP adaptation objectives.

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

Potential funding or technical-assistance sources may include, subject to program eligibility and the responsible implementing agency::

- DWR Integrated Regional Water Management (IRWM) grants
- FEMA Hazard Mitigation Grant Program (HMGP)
- FEMA Pre-Disaster Mitigation (PDM)
- SGMA Grant Program (groundwater sustainability planning)
- Proposition 1 and Proposition 4 (water resilience and drought preparedness)
- USDA NRCS Environmental Quality Incentives Program (EQIP) (agricultural water efficiency)
- Sacramento County General Fund / PER Operating Budget (staff time and coordination)

Timeline

Short-term (0-1 yr): Identify the water purveyors, Groundwater Sustainability Agencies, and applicable planning documents serving the unincorporated County; coordinate with SCWA (where applicable) and other appropriate agencies regarding available drought and water supply information; and evaluate opportunities to combine that information with the EJ Element and CalEnviroScreen 5.0 to better understand potential disparities in drought exposure and to inform future General Plan and land use planning. Assess and consider creating a “Drought Resilience Task Force” with representatives from water purveyors, groundwater sustainability agencies, SCWA where applicable to identify significant changes in drought, groundwater, and water supply conditions that may inform County land use planning.”

Mid-term (1-3 yrs): If supported through available funding and Board direction, integrate drought and water supply reliability information into a future General Plan Safety Element update (GP-1); assess whether additional General Plan or County planning guidance may be appropriate; and continue coordination regarding implementation of applicable water-efficient landscaping requirements.

Long-term (3-5 yrs): Continue coordination with applicable water purveyors, Groundwater Sustainability Agencies, and County departments; periodically review relevant drought and water-supply planning information; monitor implementation of any adopted County planning policies; and update County planning approaches as appropriate.

Project Priority (High, Medium, Low): MEDIUM-HIGH -- Supports long-term drought resilience and water-supply coordination; may improve alignment between County land-use planning and applicable groundwater and water-agency planning efforts; advances relevant 2024 CAP adaptation objectives; and supports consideration of vulnerable communities.

Action 14. Implement the Actions Included in the 2025 Sacramento County Drought Resilience Plan

Hazards Addressed: Inadequate water supplies for small water suppliers and rural communities during a water shortage event, including events caused by droughts or other emergencies such as wildfires, earthquakes, floods, and other local emergencies

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

Issue/Background (Problem Statement): Sacramento County has areas vulnerable to drought and water supply shortages, particularly communities dependent on domestic wells and State Small Water Systems (SSWSs). The 2025 Sacramento County Drought Resilience Plan (DRP), developed pursuant to SB 552, identifies drought and water shortage risks and establishes short-term response actions and long-term mitigation strategies and actions to improve resilience for domestic well and SSWS communities.

Project Description: Implement the short-term response actions and long-term mitigation strategies and actions identified in the DRP, as appropriate and as funding and implementation capacity allow.

Short-Term Response Actions; Sacramento County Department of Water Resources (SCDWR) has supporting role:

1. Establish acquisition and distribution program for packaged or bottled water to domestic well and SSWS users.

2. Prepare to facilitate short-term transportation for water hauling and bulk water delivery to domestic well owners and SSWSs with existing bulk water supply storage tanks water.

3. Prepare to expedite permits for construction of replacement wells or deepening wells.

Long-Term Mitigation Strategies and Actions; SCDWR has lead role for #1-10:

1. Explore potential consolidation of a SSWS with an overlying or nearby public water system.

2. Identify and implement potential consolidation of domestic well communities.

3. Promote water conservation and drought-related topics through outreach materials aimed at SSWSs and domestic wells; partner with Groundwater Sustainability Agencies (GSAs) to improve outreach effectiveness.

4. Establish communication and engagement program to support voluntary water conservation measures among domestic well and SSWS users in the event of a water shortage event.

5. Assist SSWS operators and domestic well owners in identifying funding opportunities at the federal, State, and local levels for well replacement, remediation, and infrastructure repairs or improvements.

6. Collaborate with GSAs to share information on groundwater monitoring and trends.

7. Collaborate with GSAs to provide technical assistance in the sizing, selecting, and installing of bulk water tanks.

8. Collaborate with GSAs to assist SSWS and domestic well operators with tracking and managing their sustainable water use; support broad community awareness of groundwater conditions.

9. Provide SSWSs and domestic well owners a resource list of well drillers and other entities to assist in evaluating well conditions, rehabilitation, and replacements.

10. Coordinate with internal and external parties responsible for development and implementation of regional plans that support improved drought and water shortage resilience for SSWS and domestic well communities.

11. Collaborate with internal and external parties to advance implementation of projects and management actions that improve drought and water shortage resilience for SSWS and domestic well communities.

12. Identify and implement methods to improve the accuracy of dry well and distressed well tracking as an input to regional groundwater conditions.

13. In collaboration with GSAs, expand the existing database of well completion reports to include well construction details that can assist in evaluating potential vulnerabilities of domestic wells and SSWSs to groundwater level changes projected by the GSAs.

14. In collaboration with GSAs, develop a program to support formal abandonment of domestic wells as a measure, among other things, to support protection of groundwater quality.

Other Alternatives: Continue to address individual drought and water shortage issues through existing emergency response, water supply, groundwater management, and assistance programs without

coordinated implementation of the DRP. Individual DRP actions may also be implemented selectively as funding and capacity become available.

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

- American River Basin Integrated Regional Water Management Plan 2018 Update
- American River Basin Study
- Groundwater Sustainability Plans (GSPs)
  - ✓ Cosumnes Subbasin GSP
  - ✓ North American Subbasin GSP
  - ✓ Solano Subbasin GSP
  - ✓ South American Subbasin GSP
- Multi-jurisdictional Local Hazard Mitigation Plan
- North American Basin Regional Drought Contingency Plan and Regional Water Reliability Plan
- Sacramento County Climate Action Plan
- Sacramento County Emergency Operations Plan
- Sacramento County General Plan

Responsible Office/Partners: Adopting Agency: The Sacramento County Board of Supervisors

Lead: Sacramento County Office of Emergency Services, Sacramento County Water Agency

Partners:

- Sacramento County Departments:
  - ✓ Agriculture & Weights and Measures
  - ✓ Community Development
  - ✓ Environmental Management
  - ✓ Health Services
  - ✓ Office of the County Executive
- California Department of Water Resources
- California State Water Resources Control Board
- Cosumnes Groundwater Authority
- Domestic Well Owner Advisory Group in the South American Subbasin
- Domestic well owners and communities
- Groundwater Sustainability Agencies
- Local water suppliers and adjacent water purveyors
- Omochumne-Hartnell Water District
- Public and private water systems
- Sacramento Area Sewer District
- Sacramento Groundwater Authority
- Sacramento Regional Water Authority
- State Small Water System operators
- The Freshwater Trust

Project Benefits (Losses Avoided):

Short-Term Response Actions

- Provide direct and immediate support to affected users
- Provide drinking and potable water during a water shortage
- Proactive measures to address drought conditions effectively in the short term
- Foster communication, involvement, and streamlining of administrative processes for relevant County departments during water shortages conditions

Long-Term Mitigation Strategies and Actions

- Contribute to improved groundwater supply reliability for domestic and SSWS communities
- Transform how vulnerable communities experience water shortages, shifting from crisis management to crisis prevention

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

- Sacramento County General Fund
- Proposition 4: Safe Drinking Water, Wildfire Prevention, Drought Preparedness, and Clean Air Bond Act of 2024
- California Department of Water Resources grants and programs
  - ✓ Sustainable Groundwater Management Grant Program
  - ✓ Small Community Drought Relief program
- California State Water Board funding
  - ✓ Countywide and Regional Funding Program
  - ✓ Drinking Water State Revolving Fund
  - ✓ Technical Assistance Funding Program
- USDA Water and Environmental Program
  - ✓ Rural Utilities Service Water and Environmental Programs

Timeline:

Collaboration:

- Task Force Meeting: April, annually

- Water Supply Monitoring and Coordination: February through November, annually
- DRP Website Update: ongoing

Short-Term Response Action and Long-Term Mitigation Strategy and Action timeline depends on priority classification as well as new regulations, climate conditions, and funding.

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

Project Priority (High, Medium, Low): High

Earthquake Actions

Action 15. EQ-1: Seismic Vulnerability Assessment & Building Retrofit Program

Hazard Addressed: Earthquake -- Ground Shaking, Liquefaction, Unreinforced Masonry Failure

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

Issue/Background (Problem Statement): Sacramento County is subject to ground shaking from regional faults, including the Hayward, Calaveras, and nearby foothill fault systems. The California Geological Survey (CGS) released updated Seismic Hazard Zone Maps for the Sacramento West and East quadrangles in mid-2025, identifying widespread liquefaction investigation zones. The General Plan Safety Element (SA-1, SA-2, SA-3) requires geotechnical reports for development in sensitive areas; however, opportunities may exist to update inventories of vulnerable existing structures using the 2025 CGS mapping. The 2021 LHMP identified earthquakes as a priority hazard. Certain County-owned critical facilities may be subject to applicable California seismic compliance requirements and future evaluation efforts..

Project Description: Consider evaluating opportunities to support a "Seismic Vulnerability Assessment and Retrofit Program." Actions may include:

(1) Evaluate opportunities to update the inventory of at-risk buildings in liquefaction and shaking zones using 2025 CGS Seismic Hazard Zone Maps, Assessor parcel data, and HAZUS loss estimation;

(2) Evaluate the feasibility of potential seismic retrofit strategies, including whether a future seismic retrofit ordinance or other implementation approaches may be appropriate, consistent with General Plan Safety Element (SA-2, SA-3);

(3) Exploring financial assistance opportunities for residential seismic retrofits in coordination with the California Residential Mitigation Program (CRMP) Earthquake Brace + Bolt (EBB) program;

(4) Supporting targeted outreach regarding available retrofit assistance to homeowners of pre-1980 cripple-wall homes in identified liquefaction hazard areas;

(5) Coordinate with appropriate County departments regarding evaluation of County-owned critical facilities for compliance with California's 2030 seismic standards;

(6) Evaluate opportunities to incorporate the 2025 CGS liquefaction zone mapping into the County development review process, consistent with General Plan Safety Element (SA-1).

Other Alternatives:

Alt. 1: Rely solely on the voluntary state EBB program without county outreach -- not advanced; low awareness in unincorporated areas may limit participation.

Alt. 2: Focus only on new development standards without addressing existing vulnerable buildings -- not advanced; a significant portion of seismic risk remains associated with older existing structures.

Alt. 3: No action -- not appropriate given the 2025 CGS map update significantly expanding liquefaction zone designations.

Existing Planning Mechanism(s) through which Action Will Be Implemented: General Plan Safety Element (SA-1, SA-2, SA-3); 2021 LHMP (Earthquake Mitigation Actions); Alquist-Priolo Earthquake Fault Zoning Act (CGS); California Seismic Hazard Mapping Act (PRC 2690-2699.6); 2025 CGS Seismic Hazard Zone Maps; CBC Title 24 (2025 edition); California Residential Mitigation Program (CRMP) -- EBB; FEMA HAZUS; FEMA P-154 Rapid Visual Screening; California Building Standards Code; Sacramento County Building Code; Sacramento County Parcel Viewer.

Responsible Office/Partners:

Lead: Sacramento County Building Permits & Inspection (BPI) and Department of General Services (co-lead for County-owned critical facilities)

Partners: Sacramento County Planning & Environmental Review (PER); Sacramento County Department of Technology (DTech); SacOES; California Geological Survey (CGS); CRMP / California Earthquake Authority (CEA); Cal OES Hazard Mitigation Division; Department of General Services (critical facilities).

Project Benefits (Losses Avoided): May reduce life-safety risk from building collapse during earthquakes; may reduce potential losses in liquefaction hazard zones; may improve resilience of critical facilities for post-earthquake emergency response; may reduce community displacement; may increase awareness of available retrofit assistance programs; and may support implementation of General Plan SA-2.

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

- California Residential Mitigation Program (CRMP) -- Earthquake Brace + Bolt (EBB)
- FEMA Hazard Mitigation Grant Program (HMGP)
- FEMA Pre-Disaster Mitigation (PDM)
- FEMA BRIC Program
- Cal OES HMGP Rolling Application
- USGS Earthquake Hazards Program (technical assistance)
- Sacramento County CIP / General Fund (local match)

Timeline:

Short-term (0-1 yr): Evaluate opportunities to update the building inventory using 2025 CGS maps; coordinate with partner agencies; and identify priorities for future critical facility seismic evaluations.

Mid-term (1-3 yrs): If supported through available funding and Board direction, evaluate potential seismic retrofit strategies, identify funding opportunities, and coordinate with appropriate departments regarding critical facility retrofit priorities.

Long-term (3-5 yrs): Continue supporting seismic resilience planning efforts; coordinate implementation of funded retrofit initiatives as appropriate; and periodically evaluate hazard information to inform future mitigation planning.

Project Priority (High, Medium, Low): HIGH -- 2025 CGS map significantly expands liquefaction zones; critical facility 2030 compliance deadline.

Flood: 1%/0.5%/0.2% Annual Chance; Flood; Localized Stormwater; Dam Failure; Levee Failure; Sea Level Rise, Severe Weather: Heavy Rains and Storms Actions

Action 16. Acquire Floodprone Properties

Hazards Addressed: Flood: 1%/0.5%/0.2% Annual Chance; Flood; Localized Stormwater; Levee Failure; Sea Level Rise; Severe Weather: Heavy Rains and Storms

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

Issue/Background (Problem Statement): Acquiring properties, as an alternative to elevation or other mitigation strategies, may be a viable solution when a structure is exposed to flood risks and is located in an area that can be effectively managed for long-term public ownership.

Project Description: This project involves a series of coordinated steps including property appraisal, negotiation and agreement with property owners, acquisition of floodprone properties, demolition of existing structures, and the implementation of deed restrictions to ensure long-term management and prevent future development on the acquired land. These actions are designed to mitigate flood risks and support sustainable public ownership of vulnerable areas.

Other Alternatives: Flood control, floodproofing, and/ or structure elevation

Existing Planning Mechanism(s) through which Action Will Be Implemented: Sacramento County General Plan Open Space Element

Responsible Office/Partners: Sacramento County Department of Water Resources

Project Benefits (Losses Avoided): The project safeguards public safety by minimizing risks to life and decreases the likelihood of property and infrastructure damage. Additionally, it offers supplementary benefits by supporting natural resources.

Potential Funding (Local Budgets, Grant Funds, etc. by specific type): FEMA Grants: HMGP, FMA, BRIC

Timeline: 3-5 years and ongoing

Project Priority (High, Medium, Low): Medium

Action 17. Maintain/ Improve Railroad Embankment Levee (from south of Freeport to south of Hood, a reach owned by California Parks and Recreation Department)

Hazards Addressed: Flood: 1%/0.5%/0.2% Annual Chance; Flood; Localized Stormwater; Levee Failure; Sea Level Rise; Severe Weather: Heavy Rains and Storms

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

Issue/Background (Problem Statement): The stretch of abandoned railroad line extending from Freeport to south of Hood serves as a critical embankment, effectively separating the Beach Stone Lakes floodplain from the adjacent area westward toward the Sacramento River. The right-of-way for this railroad is under the ownership of the California Department of Parks and Recreation, which manages it in connection with the Railroad Museum. In addition to its primary function as an embankment, this infrastructure acts as a secondary barrier, providing additional protection in the event of a failure of the Sacramento River levee. The levee itself is owned and maintained by the California Department of Water Resources Maintenance Area 9.

Project Description: The long-term strategy implemented by the State of California has not been clearly communicated to the local community. The railroad embankment functions as a levee and is in need of repairs and upgrades. Continue engaging with California Parks and Recreation Department and California Department of Water Resources on implementing this project.

Other Alternatives: No other available alternatives.

Existing Planning Mechanism(s) through which Action Will Be Implemented: Sacramento County General Plan Safety Element

Responsible Office/Partners: California Department of Water Resources, California Department of Parks and Recreation, Sacramento County Department of Water Resources

Project Benefits (Losses Avoided): The project safeguards public safety by minimizing risks to life and decreases the likelihood of property and infrastructure damage.

Potential Funding (Local Budgets, Grant Funds, etc. by specific type): FEMA Grants: HMGP, FMA, BRIC

Timeline: 5 years and ongoing

Project Priority (High, Medium, Low): Medium

Action 18. Flood Risk Mitigation for Mobile Homes and Recreational Vehicles

Hazards Addressed: Flood: 1%/0.5%/0.2% Annual Chance; Flood; Localized Stormwater; Levee Failure; Sea Level Rise; Severe Weather: Heavy Rains and Storms

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

Issue/Background (Problem Statement): Mobile Home parks and RV parks in California are licensed by the State. These parks are exempted, or "grandfathered," under the Code of Federal Regulations, which mandates that floor elevations must be set three feet above the ground, irrespective of the actual flood risk present at each location.

Project Description: This project aims to minimize flood risks by implementing comprehensive flood risk reduction strategies, establishing advanced flood warning systems, and developing effective evacuation procedures.

Other Alternatives: No other available alternatives.

Existing Planning Mechanism(s) through which Action Will Be Implemented: Sacramento County General Plan Safety Element

Responsible Office/Partners:

- Sacramento County Department of Water Resources
- CA Department of Housing and Urban Development
- CA Department of Water Resources

Project Benefits (Losses Avoided): The project safeguards public safety by minimizing risks to life and decreases the likelihood of property and infrastructure damage.

Potential Funding (Local Budgets, Grant Funds, etc. by specific type): FEMA Grants: HMGP, FMA, BRIC

Timeline: 5 years and ongoing

Project Priority (High, Medium, Low): Medium

Action 19. Plan for Public Information

Hazards Addressed: Flood: 1%/0.5%/0.2% Annual Chance; Flood; Localized Stormwater; Levee Failure; Sea Level Rise; Severe Weather: Heavy Rains and Storms

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

Issue/Background (Problem Statement): The Federal Emergency Management Agency Community Rating System outlines recognized best practices and provides incentives to National Flood Insurance Program communities that implement a Plan for Public Information. This approach encourages communities to adopt proactive measures in public outreach and education, ultimately enhancing flood risk awareness and preparedness.

Project Description: Maintaining the Program for Public Information and ensuring its annual implementation is essential for promoting community awareness and preparedness regarding flood risks. Additionally, the Program for Public Information serves as a valuable resource by providing critical information on mitigation strategies, building regulations, and stormwater management policies.

Other Alternatives: Postponing or foregoing informational outreach is not recommended, as it would diminish the community's ability to stay informed and prepared regarding flood risks and mitigation strategies.

Existing Planning Mechanism(s) through which Action Will Be Implemented: FEMA Community Rating System

Responsible Office/Partners: Sacramento County Department of Water Resources

Project Benefits (Losses Avoided): This project safeguards lives and enhances public safety, mitigates damage to property and critical infrastructure, ensures the continuity of essential operations and services, and delivers additional advantages for the preservation of natural and cultural resources as well as strengthening economic resilience.

Potential Funding (Local Budgets, Grant Funds, etc. by specific type): Sacramento County Stormwater Utility and Zone 13

Timeline: Within 1 year and ongoing

Project Priority (High, Medium, Low): Medium

Action 20. Mitigation of Repetitive Loss Flood Areas and Properties

Hazards Addressed: Flood: 1%/0.5%/0.2% Annual Chance; Flood; Localized Stormwater; Dam Failure; Levee Failure; Severe Weather: Heavy Rains and Storms

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

Issue/Background (Problem Statement): A property is classified as a repetitive loss property when it experiences flooding on two separate occasions within a ten-year period. In such cases, it is recommended that additional measures be taken to address and reduce the flood risk at the affected location, provided the property owner is agreeable to participating in mitigation efforts. It is important to note that while FEMA may designate certain structures as repetitive loss properties, there are frequently other properties within the same area that have experienced similar flooding. These properties may not be officially listed due to factors such as lack of insurance or other circumstances; therefore, communities proactively identify and map repetitive loss areas to ensure comprehensive mitigation planning.

Project Description: Identify and map areas that have experienced repetitive flood losses, conduct thorough investigations to determine the underlying causes of flooding, perform field surveys as necessary, engage with affected property owners, formulate targeted mitigation strategies, and execute projects designed to reduce flood risk and enhance community resilience.

Other Alternatives: No other available alternatives,

Existing Planning Mechanism(s) through which Action Will Be Implemented: FEMA Community Rating System, Sacramento County Program for Public Information

Responsible Office/Partners: Sacramento County Department of Water Resources

Project Benefits (Losses Avoided): The project safeguards public safety by minimizing risks to life and decreases the likelihood of property and infrastructure damage.

Potential Funding (Local Budgets, Grant Funds, etc. by specific type): FEMA Grants: HMGP, FMA, BRIC

Timeline: 1-3 years and ongoing

Project Priority (High, Medium, Low): Medium

Action 21. Flood Risk Mapping/ Watershed Modeling

Hazards Addressed: Flood: 1%/0.5%/0.2% Annual Chance; Flood; Localized Stormwater; Dam Failure; Levee Failure; Sea Level Rise; Severe Weather: Heavy Rains and Storms

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

Issue/Background (Problem Statement): To help determine mitigation strategies for the region, a comprehensive and updated watershed model is needed. The development of a watershed modeling project to create models for each major waterway impacting the region would provide a foundation for all stakeholders to plan for the future and not increase peak flows and volumes. Information from a unified model can be utilized to determine high priority mitigation projects and the impacts of proposed development projects.

Project Description: Sacramento County, the City of Sacramento, and SAFCA will collaborate to develop comprehensive models that enhance watershed planning efforts. Initial areas of focus will include the Natomas Basin's interior drainage, South Sacramento Stream Group Watersheds (Morrison Creek), and Dry Creek.

Other Alternatives: No other available actions.

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

- Sacramento County Climate Action Plan
- Sacramento County General Plan
- Drainage Master Plans

Responsible Office/Partners:

- Sacramento County Department of Water Resources
- City of Sacramento
- Sacramento Area Flood Control Agency

Project Benefits (Losses Avoided): This project safeguards lives and enhances public safety, mitigates damage to property and critical infrastructure, ensures the continuity of essential operations and services, and delivers additional advantages for the preservation of natural and cultural resources as well as strengthening economic resilience.

Potential Funding (Local Budgets, Grant Funds, etc. by specific type): FEMA Cooperating Technical Partners Program

Timeline: 1-3 years and ongoing

Project Priority (High, Medium, Low): Medium

Action 22. Storm Ready

Hazards Addressed: Flood: 1%/0.5%/0.2% Annual Chance; Flood; Localized Stormwater; Dam Failure; Levee Failure; Severe Weather: Heavy Rains and Storms

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

Issue/Background (Problem Statement): It is essential that all residents, homeowners, and business owners possess a clear understanding of the flood hazards that may impact their interests and take proactive steps to mitigate those risks. Recommended mitigation actions include preparing for flood emergencies, developing the ability to respond effectively to storm events, and having evacuation plans in place to ensure safety during severe weather conditions.

Project Description: This project encompasses a range of strategic outreach activities, including timely updates on both current and forecasted weather conditions, monitoring stream levels, and delivering comprehensive educational information focused on flood hazard awareness. The initiative further involves the distribution of informative brochures and targeted outreach campaigns. Collectively, these efforts are intended to enhance community preparedness, ensuring that residents have access to the information and resources necessary to respond effectively during severe weather events.

Other Alternatives: No other available alternatives.

Existing Planning Mechanism(s) through which Action Will Be Implemented: Sacramento County Program for Public Information

Responsible Office/Partners: Sacramento County Department of Water Resources

Project Benefits (Losses Avoided): This project safeguards lives and enhances public safety, mitigates damage to property and critical infrastructure, ensures the continuity of essential operations and services, and delivers additional advantages for the preservation of natural and cultural resources as well as strengthening economic resilience.

Potential Funding (Local Budgets, Grant Funds, etc. by specific type): Sacramento County Stormwater Utility and Zone 13

Timeline: 1 year and ongoing

Project Priority (High, Medium, Low): Medium

Action 23. Alder Creek Flood Hazard Mitigation

Hazards Addressed: Flood: 1%/0.5%/0.2% Annual Chance; Flood; Localized Stormwater; Severe Weather: Heavy Rains and Storms

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

Issue/Background (Problem Statement): Alder Creek originates in the City of Folsom, traverses through Aerojet, and ultimately flows into Lake Natoma. This watershed was subject to extensive gold mining activities from the late 1800s to the mid-1900s. Currently, the area is experiencing increased interest in land development. Notably, the creek features a miner's debris dam, constructed around 1890, which is presently in a state of disrepair.

Project Description: Restore and reinforce the dam to ensure its structural integrity and long-term durability.

Other Alternatives: An alternative approach involves removing the dam along with the accumulated sediment behind it.

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

Responsible Office/Partners: City of Folsom, Sacramento County Department of Water Resources

Project Benefits (Losses Avoided): This project safeguards lives and enhances public safety, mitigates damage to property and critical infrastructure, ensures the continuity of essential operations and services, and delivers additional advantages for the preservation of natural and cultural resources as well as strengthening economic resilience.

Potential Funding (Local Budgets, Grant Funds, etc. by specific type): FEMA Grants: HMGP, FMA, BRIC

Timeline: 1-5 years and ongoing

Project Priority (High, Medium, Low): Medium

Action 24. Beach Stone Lakes Area Flood Risk Reduction Program

Hazards Addressed: Flood: 1%/0.5%/0.2% Annual Chance; Flood; Localized Stormwater; Levee Failure; Severe Weather: Heavy Rains and Storms

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

Issue/Background (Problem Statement): The Beach Stone Lakes area consistently experiences flooding following periods of heavy rainfall.

Project Description: The project aims to implement a comprehensive set of flood mitigation measures to address the recurring flood risks in the Beach Stone Lakes area. Proposed actions include identifying and executing flood control projects, elevating and demolishing structures as necessary, raising wells, and installing flood vents.

The program also advocates for the California Department of Water Resources to undertake repairs and enhancements to the Sacramento River levee from Freeport to downstream of Hood.

Other Alternatives: No other available alternatives.

Existing Planning Mechanism(s) through which Action Will Be Implemented: Beach Stone Lakes Area Flood Plan

Responsible Office/Partners: Sacramento County Department of Water Resources

Project Benefits (Losses Avoided): The project safeguards public safety by minimizing risks to life and decreases the likelihood of property and infrastructure damage.

Potential Funding (Local Budgets, Grant Funds, etc. by specific type): FEMA Grants: HMGP, FMA, BRIC

Timeline: 3-5 years and ongoing

Project Priority (High, Medium, Low): Medium

Action 25. Protect Critical Facilities From Flooding

Hazards Addressed: Flood: 1%/0.5%/0.2% Annual Chance; Flood; Localized Stormwater; Dam Failure; Levee Failure; Sea Level Rise; Severe Weather: Heavy Rains and Storms

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

Issue/Background (Problem Statement): Critical facilities play a vital role in maintaining essential operations during and after a flood event. It is imperative that the functionality of these facilities remains uninterrupted, making their protection a top priority in any comprehensive flood hazard mitigation strategy.

Project Description: Elevate, fortify, or relocate structures and essential components to ensure they are adequately protected against flood hazards.

Other Alternatives: No other available alternatives.

Existing Planning Mechanism(s) through which Action Will Be Implemented: Sacramento County General Plan Safety Element, Sacramento County Floodplain Management Ordinance

Responsible Office/Partners: Sacramento County Department of Water Resources

Project Benefits (Losses Avoided): Protects life safety; reduces property and infrastructure damage; improves continuity of operations and essential services; provides co-benefits for natural/cultural resources and economic resilience.

Potential Funding (Local Budgets, Grant Funds, etc. by specific type): FEMA Grants: HMGP, FMA, BRIC

Timeline: 1-5 years and ongoing

Project Priority (High, Medium, Low): Medium

Action 26. Dam Safety

Hazards Addressed: Flood: 1%/0.5%/0.2% Annual Chance; Flood; Localized Stormwater; Dam Failure; Levee Failure; Severe Weather: Heavy Rains and Storms

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

Issue/Background (Problem Statement): With enhancements to Folsom Dam, it is essential to acquire comprehensive data to accurately delineate potential inundation zones and develop preparedness and response strategies for dam failure and emergency releases. Furthermore, a similar level of analysis should be conducted for other dams within the community.

Project Description: Effectively managing flood risks associated with potential dam failures and emergency releases requires a comprehensive approach. This includes conducting thorough threat assessments, developing detailed inundation maps to identify at-risk areas, and implementing robust emergency warning, response, and evacuation strategies. These measures are essential to safeguard the community and ensure preparedness in the event of a dam-related incident.

Other Alternatives: No other available alternatives.

Existing Planning Mechanism(s) through which Action Will Be Implemented: Sacramento County Emergency Operations Plan, Community Rating System Activity 630

Responsible Office/Partners: Sacramento County Office of Emergency Services, Sacramento Area Flood Control Agency, US Bureau of Reclamation, Sacramento County Department of Water Resources, City of Sacramento

Project Benefits (Losses Avoided): Protects life safety; reduces property and infrastructure damage; improves continuity of operations and essential services; provides co-benefits for natural/cultural resources and economic resilience.

Potential Funding (Local Budgets, Grant Funds, etc. by specific type): FEMA Grants: HMGP, FMA, BRIC

Timeline: 1-3 years and ongoing

Project Priority (High, Medium, Low): Medium

Action 27. Implement Delta Small Communities Projects

Hazards Addressed: Flood: 1%/0.5%/0.2% Annual Chance; Flood; Localized Stormwater; Dam Failure; Levee Failure; Sea Level Rise; Severe Weather: Heavy Rains and Storms

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

Issue/Background (Problem Statement): Between 2018 and 2021, Sacramento County Department of Water Resources, utilizing grant funding from the California Department of Water Resources, developed comprehensive flood risk reduction plans for the towns of Hood, Courtland, Walnut Grove East, Locke, and Walnut Grove West.

Project Description: Each plan includes a set of management actions and carefully considered recommendations tailored to reduce flood risks for every community involved. These measures are designed to address the specific needs and vulnerabilities of each area, ensuring a comprehensive and effective approach to flood mitigation.

Other Alternatives: No other available actions.

Existing Planning Mechanism(s) through which Action Will Be Implemented: Delta Small Communities Flood Risk Reduction Program

Responsible Office/Partners:

- Sacramento County Department of Water Resources
- Delta Communities
- Reclamation Districts

Project Benefits (Losses Avoided): Protects life safety; reduces property and infrastructure damage; improves continuity of operations and essential services; provides co-benefits for natural/cultural resources and economic resilience.

Potential Funding (Local Budgets, Grant Funds, etc. by specific type): FEMA Grants: HMGP, FMA, BRIC

Timeline: 1-5 years and ongoing

Project Priority (High, Medium, Low): Medium

Action 28. Elevate Homes to Reduce Flood Risk

Hazards Addressed: Flood: 1%/0.5%/0.2% Annual Chance; Flood; Localized Stormwater; Dam Failure; Levee Failure; Sea Level Rise; Severe Weather: Heavy Rains and Storms

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

Issue/Background (Problem Statement): Numerous structures were built before the implementation of FEMA flood maps (pre-FIRM) or were constructed in accordance with outdated construction standards. These properties present an opportunity for mitigation, as they can be safely elevated above the Base Flood Elevation to significantly reduce the potential for flood-related damage.

Project Description: The project involves elevating structures so that their main floors are positioned above the designated flood hazard elevation. By doing so, the risk of flood damage is substantially minimized.

Other Alternatives: While flood insurance is an alternative and provides financial protection in the event of flood-related losses, it does not actively prevent flood damage to properties. Therefore, it should not be considered the most effective method of flood mitigation.

Existing Planning Mechanism(s) through which Action Will Be Implemented: Sacramento County Department of Water Resources - Home Elevation Program

Responsible Office/Partners: Sacramento County Department of Water Resources

Project Benefits (Losses Avoided): Protects life safety; reduces property and infrastructure damage; improves continuity of operations and essential services; provides co-benefits for natural/cultural resources and economic resilience.

Potential Funding (Local Budgets, Grant Funds, etc. by specific type): FEMA Grants: HMGP, FMA, BRIC

Timeline: 3-5 years and ongoing

Project Priority (High, Medium, Low): Medium

Action 29. Flood Emergency Management Exercises

Hazards Addressed: Flood: 1%/0.5%/0.2% Annual Chance; Flood; Localized Stormwater; Dam Failure; Levee Failure; Severe Weather: Heavy Rains and Storms

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

Issue/Background (Problem Statement): Conducting regular emergency training is essential to ensure that all key personnel are prepared to respond effectively should an actual event occur. The Federal Emergency Management Agency promotes flood emergency exercises through its Community Rating System, in which the County maintains a strong standing.

Project Description: Annual flood emergency exercises are conducted to ensure that all relevant personnel are adequately trained and prepared to respond efficiently to flood-related emergencies. These exercises are designed to simulate real-world scenarios, allowing participants to practice coordination, communication, and decision-making under pressure.

Other Alternatives: A range of exercise formats are available to support emergency preparedness, including tabletop exercises, webinars, panel discussions, and comprehensive full-scale, real-time simulations. Each approach offers distinct advantages in facilitating training, enhancing coordination, and improving response capabilities among participants.

Existing Planning Mechanism(s) through which Action Will Be Implemented: Sacramento County Emergency Operations Plan

Responsible Office/Partners: Sacramento County Office of Emergency Services, Sacramento County Department of Water Resources

Project Benefits (Losses Avoided): Protects life safety; reduces property and infrastructure damage; improves continuity of operations and essential services; provides co-benefits for natural/cultural resources and economic resilience.

Potential Funding (Local Budgets, Grant Funds, etc. by specific type): California Department of Water Resources – Flood Emergency Response Projects Grants, California Office of Emergency Services Grants, FEMA Grants: HMGP, FMA

Timeline: 1 year and ongoing

Project Priority (High, Medium, Low): Medium

Action 30. Flood Evacuation Mapping

Hazards Addressed: Flood: 1%/0.5%/0.2% Annual Chance; Flood; Localized Stormwater; Dam Failure; Levee Failure; Severe Weather: Heavy Rains and Storms

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

Issue/Background (Problem Statement): A comprehensive understanding of flood hazards requires detailed knowledge of how floodwaters move through affected areas and the timeframe in which water levels rise to critical depths. This information is essential for determining when evacuation efforts should transition to rescue operations, ensuring the safety and effectiveness of emergency response strategies.

Project Description: Conduct a thorough analysis of multiple flood scenarios and produce detailed maps illustrating flood extent, the estimated time required for water to reach certain depths, and the maximum water depth anticipated. Develop evacuation route maps tailored to each scenario to ensure effective emergency response and public safety.

Other Alternatives: No other available alternatives.

Existing Planning Mechanism(s) through which Action Will Be Implemented: Sacramento County Evacuation Annex

Responsible Office/Partners: Sacramento County Department of Water Resources, Sacramento County Office of Emergency Services, California Department of Water Resources

Project Benefits (Losses Avoided): Protects life safety; reduces property and infrastructure damage; improves continuity of operations and essential services; provides co-benefits for natural/cultural resources and economic resilience.

Potential Funding (Local Budgets, Grant Funds, etc. by specific type): US Army Corps of Engineers Silver Jackets Program, FEMA Cooperating Technical Partners Program

Timeline: 1-3 years and ongoing

Project Priority (High, Medium, Low): Medium

Action 31. Floodproofing Non-Residential Structures

Hazards Addressed: Flood: 1%/0.5%/0.2% Annual Chance; Flood; Localized Stormwater; Dam Failure; Levee Failure; Sea Level Rise; Severe Weather: Heavy Rains and Storms

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

Issue/Background (Problem Statement): According to FEMA guidelines, floodproofing is advised for non-residential structures when alternative mitigation strategies are not feasible. This recommendation ensures that these facilities remain protected against flood risks in situations where other preventive measures cannot be implemented effectively.

Project Description: Dry floodproofing measures are particularly effective for mitigating shallow flooding events. These strategies may include the installation of berms, floodwalls, and flood gates at entry points, the application of floodproofing membranes to exterior walls, and the modification of landscaping to direct water away from structures.

When dry floodproofing cannot be implemented, wet floodproofing serves as an alternative approach, allowing controlled entry of flood waters into buildings to minimize structural damage.

Other Alternatives: No other available alternatives.

Existing Planning Mechanism(s) through which Action Will Be Implemented: Sacramento County Floodplain Management Ordinance

Responsible Office/Partners: Sacramento County Department of Water Resources

Project Benefits (Losses Avoided): Protects life safety; reduces property and infrastructure damage; improves continuity of operations and essential services; provides co-benefits for natural/cultural resources and economic resilience.

Potential Funding (Local Budgets, Grant Funds, etc. by specific type): FEMA Grants: HMGP, FMA, BRIC

Timeline: 1-5 years and ongoing

Project Priority (High, Medium, Low): Medium

Action 32. Update Hydrology Standards

Hazards Addressed: Flood: 1%/0.5%/0.2% Annual Chance; Flood; Localized Stormwater; Sea Level Rise; Severe Weather: Heavy Rains and Storms

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

Issue/Background (Problem Statement): The County Hydrology Standards established in 1996 are scheduled for revision.

Project Description: Conduct a comprehensive review of historical rainfall data and update the statistical analyses to reflect current and future conditions. Share the revised data with hydrology professionals for peer evaluation. Upon completion of the review process, proceed to revise the County Hydrology Standards accordingly.

Other Alternatives: Continue using old hydrology tools and standards.

Existing Planning Mechanism(s) through which Action Will Be Implemented: Sacramento County Hydrology Standards

Responsible Office/Partners: Sacramento County Department of Water Resources

Project Benefits (Losses Avoided): Protects life safety; reduces property and infrastructure damage; improves continuity of operations and essential services; provides co-benefits for natural/cultural resources and economic resilience.

Potential Funding (Local Budgets, Grant Funds, etc. by specific type): Sacramento County Zone 11A/B/C

Timeline: 1 year

Project Priority (High, Medium, Low): Medium

Action 33. Maintain/ Improve Sacramento River East Levee (from south of Freeport to south of Hood, a reach owned and operated by California Department of Water Resources Maintenance Area 9)

Hazards Addressed: Flood: 1%/0.5%/0.2% Annual Chance; Flood; Localized Stormwater; Levee Failure; Sea Level Rise; Severe Weather: Heavy Rains and Storms

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

Issue/Background (Problem Statement): The Sacramento River east bank levee, extending from Freeport to the area downstream of Hood, serves as a critical infrastructure component for flood control and water supply. This levee is owned and managed by the State of California Department of Water Resources, Maintenance Area 9. It needs enhancements to ensure continued reliability.

Project Description: This project entails the comprehensive repair, enhancement, and certification of the Sacramento River East Levee segment. These improvements are essential to strengthen flood protection for residents located downstream. This project will ensure the levee's continued effectiveness as a critical infrastructure component, supporting both community safety and regional water needs. Continue engaging with and California Department of Water Resources to perform this work.

Other Alternatives: No other available alternatives.

Existing Planning Mechanism(s) through which Action Will Be Implemented: Central Valley Flood Protection Plan

Responsible Office/Partners: California Department of Water Resources, Sacramento County Department of Water Resources

Project Benefits (Losses Avoided): Protects life safety; reduces property and infrastructure damage; improves continuity of operations and essential services; provides co-benefits for natural/cultural resources and economic resilience.

Potential Funding (Local Budgets, Grant Funds, etc. by specific type): California Department of Water Resources Fund, California Department of Water Resources – Flood Emergency Response Projects Grants

Timeline: 1-5 years and ongoing

Project Priority (High, Medium, Low): Medium

Action 34. Implement Storm Drain Capital Improvement Plan

Hazards Addressed: Flood: 1%/0.5%/0.2% Annual Chance; Flood; Localized Stormwater; Severe Weather: Heavy Rains and Storms

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

Issue/Background (Problem Statement): The initiative focuses on the design and construction of drainage capital improvement projects, with the primary goal of repairing existing facilities and implementing enhancements that will mitigate flooding risks.

Project Description: Sacramento County has established a comprehensive five-year Capital Improvement Plan, which outlines the design, construction, and enhancement of drainage infrastructure projects. This plan aims to repair existing facilities and implement upgrades that effectively reduce flooding risks.

Other Alternatives: Postponing the projects is an option; however, this approach is not recommended due to the potential negative impacts on flood mitigation and infrastructure improvements.

Existing Planning Mechanism(s) through which Action Will Be Implemented: Sacramento County 5-year Capital Improvement Plan

Responsible Office/Partners: Sacramento County Department of Water Resources

Project Benefits (Losses Avoided): Protects life safety; reduces property and infrastructure damage; improves continuity of operations and essential services; provides co-benefits for natural/cultural resources and economic resilience.

Potential Funding (Local Budgets, Grant Funds, etc. by specific type): FEMA Grants: HMGP, FMA, BRIC, Sacramento County Stormwater Utility

Timeline: 1 to 5 years

Project Priority (High, Medium, Low): Medium

Action 35. Cosumnes River Watershed Multi-benefit Projects

Hazards Addressed: Flood: 1%/0.5%/0.2% Annual Chance; Flood; Localized Stormwater; Drought & Water Shortage; Levee Failure; Severe Weather: Heavy Rains and Storms

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

Issue/Background (Problem Statement): The Cosumnes River is the only major stream system in the Western Sierra Nevada Mountain Range without a major flood control system. Its watershed spans parts of Sacramento, El Dorado, and Amador counties and has experienced significant flooding and drought in recent years, resulting in infrastructure damage, loss of life, and adverse impacts on local communities and ecosystems.

Project Description: Sacramento County is advancing projects that mitigate flood risks, enhance groundwater recharge, and expand floodplain areas to improve natural habitats.

Other Alternatives: No other available alternatives.

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

Responsible Office/Partners: Sacramento County Department of Water Resources

Project Benefits (Losses Avoided): The project improves public safety by reducing risks to life and property, keeps essential services running during emergencies, and preserves natural and cultural resources. It also promotes economic resilience and supports regional well-being through multi-benefit strategies.

Potential Funding (Local Budgets, Grant Funds, etc. by specific type): FEMA Grants: HMGP, FMA, BRIC, California Department of Water Resources – Flood Emergency Response Projects Grants

Timeline: 1-5 years and ongoing

Project Priority (High, Medium, Low): Medium

Action 36. Urban Levee Monitoring

Hazards Addressed: Flood: 1%/0.5%/0.2% Annual Chance; Flood; Localized Stormwater; Dam Failure; Levee Failure; Sea Level Rise; Severe Weather: Heavy Rains and Storms

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

Issue/Background (Problem Statement): Improvements to the American River North and South Levees were completed by SAFCA, and the County has accepted the findings of the associated engineering reports. These reports identify several items requiring ongoing actions and monitoring, including right-of-way and access considerations, encroachments, and structural penetrations. Similarly, SAFCA is currently implementing improvements to the Natomas basin levees, and upon completion, those levees will require comparable actions and monitoring.

Project Description: Sacramento County is developing monitoring and implementation strategies to address these items. This effort includes an extensive initiative to catalog, document, inspect, and prioritize the repair or removal of identified issues. This work will be done in collaboration with the City of Sacramento and SAFCA.

Other Alternatives: No other available alternatives.

Existing Planning Mechanism(s) through which Action Will Be Implemented: Urban Level of Design Criteria Right-of-Way Plan; Urban Level of Design Criteria Exceptions Plan

Responsible Office/Partners:

- Sacramento County Department of Water Resources
- City of Sacramento
- Sacramento Area Flood Control Agency

Project Benefits (Losses Avoided): The project improves public safety by reducing risks to life and property, keeps essential services running during emergencies, and preserves natural and cultural resources. It also promotes economic resilience and supports regional well-being through multi-benefit strategies.

Potential Funding (Local Budgets, Grant Funds, etc. by specific type): Sacramento County Zone 13

Timeline: 1 year and ongoing

Project Priority (High, Medium, Low): Medium

Action 37. Movable Bridge Maintenance

Hazards Addressed: Flood, Levee Failure, Sea Level Rise, Severe Weather: Heavy Rain and Storms

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

Issue/Background (Problem Statement): Maintenance and repair of levees in the Delta includes transporting materials by barge, which requires opening the movable bridges along those routes. Keeping the bridges operable is critical to mariners and the ability to protect infrastructure. Additionally, these bridges are part of critical evacuation routes for the population living in the delta communities.

Project Description: Repair and upgrade aging infrastructure to continue to allow bridge openings for mariners to make levee repairs and complete mitigation projects during calm weather and allow the bridge to remain functional for emergency services and evacuation traffic during emergency incidents.

Other Alternatives: No action

Existing Planning Mechanism(s) through which Action Will Be Implemented: Caltrans Structure Maintenance and Investigations regularly inspects the bridges every two years which define the actions that need to be implemented.

Responsible Office/Partners: Sacramento County Department of Transportation, Caltrans

Project Benefits (Losses Avoided): Movable Bridge Maintenance projects will prevent restricted access to the rivers, allowing levee maintenance and repairs to continue and prevent closure of evacuation routes.

Potential Funding (Local Budgets, Grant Funds, etc. by specific type): Sacramento County Road Fund, Highway Bridge Program, Bridge Preventive Maintenance Program

Timeline: Within 2 years and biannually. Bridge inspections are performed every two years and projects are identified from inspections.

Project Priority (High, Medium, Low): High

Action 38. Scour Countermeasures

Hazards Addressed: Flood, Severe Weather: Heavy Rain and Storms

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

Issue/Background (Problem Statement): During high river flows, flooding, and rain events bridges within Sacramento County can sustain scour damage, potentially leading to critical failure.

Project Description: Inspect and identify bridges with potential to scour during and before future flood events, during bridge inspections, and during regular maintenance. Continue inspection, identification, and mitigation of bridge scour after flood events to mitigate for future events. Install scour countermeasures as identified by inspections.

Other Alternatives: No action

Existing Planning Mechanism(s) through which Action Will Be Implemented: Caltrans Structure Maintenance and Investigations regularly inspects the bridges every two years which define the actions that need to be implemented.

Responsible Office/Partners: Sacramento County Department of Transportation, Caltrans

Project Benefits (Losses Avoided): Scour countermeasure projects will prevent evacuation routes from being cut off due to bridge failures or instabilities resulting from scour damage.

Potential Funding (Local Budgets, Grant Funds, etc. by specific type): Sacramento County Road Fund, Highway Bridge Program, Bridge Preventive Maintenance Program

Timeline: Within 2 years and biannually. Bridge inspections are performed every two years and projects are identified from inspections.

Project Priority (High, Medium, Low): High

Action 39. Wilton Area Roadway Resiliency Project

Hazards Addressed: Multi-hazard – Project will continue to identify hazards including but not limited to: Climate hazards (flooding, wildfire, subsidence, etc.) & transportation system hazards (closed emergency evacuation routes, damaged infrastructure, loss of capacity, etc.).

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

Issue/Background (Problem Statement): The rural community of Wilton faces escalating climate driven threats that directly impact the reliability, safety, and resilience of its multimodal transportation network. Situated along the Cosumnes River, the study area has experienced repeated and increasingly severe flooding events that have inundated major corridors, damaged infrastructure, disrupted emergency access, and led to tragic loss of life. Much of the region lies within Federal Emergency Management Agency (FEMA) designated 100- and 500-year floodplains, and key routes such as Wilton Road, Dillard Road, and Riley Road have been submerged during recent storm events (2017). These vulnerabilities are compounded by a history of significant wildfires between 2016 and 2023, as well as extreme heat conditions that elevate wildfire risk and further strain transportation infrastructure.

Project Description: The Wilton Area Roadway Resiliency Project will create a Resilience Improvement Plan and advance up to 30% design for priority roadway and bridge improvement solutions. The project focuses on developing sub-projects to strengthen existing transportation assets against seasonal and extreme flooding, wildfire risk, and extreme heat while evaluating opportunities to introduce bicycle lanes and active transportation facilities where none currently exist. These improvements will enhance safety, expand low cost mobility options, and support greenhouse gas (GHG) reduction goals.

Other Alternatives: No Action

Existing Planning Mechanism(s) through which Action Will Be Implemented: The final resilience plan will be prepared to align with the California State Adaptation Strategy, CalSTA's Climate Action Plan for Transportation Infrastructure, OPR's Integrated Climate Adaptation and Resiliency Program (ICARP) program, SACOG climate adaptation strategies, and Sacramento County's Climate Action Plan.

Responsible Office/Partners: Sacramento County Department of Transportation

Project Benefits (Losses Avoided): The defined sub-projects will reflect the highest combined benefits in terms of climate vulnerability reduction, mobility enhancement, community support, and general feasibility based on planning level information. The sub-projects identified will prevent or minimize damage to evacuation routes and critical community infrastructure during emergencies including flood and wildfire events.

Potential Funding (Local Budgets, Grant Funds, etc. by specific type): The alignment with the planning mechanisms above supports eligibility for future grant and other funding opportunities, including PROTECT program grants and additional state or federal resilience funding.

Timeline: The Wilton Area Roadway Resiliency Project will be completed by the end of 2027.

Project Priority: High

Action 40. FL-1: Floodplain Open Space Preservation and Green Infrastructure, Development Approvals

Hazard Addressed: Flood -- Climate-Enhanced; Sea Level Rise / Delta; Drought and Water Security: Land Use and Stormwater Planning

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

Issue/Background (Problem Statement): Sacramento County's General Plan contains opportunities to further strengthen policies related to floodplain open space preservation and climate resilience. Additional opportunities may also exist to evaluate the role of green infrastructure in supporting flood resilience through future planning and development processes. This action is intended to complement, not duplicate, the County's existing Floodplain Management Ordinance (Title IX of the County Zoning Code, County Code Chapters 901-907, administered by the Department of Water Resources), which already establishes floodplain development permitting, compensatory storage, and drainage review requirements; the focus here is on connecting these existing regulatory tools to General Plan open space and climate resilience policy direction.

Project Description: Consider evaluating opportunities to support future floodplain open space preservation policies and green infrastructure approaches that enhance flood resilience and inform future land use planning. Actions may include: These actions are intended to build on, and coordinate with, existing floodplain regulatory requirements administered by the Department of Water Resources under the County's Floodplain Management Ordinance, rather than establish new or duplicative floodplain development standards.

(1) Evaluate whether additional General Plan policy direction related to floodplain open space preservation may be appropriate, including consideration of preserving key floodplain areas as climate resilience assets, where supported through future planning efforts; (This General Plan policy consideration is distinct from, and would not alter, the development standards and permit requirements already administered under the Floodplain Management Ordinance.)

(2) Exploring Low Impact Development (LID) and green infrastructure approaches that may be appropriate for future planning and development projects, in coordination with DWR and DOT;

(3) Explore opportunities to improve Community Rating System (CRS) credit eligibility through floodplain planning and conservation efforts, in coordination with SacOES.;

(4) Evaluate opportunities to support riparian protection strategies for future planning efforts in coordination with CDFW and the U.S. Army Corps of Engineers.. Because LID and drainage design standards are primarily developed and administered by DWR and DOT under existing County Code and the Stormwater Quality Design Manual, this action would focus on land use and General Plan policy alignment rather than establishing new LID technical standards.

Other Alternatives:

Alt. 1: Rely solely on National Flood Insurance Program (NFIP) floodplain management ordinance without additional open space or LID requirements -- not advanced; NFIP minimum standards do not address climate-intensified flood risk or capture CRS credits.

Alt. 2: Address floodplain preservation only through DWR and SAFCA capital projects without land use policy -- not advanced; land use policy is needed to prevent incremental floodplain loss through development approvals.

Alt. 3: No action -- not appropriate; continued floodplain development under increasing precipitation risk increases County flood exposure and foregoes CRS credits.

Existing Planning Mechanism(s) through which Action Will Be Implemented: Sacramento County General Plan (Conservation/Open Space Element; Safety Element SA-7, SA-8); Sacramento County Floodplain Management Ordinance (NFIP compliance); FEMA CRS Activities 420 and 450; 2024 CAP (Nature-Based Solutions); CAP Climate Vulnerability Assessment (Ascent Env., 2017); Cal-Adapt SLR Planning Tool; Central Valley Flood Protection Plan (DWR); SAFCA; SB 379; AB 2421 (riparian protection); CDFW Section 1602; Army Corps Section 404; Sacramento County Stormwater Quality Design Manual (DOT); Environmental Justice Element; CalEnviroScreen 5.0. (Note: Sacramento County Floodplain Management Ordinance, Title IX of the County Zoning Code / County Code Chapters 901-907, administered by DWR as Floodplain Administrator, already establishes floodplain permitting, compensatory storage requirements for fill (Chapter 6), development standards, and Urban Level of Flood Protection (ULOP) criteria; this action is intended to complement these existing regulations through General Plan-level open space and coordination policy, not duplicate them.)

Responsible Office / Partners:

Lead: Sacramento County Planning & Environmental Review (PER)

Partners: DWR (LID design standards); Sacramento County Water Agency (SCWA) — a water purveyor division of the Department of Water Resources (DWR) — (floodplain hydrology); SAFCA (flood infrastructure coordination); Regional Parks (conservation); SacOES (FEMA CRS coordination); CDFW; Army Corps of Engineers; FEMA Region IX.

Note: Specific project components may be more appropriately led by DWR or DOT; responsibility should be confirmed based on regulatory vehicle selected. The County does not have direct authority over independent water agencies' operations or funding priorities, which shift year to year based on precipitation and hydrologic conditions.

Project Benefits (Losses Avoided): May preserve natural flood attenuation capacity; potential FEMA CRS Activity 420 credits may reduce NFIP insurance premiums; may reduce stormwater runoff and improve groundwater recharge; may protect riparian habitat; may support implementation of CAP nature-based solutions; and may provide equity benefit for disadvantaged communities near floodplains.

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

- FEMA Hazard Mitigation Grant Program (HMGP)
- FEMA CRS Program (indirect benefit through reduced NFIP premiums)
- DWR Proposition 1 / CVFPP Implementation Grants
- USFWS Partners for Fish and Wildlife / NRCS RCPP
- FEMA BRIC Program
- Sacramento County General Fund / DOT Stormwater Fund

Timeline:

Short-term (0-12 months): Evaluate feasibility of compiling available floodplain mapping information, identify priority planning areas, evaluate opportunities for future policy development, and coordinate with SacOES regarding CRS opportunities. Consider establishing an annual formalized coordination meeting schedule and agenda template with DWR, SCWA, SAFCA, and Groundwater Sustainability Agencies to systematically review floodplain and precipitation-driven priorities beyond ad hoc, project-specific touchpoints. Mid-term (1-3 yrs): If supported through available funding and Board direction evaluate potential General Plan policy updates, explore LID approaches through appropriate planning processes, and coordinate with SacOES regarding potential CRS opportunities.

Long-term (3-5 yrs): Continue coordination with partner agencies; monitor implementation of adopted planning efforts as appropriate, and periodically evaluate flood resilience initiatives.

Project Priority: HIGH -- Direct flood risk reduction; CRS credits reduce community insurance costs; implements CAP nature-based solutions; SB 379 contribution; equity co-benefit.

Action 41. Support Sea-Level Rise Data Analysis to Protect Critical Infrastructure and Guide Future Development

Hazards Addressed: Sea Level Rise

Issue/Background (Problem Statement): The impact of sea level rise will manifest gradually over the century, and according to current projections, 8 percent of Sacramento County is at risk of inundation from a 1.41-meter rise in sea level coupled with a 100-year flood event. 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. Current Federal Emergency Management Agency Base Flood Elevations do not account for potential sea level rise due to climate change. If planning and

investment decisions are not informed by updated sea level rise information, the county is at higher risk for future loss of life, property, and services, among other damages.

Project Description: This project would support ongoing collection and analysis of sea level rise, storm surge, and tidal data; research on regional saltwater intrusion and degraded water quality as a result of sea level rise; and regular updates to sea level rise maps by existing institutions such as the Federal Emergency Management Agency, the National Oceanic and Atmospheric Administration, the California Coastal Commission, and the California Department of Water Resources. The County can then use this information to 1) update capital improvement plans for critical infrastructure in areas at risk from future sea level rise and related hazards and 2) guide future development away from vulnerable areas through tools such as zoning changes, transfer of development rights, or other land use mechanisms.

This action is based on the Sacramento County Climate Action Plan measures SLR-01 – SLR-05.

Other Alternatives: No Action.

Existing Planning Mechanism(s) through which Action Will Be Implemented: Sacramento County Climate Action Plan

Responsible Office/Partners: Sacramento County Department of Water Resources, Sacramento County Planning and Environmental Review, reclamation districts

Project Benefits (Losses Avoided): Injury and loss of life; Commercial and residential structural and property damage; Health hazards associated with mold and mildew, contamination of drinking water, etc.; 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.

Potential Funding (Local Budgets, Grant Funds, etc. by specific type): FEMA hazard mitigation grant program; General Funds

Timeline: To be initiated within 5 years and ongoing

Project Priority (High, Medium, Low): Low

Severe Weather: Extreme Heat Actions

Action 42. Cool Surfaces Measure / Cool City Strategy

Hazards Addressed: Extreme weather (Heat)

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

Issue/Background (Problem Statement): California faces an increasing number of natural disasters – extreme heat is one of them. Climate change is increasing temperatures and the frequency of extreme heat events. Excess heat is being trapped by the built environment, especially in developed areas compared to more rural areas. This phenomenon is known as the urban heat island effect.

Project Description: One solution to address urban heat islands is to implement a cool surfaces measure and/or a cool city strategy that focuses on creating heat-adapted built environments. Surface reflectivity improvements can reduce the average temperature of cities by decreasing the amount of heat that is absorbed by city infrastructure. Cool pavement, cool roof, and cool wall projects will improve reflectivity, ensuring that surfaces emit less heat. Additionally, solar photovoltaic shade structures could be strategically installed within cities to provide shade and help cool electric vehicles as they charge.

Other Alternatives: Vegetation effectively reduces temperatures through the process of evapotranspiration and by providing shade to neighborhoods. A dedicated tree planting and management strategy is also essential to include in the 2026 Sacramento LHMP Update to address extreme heat.

Existing Planning Mechanism(s) through which Action Will Be Implemented: Climate action plans and general plans; street design standards

Responsible Office/Partners: Public works departments, climate planning and sustainability departments within local jurisdictions

Project Benefits (Losses Avoided): These actions would increase resilience to extreme heat and lead to less hospital visits from members of vulnerable populations including the elderly, young children, people with pre-existing health conditions, outdoor workers, and people experiencing homelessness who have less access to air conditioning.

Potential Funding (Local Budgets, Grant Funds, etc. by specific type): GGRF and Prop 4 Extreme Heat and Community Resilience Grant funding, Caltrans Sustainable Transportation Planning Grant, FEMA's Building Resilient Infrastructure and Communities and Hazard Mitigation Grant programs

Timeline: Within 2 years and ongoing

Project Priority (High, Medium, Low): Medium

Action 43. EH-2: Urban Heat Island (UHI) Mapping and General Plan / Land Use Integration

Hazard Addressed: Extreme Heat, Urban Heat Island Effect: Land Use Planning Integration

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

Issue/Background (Problem Statement): Sacramento County currently has limited integration of Urban Heat Island (UHI) mapping into General Plan land use decisions or development review. The CAP Climate Vulnerability Assessment (2017) documents UHI conditions across Sacramento County, identifying areas with high impervious surface, low tree canopy, and aging housing stock. Multiple communities in the unincorporated County experience elevated heat vulnerability, as identified through the Environmental Justice Element and CalEnviroScreen 5.0. SB 379 requires Safety Elements to address hazard exposure for vulnerable populations, and UHI information may help inform future planning efforts. The 2024 CAP includes cool community measures that would benefit from a supporting spatial data layer.

Project Description: Consider evaluating opportunities to develop and use a "UHI Hazard Layer" to support future land use planning and climate resilience efforts. Actions may include:

(1) Developing or evaluating a UHI planning GIS layer using CalEPA UHI Index data and other available thermal and canopy datasets, together with Environmental Justice Element policy areas and CalEnviroScreen 5.0;

(2) Evaluating the use of the UHI planning layer as a planning support tool during updates to the Safety Element (GP-1), where appropriate, consistent with SB 379;

(3) Consider using the UHI planning layer to support development review and inform cool community standards in coordination with LU-1;

(4) Making UHI data available through County GIS resources to support planning, collaboration, and public awareness.

Other Alternatives:

Alt. 1: Rely on CalEPA's statewide UHI map without a county-specific layer -- not advanced; statewide map lacks resolution for project-level review.

Alt. 2: Address UHI through case-by-case landscaping conditions without a systematic layer -- not advanced; may result in inconsistent application and no cumulative tracking.

Alt. 3: No action -- not appropriate; UHI-related health risk in disadvantaged communities continues to grow without systematic policy response.

Existing Planning Mechanism(s) through which Action Will Be Implemented: Sacramento County 2024 CAP (TEMP-04, TEMP-07, TEMP-08); General Plan Safety Element; General Plan Environmental Justice Element; SB 379; AB 296 (CalEPA UHI Index); CAP Climate Vulnerability Assessment (Ascent Env., 2017); CalEnviroScreen 5.0; LCI Vulnerable Communities Platform (supplemental); SMAQMD Air Quality Management Plan; Sacramento County GIS Services; Cal-Adapt 5th Assessment Climate Projections.

Responsible Office/Partners:

Lead: Sacramento County Planning & Environmental Review (PER), in coordination with departments and agencies responsible for public health, emergency response, parks, and community services

Partners: SMAQMD; Department of Regional Parks; Sacramento County Public Health (SCPH); Sacramento County Office of Emergency Services; Sacramento County GIS Services; CalEPA; Community-Based Organizations

Project Benefits (Losses Avoided): May enable consistent heat screening in development review; may target cool design investments to highest-heat-burden communities; may support SB 379 Safety Element compliance; may advance 2024 CAP cool community measures; and potential FEMA CRS Activity 430 credits.

Potential Funding (Local Budgets, Grant Funds, etc. by specific type): Potential funding sources may include:

- SMAQMD Planning Grants
- CAL FIRE Urban Forestry (Proposition 4) for canopy mapping
- Strategic Growth Council Climate Adaptation Planning grants
- FEMA HMGP Planning
- USDA Urban and Community Forestry Program
- NASA Applied Sciences Urban Climate Program (technical assistance)
- Sacramento County General Fund / GIS Capital (staff time and data acquisition)

Timeline:

Short-term (0-12 months): Compile available datasets; evaluate development of a draft UHI planning layer using available methodologies; and present preliminary findings to planning staff and other applicable working groups.

Mid-term (1-2 yrs): Refine the UHI planning layer, evaluate opportunities for integration into future planning efforts such as GP-1 and LU-1, and consider making mapping resources publicly available, as appropriate.

Long-term (2-5 yrs): Continue evaluating available heat vulnerability data and update planning resources as new information becomes available.

Project Priority: HIGH -- Required for SB 379 Safety Element compliance; foundational data for LU-1 and EJ work; aligned with 2024 CAP.

Wildfire Actions

Action 44. Home Hardening, Defensible Space, and Vegetation Management; Development of Areas of Refuge

Hazards Addressed: Wildfire

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

Issue/Background (Problem Statement): Numerous areas of the community are affected by wildfires including the American River Parkway, Rancho Murrieta, Sloughouse and Jackson Highway. Wildfires can cut off the limited egress routes and residents and businesses need to identify areas of refuge that can protect people from approaching fire. Sacramento County's unincorporated communities in and adjacent to CAL FIRE-designated High and Very High Fire Hazard Severity Zones (FHSZ) face elevated wildfire risk, and the General Plan Safety Element (SA-23 through SA-29) identifies fire hazard as a priority risk. Vulnerable households, including lower-income residents, seniors, and limited-English speaking populations, may face heightened wildfire risk in these areas.

Project Description: Projects to create defensible space and vegetation management in communities most affected by wildfire dangers. To study the feasibility of designated areas of refuge, identify mechanisms for access to, or funding opportunities for procurement and design of, those areas of Refuge and implement a public education strategy on how to safely use those refuge areas. This also includes evaluating opportunities to support a Community Fuel Reduction and WUI Home Hardening Program for parcels in High/Very High FHSZ areas, including: incorporating CAL FIRE FHSZ maps in the County Parcel Viewer to support wildfire risk identification; exploring financial assistance options for home hardening and ignition-resistant retrofits (e.g., through programs such as CHHA or similar programs); coordinating with local, regional, and state agencies to identify and support fuel reduction opportunities on private parcels; coordinating with appropriate partner agencies to support defensible space inspection and compliance efforts for parcels located within FHSZ areas; and supporting development of Community Wildfire Protection Plans (CWPPs), in coordination with appropriate partner agencies, for vulnerable unincorporated communities where appropriate. At a high level, the County may also use FHSZ mapping and partner coordination to identify existing developed areas in SRAs or VHFHSZs where access, vegetation clearance, signage, water supply, defensible space, or evacuation conditions may not meet current fire-safe standards, and may consider mitigation priorities and long-term maintenance responsibility for vegetation management, roadside clearance, and fuel breaks as part of ongoing wildfire risk reduction efforts, consistent with the Board of Forestry and Fire Protection's Safety Element review criteria.

Other Alternatives: Partner with local Fire Safe Councils, fire departments, General Plan changes requiring the identification of refuge sites. Alternatives could include expanding arterial and corridor capacity to effect large, rapid evacuation orders. Additional alternatives considered for this action: A regulatory-only approach without financial assistance was not advanced because lower-income households may have limited access to retrofit resources. Public lands fuel treatment only, without addressing private parcels, was not advanced because wildfire risk extends beyond public lands and the majority of ignition risk involves privately owned parcels. No action was not advanced given documented and increasing fire risk. Partnering with local Fire Safe Councils, fire departments, and pursuing General Plan changes

requiring identification of refuge sites, as well as expanding arterial and corridor capacity for large, rapid evacuation orders, remain part of the preferred combined approach alongside defensible space, vegetation management, and fuel reduction/home hardening efforts.

Existing Planning Mechanism(s) through which Action Will Be Implemented: Sacramento County General Plan Safety Element (SA-23, SA-25-SA-27), 2024 Climate Action Plan, Sacramento County Parcel Viewer (WUI overlay), CAL FIRE FHSZ regulations, CBC Chapter 7A (WUI Construction Standards), California Wildfire Mitigation Program (AB 38/CWMP), Regional Forest and Fire Capacity (RFFC) Program, Sacramento County Fire Advisory Board.

Responsible Office/Partners: Sacramento County OES, Regional Parks, Sacramento County Planning & Environmental Review (PER), Department of Community Development, local fire protection districts, CAL FIRE, Fire Safe Councils, and community-based organizations serving vulnerable populations.

Project Benefits (Losses Avoided): Reduced wildfire risk. May reduce structure ignition risk in FHSZ areas; may improve protection of critical infrastructure and emergency access corridors; may provide equity co-benefit for lower-income FHSZ residents; and may support reduced wildfire emissions and resilience objectives in the 2024 CAP.

Potential Funding (Local Budgets, Grant Funds, etc. by specific type): CAL FIRE grants, FEMA HMGP, General Funds, FEMA Hazard Mitigation Grant Program (HMGP) (75%/25% match), FEMA Pre-Disaster Mitigation (PDM), California Wildfire Mitigation Program (CWMP/AB 38), Proposition 4 (Wildfire & Forest Resilience), USDA Forest Service State Fire Assistance grants, Sacramento County CIP/General Fund (local match)

Timeline: Within 5 years Full phased timeline for this action: Short-term (0-2 yrs): Evaluate opportunities to incorporate CAL FIRE FHSZ maps in the County Parcel Viewer; identify at-risk areas; coordinate with partner agencies regarding defensible space efforts; explore opportunities to support the CWPP process; and begin defensible space and vegetation management projects and the areas-of-refuge feasibility study within the overall 5-year action window. Mid-term (2-4 yrs): Explore financial assistance opportunities for home hardening; continue coordination with state, regional, and local partners regarding fuel reduction initiatives; and continue implementation of defensible space, vegetation management, and areas-of-refuge public education. Long-term (4-5 yrs): Support implementation of CWPPs, where developed, and continue coordination with partner agencies regarding wildfire mitigation efforts, consistent with the overall 5-year action timeline

Project Priority (High, Medium, Low): High

Action 45. Wildfire Fighting - Support

Hazards Addressed: Wildfire risk within Sacramento County Regional Parks and in Open Space, especially at the urban interface.

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

Issue/Background (Problem Statement): Large areas of Sacramento County's rural areas and open space are susceptible to wildfire. The multi-year drought conditions have stressed trees and other vegetation, increased flammability and lengthened the fire season. The County has experienced more and larger wildfires than in years past. Wildfire fighting support is needed to reduce response time to minimize wildfire size and intensity. Wildfire risk also extends beyond public parkland to private parcels within CAL FIRE High/Very High Fire Hazard Severity Zones (FHSZ), including vulnerable households such as lower-income residents, seniors, and limited-English speaking populations, making coordinated fuel reduction and home hardening across public and private land essential.

Project Description: Mitigation includes firebreak maintenance, clearance for access roadways, adding fire access signage, maintaining technology to share information on access routes, hydrants, sensitive habitat, and cultural resource areas. Coordination with local fire agencies on risks and response activities. Mitigation includes firebreak maintenance, clearance for access roadways, adding fire access signage, maintaining technology to share information on access routes, hydrants, sensitive habitat, and cultural resource areas. Coordination with local fire agencies on risks and response activities.

Other Alternatives: No Action. Additional alternatives considered for this action: A regulatory-only approach without financial assistance for private parcel fuel reduction was not advanced, as lower-income households may have limited access to retrofit resources. Public lands fuel treatment only, without addressing private parcels, would not be sufficient, as wildfire risk extends beyond public lands and the majority of ignition risk involves privately owned parcels; coordinated public- and private-land treatment is the preferred approach alongside continued firebreak maintenance and access road clearance.

Existing Planning Mechanism(s) through which Action Will Be Implemented: Parks has identified locations for road clearance. Planning with other agencies is ongoing to prioritize hazardous conditions and make efficient use of funds. Sacramento County Parcel Viewer (WUI overlay), CAL FIRE FHSZ regulations, California Wildfire Mitigation Program (AB 38/CWMP), and Sacramento County Fire Advisory Board also support coordinated planning for this action.

Responsible Office/Partners: Sacramento County OES, Sacramento County Department of Regional Parks / Sacramento Metropolitan Fire District, City of Sacramento Fire Department, Sacramento County Planning & Environmental Review (PER), CAL FIRE, and Fire Safe Councils

Project Benefits (Losses Avoided): Protecting park lands, adjacent neighborhoods, high priority forests, wildlife habitats, and cultural resources.

Potential Funding (Local Budgets, Grant Funds, etc. by specific type): Cal Fire grants, FEMA Fire Management and Firefighters Assistance Grants

Timeline: Within 5 years and periodic as required by specific projects. Full timeline for this action: Within 5 years and periodic as required by specific projects, including ongoing coordination with partner agencies, within the 0-4 year period, on complementary private-parcel fuel reduction and home hardening efforts, CAL FIRE FHSZ mapping, and defensible space compliance support, alongside continued firebreak maintenance, access road clearance, and fire access signage work.

Project Priority (High, Medium, Low): High

Action 46. Wildfire Suppression

Hazards Addressed: Wildfire

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

Issue/Background (Problem Statement): Large areas of Sacramento County's rural areas and open space are susceptible to wildfire. Areas of concern include Regional Parks and Open Space areas, especially at the urban interface. The multi-year drought conditions have stressed trees and other vegetation, increased flammability and lengthened the fire season. The County has recently experienced more frequent and larger wildfires than in years past. Wildfire suppression is needed to reduce fire loads and to reduce response time to minimize wildfire size and intensity. Fire risk also extends to private parcels in CAL FIRE-designated High and Very High Fire Hazard Severity Zones (FHSZ), where vulnerable households, including lower-income residents, seniors, and limited-English speaking populations, may face heightened wildfire risk, underscoring the need for coordinated public- and private-land wildfire suppression and fuel reduction efforts.

Project Description: Mitigation includes clearance for access roadways and firebreaks, maintaining and adding fire access signage, sharing information on access routes, hydrants, sensitive habitat, and cultural resource areas. Providing areas for wildfire training (burns) for fire departments, when feasible. Active patrols to monitor for wildfire ignitions and possibly adding remote monitoring equipment.

Other Alternatives: No Action. Additional alternatives considered for this action: A regulatory-only approach without financial assistance for private parcel fuel reduction was considered and not advanced, as lower-income households may have limited access to retrofit resources; no action was not advanced given documented and increasing wildfire frequency and severity. Continuing current clearance, signage, monitoring, and training-burn activities, supplemented by coordinated private-parcel fuel reduction and home hardening support, is the preferred combined approach.

Existing Planning Mechanism(s) through which Action Will Be Implemented: American River CWPP and other area fire plans and programs, Sacramento County Parcel Viewer (WUI overlay), CAL FIRE FHSZ regulations, CBC Chapter 7A (WUI Construction Standards), Regional Forest and Fire Capacity (RFFC) Program.

Responsible Office/Partners: Sacramento County OES, Sacramento County Department of Regional Parks, Sacramento Metropolitan Fire District, City of Sacramento Fire Department, Sacramento County Planning & Environmental Review (PER), Department of Community Development, CAL FIRE, and Fire Safe Councils

Project Benefits (Losses Avoided): Protecting park lands and facilities, adjacent neighborhoods, high priority forests, wildlife habitats, and cultural resources.

Potential Funding (Local Budgets, Grant Funds, etc. by specific type): FEMA HMGP, Cal Fire grants, FEMA Fire Management and Firefighters Assistance Grants, California Wildfire Mitigation Program (CWMP/AB 38), Proposition 4 (Wildfire & Forest Resilience), USDA Forest Service State Fire Assistance grants

Timeline: Within 5 years and at minimum implemented annually - periodic scheduled work Full timeline for this action: Within 5 years and at minimum implemented annually - periodic scheduled work, including access roadway/firebreak clearance, fire access signage, sharing of access/hydrant/habitat/cultural resource information, wildfire training burns where feasible, and active ignition-monitoring patrols; within the 0-4 year period, coordinate with partner agencies to support private-parcel fuel reduction, home hardening financial assistance, and defensible space compliance efforts in FHSZ areas, complementing ongoing public-land suppression activities.

Project Priority (High, Medium, Low): Medium

Action 47. Rural Southern Sacramento County System Mapping/Vulnerability Assessments and Stream/Swale Channel Maintenance

Hazards Addressed: Flood: 1%/0.5%/0.2% Annual Chance, Severe Weather: Heavy Rains and Storms, Wildfire

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

Issue/Background (Problem Statement): In rural southern Sacramento County, our interconnected network of vernal pools and swales serves as critical natural drainage infrastructure. However, under the changing regional risk landscape, these features present two interrelated hazards:

- Localized High-Water & Spillover Flooding: During heavy atmospheric river events, saturated swales and vernal basins quickly exceed capacity, causing unmanaged runoff that inundates local roads, isolates properties, and impedes emergency responder access.
- Wildfire & Fuel Load Hazards (WUI): During hot summer and fall months, the dense, dried vegetation within unmaintained swales and seasonal basin beds creates continuous fuel corridors across agricultural and residential property lines, increasing WUI wildfire risks.

Project Description: This project aims to mitigate the above problems using:

- System Mapping & Vulnerability Assessments: Mapping critical swales and vernal pool basins relative to local roads, evacuation routes, and critical agricultural/residential infrastructure.
- Stream & Swale Channel Maintenance Projects: Establishing clear mitigation protocols for eco-friendly clearing and maintenance to reduce both flood backup and wildfire fuel loads.

Other Alternatives: No action.

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

Responsible Office/Partners: Herald Fire Prevention Council in partnership with County OES.

Benefits (Losses Avoided): The risk of wildfire and flooding will be reduced for people, property, and critical facilities in rural southern Sacramento County.

Potential Funding (Local Budgets, Grant Funds, etc.): Herald Fire Prevention Council would sub-apply for future FEMA grants (such as BRIC or HMGP) and state watershed protection funds using an "in-kind" local matching model supported by community volunteerism and local stakeholders.

Timeline: Within 5 years.

Project Priority (High, Medium, Low): Medium

Action 48. Community Chipper Days

Hazards Addressed: Wildfire

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

Issue/Background (Problem Statement): There is a need to reduce hazardous vegetation and increase defensible-space debris around homes, roadways, and community facilities.

Project Description: Establish recurring community chipper events that provide residents with a safe and affordable way to dispose of tree limbs, brush, and other vegetative fuels. Events may include curbside collection, centralized drop-off locations, or scheduled neighborhood service areas. The program would prioritize high-risk areas, coordinate with fire agencies and public works partners, and include clear participation and pile-preparation requirements.

Other Alternatives: No action.

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

Responsible Office/Partners: Sacramento County OES, Sacramento County Public Works or Parks, CAL FIRE, Fire agencies, local haulers, volunteers, property owners, HOAs Fire Agencies and Fire Safe Councils

Benefits (Losses Avoided): Reduces ladder fuels and accumulated vegetation; supports defensible-space compliance; decreases illegal dumping and open burning; improves community participation in wildfire mitigation.

Potential Funding (Local Budgets, Grant Funds, etc.): FEMA HMGP/BRIC when eligible, CAL FIRE grants, California Fire Safe Council grants, County general or grant funds, local sponsorships

Timeline: Concept under development; community interest and partner coordination are ongoing. It is desired to have this project going within the five-year life cycle of this LHMP.

Project Priority (High, Medium, Low): High

Action 49. Community Wildfire Preparedness and Education Program

Hazards Addressed: Wildfire

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

Issue/Background (Problem Statement): There is a need to increase public understanding of local hazards and improve household preparedness, evacuation readiness, and risk-reduction behaviors.

Project Description: Develop a sustained community education program using workshops, neighborhood meetings, mailers, social media, school and youth outreach, and preparedness events. Topics may include evacuation readiness, alert and warning systems, go-bags, defensible space, home hardening, smoke preparedness, livestock evacuation, emergency communications, and assistance for people with access and functional needs.

Other Alternatives: No action.

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

Responsible Office/Partners: Fire Safe Councils/ Sacramento County OES, Sacramento County OES, fire agencies, CAL FIRE, American Red Cross, law enforcement, schools, animal services, utilities, community organizations

Benefits (Losses Avoided): Improves protective actions before and during emergencies; increases enrollment in alert systems; supports faster evacuation; strengthens household self-sufficiency and community resilience.

Potential Funding (Local Budgets, Grant Funds, etc.): FEMA preparedness and mitigation grants, CAL FIRE grants, California Fire Safe Council grants, County funds, utility and private sponsorships

Timeline: Near term; launch within 1 year and maintain as an ongoing program.

Project Priority (High, Medium, Low): High

Action 50. State Route 16 Evacuation and Transportation Resilience Study

Hazards Addressed: Wildfire

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

Issue/Background (Problem Statement): There is a need to identify and reduce evacuation bottlenecks and transportation vulnerabilities affecting Herald and surrounding South Sacramento County communities.

Project Description: Conduct a corridor-level evacuation and transportation study for State Route 16 and connecting local roads. The study would evaluate traffic capacity, choke points, emergency access, road closures, signal operations, contraflow or traffic-control options, roadside vegetation, signage, communications, and the movement of livestock and oversized vehicles. The project would also develop prioritized short-, medium-, and long-term mitigation recommendations.

Other Alternatives: No action.

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

Responsible Office/Partners: Sacramento County Department of Transportation, Caltrans, Sacramento County OES, Sheriff, CHP, fire agencies, local communities, schools, animal services, utilities, transportation consultants

Benefits (Losses Avoided): Improves evacuation planning and emergency access; identifies capital projects; supports grant applications; reduces delay, congestion, and life-safety risk during fast-moving incidents.

Potential Funding (Local Budgets, Grant Funds, etc.): Caltrans planning grants, FEMA BRIC/HMGP, state transportation grants, County transportation funds, regional planning funds

Timeline: Short term study: 1-3 years; recommended improvements: 3-10 years.

Project Priority (High, Medium, Low): High

Action 51. Implementation of Evacuation Study Mitigation Recommendations

Hazards Addressed: Wildfire

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

Issue/Background (Problem Statement): There is a need to implement priority physical and operational improvements identified through evacuation and transportation studies.

Project Description: Advance high-priority recommendations identified by the State Route 16 or other evacuation studies. Potential improvements may include emergency signage, intersection controls, traffic management plans, roadside vegetation clearance, shoulder or turnout improvements, secondary access feasibility, emergency gate modifications, communication systems, preplanned traffic-control points, and evacuation route maintenance.

Other Alternatives: No action.

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

Responsible Office/Partners: Sacramento County Department of Transportation, depending on project ownership, Caltrans, Sacramento County OES, Sheriff, CHP, fire agencies, utilities, private landowners, community organizations

Benefits (Losses Avoided): Translates planning into measurable risk reduction; improves evacuation flow and emergency responder access; provides visible progress toward long-term community resilience.

Potential Funding (Local Budgets, Grant Funds, etc.): FEMA BRIC/HMGP, Caltrans and state transportation grants, County capital funds, federal infrastructure programs, utility partnerships

Timeline: Medium to long term; 2-10 years after completion of the study

Project Priority (High, Medium, Low): High

Action 52. Ongoing Fuels Reduction and Vegetation Maintenance

Hazards Addressed: Wildfire

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

Issue/Background (Problem Statement): There is a need to reduce hazardous fuels and maintain previously treated areas to lower wildfire intensity and improve access and evacuation safety.

Project Description: Establish a recurring program for roadside clearance, mowing, brush removal, pruning, invasive vegetation control, shaded fuel breaks, and maintenance of previously completed fuels-reduction projects. Work would focus on evacuation routes, public facilities, community edges, utility corridors, and other priority areas identified through the CWPP, LHMP, fire inspections, or local risk assessments.

Other Alternatives: No action.

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

Responsible Office/Partners: Fire Safe Councils, Fire Agencies, responsible landowner or public agency, Sacramento County departments, Fire Agencies, CAL FIRE, utilities, private landowners, contractors, conservation organizations

Benefits (Losses Avoided): Reduces fire intensity and spread; protects evacuation routes and infrastructure; preserves prior mitigation investments; improves firefighter access and operational safety.

Potential Funding (Local Budgets, Grant Funds, etc.): CAL FIRE fuels-reduction grants, FEMA HMGP/BRIC, California Fire Safe Council grants, County funds, utility vegetation-management programs, landowner cost share

Timeline: Ongoing; priority treatments within 1-3 years with annual or multi-year maintenance cycles

Project Priority (High, Medium, Low): High

Action 53. Community Evacuation Brochure and Route Education

Hazards Addressed: Wildfire

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

Issue/Background (Problem Statement): There is a need to provide residents with clear, locally specific evacuation information before an emergency occurs.

Project Description: Develop, print, distribute, and periodically update a Herald-specific evacuation brochure. Content would include alert and warning registration, evacuation terminology, primary and alternate routes, evacuation transfer points or shelter information, livestock and pet planning, go-bag guidance, family communication planning, and actions for residents with access and functional needs. The

brochure should align with County and fire-agency procedures and be supported by digital versions and community presentations.

Other Alternatives: No action.

Existing Planning Mechanism(s) through which Action Will Be Implemented: Existing public outreach efforts.

Responsible Office/Partners: Sacramento County OES, Fire and law enforcement, HOAs, Fire Safe Councils, Fire agencies, Sheriff, CHP, CAL FIRE, American Red Cross, schools, animal services, County PIO, community groups

Benefits (Losses Avoided): Reduces confusion during emergencies; improves alert enrollment and route familiarity; supports timely evacuation; provides consistent messaging across agencies.

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

Timeline: Near term; complete within 1 year and review at least every 2 years

Project Priority (High, Medium, Low): High

Action 54. Home Hardening and Defensible Space Education

Hazards Addressed: Wildfire

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

Issue/Background (Problem Statement): There is a desire to increase the number of homes and outbuildings that can resist ember intrusion, radiant heat, and direct flame exposure.

Project Description: Create a community education and technical-assistance program focused on home hardening and defensible space. Activities may include workshops, demonstration projects, property assessments, checklists, contractor and material guidance, information on Zone 0 and defensible-space requirements, retrofit priorities, and referrals to potential rebate or grant programs. Education should address residences, agricultural structures, barns, and accessory buildings.

Other Alternatives: No action.

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

Responsible Office/Partners: HOAs, Fire Safe Councils, Fire agencies, Fire agencies, CAL FIRE, Sacramento County, building and planning officials, insurers, utilities, contractors, Fire Safe Councils, community organizations

Benefits (Losses Avoided): Reduces structure ignition and neighborhood-to-neighborhood fire spread; helps residents prioritize affordable upgrades; supports compliance and long-term risk reduction.

Potential Funding (Local Budgets, Grant Funds, etc.): CAL FIRE and CFSC grants, FEMA HMGP/BRIC, state home-hardening programs, insurer or utility partnerships, local cost-share programs

Timeline: Near term and ongoing; initiate within 1-2 years

Project Priority (High, Medium, Low): High

Action 55. Annual Public Preparedness and Mitigation Events

Hazards Addressed: Wildfire (and other hazards)

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

Issue/Background (Problem Statement): There is a need to sustain community engagement and connect residents directly with agencies, resources, and practical mitigation actions.

Project Description: Conduct recurring public preparedness events, such as South County Preparedness Day, go-bag workshops, neighborhood meetings, wildfire preparedness fairs, youth activities, evacuation demonstrations, and partner resource events. Events would provide hands-on education, agency exhibits, emergency alert registration, defensible-space and home-hardening information, animal evacuation guidance, and opportunities to recruit volunteers and community leaders.

Other Alternatives: No action.

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

Responsible Office/Partners: Fire Safe Councils, County OES, HOAs, and local partner agencies, Sacramento County OES, fire agencies, Sheriff, CAL FIRE, American Red Cross, utilities, schools, public health, animal services, nonprofits, local businesses

Benefits (Losses Avoided): Builds trust and relationships; increases awareness of local resources; promotes household action; strengthens coordination among agencies and community partners

Potential Funding (Local Budgets, Grant Funds, etc.): FEMA and state preparedness grants, CAL FIRE and CFSC grants, County funds, sponsorships, donations, in-kind partner support

Timeline: Near term and ongoing; at least one major event annually with smaller activities throughout the year

Project Priority (High, Medium, Low): High

Chapter 6 Plan Adoption

44 CFR §201.6(c)(5): [The local hazard mitigation plan shall include] documentation that the plan has been formally approved by the governing body of the jurisdiction requesting approval of the plan (e.g., City Council, county commissioner, Tribal Council).

The purpose of formally adopting this 2026 Sacramento County LHMP Update is to secure buy-in from each participating jurisdiction, raise awareness of the Plan, and formalize the Plan's approval and implementation. The adoption of this LHMP Update completes Planning Step 9 of the 10-step planning process: Adopt the Plan, in accordance with the requirements of DMA 2000. For unincorporated Sacramento County and the incorporated communities, this adoption resolution also addresses AB 2140 requiring adoption by reference or incorporation into the Safety Element of the General Plan. Two resolutions were created – one for the County and incorporated communities and one for the special districts and local agencies.

The governing board for each jurisdiction has adopted this 2026 Sacramento County LHMP Update by passing a resolution. A copy of the generic resolutions is included in Appendix D: Adoption Resolution.

Chapter 7 Plan Implementation and Maintenance

44 CFR §201.6(c)(4): [The plan maintenance process shall include a] section describing the method and schedule of monitoring, evaluating, and updating the mitigation plan within a five-year cycle.

Implementation and maintenance of this 2026 Sacramento County LHMP Update is critical to the success of hazard mitigation in the Sacramento County Planning Area. Plan implementation and maintenance is Planning Step 10 of the 10-step planning process. Accordingly, this chapter provides an overview of the overall strategy for Plan implementation and maintenance and outlines the method and schedule for monitoring, updating, and evaluating the Plan. The chapter also discusses incorporating the Plan into existing planning mechanisms and how to address continued public involvement in local hazard mitigation planning.

Chapter 3, Planning Process, includes information on the implementation and maintenance process since the adoption of the 2021 LHMP Update. This chapter includes information on the implementation and maintenance process for the development of this Plan, the 2026 LHMP Update.

7.1 Implementation

Once adopted, this 2026 Sacramento County Multi-Jurisdictional LHMP Update faces the truest test of its worth: implementation. While the Plan contains many worthwhile actions, the participating jurisdictions will need to decide which action(s) to undertake first. Two factors should be considered when making that decision: the priority assigned to the Mitigation Actions in the Plan and funding availability. Low or no-cost actions most easily demonstrate progress toward successful Plan implementation.

An important implementation mechanism that is highly effective and low-cost is incorporation of the hazard mitigation plan recommendations and their underlying principles into other plans and mechanisms such as local general plans, stormwater and flood plans, drought plans, wildfire plan, Emergency Operations Plans (EOPs), evacuation plans, and other hazard and emergency management planning efforts by the participating jurisdictions. These jurisdictions already implement policies and programs to reduce losses to life and property from hazards. This 2026 LHMP Update builds upon the momentum developed through prior, related planning and mitigation programs and recommends implementing actions, where possible, through other programs.

Mitigation is most successful when it is incorporated into the day-to-day functions and priorities of government and development. Implementation can be accomplished by adhering to the schedules identified for each action through sustained collaborative efforts, highlighting the mutual benefits of proposed mitigation actions, and the Sacramento County jurisdictions, its stakeholders, and the public. This is achieved through the routine actions of monitoring agendas, attending meetings, and promoting mitigation initiatives to enhance the safety and sustainability of the community. Additional mitigation strategies may include consistent and ongoing enforcement of existing policies and the vigilant review of programs for coordination and multi-objective opportunities to enhance mitigation.

Simultaneously, it is important to continuously monitor potential funding opportunities to finance mitigation actions. This may include identifying funding sources to meet local matching funds requirements under FEMA pre- and post-disaster mitigation grant programs, and other sources. When funding becomes available, the participating jurisdictions will be better positioned to capitalize on the opportunity.

7.1.1. Responsibility for Implementation of Goals and Activities

The elected officials, executive leadership teams, responsible staff and departments, and emergency management offices of the participating jurisdictions are charged with implementation of various activities in the 2026 LHMP Update. During the quarterly reviews as described later in this section, each participating jurisdiction should conduct an assessment of progress toward meeting the goals and activities of the LHMP Update. At that time, recommendations may be made to modify timeframes for the completion of identified mitigation actions, identify funding sources, and work with responsible entities to implement the actions. On a quarterly basis, the priority of various mitigation actions may be adjusted. Some activities that are found not to be feasible may be removed from the Plan entirely, while other mitigation actions unforeseen during Plan development process may be added.

7.1.2. Role of the LHMP Update Planning Committee in Implementation and Maintenance

With adoption of this Plan, each participating jurisdiction will be responsible for LHMP implementation and maintenance. The Hazard Mitigation Planning Committee (HMPC) identified in Chapter 3 (or a similar committee) will reconvene quarterly each year to ensure mitigation strategies are being implemented and the Cities continue to maintain compliance with the NFIP. The Sacramento County, Department of Water Resources (County DWR), will continue in its role as project lead for LHMP implementation and maintenance. As such, County DWR, as LHMP project lead, and all participating jurisdictions will continue their relationship, and will plan to convene a similar HMPC when preparing the subsequent LHMP update. The County DWR project lead, with support from participating jurisdictions and the LHMP Update HMPC will:

- Act as a forum for hazard mitigation issues;
- Disseminate hazard mitigation ideas and activities to all participants;
- Pursue the implementation of high-priority, low/no-cost recommended actions;
- Ensure hazard mitigation remains a consideration for community decision makers;
- Maintain a vigilant monitoring of multi-objective cost-share opportunities to help the community implement the Plan's recommended actions for which no current funding exists;
- Monitor and assist in the implementation and update of this Plan;
- Report on Plan progress and recommended changes to the governing boards for all participating jurisdictions; and
- Inform and solicit input from the public.

The primary duty of the participating jurisdictions and the HMPC is to see the LHMP Update successfully carried out and to report to their governing boards and the public on the status of LHMP implementation and mitigation opportunities. Other duties include reviewing and promoting mitigation proposals,

considering stakeholder concerns about hazard mitigation, passing concerns on to appropriate entities, and posting relevant information about the LHMP on the websites of participating jurisdictions.

7.2 Maintenance

Plan maintenance implies an ongoing effort to monitor and evaluate LHMP implementation and to update the Plan as progress, roadblocks, or changing circumstances are encountered.

7.2.1. Maintenance Schedule

County DWR, as project lead, in conjunction with the LHMP leads for all participating jurisdictions, is responsible for initiating Plan reviews. In order to monitor progress and update the mitigation strategies identified in the mitigation action plan, County DWR, LHMP leads from other participating jurisdictions, and the HMPC will revisit this Plan quarterly each year and following a hazard event. The HMPC will meet quarterly to review progress on Plan implementation and Sacramento County and the cities of Sacramento and Citrus Heights, as the three participating CRS communities, will provide annual evaluation reports for CRS Activity 510 in accordance with their CRS program requirements. The HMPC will also submit a five-year written update to the State and FEMA Region IX, unless disaster or other circumstances (e.g., changing regulations) require a change to this schedule. With this 2026 LHMP Update anticipated to be fully approved and adopted in mid-2027, the next required written update of the Plan must be completed by mid-2032. County DWR, or another department from the participating jurisdictions, will initiate the Plan update – which may include applying for grant funding to hire professional services to assist in preparing the 2032 LHMP Update. The 2032 LHMP Update development process should be initiated in 2029 to ensure the 2032 LHMP Update can be funded and completed by this 2026 Sacramento County LHMP's expiration date.

7.2.2. Maintenance Evaluation Process

Evaluation of progress can be achieved by monitoring changes in vulnerabilities identified in the Plan. Changes in vulnerability can be identified by noting:

- Decreased vulnerability as a result of implementing recommended actions;
- Increased vulnerability as a result of failed or ineffective mitigation actions;
- Increased vulnerability as a result of new development (and/or annexation); and/or
- Increased vulnerability resulting from unforeseen or new circumstances.

Updates to this Plan will:

- Consider changes in vulnerability due to action implementation;
- Document success stories where mitigation efforts have proven effective;
- Document areas where mitigation actions were not effective;
- Document any new hazards that may arise or were previously overlooked;
- Incorporate new data or studies on hazards and risks;
- Incorporate new capabilities or changes in capabilities;
- Incorporate growth and development-related changes to infrastructure inventories; and

- Incorporate new action recommendations or changes in action prioritization.

Changes will be made to this Plan to accommodate for actions that have failed or are not considered feasible after a review of their consistency with established criteria, time frame, community priorities, and/or funding resources. All mitigation actions will be reviewed during the monitoring and update of this Plan to determine feasibility of future implementation. Updating of this LHMP will be by written changes and submissions, as the participating jurisdictions and HMPC deems appropriate and necessary, and as approved by the governing boards of each participating jurisdiction. In keeping with the five-year update process, the HMPC will convene public meetings to solicit public input on this LHMP Update and its routine maintenance, and the final product will be again adopted by the governing boards of each participating jurisdiction.

Quarterly Plan Review Process

For the LHMP Update review process, the County DWR lead, and the LHMP leads for each of the participating jurisdictions, will be responsible for facilitating, coordinating, and scheduling reviews and maintenance of the LHMP. The LHMP is intended to be a living document. The review of the 2026 LHMP Update will normally occur on a quarterly basis each year and will be conducted by the HMPC as follows:

- County DWR will place an advertisement in the local newspaper and will utilize other public outreach mechanisms, such as e-newsletters, social media blasts, and others, advising the public of the date, time, and place for each quarterly review of the LHMP Update and will be responsible for leading the meeting to review the Plan.
- Notices will be mailed to the members of the HMPC, federal, state, and local agencies, non-profit groups, local planning agencies, representatives of business interests, neighboring communities, and others advising them of the date, time, and place for the review.
- County/City/District/Tribal officials will be noticed by email and telephone or personal visit and urged to participate.
- Members of any participating jurisdiction's planning commissions and other appointed commissions and groups will also be noticed by email and either by telephone or personal visit.
- Prior to the review, jurisdictional leads, department heads, and others tasked with implementation of the various activities will be queried concerning progress on each activity in their area of responsibility and asked to present a report at the review meeting.
- The local news media will be contacted, and a copy of the current LHMP will be available for public comment at Sacramento County as project lead.
- After the review meeting, minutes of the meeting and a quarterly report will be prepared by HMPC and forwarded to the news media (public) and the CRS specialist for the CRS program. The report will also be presented to the Sacramento County and cities of Sacramento and Citrus Heights' governing boards, as the three CRS communities, for review, and a request will be made that the governing boards take action to recognize and adopt any changes resulting from the review.
- A copy of the 2026 LHMP Update will be continually posted on the LHMP website for the participating jurisdictions and the Sacramento County and cities of Sacramento and Citrus Heights LHMP websites will also include the annual CRS Activity 510 report.

Criteria for Quarterly Reviews

The criteria recommended in 44 CFR 201 and 206 will be utilized in reviewing and updating the 2026 LHMP Update. More specifically, the reviews should include the following information:

- Community growth or change in the past quarter.
- The number of substantially damaged or substantially improved structures by flood zone.
- The renovations to public infrastructure including water, sewer, drainage, roads, bridges, gas lines, and buildings.
- Natural hazard occurrences that required activation of the Emergency Operations Center(s) (EOC) and whether or not the event resulted in a federal disaster declaration.
- Natural hazard occurrences that were not of a magnitude to warrant activation of the EOC or a federal disaster declaration but were severe enough to cause damage in the community or closure of businesses, schools, or public services.
- The dates of hazard events and descriptions.
- Documented damages due to the events.
- Closures of places of employment or schools and the number of days closed.
- Road or bridge closures due to the hazard and the length of time closed.
- Assessment of the number of private and public buildings damaged and whether the damage was minor, substantial, major, or if buildings were destroyed. The assessment will include residences, mobile homes, commercial structures, industrial structures, and public buildings, such as schools and public safety buildings.
- Review of any changes in federal, state, and local policies to determine the impact of these policies on the community and how and if the policy changes can or should be incorporated into the next LHMP Update. Review of the status of implementation of mitigation actions and projects (mitigation strategies) including those completed will be noted. Actions and projects behind schedule will include a reason for delay of implementation.

7.2.3. Incorporation into Existing Planning Mechanisms

Another important implementation mechanism that is highly effective and low-cost is incorporation of the 2026 LHMP Update recommendations and their underlying principles into other jurisdictional plans and mechanisms. Where possible, Plan participants will use existing plans and/or programs to implement hazard mitigation actions. As previously stated in Section 7.1 of this Plan, mitigation is most successful when it is incorporated into the day-to-day functions and priorities of government and development. The point is re-emphasized here. As described in this LHMP's capability assessment, the participating jurisdiction's already implement policies and programs to reduce losses to life and property from hazards. This Plan builds upon the momentum developed through previous and related planning efforts and mitigation programs and recommends implementing actions, where possible, through these other program mechanisms. These existing mechanisms include:

- General, master, and strategic plans
- Emergency Operations Plans and other emergency management efforts
- Jurisdictional ordinances
- Flood/stormwater management/watershed master plans
- Fire Plans

- Climate Plans
- Capital Improvement Plans and budgets
- Other plans and policies outlined in the capability assessment
- Other plans, regulations, and practices with a mitigation focus

HMPC members involved in these other planning and program mechanisms will be responsible for integrating the findings and recommendations of this LHMP with these other plans, programs, etc., as appropriate. As described in Section 7.1 Implementation, incorporation into existing planning mechanisms will be done through the routine actions of:

- monitoring other planning/program agendas;
- attending other planning/program meetings;
- participating in other planning processes; and
- monitoring community budget meetings for other community program opportunities.

The successful implementation of this mitigation strategy will require constant and vigilant review of existing plans and programs for coordination and multi-objective opportunities that promote a safe, sustainable community.

Examples of incorporation of the 2026 LHMP Update into existing planning mechanisms include:

1. As recommended by Assembly Bill 2140, the County and Cities should adopt (by reference or incorporation) this LHMP into the Safety Element of their General Plan. Evidence of such adoption (by formal, certified resolution and text within the body of the Safety Element) shall be provided to CAL OES and FEMA.
2. Integration of flood actions identified in this mitigation strategy with implementation priorities in existing Watershed, Flood, and Stormwater Drainage Plans. Key people responsible for development and implementation of Flood Plans and Stormwater Master Plans participated on the HMPC. Key projects were identified and integrated specifically into this LHMP, while others currently of lessor priority should be referenced in their source document. Actual implementation of these projects will likely occur through the flood and stormwater plans' processes through the efforts of each responsible jurisdiction and department.
3. Integration of hazard actions, that focus on addressing future conditions to reduce future hazard impacts to communities, with Climate Vulnerability Assessments, Climate Adaptation Plans, and other climate and future conditions planning mechanisms. Key people responsible for development and implementation of Climate Plans participated on the HMPC. Key projects were identified and integrated specifically into this LHMP, while others currently of lessor priority should be referenced in their source document. Actual implementation of these projects will likely occur through the Climate Plans' processes through the efforts of each responsible jurisdiction and department.
4. Integration of many of the infrastructure, roads, and facility improvement projects with the jurisdictional Capital Improvement Programs.
5. Use of risk assessment information to inform future updates of the hazard analysis in the Emergency Operations Plans and related emergency management efforts for all participating jurisdictions.

Each jurisdiction will consider incorporation of the LHMP into planning mechanisms listed on Table 7-1.

Table 7-1 LHMP Incorporation into other Planning Mechanisms

Jurisdiction	General Plans / Master Plans / Strategic Plans / 5-year Plans	EOP / Emergency Plans / Safety Plans/ Evacuation Plans	CIP	Flood/ Levee / Stormwater/ Watershed / Dam Plans	CWPP/ Fire Plans	Climate Plans	Other Related Hazard Plans: Drought/ Water Management/ Other
Sacramento County and Incorporated Communities							
Unincorporated County	X	X	X	X	X	X	X
Citrus Heights	X	X	X	X	X	X	X
Elk Grove	X	X	X	X	X	X	X
Folsom	X	X	X	X	X	X	X
Galt	X	X	X	X	X	X	X
Isleton	X	X	X	X	X	X	X
Rancho Cordova	X	X	X	X	X	X	X
Sacramento	X	X	X	X	X	X	X
Special Districts							
American River Flood Control District	X	X	X	X			X
Citrus Heights Water District	X	X	X	X			X
Cosumnes Community Services/Fire District	X	X	X		X		X
Los Rios Community College	X	X	X				X
RD 800	X	X	X	X			X
RD 1000	X	X	X	X			X
Sacramento County Water Agency	X		X	X		X	X
Sacramento Metro Fire District	X	X	X		X		X
Sacramento Area Sewer District	X	X	X	X		X	X

Jurisdiction	General Plans / Master Plans / Strategic Plans / 5-year Plans	EOP / Emergency Plans / Safety Plans/ Evacuation Plans	CIP	Flood/ Levee / Stormwater/ Watershed / Dam Plans	CWPP/ Fire Plans	Climate Plans	Other Related Hazard Plans: Drought/ Water Management/ Other
Southgate Rec and Park District	X		X				X
Twin Rivers Unified School District	X	X	X				X
Brannan - Andrus Levee Maintenance District	X	X	X	X			X
RD 3	X	X	X	X			X
RD 341	X	X	X	X			X
RD 349	X	X	X	X			X
RD 369	X	X	X	X			X
RD 551	X	X	X	X			X
RD 554	X	X	X	X			X
RD 556	X	X	X	X			X
RD 563	X	X	X	X			X
RD 1002	X	X	X	X			X
RD 1601	X	X	X	X			X
RD 2111	X	X	X	X			X
Delta Region Geologic Hazard Abatement District							X

In addition, in the mitigation actions discussion in each jurisdiction, there is a line item discussing "Existing Planning Mechanism(s) through which Action will be implemented" that contains the related planning mechanism or program that each mitigation action will be implemented through. Those can be found in each jurisdiction's annex to this Base Plan.

Efforts should continuously be made to monitor the progress of mitigation actions implemented through these other planning mechanisms and, where appropriate, their priority actions should be incorporated into updates of this LHMP.

7.2.4. Continued Public Involvement

Continued public involvement is a crucial element of successful Plan implementation. The update process provides an opportunity to solicit participation from new and existing stakeholders and to publicize success stories from the 2026 LHMP implementation and seek additional public comment. The Plan maintenance and update process will include continued public and stakeholder involvement and input through attendance at designated committee meetings, web postings, press releases to local media, and through public hearings.

Public Involvement Process for Quarterly Reviews

The public will be noticed by placing an advertisement in the newspaper specifying the date and time for the review and inviting public participation. The HMPC, local, state, and regional agencies will be notified and invited to attend and participate.

Public Involvement for Five-year Update

When the participating jurisdictions and HMPC reconvenes for the next LHMP Update, they will coordinate with all stakeholders participating in the planning process—including those that joined the committee since the planning process began—to update and revise the Plan. In reconvening, the HMPC will identify a public outreach subcommittee, which will be responsible for coordinating the activities necessary to involve the greater public. The subcommittee will develop a plan for public involvement and will be responsible for disseminating information through a variety of media channels detailing the LHMP update process. As part of this effort, public meetings will be held, and public comments will be solicited on the LHMP Update draft. The subcommittee will also coordinate this public outreach process with any public information programs established pursuant to the current guidelines from the Community Rating System (CRS) program. In addition, continued public involvement and outreach efforts will place an emphasis on identifying and inviting representatives from underserved and vulnerable populations to be part of the next, 2032 Sacramento County LHMP Update. As a starting point the underserved and vulnerable population groups, and other public members, identified for this 2026 LHMP Update will be contacted to invite them to the 2032 LHMP Update process with additional groups identified and added to meet the ongoing goal of mitigation planning for the whole community.