



CITY OF
**PALO
ALTO**

Santa Clara County Multijurisdictional Hazard Mitigation Plan 2023 Update

City of Palo Alto Annex

February 21, 2024

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8. City of Palo Alto

8.1. Hazard Mitigation Plan Points of Contact

The point of contact during the Santa Clara County Multijurisdictional Hazard Mitigation Plan (MJHMP) planning process for the City of Palo Alto was the Emergency Services Coordinator. This annex within the MJHMP was developed using information provided by the City of Palo Alto's Local Planning Team.

Table 1: City of Palo Alto Local Planning Team Members for the 2023 Santa Clara County MJHMP

Name	Position	Department	Role on Team and in Planning Process
Nathan Rainey	Office of Emergency Services Coordinator	City of Palo Alto-Office of Emergency Services	General oversight, hazard identification, and plan development
Michel Jeremias	Senior Engineer	City of Palo Alto-Public Works	Hazard identification and plan development
Rajeev Hada	Project Engineer, Floodplain Administrator	City of Palo Alto-Public Works	Hazard identification and plan development
Karin North	Assistant Director	City of Palo Alto-Public Works	Hazard identification and plan development
Holly Boyd	Assistant Director	City of Palo Alto-Public Works	Hazard identification and plan development
Lam Do	Superintendent	City of Palo Alto-Community Services	Hazard identification and plan development
Lisa Meyers	Manager, Supervising Ranger	City of Palo Alto-Community Services	Hazard identification and plan development
Chitra Moitra	Planner	City of Palo Alto-Planning and Development Services	Hazard identification and plan development
Christine Luong	Manager, Environmental Control Program	City of Palo Alto-City Manager's Office	Hazard identification and plan development
Ken Dueker	Chief, Office of Emergency Services	City of Palo Alto-Office of Emergency Services	Hazard identification and plan development
Mike Wong	Assistant Director, Operations	City of Palo Alto-Public Works	Hazard identification and plan development

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Name	Position	Department	Role on Team and in Planning Process
Brad Eggleston	Director	City of Palo Alto-Public Works	Hazard identification and plan development
Dean Batchelor	Director	City of Palo Alto-Utilities	Hazard identification and plan development
Daren Anderson	Assistant Director	City of Palo Alto-Community Services	Hazard identification and plan development
Darren Numoto	Director	City of Palo Alto-Information Technology	Hazard identification and plan development
Tomm Marshal	Assistant Director, Electric	City of Palo Alto-Utilities	Hazard identification and plan development
Matt Zucca	Assistant Director, Water, Gas, Wastewater	City of Palo Alto-Utilities	Hazard identification and plan development
Andrew Binder	Chief	City of Palo Alto-Police	Hazard identification and plan development
Geo Blackshire	Chief	City of Palo Alto-Fire	Hazard identification and plan development
Kiely Nose	Assistant City Manager	City of Palo Alto-City Manager's Office	Hazard identification and plan development
Philip Kamhi	Chief Transportation Officer	City of Palo Alto-Office of Transportation	Hazard identification and plan development
Amy French	Chief Planning Official	City of Palo Alto-Planning and Development Services	Hazard identification and plan development
Minka Van Der Zwaag	Human Services Manager	City of Palo Alto-Community Services	Hazard identification and plan development

The City's Local Planning Team Members participated in the MJHMP by attending meetings on the Plan Kick-Off, Risk Assessment, Capabilities Assessment, Mitigation Strategy, Wrap-up, and one one-on-one meetings with the planning consultant. In addition, the city filled out the requested forms on each section which were used to develop this annex. The city also shared information regarding public opportunities to participate in the draft plan update utilizing the digital survey and seven in-person and virtual public outreach meetings. Further, the City team was provided the opportunity to review the draft plan prior to submittal to Cal OES and FEMA.

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Table 2: External Stakeholders Invited to Be Involved in Planning Process

Agency or Organization	Stakeholder Type	Description
American Red Cross	Representatives of nonprofit organizations, including community-based organizations, that work directly with and/or provide support to underserved communities and socially vulnerable populations, among others.	A nonprofit humanitarian organization that provides emergency assistance, disaster relief, and disaster preparedness education in the United States.
Amateur Radio Emergency Service (ARES)	Representatives of businesses, academia, and other private organizations.	A corps of trained amateur radio operator volunteers organized to assist in public service and emergency communications.
California Office of Emergency Services (Cal OES)	Local and regional agencies involved in hazard mitigation activities.	Office responsible for overseeing and coordinating emergency preparedness, response, recovery, and homeland security activities within the state.
California Department of Forestry and Fire Protection	Local and regional agencies involved in hazard mitigation activities.	The fire department of the California Natural Resources Agency.
California Department of Transportation	Agencies that have the authority to regulate development.	An executive department of the U.S. state of California.
Cattlemen’s Association	Representatives of businesses, academia, and other private organizations.	A nonprofit trade association that represents California's ranchers and beef producers in political affairs.
City of East Palo Alto	Neighboring communities.	A city in San Mateo County, California, United States.
City of Menlo Park	Neighboring communities.	Menlo Park is a city at the eastern edge of San Mateo County.
Cooper-Garrod Estate Vineyards	Representatives of businesses, academia, and other private organizations.	Garrod Farms is a family-owned and operated estate winery and stables.
Department of Homeland Security	Agencies that have the authority to regulate development.	The U.S. federal executive department responsible for public security, roughly comparable to the interior or home ministries of other countries.
Department of Toxic Substances	Agencies that have the authority to regulate development.	An agency of the government of the state of California which protects public health and the environment from hazardous waste.

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Agency or Organization	Stakeholder Type	Description
Department of Toxic Substances	Agencies that have the authority to regulate development.	An agency of the government of the state of California that protects public health and the environment from hazardous waste.
Downtown Streets Team	Representatives of nonprofit organizations, including community-based organizations, that work directly with and/or provide support to underserved communities and socially vulnerable populations.	Teams that restore dignity, inspire hope, and provide a pathway to recover from homelessness.
Emergency Medical Services	Agencies that have the authority to regulate development.	Provides statewide coordination and leadership for the planning, development, and implementation of local EMS systems.
Emergency Services Volunteer Representative	Local and regional agencies involved in hazard mitigation activities.	Organization that ensures public safety, security, and health by addressing and resolving different emergencies.
Federal Aviation Administration	Agencies that have the authority to regulate development.	Offers civil aviation safety enforcement services.
Google	Representatives of businesses, academia, and other private organizations.	American multinational technology company focusing on artificial intelligence, online advertising, search engine technology, cloud computing, computer software, quantum computing, e-commerce, and consumer electronics.
Hidden Villa Farm	Representatives of nonprofit organizations, including community-based organizations, that work directly with and/or provide support to underserved communities and socially vulnerable populations, among others.	Nonprofit educational organization teaching programs on environmental and multicultural awareness.
Intel Corporation	Representatives of businesses, academia, and other private organizations.	An American multinational corporation and technology company headquartered in Santa Clara, California.
Kaiser Permanente—Santa Clara	Representatives of businesses, academia, and other private organizations.	An American integrated managed care consortium.

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Agency or Organization	Stakeholder Type	Description
Life Moves	Representatives of businesses, academia, and other private organizations.	Provides interim housing and supportive services for homeless families and individuals to rapidly return to stable housing.
Los Altos School District	Representatives of businesses, academia, and other private organizations.	Los Altos School District serves the elementary and intermediate educational needs of Los Altos, Los Altos Hills, Mountain View and Palo Alto, United States.
Moffett Field Ames Research Center, National Aeronautics and Space Administration (NASA)	Representatives of businesses, academia, and other private organizations.	Major NASA research center at Moffett Federal Airfield in California's Silicon Valley.
National Weather Service, National Oceanic and Atmospheric Administration (NOAA)	Agencies that have the authority to regulate development.	Scientific and regulatory agency within the U.S. Department of Commerce.
Pacheco Pass Water District	Neighboring communities.	Independent special water district.
Palo Alto Chamber of Commerce	Representatives of businesses, academia, and other private organizations.	an association of businesspeople designed to promote and protect the interests of its members in Palo Alto.
Palo Alto Medical Foundation	Representatives of businesses, academia, and other private organizations, and neighboring communities.	A not-for-profit health care organization with medical offices in more than 15 cities in the Bay Area.
Palo Alto Planning and Transportation Commission	Local and regional agencies involved in hazard mitigation activities.	Responsible for making recommendations to City Council regarding development, public facilities, and transportation.
Palo Alto Unified School District	Representatives of businesses, academia, and other private organizations, and neighboring communities.	A public school district located near in Palo Alto, California.
Pacific Gas and Electric (PG&E)	Representatives of businesses, academia, and other private organizations, and neighboring communities.	One of the largest combination natural gas and electric utilities in the United States.
Ravenswood Family Health Center	Representatives of businesses, academia, and other private organizations.	A federally qualified health center headquartered in the low-income East Palo Alto area of San Mateo County.
Regional Water Quality Control Board	Agencies that have the authority to regulate development.	Provides government regulatory services related to water pollution and control.

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Agency or Organization	Stakeholder Type	Description
Rotating Safe Car Park	Local and regional agencies involved in hazard mitigation activities, and neighboring communities.	Allows for temporary overnight parking for homeless individuals or families living out of their cars as a safe alternative to sleeping on the streets or in a homeless shelter.
Santa Clara County CERT	Representatives of nonprofit organizations, including community-based organizations, that work directly with and/or provide support to underserved communities and socially vulnerable populations.	Trains residents to prepare for and respond to life-threatening events in their community.
Santa Clara County FireSafe Council	Representatives of nonprofit organizations, including community-based organizations, that work directly with and/or provide support to underserved communities and socially vulnerable populations.	A nonprofit, grassroots organization that provides education and project assistance for homeowners.
Santa Clara County Local Oversight Program	Local and regional agencies involved in hazard mitigation activities.	Program to oversee assessment and mitigation of contaminated sites to protect groundwater resources, human health, safety, and the environment.
Santa Clara County Parks	Agencies that have the authority to regulate development, and neighboring communities.	Provide, protect, and preserve regional parklands for the enjoyment and education.
Santa Clara County Planning & Development	Agencies that have the authority to regulate development, and neighboring communities.	Plays a key role in supporting economic development and ensuring opportunities for the public to participate in land development.
Santa Clara County Sheriff's Office	Agencies that have the authority to regulate development, and neighboring communities.	A local law enforcement agency that serves Santa Clara County, California.
Santa Clara University	Representatives of businesses, academia, and other private organizations.	A private Jesuit university in Santa Clara, California.
Santa Clara Valley Open Space Authority	Neighboring communities.	An independent special district in Santa Clara County.
Santa Cruz County	Neighboring communities.	A county on the Pacific coast of the U.S. state of California.

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Agency or Organization	Stakeholder Type	Description
St. Louise Hospital (Santa Clara County Hospital System)	Representatives of nonprofit organizations, including community-based organizations, that work directly with and/or provide support to underserved communities and socially vulnerable populations.	Community hospital.
Stanford Healthcare	Representatives of businesses, academia, and other private organizations, and neighboring communities.	Multispecialty clinic that provides convenient access to advanced, specialty care in the South Bay.
Vista Center for the Blind and Visually Impaired	Representatives of businesses, academia, and other private organizations.	Empowers individuals who are blind or visually impaired to embrace life to the fullest through evaluation, counseling, education, and training.
Westwind Barn	Representatives of businesses, academia, and other private organizations.	State-of-the-art horse boarding and training facility.
County of Santa Clara	Neighboring jurisdiction, local agency involved in hazard mitigation.	Response for engaging the whole community in assessing needs and developing strategies to achieve stronger mitigation capabilities within the Santa Clara County Operational Area.
City of Campbell	Neighboring communities.	A city in Santa Clara County.
City of Cupertino	Neighboring communities.	Located in Silicon Valley.
City of Gilroy	Neighboring communities.	A city in Santa Clara County.
City of Los Altos	Neighboring communities.	A city in Santa Clara County.
Town of Los Altos Hills	Neighboring communities.	A city in Santa Clara County.
Town of Los Gatos	Neighboring communities.	A city in Santa Clara County.
City of Milpitas	Neighboring communities.	A city in Santa Clara County.
City of Morgan Hill	Neighboring communities.	A city in Santa Clara County.
City of Mountain View	Neighboring communities.	A city in Santa Clara County.
City of San José	Neighboring communities.	Located in Silicon Valley.
City of Santa Clara	Neighboring communities.	A city near San Jose, in California's Silicon Valley.
City of Saratoga	Neighboring communities.	Located in Silicon Valley.
City of Sunnyvale	Neighboring communities.	Located in the Santa Clara Valley.
Santa Clara County Fire Department	Local and regional agencies involved in hazard mitigation activities, and neighboring communities.	A California Fire Protection District serving Santa Clara County.

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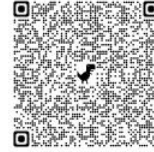
Agency or Organization	Stakeholder Type	Description
Santa Clara Valley Water District	Representatives of businesses, academia, and other private organizations, and neighboring communities.	Provides stream stewardship, wholesale water supply, and flood protection for Santa Clara County, California.

The City supported a “whole community” approach to this plan update. Neighboring communities, local and regional agencies involved in mitigation activities, agencies that have the authority to regulate development as well as businesses, academia, and other private and nonprofit interests were invited to be involved in the planning process by participating in planning meetings, public meetings, or reviewing the draft plan. In addition to the wide variety of stakeholders identified by the County, other stakeholders the City of Palo Alto recommended including included the Palo Alto Planning and Transportation Commission, San Francisquito Creek Joint Powers Authority, Stanford University, Stanford Healthcare, Palo Alto Medical Foundation, Emergency Services Volunteer Representatives, Palo Alto Chamber of Commerce, City of East Palo Alto, City of Menlo Park, Palo Alto Unified School District, Life Moves, Avenidas, Downtown Streets Team, Ravenswood Family Health Center, and Vista Center for the Blind and Visually Impaired. Additional stakeholders that were able to participate are included in Volume 1 of this plan.

8.1.1. Public Outreach and Engagement

In addition to inviting a wide range of stakeholders, the City supported public outreach and engagement through distributing a digital survey utilizing social media. This survey reached members of underserved populations, including primarily non-English speaking households.

Public Comment Period: Local Hazard Mitigation Plan



Published on July 20, 2023

The Santa Clara County Office of Emergency Management is updating the Santa Clara County Multijurisdictional Hazard Mitigation Plan (MJHMP) to assess the risks and vulnerabilities of local hazards on residents and community assets. By doing so, the County and its participating jurisdictions are committing to reducing the effects of disasters through long-term actions that reduce impacts on people and property.



Drafts of the Base Plan and the jurisdictional annexes can be found here: :
<https://emergencymanagement.sccgov.org/multi-jurisdictional-hazard-mitigation-plan-mjhmp>.

If you would like to make comments about the Draft, please follow this link: <https://bit.ly/MJHMPComments>. The public comment period will be open until July 28, 2023.

In Palo Alto, we have identified a number of projects to reduce impacts to hazards we face. A few examples include:

- Foothills Rebuild – Undergrounding 11 miles of overhead power lines in the Palo Alto Foothills to reduce the risk of wildfires.
- Seismic Retrofit of Potable Water Distribution Main in Liquefaction Zones - Replacement of 10 miles of non-seismically restrained potable water piping in liquefaction zones with new fused and fully restrained piping.
- Advanced Water Purification Facility project - Improve the quality of the tertiary-treated recycled water by microfiltration or ultrafiltration followed by reverse osmosis to increase uses for recycled water.
- Rebuild Fire Station 4 to mitigate current risks to essential services – Construct a new station that will continue to function after an earthquake and provide backup emergency facilities.

We look forward to receiving your feedback.

Figure 1: City of Palo Alto Public Outreach Survey Input Request

early fall.

Share Input on the Countywide Multijurisdictional Hazard Mitigation Plan

The Santa Clara County Office of Emergency Management is updating the Multijurisdictional Hazard Mitigation Plan (MJHMP) to assess the risks and vulnerabilities of local hazards on residents and community assets. By doing so, the County and its participating jurisdictions including Palo Alto are



committing to reducing the effects of disasters through long-term actions that reduce impacts on people and property. [View the draft document](https://bit.ly/MJHMPComments). Share your input at <https://bit.ly/MJHMPComments>. The public comment period will be open until July 28, 2023.

Palo Alto FireMed: Peace of Mind in an



Figure 2: City of Palo Alto Uplift Newsletter

In addition, the MJHMP was discussed at two virtual and five in-person public meetings across Santa Clara County. These in-person meetings were targeted towards areas with socially vulnerably populations. These meetings were also designed to be accessible for AFN (access and functional needs) populations. The public was also provided the opportunity to comment on the draft plan. Comments from the public survey were reviewed, evaluated for alignment with planning priorities, and incorporated as appropriate. Notable hazards of concern to the public included flooding, extreme heat, wildfire (including wildfire smoke), as well as some mentions of drought. In particular, flood control around Palo Alto was mentioned as a possible mitigation measure, as well as partnership building especially with utility providers. Overall, there was also significant discussion on the need for additional public outreach and education. This feedback is reflected in the mitigation actions Palo Alto has selected.

The participation of the City of Palo Alto and its stakeholders helped inform the development of the MJHMP and this annex in accordance with current priorities. The new plan continues to expand upon the work of the prior plan including emphasizing partnerships both within jurisdictions and special districts as well as with external stakeholders. Further, there is an increased emphasis on climate change, reflecting the increased understanding of the risk this hazard poses to the OA. The City did not identify additional changes in priorities to be highlighted in their annex.

8.2. Jurisdiction Profile

The following is a summary of key information about the jurisdiction and its history:

- **Date of Incorporation:** April 23, 1894
- **Current Population:** The City has a population of 66,010 as of July 2022 according to the U.S. Census Bureau.
- **Population Growth:** Palo Alto's population has increased only slightly during the last 30 years compared to Santa Clara County as a whole. The number of residents increased by 4.7 percent from 55,966 in 1970 to 58,598 in 2000, and 9.9 percent between 2000 and 2010 (U.S. Census 1980, 1990, 2000, and 2010). It increased from 64,403 in 2010 to 68,572 according to the 2020 U.S. Census, but decreased slightly to 66,010 in 2022, a decrease of 0.02%. The average persons per household have remained fairly steady from 2.7 in 1970 to 2.61 in 2021, while the number of housing units have increased.

Although 50 percent of Palo Alto's population is White, the City is becoming more ethnically diverse. Asians, Native Hawaiians, and Other Pacific Islanders comprise 35.2 percent, while 0.3 percent are American Indian/Alaska Native, 7 percent are Hispanic, 2.1 percent are Black, and 7.2 percent identify themselves as some other race or two or more races.

The median age of Palo Alto's population has increased dramatically over the last few decades. In 1970, the median age was 29.5 for men and 33.7 for women. By 1990, these figures had increased to 36.7 and 40.0, respectively. In the year 2000, the median age for the entire population of Palo Alto was 40.2 years, which is considerably higher than the County median age of 34 years, and in 2010 it rose further to 41.9 years. The increase in median age has been accompanied by an increase in Palo Alto's senior population; the number of people over 65 increased from 10 to 18.5 percent of the population between 1970 and 2021. The number of older adults is expected to continue to increase in the future. At the other end of the age spectrum, the number of children under five has increased significantly over the last two decades and has resulted in an increase in the number of children entering childcare and school. However, the number of women of childbearing age has decreased markedly after increasing during the 1980s and 1990s, and the middle-aged population has increased significantly, indicating that Palo Alto will continue to grow older during the next decade.

- **Location and Description:** Part of the metropolitan San Francisco Bay Area and the Silicon Valley, Palo Alto is located within Santa Clara County and borders San Mateo County. The City's boundaries extend from San Francisco Bay on the east to the Skyline Ridge of the coastal mountains on the west, with Menlo Park to the north, and Mountain View to the south. The City encompasses an area of approximately 26 square miles, of which one-third is open space. The City shares its borders with East Palo Alto, Los Altos, Los Altos Hills, Stanford, Menlo Park, Mountain View, Portola Valley, and portions of unincorporated San Mateo County and Santa Clara County (including the unincorporated areas of Cupertino and Saratoga in the foothills). It is named after a redwood tree called El Palo Alto. The City includes portions of Stanford University and its affiliates, is headquarters to a number of Silicon Valley high-technology companies, including Hewlett-Packard, VMware, Tesla Motors, SAP and Palantir and has served as an incubator to several other high-technology companies, such as Google, Facebook, Logitech, Intuit, and PayPal.

A blend of business and residential neighborhoods, anchored by a vibrant downtown, defines Palo Alto's unique character. A charming mixture of old and new, Palo Alto's tree-lined streets and historic buildings reflect its California heritage. At the same time, Palo Alto is recognized worldwide as a leader in cutting edge development, as a quintessential part of Silicon Valley.

- **Brief History:** Palo Alto was incorporated in 1894 and received its name from the tall landmark Redwood tree, El Palo Alto, which still grows on the east bank of San Francisquito Creek across from Menlo Park. One trunk of the twin-trunked tree can still be found by the railroad trestle near Alma Street in El Palo Alto Park.

Leland Stanford Junior University opened to 465 students in 1891, as a memorial by Leland and Jane Stanford to their son who died in 1884 while traveling in Europe. Stanford University played a significant role in the development of the Palo Alto landscape; it has since grown into a world-renowned teaching and research university with more than 16,000 undergraduate and graduate students.

In 1925 the town of Mayfield, the original settlement that developed in the area in 1853, was annexed to the larger Palo Alto. In the decades that followed, Palo Alto continued to expand southward reaching the border it currently shares with Mountain View.

The population more than doubled from 25,000 to 55,000 residents by 1960, and since then has increased to roughly 68,000 today. During these boom years Palo Alto was transformed from agricultural fields to urban forest and became the birthplace of the Silicon Valley

- **Climate:** Typical of the San Francisco Bay Area, Palo Alto has a Mediterranean Climate with cool, wet winters and warm, dry summers. Typically, in the warmer months, as the sun goes down, the fog bank flows over the foothills to the west and covers the night sky, thus creating a blanket that helps trap the summer warmth absorbed during the day.

The record high temperature was 107 degrees Fahrenheit (°F) on June 15, 1961, and the record low temperature was 15 °F on November 17, 2003. Temperatures reach 90 °F or higher on an average of 9.9 days. Temperatures drop to 32 °F or lower on an average of 16.1 days.

Due to the Santa Cruz Mountains to the west, there is a "rain shadow" in Palo Alto, resulting in an average annual rainfall of only 15.32 inches (389 mm). Measurable rainfall occurs on an average of 57 days annually. The wettest year on record was 1983 with 32.51 inches (826 mm) and the driest year was 1976 with 7.34 inches (186 mm). The most rainfall in one month was 12.43 inches (316 mm) in February 1998 and the most rainfall in one day was 3.75 inches (95 mm) on February 3, 1998. Measurable snowfall is very rare in Palo Alto, but 1.5 inches (38 mm) fell on January 21, 1962.

- **Governing Body Format:** Palo Alto is a Charter City and has a council-manager form of government in which the seven-member, popularly elected City Council appoints the City Manager, who in turn oversees a dynamic Executive Leadership Team in the operation of thirteen departments employing 1,000 staff. This vibrant organization enjoys a strong, collaborative, and open environment. The Fiscal Year 2023 citywide operations budget amounts to \$965.9 million, with a General Fund budget of \$247.4 million, and a Capital Budget of \$379.5 million. The City Council assumes responsibility for the adoption of this plan, the Office of Emergency Services, on behalf of the City Manager, will oversee its implementation.

8.3. Development Trends

According to the City's 2030 Comprehensive Plan, Palo Alto covers almost 26 square miles (16,627 acres) of land, about a third of which is open space, including 34 city-owned parks and 1,700 acres of protected Baylands. The City has 35 different neighborhoods and is composed of connected commercial centers and business districts. With a steady growing population and large employers such as Stanford University, Stanford Healthcare, Lucile Packard Children's Hospital, VMWare, SAP Labs, Space Systems Loral, and more, the City is expected to continue growing.

The City of Palo Alto has increased its population since the previous plan was developed, thereby increasing its vulnerability to seismic activity, climate change, fire, and flooding. Palo Alto has and will continue to monitor the vulnerability of its population through restriction of major development in the foothills area, enforcing building Code seismic restrictions for all construction, attaining in-depth soil reports, retrofitting and upgrades of structures, and enforcement of building requirements.

Table 128 summarizes development trends in the performance period since the development of the previous hazard mitigation plan and expected future development trends.

Table 3: Recent and Expected Future Development Trends

Criterion	Response
<p>Has your jurisdiction annexed any land since the development of the previous hazard mitigation plan?</p> <ul style="list-style-type: none"> If yes, give the estimated area annexed and estimated number of parcels or structures. 	<p>No</p>
<p>Is your jurisdiction expected to annex any areas during the performance period of this plan?</p> <ul style="list-style-type: none"> If yes, please describe land areas and dominant uses. If yes, who currently has permitting authority over these areas? 	<p>No</p>
<p>Are any areas targeted for development or major redevelopment in the next five years?</p> <ul style="list-style-type: none"> If yes, please briefly describe, including whether any of the areas are in known hazard risk areas 	<p>The City has two Planned Development Areas (PDA): Downtown and California Avenue. Transit-oriented development is encouraged in these areas, and state law adopted in 2022 related to development within ½ mile from major transit stops may result in more major development in these areas. The City is currently working on a Coordinated Area Plan for the North Ventura area and the Housing Element Update, which contains programs targeting new areas in Palo Alto for potential housing development, and it might potentially embark on working a Downtown Housing Plan. All these plans encourage additional housing development in different parts of the City. As part of the Housing Element, the City proposes to permit high density multifamily residential uses in its General Manufacturing and Research, Office, and Limited Manufacturing zone districts.</p> <p>Previously, multifamily residential was not a permitted use. The maximum density is 90 dwelling units per acre. Coupled with proposed development incentives, there could be significant development in those districts. The City has received few multifamily development proposals along El Camino corridor, with higher densities. But ultimately, it is at the discretion of the property owners to propose development projects.</p> <p>Several residential sites in the foothills area of the City lie within areas with geologic and seismic zones, so any development there will have seismic risks. However, no major development would be allowed in the foothills (open space zoning) areas. The City strictly enforces Building Code seismic safety restrictions for all types of construction. For residential sites within earthquake fault zone areas, in-depth soil reports are required as a part of the development approval process. Although the entire</p>

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Criterion	Response
	<p>City is subject to moderate to severe earth movement during a seismic event, standard engineering solutions to mitigate these conditions are enforced. Both Downtown Palo Alto and North Ventura areas already have existing developments and for the most part will have infill development. All new developments and redevelopments in the City are subject to requirements of California Building codes, including seismic retrofitting and upgrades. Sites identified in the City’s Housing Element for future housing developments also have similar building code and seismic requirements.</p> <p>Palo Alto is subject to flooding following unusually heavy rainfall. Flooding is typically associated with overtopping of creek banks, inadequately sized bridges and culverts, and blocked storm drains. Much of the City lies outside the 100-year flood plain boundary defined by the Federal Emergency Management Agency (FEMA). However, a substantial area is subject to flooding in a 100-year storm and designated as a Special Flood Hazard Area on FEMA’s Flood Insurance Rate Map, with approximately 25-30 percent of the City within this flood hazard zone. Structures within this zone must meet certain building requirements to reduce potential flooding impacts when expanding or improving property if the improvement cost is greater than 50 percent of the value of the property.</p> <p>The impacts of global climate change have led to more drastic weather changes that include heavier and more frequent rain event storms, droughts that facilitate larger, more intense forest fires, warmer temperatures, and changes to the jet stream. Therefore, any future development decisions for Palo Alto will need to consider these impacts throughout the City.</p> <p>City of Palo Alto is considered to have a wildland/urban interface because it is built within and adjacent to mountainous areas and has seen an increase in the number of people living near heavily vegetated areas where wildlands meet urban development. A fire along the wildland urban interface (WUI) can result in major losses of property and structures unless adequate protection measures have been provided. Chapter 7A of the California Building Code (CBC) and Chapter R337 of the California Residential Code (CRC) contain standards associated with the construction of buildings in wildfire prone areas. The City of Palo Alto recognizes and refers to both the CBC and CRC in the design and approval process for housing developments. Fuel, topography, and weather also impact fire risks in Palo Alto. Palo Alto’s hilly topography in the South portion of the City has led to residential construction near mountainsides and in</p>

Criterion	Response						
	canyons. Homes built in steep, narrow canyons and at canyon rims face an increased fire risk.						
How many building permits were issued in your jurisdiction since the development of the previous hazard mitigation plan?		2017	2018	2019	2020	2021	2022
	Total Number of Permits	89	54	107	178	212	128
Please provide the number of permits for each hazard area or provide a qualitative description of where development has occurred.	The majority of permits occur in the urbanized area of Palo Alto, which corresponds primarily to earthquake hazards, but also to heavy rain, heavy winds, and extreme temperatures. A small number of permits can be associated with development in the Foothills, which corresponds to the City's wildfire hazard.						
Please describe the level of buildout in the jurisdiction, based on your jurisdiction's buildable lands inventory. If no such inventory exists, provide a qualitative description.	Palo Alto is 99% built out.						

8.4. Capability Assessment

8.4.1. Resources for the 2023 Planning Initiative

The following technical reports, plans, and regulatory mechanisms were reviewed to provide information for inclusion into the 2023 Multijurisdictional Hazard Mitigation Plan for both Volume 1 and Volume 2 (City of Palo Alto Annex). All the below items were additionally reviewed as part of the full capability assessment for the City of Palo Alto.

- **City of Palo Alto Comprehensive Plan:** The Comprehensive Plan was reviewed for information regarding goals and policies consistent with hazard mitigation for carry over as goals and objectives. Additionally, development trends from the Land Use section of the Comprehensive Plan informed the development section of this annex. The Economic Development Plan and Transportation Plan can also be found within this document.
- **City of Palo Alto Municipal Code:** The Municipal Code was reviewed for the full capability assessment and for identifying opportunities for action plan integration.
- **Flood Damage Prevention Ordinance:** The Flood Damage Prevention Ordinance was reviewed for compliance with the National Flood Insurance Program.
- **Capital Improvements Plan:** The Capital Improvements Plan was reviewed to identify cross-planning initiatives for inclusion as mitigation projects.
- **State of California Hazard Mitigation Plan:** The state plan was helpful for reviewing goals and also in assessing hazards.
- **County of Santa Clara and City of Palo Alto Local Hazards Mitigation Plan:** The previous LHMP provided a baseline of information for the writing of this document.
- **City of Palo Alto Emergency Operations Plan:** The Storm Drain Master Plan was reviewed to inform the jurisdictional profile as well as a source of mitigation actions.

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- **City of Palo Alto Urban Water Management Plan:** The Storm Drain Master Plan was reviewed to inform the jurisdictional profile as well as a source of mitigation actions.
- **Palo Alto Threats and Hazards Identification and Risk Assessment (THIRA):** The THIRA helped to inform the hazard analysis portion of this plan, as well as a source for mitigation actions.
- **Palo Alto Energy Assurance Plan:** The Energy Assurance Plan provided information for the jurisdiction profile as well as a source for mitigation actions.
- **Sustainability / Climate Adaptation Plan:** This plan provided information for the hazards analysis as well as identification of mitigation actions.
- **Foothills Wildfire Management Plan / Santa Clara County Community Wildfire Prevention Plan:** These plans informed the hazards analysis as well as identifying wildfire mitigation actions.

8.4.2. Full Capability Assessment

An assessment of legal and regulatory capabilities is presented in Table 129 and Table 130. An assessment of fiscal capabilities is presented in Table 131. An assessment of staffing capabilities is presented in Table 132. An assessment of administrative and technical capabilities is presented in Table 133. Information on National Flood Insurance Program (NFIP) compliance is presented in Table 134. An assessment of education and outreach capabilities is presented in Table 135. Classifications under various community mitigation programs are presented in Table 136. Development and permitting capabilities are presented in Table 137, and the community’s adaptive capacity for the impacts of climate change is presented in Table 138.

Table 4: Legal and Regulatory Capabilities: Codes, Ordinances, and Requirements

Legal and Regulatory Capability	Local Authority	Other Jurisdiction Authority	State Mandated	Integration Opportunity?
Building Code	Yes	Yes	Yes	No
<i>Comment: The City has adopted the 2022 California Building Code, Title 24, Part 2, Volumes 1 & 2 adopted and amended.</i>				
Zoning Ordinance	Yes	Yes	Yes	No
<i>Comment: Municipal Code, Title 18, Passed December 12, 2022</i>				
Subdivision Ordinance	Yes	No	No	No
<i>Comment: Municipal Code, Title 21, Effective June 13, 2016</i>				
Stormwater Management Ordinance	No	No	No	No
<i>Comment: None Identified.</i>				
Other Natural Hazard-Specific Ordinances	Yes	Yes	No	No
<i>Comment: City Code, Chapter 16.42, Chapter 16.52, and Chapter 15.04.420</i>				

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Legal and Regulatory Capability	Local Authority	Other Jurisdiction Authority	State Mandated	Integration Opportunity?
Post-Disaster Recovery	No	No	No	No
<i>Comment: None Identified.</i>				
Real Estate Disclosure	No	No	Yes	Yes
<i>Comment: Cal. Civ. Code §1102 et seq.</i>				
Growth Management	Yes	Yes	Yes	No
<i>Comment: Growth management falls under Palo Alto's 2022 Zoning Regulations and is more discreetly addressed in the City's Comprehensive Plan; Cal. Gov. Code §65300 et seq</i>				
Site Plan Review	Yes	Yes	Yes	No
<i>Comment: Site Plan review falls under Palo Alto's 2022 Zoning Regulations and is well practiced in the permitting process.</i>				
Environmental Protection	Yes	Yes	Yes	Yes
<i>Comment: Ordinance 5107, 13 December 2010, to provide green building standards and environmental protections; California Environmental Quality Act (Guideline: California Code of Regulations, Title 14, Division 6, Chapter 3, Sections 15000–15387); 2022 Proposed Green Building and Local Energy Codes.</i>				
Flood Damage Prevention	Yes	Yes	No	No
<i>Comment: Municipal Code, Chapter 16.52 effective June 13, 2016</i>				
Emergency Management	Yes	Yes	Yes	No
<i>Comment: Municipal Code, Chapter 16.52 effective June 13, 2016</i>				
Climate Change	Yes	Yes	No	No
<i>Comment: Ordinance No. 5345, 31 August 2015, to comply with California Energy Code 2013 edition; California SB-379: Land Use: General Plan: Safety Element</i>				
Acquisition of land for open space and public recreation uses	N/A			
<i>Comment: Palo Alto is almost 100% built out; the City has extensive open spaces and parks.</i>				

Table 5: Planning, Legal, and Regulatory Capabilities

Planning, Legal, or Regulatory Capability	Local Authority	Other Jurisdiction Authority	State Mandated	Integration Opportunity?
General Plan	Yes	No	Yes	No
<i>Is the plan compliant with Assembly Bill 2140? Yes</i>				
<i>Comment: 2030 Comprehensive Plan.</i>				
Capital Improvement Plan	Yes	Yes	Yes	Yes
<i>How often is the plan updated? Five years</i>				
<i>Comment: The 2022-2026 Capital Improvement Program Plan for the City of Palo Alto guides the City in the planning and scheduling of infrastructure improvement projects over the five year period. Annually, the City publishes a Capital Improvement Program budget to guide annual funding of scheduled projects.</i>				
Floodplain or Watershed Plan	No	Yes	No	Yes
<i>Comment: Santa Clara Valley Water District</i>				
Stormwater Management Plan	Yes	No	No	No
<i>Comment: Included in the City's municipal code for Stormwater Pollution Protection</i>				
Urban Water Management Plan	Yes	No	Yes	No
<i>Comment: The 2020 Urban Water Management Plan (UWMP)</i>				
Habitat Conservation Plan	No	Yes	No	Yes
<i>Comment: 2013 – Santa Clara Valley Habitat Plan</i>				
Green Infrastructure Plan	No	No	No	No
<i>Comment: None Identified.</i>				
Parks or Open Space Plan	Yes	No	No	No
<i>Comment: Parks and Open Space is also addressed in the Natural Element and Community Services Element of the 2030 Comprehensive Plan.</i>				
Economic Development Plan	No	No	No	No
<i>Comment: The primary considerations for this are included in the City's Comprehensive Plan.</i>				
Transportation Plan	Yes	Yes	No	No
<i>Comment: Transportation is covered in the 2030 Comprehensive Plan, Transportation Element.</i>				
Shoreline Management Plan	Yes	No	No	No
<i>Comment: Baylands Master Plan 2008. The 2008 plan is an information update with the goal of producing an up-to-date record of Council approved policies and actions in the Baylands. It includes the history, environmental setting and adopted planning goals and policies for the Baylands area. Baylands Comprehensive Conservation Plan. Palo Alto is currently preparing this plan. It will address future management of the Baylands including conservation, recreation, and visitor use for the next 15 years and beyond.</i>				
Community Wildfire Protection Plan	Yes	Yes	No	Yes
<i>Comment: Palo Alto is a part of the Santa Clara County CWPP. It is currently being updated.</i>				
Urban Forest Management Plan	Yes	No	No	No
<i>Comment: 2019 - The purpose of the plan is to establish long-term management goals and strategies to foster a sustainable urban forest in Palo Alto. It was developed using an inter-departmental team of staff in conjunction with Canopy and community partners.</i>				

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Planning, Legal, or Regulatory Capability	Local Authority	Other Jurisdiction Authority	State Mandated	Integration Opportunity?
Climate Action Plan	Yes	No	No	Yes
<i>Comment: 2022 – In 2020, the City started to update the City’s Sustainability and Climate Action Plan (S/CAP) to develop the strategies needed to meet the City’s sustainability goals, include the goal of reducing greenhouse gas emissions by 80% below 1990 levels by 2030. Parts of the plan were updated again in 2022.</i>				
Local Emergency Operations Plan	Yes	No	No	Yes
<i>Comment: 2016 - The Palo Alto Emergency Operations Plan (EOP) identifies the City’s emergency planning, organization, and response policies and procedures.</i>				
Threat and Hazard Identification and Risk Assessment (THIRA)	Yes	Yes	No (Partial)	No
<i>Comment: City of Palo Alto THIRA, 2017</i>				
Post-Disaster Recovery Plan	No	No	No	Yes
<i>Comment: None Identified.</i>				
Continuity of Operations Plan	Yes	No	No	No
<i>Comment: Palo Alto completed Continuity of Governance/Continuity of Operations planning in 2017; the manner with which this is managed is currently being reviewed to determine how best to maintain this function.</i>				
Public Health Plan	No	Yes	Yes	No
<i>Comment: The Santa Clara County Department of Public Health has responsibility for public health planning across the County.</i>				
Other:	Yes	Yes	No	Yes
<i>Comment: WUI/Foothills Fire Management Plan: This plan was updated in 2016.</i>				

Table 6: Financial Capabilities

Financial Capability	Could the resource be used to fund future mitigation activities?	Has the funding resource been used in the past for mitigation activities? If yes, for what type of mitigation activities?
Community Development Block Grants	Yes	No
Other Federal Funding Programs	Yes	No
Capital Improvements Project Funding	Yes	Yes
Authority to Levy Taxes for Specific Purposes	Yes	No
User Fees for Water, Sewer, Gas or Electric Services	Yes	Yes, CIP projects for Utilities and Public Works departments
Stormwater Utility Fee	Yes	Yes, storm drain masterplan CIP projects. Green Stormwater Infrastructure.

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Financial Capability	Could the resource be used to fund future mitigation activities?	Has the funding resource been used in the past for mitigation activities? If yes, for what type of mitigation activities?
Incur Debt through General Obligation Bonds	Yes	Yes
Incur Debt through Special Tax Bonds	Yes	Yes, the improvement of public-school facilities, and other infrastructure improvements.
Incur Debt through Private Activity Bonds	No	Yes, for the construction of a new Public Safety building.
Withhold Public Expenditures in Hazard-Prone Areas	Yes	No
State Funding Programs	Yes	Yes, improving public safety resources and systems, and advancing infrastructure development projects.
Development Impact Fees for Homebuyers or Developers	Yes	No
Public or Private Partnership Funding Sources	Yes	No
Other Funding Sources	Yes	No

Table 7: Staffing Capabilities

Staffing Capability	Have Capability?	Is staffing adequate to enforce regulations?	Is staff trained on natural hazards and mitigation?
Chief Building Official	<ul style="list-style-type: none"> • Yes • Full time • Planning and Development Services Department 	Yes	Yes
Parks and Recreation Director	<ul style="list-style-type: none"> • Yes • Full time • Department of Community Services Open Space & Parks 	Yes	Yes
Emergency Manager	<ul style="list-style-type: none"> • Yes • Full time • Office of Emergency Services 	No	Yes

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Staffing Capability	Have Capability?	Is staffing adequate to enforce regulations?	Is staff trained on natural hazards and mitigation?
Community Planner	<ul style="list-style-type: none"> • Yes • Full time • Department of Planning & Development, Department of Community Services Open Space & Parks 	No	No
Civil Engineer	<ul style="list-style-type: none"> • Yes • Full time • Department of Public Works, Department of Planning & Development 	No	Yes
Engineers or professionals trained in building or infrastructure construction practices	<ul style="list-style-type: none"> • Yes • Full time • The City does not have one Civil Engineer, it has a public works director, and an engineering department of Professional Engineers. The Public Works Director acts as the City's Civil Engineer designate. 	No	Yes
Planners or engineers with knowledge of land development and land management practices	<ul style="list-style-type: none"> • Yes • Full time • Planning & Community Environment – Planner, Community & Services Department – Open Space Ranger 	No	No
Planners or engineers with an understanding of natural hazards	<ul style="list-style-type: none"> • Yes • Full time • Public Works - Engineer, Development Services – Building Inspector 	Yes	Yes
Surveyors	<ul style="list-style-type: none"> • Yes • Full time • Public Works 	Yes	

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Staffing Capability	Have Capability?	Is staffing adequate to enforce regulations?	Is staff trained on natural hazards and mitigation?
GIS Coordinator or personnel skilled or trained in GIS applications	<ul style="list-style-type: none"> • Yes • Full time • Information Technology 	Yes	No
Public Works Director	<ul style="list-style-type: none"> • Yes • Full time • Department of Public Works 	Yes	Yes
Fire Chief	<ul style="list-style-type: none"> • Yes • Full time • Palo Alto Fire Department 	Yes	Yes
Environmental Director	<ul style="list-style-type: none"> • Yes • Full time • Public Works, Environmental Services 	Yes	Yes
Staff with training in benefit/cost analysis	<ul style="list-style-type: none"> • Yes • Full time • Administrative Services, Accounting Division 	Yes	Yes
Scientist familiar with natural hazards in local area	<ul style="list-style-type: none"> • Yes • Full time • U.S.GS, NWS 	Yes	No

Table 8: Administrative and Technical Capabilities

Administrative or Technical Capability	Have Capability?	Has the capability been used to assess or mitigate risk in the past? If yes, what type of hazard event?
Maintenance programs to reduce risk	Yes	Multiple maintenance programs executed through the Department of Public Works. Also, the City Utilities Department maintains Electric, Water, Gas, and Wastewater systems.
Mutual aid agreements	Yes	Palo Alto participates in the statewide, California Master Mutual Aid Agreement for public safety services.
Hazard data and information	Yes	Yes, flooding and creek monitoring.
Hazus analysis or GIS software	Yes	Yes, flooding and creek monitoring.
Grant writing	Yes (Contracted)	Yes, grants for all hazards.

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Administrative or Technical Capability	Have Capability?	Has the capability been used to assess or mitigate risk in the past? If yes, what type of hazard event?
Does your jurisdiction have any established warning systems or services for hazard events?	Yes	AlertSCC. Alerts are sent directly to your mobile device, landline, and/or email. Alerts for fire, earthquake, Heavy rain, heavy winds, extreme temperatures, crime, and instructions during a disaster.

Table 9: National Flood Insurance Program (NFIP) Compliance

Topic	Response
What department in your jurisdiction is responsible for floodplain management?	Department of Public Works
Who acts as your jurisdiction’s floodplain administrator?	Public Works Engineer
Is the floodplain administrator or NFIP Coordinator certified?	Yes
Is floodplain management an auxiliary function in your jurisdiction?	No
What is the date of adoption of your flood damage prevention ordinance?	2004
Do floodplain development regulations meet or exceed FEMA or state minimum requirements? If regulations exceed requirements, in what ways?	Yes
How are the substantial improvement/substantial damage provisions implemented?	<p>The substantial improvement and substantial damage definitions for the city meet the standard definitions given by the NFIP. In addition to assessments post event, permit review can be used to track substantial improvement/substantial damage. The Floodplain Administrator is responsible for reviewing all development permits. The local permit official is responsible for making substantial improvement/substantial damage using permit information. The closer to 50% market value the improvements are, the greater the need for precision. If the improvement is estimated to be between 40-60% of the market value, additional information may be requested from the permit applicant or owner. Community members interested in learning more about these provisions can find further information on the city’s website at https://www.cityofpaloalto.org/Departments/Public-Works/Engineering-Services/Floodplain-Management/Substantial-Damage-and-Improvement.</p>

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Topic	Response
Provide an explanation of the permitting process for development within the floodplain.	See the Palo Alto Municipal Code, 16.52.10
Does your floodplain management program meet or exceed minimum requirements?	Yes
When did your jurisdiction enter the NFIP?	September 19, 1984
Is your jurisdiction in good standing with the NFIP?	Yes
Are the jurisdiction’s Flood Insurance Rate Maps (FIRMs) digital, paper, or both?	Digital Adopted effective maps dated 5/18/2009
Explanation of NFIP administration services within your jurisdiction.	<p>Before building plans are processed for approval, Public Works Engineering Technicians does a flood zone screening checklist. The purpose of the check list is to determine the flood zone designation, base flood elevation and all the construction regulations that the homeowner needs to comply to build a structure in a flood zone. The City has a flood zone look up on the City’s website. Public Works Engineering Technicians can provide the flood zone designation and the base flood elevation of the properties to homeowners.</p> <p>FEMA 100-year flood maps are available on the City’s GIS. City’s GIS can show parcel boundaries along with the flood zone and flooding boundaries. The City has FEMA certified Flood Plain Manager (CFM) and staff that can assist homeowners on the requirements to build a structure in a FEMA designated 100 year flood zone, Which includes LOMA, CLOMA, Flood Proofing Certificate, Elevation Certificate, etc. Public Works Inspectors inspects, reviews and signs off on all Elevation Certificates for structures built in FEMA designated flood zone areas. The City mails safety tips from flooding as utility inserts to all City residents every year. The utility insert includes information on how to protect properties from flood hazard before flooding, during flooding and after flooding. The information on flood safety is also available on the City website.</p>
Barriers to running an effective NFIP program in your jurisdiction.	None
When was the most recent Community Assistance Visit (CAV) or Community Assistance Contact (CAC)?	2021
Is a CAV or CAC scheduled or needed?	Yes. A visit is scheduled in the fall of 2023.
Does your jurisdiction have any outstanding NFIP compliance violations that need to be addressed?	No

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Topic	Response
Do your flood hazard maps adequately address the flood risk within your jurisdiction?	Yes
Does your floodplain management staff need any assistance or training to support its floodplain management program?	Yes, additional staffing.
Does your jurisdiction participate in the Community Rating System (CRS)?	Yes, class 6
How many structures are exposed to flood risk within your jurisdiction?	<ul style="list-style-type: none"> • In 10% annual chance flood hazard area: 2,829 • In 1% annual chance flood hazard area: 4,994 • In 0.2% annual chance flood hazard area: 20,184
How many flood insurance policies are in force in your jurisdiction? <ul style="list-style-type: none"> • What is the insurance in force? • What is the premium in force? 	<ul style="list-style-type: none"> • 3,665 policies in force • \$957,293,500 insurance in force • \$4,126,988 premium in force
Areas of flood risk with limited NFIP policy coverage.	Unknown
How many total loss claims have been filed in your jurisdiction? <ul style="list-style-type: none"> • How many claims were closed without payment or are still open? • What is the total amount of paid claims? • How many claims were for substantial damage? 	<ul style="list-style-type: none"> • 473 total loss claims have been filed • 104 claims closed without payment • \$8,984,657.71 total payments for losses
How NFIP compliance will be continued during the next 5 years.	<p>NFIP compliance will be continued by following the FEMA Floodplain Management Regulations, the California Building Code, and the floodplain management requirements that are on the City's Municipal Code for all new construction and substantial improvement construction in Special Flood Hazard Areas (SFHAs). The link to FEMA's Map Service Center is provided on the City's website for flood zone identification for any properties. The City also provides a service to provide flood zone designations and base flood elevations from the City's Flood Zone Lookup from the City's website. All LOMA documents are attached in the City's GIS system. Thus, local requests for map updates for properties with LOMAs can be viewed on the City's GIS map. The City's public works inspectors monitors all constructions — substantial improvements and non-substantial improvements — in SFHAs. Elevation Certificates (ECs) are reviewed, signed, and approved by public inspectors when the building has been constructed in compliance with NFIP regulations.</p>

Table 10: Education and Outreach Capabilities

Education or Outreach Capability	Response	How does the personnel, program, or organization relate to disaster resilience and mitigation?	Could the personnel, program, or organization help implement future mitigation activities?
Does your jurisdiction have a Public Information Officer or Communications Office?	Yes. The City Communications Office, Public Safety public information officers, and Utilities Communication Manager provide public information officer functions.	PIO and Communications provide public alerts and warnings using multiple systems.	Yes
Does your jurisdiction have personnel skilled or trained in website development?	Yes	Websites provide information for public consumption of mitigation activities across the City.	Yes
Does your jurisdiction have hazard mitigation information available on your website?	<ul style="list-style-type: none"> • Yes. www.cityofpalto.org/lhmap & www.cityofpalto.org/thirda • Palo Alto maintains and follows an Open data initiative that makes large amounts of governmental information available to the public. The City has a local hazards mitigation page on the City website. 	This plan provides suggested mitigation actions the City could consider.	Yes
Does your jurisdiction utilize social media for hazard mitigation education and outreach?	Yes, The City has implemented the use of social media using Nextdoor to communicate these types of information to the public at large.	Those who perform these roles provide hazard related preparedness information to the community on a seasonal basis	Yes
Does your jurisdiction have any citizen boards or commissions that address issues related to hazard mitigation?	<ul style="list-style-type: none"> • The Planning & Transportation Commission advises the City Council, Planning Director, and Transportation Director on land use and transportation matters, including the Comprehensive Plan, 	Commissions, through their routine advisory roles, address topics that have a nexus to mitigation activities. These commissions make recommendations to the City Council for consideration.	Yes

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Education or Outreach Capability	Response	How does the personnel, program, or organization relate to disaster resilience and mitigation?	Could the personnel, program, or organization help implement future mitigation activities?
	<p>zoning, transportation programs, and related matters.</p> <ul style="list-style-type: none"> • Utilities Advisory Commission (UAC) is charged with providing advice on acquisition, development, and financial review of electric, gas and water resources; joint action projects with other public or private entities which involve electric, gas or water resources; environmental implications of proposed electric, gas or water utility projects; and conservation and demand management. Additionally, the UAC is charged with providing advice on the acquisition, development and financial review of the dark fiber network and wastewater collection utilities. • Citizen Corps is a best practice and model advocated by the federal government to integrate volunteers, non-government entities, the private sector, and other groups with local programs related to homeland security and emergency management (HS/EM). 		
<p>Does your jurisdiction have any ongoing public education or information programs that could be used to communicate</p>	<ul style="list-style-type: none"> • Yes. Palo Alto maintains and follows an Open data initiative that makes large amounts of governmental information available to the public. The City has a local hazards mitigation page on the City website. 	<p>A wide range of data and information sources are available for public consumption bringing awareness to those who seek it.</p>	<p>Yes</p>

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Education or Outreach Capability	Response	How does the personnel, program, or organization relate to disaster resilience and mitigation?	Could the personnel, program, or organization help implement future mitigation activities?
<p>hazard-related information?</p>	<p>The website also provides several sources for hazard related information including a threats and hazards page, but also in the comprehensive plan.</p> <ul style="list-style-type: none"> • The emergency services volunteer program also serves as a communications network in their outreach to neighborhood members as well as their participation in community events. • https://www.cityofpaloalto.org/Departments/Emergency-Services; https://www.cityofpaloalto.org/Departments/Emergency-Services/Emergency-Volunteers; https://www.cityofpaloalto.org/Departments/Fire/Prepare-For-Wildfire-READY-SET-GO • The Fire Department provides fire prevention training throughout the community; the Public Works department provides community education through their Clean Bay initiative and tours of the Regional Water Quality Control Plant; the Community Services Department provides environmental education through their partnership with Save the Bay organization. 		

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Education or Outreach Capability	Response	How does the personnel, program, or organization relate to disaster resilience and mitigation?	Could the personnel, program, or organization help implement future mitigation activities?
<p>Does your jurisdiction have local citizen groups or nonprofit organizations focused on environmental protection, emergency preparedness, and/or underserved populations?</p>	<ul style="list-style-type: none"> • Yes. Citizen Corps is a best practice and model advocated by the federal government to integrate volunteers, non-government entities, the private sector, and other groups with local programs related to homeland security and emergency management (HS/EM). • The City also maintains an Emergency Services Volunteer program to support preparedness, response, and recovery efforts. • https://www.cityofpaloalto.org/Departments/Emergency-Services/Emergency-Volunteers 	<p>The individuals who participant in Citizen Corps activities champion resilience topics and share this information across the community.</p>	<p>Yes</p>
<p>Does your jurisdiction have ongoing public education or information programs?</p>	<ul style="list-style-type: none"> • Yes. Palo Alto maintains and follows an Open data initiative that makes large amounts of governmental information available to the public. The City has a local hazards mitigation page on the City website. The website also provides several sources for hazard related information including a threats and hazards page, but also in the comprehensive plan. The emergency services volunteer program also serves as a communications network in their outreach to neighborhood members as well as their participation in community events. • https://www.cityofpaloalto.org/Departments/Emergen 	<p>Public education activities occur in various departments and community groups. These efforts provide opportunities to educate various elements of the community.</p>	<p>Yes</p>

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Education or Outreach Capability	Response	How does the personnel, program, or organization relate to disaster resilience and mitigation?	Could the personnel, program, or organization help implement future mitigation activities?
	<p>cy-Services; https://www.cityofpaloalto.org/Departments/Emergency-Services/Emergency-Volunteers; https://www.cityofpaloalto.org/Departments/Fire/Prepare-For-Wildfire-READY-SET-GO</p> <ul style="list-style-type: none"> • The Fire Department provides fire prevention training throughout the community; the Public Works department provides community education through their Clean Bay initiative and tours of the Regional Water Quality Control Plant; the Community Services Department provides environmental education through their partnership with Save the Bay organization. • Implemented the use of social media using Nextdoor to communicate these types of information to the public at large. 		

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Education or Outreach Capability	Response	How does the personnel, program, or organization relate to disaster resilience and mitigation?	Could the personnel, program, or organization help implement future mitigation activities?
<p>Does your jurisdiction have natural disaster or safety related school programs?</p>	<ul style="list-style-type: none"> • Yes, Palo Alto maintains and follows an Open data initiative that makes large amounts of governmental information available to the public. The City has a local hazards mitigation page on the City website. The website also provides several sources for hazard related information including a threats and hazards page, but also in the comprehensive plan. • The emergency services volunteer program also serves as a communications network in their outreach to neighborhood members as well as their participation in community events. • https://www.cityofpaloalto.org/Departments/Emergency-Services; https://www.cityofpaloalto.org/Departments/Emergency-Services/Emergency-Volunteers; https://www.cityofpaloalto.org/Departments/Fire/Prepare-For-Wildfire-READY-SET-GO 	<ul style="list-style-type: none"> • The Fire Department provides fire prevention training throughout the community; the Public Works department provides community education through their Clean Bay initiative and tours of the Regional Water Quality Control Plant; the Community Services Department provides environmental education through their partnership with Save the Bay organization. • Implemented the use of social media using Nextdoor to communicate these types of information to the public at large. 	<p>Yes</p>
<p>Does your jurisdiction have public/private partnership initiatives addressing disaster-related issues?</p>	<p>Yes. Palo Alto has established a partnership with VMWare, whose campus is located in Palo Alto. Through this partnership, VMWare has created a solar 'Micro Grid' that can support public safety operations in a crisis.</p>	<p>This provides resilience for potential 'power outage' scenarios, or to augment public safety operations in vicinity of the Wildland Urban Interface.</p>	<p>Yes</p>

Table 11: Community Classifications

	Participating?	Classification	Date Classified
Community Rating System	Yes	6	5/1/2017
Building Code Effectiveness Grading Schedule	Yes	3	2018
Insurance Services Office (ISO) Fire Rating	Yes	2	2016
National Weather Service StormReady Program®	Yes	N/A	2015
Firewise USA® Program	No	N/A	N/A

Table 12: Development and Permitting Capabilities

Development or Permitting Capability	Response
Does your jurisdiction issue development permits? • If no, who does? If yes, which department?	Yes, Development Services Department
Does your jurisdiction have the ability to track permits by hazard area?	Yes
Does your jurisdiction have a buildable lands inventory?	No

Table 13: Adaptive Capacity for Climate Change

Adaptive Capacity Assessment Question	Jurisdiction Rating
Technical Capacity	
Jurisdiction-level understanding of potential climate change impacts	High
<i>Comment: The City has a Sustainability Officer who manages a stakeholder team of both internal staff members and external agency representatives to understand the climate change issues in Palo Alto. The City’s Sustainability and Climate Action Plan demonstrates the understanding of climate change impacts; Palo Alto is engaged in Bay Area conservation planning groups that are also involved in climate change impacts.</i>	
Jurisdiction-level monitoring of climate change impacts	High
<i>Comment: The City recently completed a Sea Level Rise Vulnerability Assessment which documents potential sea level rise hazards to City and community assets from increments of sea level rise between 12 to 84 inches.</i>	
Technical resources to assess proposed strategies for feasibility and externalities	High
<i>Comment: Staff members are assigned to assess and propose strategies for climate change impacts. These strategies are then included in the City’s Comprehensive Plan, Hazard Mitigation Planning, and Sustainability and Climate Action Plan.</i>	

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Adaptive Capacity Assessment Question	Jurisdiction Rating
Jurisdiction-level capacity for development of greenhouse gas emissions inventory	High
<p>Comment: In 2009 Palo Alto published the City's Climate Protection Plan to reduce greenhouse gas emissions. The Climate Protection Plan provides a comprehensive inventory of emissions, reduction targets, and steps to reach those targets. (http://www.cityofpaloalto.org/civicax/filebank/documents/9986). In 2014 the City updated this plan with new emissions data, goals, and actions. Additionally, the City has developed several programs to further reduce emissions including a long-term road map coordinated through the Sustainability and Climate Action Plan as well as the City's carbon neutral electric plan.</p>	
Capital planning and land use decisions informed by potential climate impacts	High
<p>Comment: As a result of the technical resources assigned to this planning element, Palo Alto incorporates decisions into Comprehensive Planning, Local Hazard Mitigation Planning, and Sustainability and Climate Action Planning.</p>	
Participation in regional groups addressing climate risks	High
<p>Comment: Palo Alto staff members are involved in Local, Regional, and National groups studying climate/change and adaption issues.</p>	
Implementation Capacity	
Clear authority/mandate to consider climate change impacts during public decision-making processes	High
<p>Comment: The Palo Alto City Council has established an aggressive GHG reduction goal and is in process of updating its Comprehensive Plan and adopting a Sustainability and Climate Action Plan that will mandate considering climate change impacts during public decision-making processes.</p>	
Identified strategies for greenhouse gas mitigation efforts	High
<p>Comment: The City's Sustainability and Climate Action Plan (scheduled for approval 11/28) identifies strategies for reducing GHG emissions 80 percent by 2030 (against a 1990 baseline) and for adapting to expected climate change impacts. These include strong energy efficiency requirements in building codes; exploring electrification (switching customers from natural gas to carbon neutral electricity); embedding sustainability and climate considerations into the City's purchasing, operations, and capital investment processes; encouraging shift of private and public vehicles to EVs, supported by expanded EV infrastructure; continued pursuit of the City's zero waste goals.</p>	
Identified strategies for adaptation to impacts	High
<p>Comment: The City's Sustainability and Climate Action Plan identifies strategies to prepare for climate change by reducing the impacts of climate change from sea level rise and wildfires.</p>	
Champions for climate action in local government departments	High
<p>Comment: Public Works Director sitting on City's Executive Leadership Team; multi-department Sustainability Steering Committee; multi-department Sustainability Leadership Team.</p>	
Political support for implementing climate change adaptation strategies	High
<p>Comment: Strong community and Council support; climate change has been a top Council priority for the past 3 years.</p>	
Financial resources devoted to climate change adaptation	High
<p>Comment: Currently, the City provides funding for staff members to engage in change adaptation planning including a Chief Sustainability Officer, and additional departmental staff members on an ad hoc basis. The City has a Capital Improvement Plan (CIP) fund that will provide funding for designated projects. The City Council can allocate funding for change adaptation projects as well.</p>	

Adaptive Capacity Assessment Question	Jurisdiction Rating
Local authority over sectors likely to be negatively impacted	Low
<i>Comment: The Sea Level Rise Vulnerability Assessment identifies the sectors likely to be negatively impacted by climate change. The Vulnerability Assessment focuses on sectors withing Palo Alto's authority.</i>	
Public Capacity	
Local residents knowledge of and understanding of climate risk	High
<i>Comment: Palo Alto includes a highly educated community, many of whom understand climate risks. The City has hosted several events, webinars, and workshops focused on various topics of climate risk (https://www.cityofpaloalto.org/City-Hall/Sustainability/Get-Involved/SCAP-Community-Engagement).</i>	
Local residents support of adaptation efforts	High
<i>Comment: There is strong local support for adaptation efforts. The City hosted a public Sustainability and Climate Action Plan Ad Hoc Meeting to discuss wildfires and sea level rise (https://www.cityofpaloalto.org/City-Hall/City-Council/Sustainability-and-Climate-Action-Plan-Ad-Hoc-Committee), as well as several Sea Level rise workshops and webinars (https://www.cityofpaloalto.org/sealevelrise). Many community members are speaking up about their concerns of climate change, and several organizations have organized action groups (i.e. Palo Alto Green, Save Palo Alto Groundwater).</i>	
Local residents' capacity to adapt to climate impacts	Medium
<i>Comment: Climate adaptation and sea level rise is addressed in the soon-to-be adopted Sustainability and Climate Action Plan (S/CAP). The in-development Sea Level Rise Adaptation Plan will address local residents' capacity to adapt to climate impacts. The S/CAP also has a goal to minimize wildland fire hazards by ensuring adequate provisions for vegetation management, emergency access and communications, inter-agency firefighting, and standards for design and development within wildland areas.</i>	
Local economy current capacity to adapt to climate impacts	Medium
<i>Comment: Generally strong economy; very energy efficient compared to U.S.; substantial local food production capacity; but generally unrecognized risk to Long-Term water supplies (impacting potable water, hydropower, and agriculture).</i>	
Local ecosystems capacity to adapt to climate impacts	Medium
<i>Comment: Depends on the extent of the impacts. The City can expect successional pressure on ecosystems from temperature and precipitation changes, other impacts from wildfires and flooding.</i>	

8.4.3. Opportunities to Expand Upon and Improve Existing Capabilities

The hazard mitigation planning process presented the opportunity for the community to discuss and evaluate their current capabilities however, building mitigation capabilities is an ongoing process. New capabilities can be added which will support mitigation. Current capabilities can also be enhanced to actively support mitigation and reduce risk. Significant efforts have been made to increase the capabilities of jurisdictions across the OA. By participating in this plan update, each community is reinforcing their support for mitigation and understanding of the capabilities they need to successfully implement mitigation measures. Actions that can expand and improve existing authorities, plans, policies, and resources for mitigation include:

- Developing a Climate Action Plan which incorporates hazard data and actions to adapt to a changing climate.
- Budgeting and passing policies and procedures for mitigation actions.
- Adopting and implementing stricter mitigation regulations.

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- Approving the training of staff for mitigation activities.
- Approving mitigation updates to existing plans as new needs are recognized.
- Continuing to update plans as necessary to ensure they are current and reflect the needs of the community or special district.
- Further developing warning systems and messaging.
- Creating and implementing additional public education and outreach offerings and increasing the volume of translated materials.
- Ensuring grant opportunities are capitalized upon to meet mitigation goals.

Each type of the four FEMA-identified capabilities were evaluated, in addition to OA-priority capabilities like adaptive capacity. Gaps and limitations, if any, are discussed in the tables above. Additional jurisdiction-specific opportunities to expand on and improve capabilities for reducing risk include:

- Continue to participate in the Community Rating System and identify additional actions to both reduce flood risk and reduce flood insurance premiums.
- Update the Comprehensive Plan and include requirements to address climate change.
- Adopt and implement the city's new Sustainability and Climate Action Plan (S/CAP).
- Acquire additional planning, engineering, and emergency management professionals who can support hazard mitigation initiatives.
- Expand grant writing capabilities to include mitigation grants such as BRIC.

8.5. Integration with Other Planning Initiatives

This section describes the process for integrating the hazard mitigation plan into local planning mechanisms.

8.5.1. Existing Integration

The following plans and programs currently integrate the goals, risk assessment and/or recommendations of the hazard mitigation plan:

- **Comprehensive Plan:** The Local Hazard Mitigation Plan is nested within the City's Comprehensive Plan, and many of the policies and programs in the Comprehensive Plan now have mitigation linkages for the hazards addressed in this plan.
- **Municipal Code:** The City of Palo Alto Municipal Code establishes risk mitigation standards for building codes that impact the City's seismic and flood risks.
- **Sustainability and Climate Action Plan:** The City's Sustainability and Climate Action Plan is the primary document that addresses the City's programs and mitigation actions for climate adaptation.
- **Seismic Hazards Identification Program:** This program will evolve in the near future to provide additional policies to reduce risks to seismic prone buildings.
- **Community Rating System:** Palo Alto will continue efforts to reduce the City's CRS rating to reduce flood risks to those property owners in FEMA designated flood zones. The prior LHMP was provided as a part of the city's local CRS assessments in order to maintain the current CRS rating by implementing preparedness measures through drills and exercises, community outreach, and LHMP annual updates.

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- **Energy Assurance Plan:** Palo Alto is developing programs and actions to improve the City's energy assurance for certain critical infrastructure.
- **Foothills Fire Management Plan:** This plan addresses a broad range of integrated activities and planning documents to identify and mitigate the impacts of fire hazards in the Palo Alto Foothills Area. Fire mitigation project areas include the boundaries of Foothills Park and Pearson-Arastradero Preserve and each year the City allocates resources to treat segments of the project area and to provide public education and awareness.
- **Water Conservation Best Management Practices (BMP):** Since 2002, the City has partnered with the Santa Clara Valley Water District (SCVWD) to promote and cost-share water efficiency programs for Palo Alto customers. Through this cost-sharing agreement, the City pays roughly half of the cost of the programs, with SCVWD administering many of these programs including onsite water audits, and rebates for landscape conversion as well as water efficient fixtures and appliances. The City also administers other water conservation programs in-house or through separate contracts with outside vendors, such as the Home Water Report program. The City continues to evaluate opportunities for program partnership opportunities with the Bay Area Water Supply and Conservation Agency and other regional alliances.
- **Funding/Day-to-Day Projects:** The City asks for public assistance regarding stormwater, water use, defensible space issues among others. The LHMP addresses projects to encourage compliance with city policies. Additionally, the City works with various special districts and incorporates specific projects into the LHMP that serve all entities. Examples are with the San Francisquito Creek Joint Powers Authority and Valley Water for our CRS assessments and NFIP flood reduction projects; and the interdepartmental efforts to reduce wildfire risks in our Wildland Urban Area.

8.5.2. Opportunities for Future Integration

The following plans and programs do not currently integrate the goals, risk assessment and/or recommendations of the hazard mitigation plan, but provide an opportunity for future integration:

- **Capital Improvement Program (CIP):** Many of the CIP projects being implemented have a direct or indirect application to local hazards. Specific projects will become part of Palo Alto's mitigation action plan and vice versa.
- **One Water Plan:** The development of this plan was identified as a key action in the city's Sustainability and Climate Action Plan. The water plan will evaluate alternative water supplies, define existing and future uncertainties and supply risks, and identify community needs and priorities. This relates to multiple hazards and actions described in the MJHMP.
- **Community Wildfire Protection Plan:** This plan is currently being updated. Data and mitigation actions can be reflected in both plans.
- **Building Codes/Zoning:** The City updates these hazard-related policies as needed in accordance with State requirements. The last update was in 2022, and additional updates may occur before the next MJHMP update.

The City has a number of plans and policies that have a nexus with the MJHMP. City staff members actively work with another to integrate topics between these plans/policies during normal working group meetings. The diverse group of internal stakeholders that participated in this plan update reflects the city's collaborative approach to integrating this MJHMP with other planning mechanisms. The Local Mitigation Planning Team will be responsible for integrating information from the 2023 hazard mitigation plan in accordance with normal Palo Alto planning activities.

8.6. Jurisdiction-Specific Natural Hazard Event History

Table 139 lists all past occurrences of natural hazards within the jurisdiction.

Table 14: Natural Hazard Events.¹

Type of Event	FEMA Disaster # (if applicable)	Date	Preliminary Damage Assessment
January 2023 Severe Storms	DR-4683	01/14/2023	Unknown
COVID-19 Response	DR-3428	03/13/2020	Unknown
Flood	DR-1203	02/09/1998	\$23 million
Earthquake	DR-845	10/18/1989	Unknown
Flood	DR-651	01/07/1982	Unknown
Flood	N/A	1967	Unknown
Flood	N/A	1958	Unknown
Flood	N/A	1955	Unknown
Flood	N/A	1911	Unknown
Flood	N/A	1862	Unknown

8.7. Jurisdiction-Specific Vulnerabilities

- Palo Alto tends to fall around the middle compared with other jurisdictions in the OA in terms of estimated losses to the earthquake Hazus scenarios. Estimates for structural losses were between \$800-\$900 million for the three fault-based scenarios, representing 4.3-4.9% of the total building value in the city. There is a high density of seismically at-risk soft-story, concrete tilt-up, and concrete shear wall buildings constructed prior to 1994 that have not been retrofitted, which is a mix of residential and commercial use. Moderate to High liquefaction potential begins near the center of the city and rises closer to the coastline. Structures and utilities in these areas are at additional risk to damage from changes in stability during an earthquake related to soil conditions. The city public safety building (built in 1970) and Fire Station 4 (built in 1953) are considered to be vulnerable to seismic activity because they do not include modern seismic building standards.
- A total of 604 buildings valued at \$25 million are within wildfire hazard areas in Palo Alto. A total of 1,711 people (2.5% of the total population) reside within wildfire hazard areas. The Foothills community and potable water supply reliability from reservoirs are vulnerable to wildfire. Additional water storage has been created in the low-lands to offset water losses. Power lines are occasionally de-energized in high wind events and similar conditions that may increase risk of wildfire. Although de-energizing lines reduces risk of igniting a wildfire, power interruptions can affect operations of other critical facilities, including water distribution facilities needed for fire response efforts. Other mitigation techniques could reduce wildfire ignition from power distributions without loss of power service. Not all structures in areas at risk to wildfire are constructed with fire resistant materials or have adequate defensible space or other forms of vegetation management to reduce wildfire risk. Wildfire risk is expected to increase by extended periods of drought or extreme heat caused by climate change.

¹ Damage assessment information from San Francisquito Creek Joint Powers Authority (2006), except 1862 flood information from various historical records. Recreating the Great California Flood of 1862 – A Case Study. NOAA Physical Sciences Laboratory. https://psl.noaa.gov/data/20thC_Rean/CA_flood_1861-1862/

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- A total of 8,200 residents and 3,318 households are in potential inundation areas from high hazard dams: Felt Lake and Lagunita. Structures valued at over \$2 billion are also within these potential inundation areas. See Figure 58 and 59 in the base plan for location. Foothills Nature Preserve Dam has shown signs of seepage, and monitoring may expose needs for repairs or other improvements.
- A total of 629 people (.92% of the total population) are within the 1% SFHA, and 4,534 (6.62%) are within the 0.2% SFHA. Structures in these areas are valued at \$158 million and \$367 million respectively. Roughly 20 percent of Palo Alto is exposed to special flood hazard areas including, 3 schools (1 public, 2 private), several businesses, and other public infrastructure. There are residents living in this area who require assistance, but there are strong neighborhood resources to assist. Levees in the Baylands help mitigate flood risk and sea level rise to structures closer to the bay. Several levees need improvements. The tide gate is also in need of replacing.
- A large portion of Palo Alto is at risk to flooding from the San Francisquito Creek due to two poorly designed bridges. Heavy rain events can result in high water flows that these bridges cannot handle, including Pope Chaucer bridge and Newell Road Bridge. The stream channel may experience bank erosion or other damage during flood or heavy rain events. The storm drain system has deteriorated with age and is also in need of repairs or other improvements.
- A total of 620 residents are exposed to landslide potential. Structures in moderate to high landslide risk areas are valued at \$520 million. Roadways in the Palo Alto Foothills are exposed to landslide risks, which could limit the ability to move into and out of this area. Water storage tanks in the landslide risk area may also be at risk to damage from landslide. Damage to these tanks would disrupt water supply delivery to the city.
- Vulnerability of permanent structures and residences to tsunamis are minimal. The potential evacuation area for tsunamis is adjacent to HW 101, a primary transportation route in northern Palo Alto.
- Impacts from inclement weather such as heavy rain, hail, and wind are likely to be very similar across the OA. Individual events may impact only limited areas, but the entire OA is at risk to similar conditions. Heavy rain may cause localized flooding on roadways and low-lying areas which may disrupt transportation for the general public and can also delay emergency response. Heavy rain can also have cascading impacts on landslide potential or strain the capacity of dams. High winds can disrupt power, communication and other services and cause damage to structures. Extreme heat or cold can be harmful to health, particularly those with inadequate housing with adequate warming and cooling systems.
- Extreme heat can strain power sources and contribute a need to implement rolling blackouts. These power outages can increase the risk of heat-related illness for vulnerable populations. Backup power systems or other secondary sources of power at critical facilities and public spaces that can be used as cooling centers could address this risk.
- Power outages occur throughout the community when high winds, combined with years of drought, and heavy rains and high winds cause tree limbs to come into contact with power lines. Commercial communications infrastructure does not have adequate backup power systems to maintain lifeline needs.
- Single grid tied high voltage transmission connection to PG&E for the power supply to the City, where it is then distributed by City of Palo Alto Utilities (CPAU) across the City of Palo Alto community. This presents a vulnerability to conditions that impact this transmission line.
- Impacts from drought will be fairly consistent across the OA. Drought impacts vegetation and can make it more vulnerable to disease and wildfire. Extended drought may necessitate limits on landscape irrigation or higher costs for irrigation, which can have economic impacts. Although agriculture is not a primary economic sector in the OA, drought can have severe negative impacts on growth of crops and gardens. Drought is expected to be more common in the future due to

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climate change. Water conservation efforts and expansion of water recycling systems are needed to maintain a reliable city water supply.

- In order to better anticipate flooding or wildfire risks, sensors are currently employed to provide rainfall amounts, creek flow rates and heights, and video monitoring. Providing more sensors along creeks or in the Foothills area could improve the information used to make community facing decisions.

Climate Change Considerations:

Anticipated changes in climate may increase the number of occurrences, length or intensity in hazards such as extreme heat or drought, as indicated by the CMRA tool. Both drought and extreme heat conditions contribute to increased risk of wildfire, as lack of precipitation and high temperatures both contribute to vegetation becoming dry and more susceptible to quick ignition and faster fire spread. Changes in temperature and precipitation patterns can also reduce snowpack, and changes in runoff from snowpack may result in changes to water supplies throughout the region. Climate change may also impact the future frequency or severity of severe weather such as heavy rain and subsequent risk of flooding. Although CMRA does not indicate a significant change in the number of precipitation events or overall annual rainfall, it is anticipated that those events may become more extreme, with significant amounts of precipitation occurring during an extreme precipitation event. Climate change may lead to frequent fluctuation of water levels retained by dams and may result increased discharges and flooding downstream and possibly overtopping or other design failures following extreme precipitation events. Intense rainstorms can result in increased risk of landslides occurrences. Loss of vegetation from wildfire reduces slope stability, and post-fire debris flows. An in-depth assessment of the possibility of increasing numbers and intensities of windstorms is not currently available for the OA; however, changes in temperature and extreme weather events may also be accompanied with increases in high wind. These could result in damaged utility lines resulting in power outages and can also contribute to extreme wildfire risk conditions.

Palo Alto will likely experience effects of climate change in relation to drought, extreme heat, heavy rain, high wind, flooding, and dam failure. Wildfire and landslide risk are confined to a relatively small area in Palo Alto. Climate change may impact those conditions but may not significantly increase the potential impacts to the city. Climate impacts to earthquake hazards are not well understood and not currently believed to have an effect in Palo Alto. Additional details on potential impacts to population, property, critical facilities, the environment, and the economy can be found in Volume 1, Section 12.

Repetitive loss records are as follows:

- Number of Federal Emergency Management Agency (FEMA)-identified Repetitive-Loss Properties (RL): 4
- Number of FEMA-identified Severe-Repetitive-Loss (SRL) Properties: 1
- Number of RL Properties or SRL Properties that have been mitigated: 0

Other noted vulnerabilities include:

- The State of California anticipates that relative sea level rise projections stemming from greenhouse gas emissions and related climate change pose significant economic, environmental, and social risks to communities along the San Francisco Bay Shoreline, including the City of Palo Alto. Sea level rise in San Francisco Bay is anticipated to range between three feet to more than ten feet by 2100, with rising tides likely thereafter. In Palo Alto, many City services and infrastructure that are essential to the City's public health, safety, and economy are located within areas that are predicted to be inundated by Bay water if adaptation measures are not implemented.
- Current climate change planning, specifically for sea-level rise, has shown groundwater incursion as a risk and the possible impacts that may cause to infrastructure and properties in close

proximity to the San Francisco Bay. City staff members must continue to assess these risks to develop effective mitigation strategies.

8.7.1. Social Vulnerability

Palo Alto has mostly low to moderate social vulnerability, as shown in Figure 88. This indicates that the population has fewer characteristics that might make recovery from hazard impacts more difficult, and the community would be fairly resilient following a disaster. However, although there were not high concentrations of individuals with social vulnerabilities identified in this tool, it should be expected that individuals with various disadvantages are found in the city. Individuals with household incomes below poverty level, those whose primary language is not English, the very young or those over 65 who are more dependent on others for care, those with access and functional needs, as well as other educational, socioeconomic, and other factors, should be given additional consideration in planning and plan implementation efforts. Two institutions that serve vulnerable populations in the area include Lucile Packard Children’s Hospital and the VA Hospital.

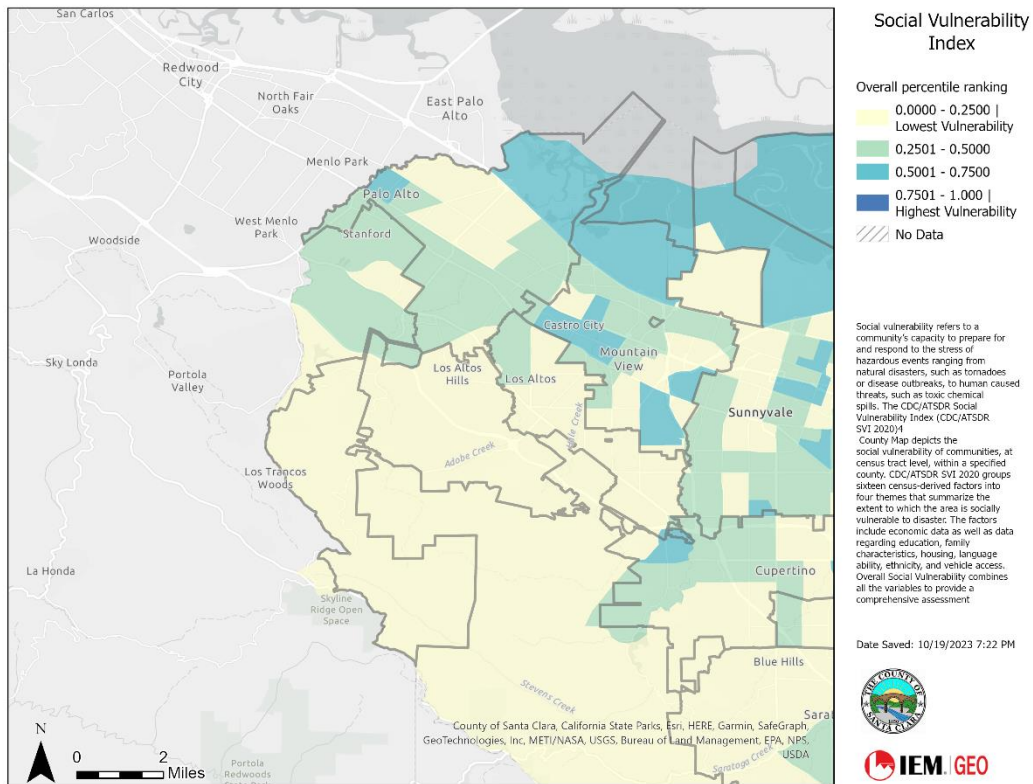


Figure 3: Palo Alto Social Vulnerability

8.8. Hazard Risk Index

Table 140 presents the hazards of concern from highest risk index number to lowest, as assigned by the City of Palo Alto.

Table 15: Hazard Risk Index

Hazard	Probability	Life Impact	Property Impact	Percentage of Area Impacted	Maximum Probable Extent
Drought	Highly Likely	Minor	Catastrophic	Significant	Major
Heavy Rain	Highly Likely	Limited	Critical	Extensive	Moderate
High Wind	Highly Likely	Limited	Limited	Extensive	Moderate
Extreme Heat	Highly Likely	Limited	Limited	Extensive	Moderate
Earthquake	Likely	Critical	Critical	Significant	Major
Wildfire/Smoke/ Air Quality	Highly Likely	Critical	Limited	Minimal	Moderate
Climate Change	Highly Likely	Minor	Catastrophic	Significant	Major
Dam/Levee Failure	Unlikely	Critical	Limited	Negligible	Weak
Flood	Occasional	Minor	Limited	Minimal	Moderate
Landslide/Mass Movement	Unlikely	Minor	Minor	Negligible	Weak
Tsunami	Unlikely	Minor	Minor	Negligible	Weak

Table 134: Comparison of Palo Alto Hazard Risk Score to Operational Area (OA)

Risk Score	Earth-quake	Dam/ Levee Failure	Heavy Rain	High Wind	Extreme Heat	Wildfire	Drought	Flood	Land- slide	Tsunami	Climate Change
Palo Alto	2	0.95	2.05	1.85	1.85	1.95	2.05	0.65	0	0	1.85
OA	2.24	1.19	1.44	1.44	1.44	1.68	1.21	0.90	0.36	.02	1.13

8.9. Future Needs to Better Understand Risk/Vulnerability

Current climate change planning, specifically for sea-level rise, has shown ground water incursion as a risk and the possible impacts that it may cause to infrastructure and properties in close proximity to the San Francisco Bay. City staff members must continue to assess these risks to develop effective mitigation strategies.

In order to better anticipate flooding or wildfire risks, sensors are currently employed to provide rainfall amounts, creek flow rates and heights, and video monitoring. Providing more sensors along creeks or in the Foothills area could improve the information used to make community facing decisions.

Residential insurance is needed for hazard events such as flood, earthquake, wildfire. Knowing how many have hazard specific insurance will help City representatives understand the community’s level of exposure and personal risk.

8.10. Status of Previous Plan Actions

Participants were asked to report the status of their mitigation actions listed in the previous plan as a part of this plan update. Where further information isn’t provided, the answers are defined as follows:

- *Completed* – work on this action is totally complete.

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- *Completed and ongoing* – work on this action is complete; however, it is an ongoing project that will continue to be implemented. An example is a public outreach campaign that was created and will continue to be implemented.
- *In progress* – work on this action has begun and is in progress, but the action is not yet complete.
- *Retain* – work on this action has not begun yet, the action is still relevant, and it should be in the 2023 MJHMP.
- *No longer relevant* – Action item is no longer relevant due to reduce or eliminated risk, it no longer being feasible, there has been a change in jurisdictional or organizational priorities, or another reason as stated.

Unless specifically requested otherwise, only those actions listed as “retain” are incorporated into the 2023 action plan.

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Table 16: Status of Action Items from the 2017 MJHMP

Action Item Number*	Action Item Description	Hazard(s) Mitigated	Current Status and Comments
PA.1	San Francisquito Creek Lower Reach Flood Reduction and Ecosystem Restoration Project	Flood/Heavy precipitation	Complete
PA.2; PA.4	San Francisquito Creek Upper Reach Flood Reduction and Ecosystem Restoration Project	Severe Storm/Flood	In progress. The initial planning application was submitted to Palo Alto and review by staff in the fall of 2021. The project encroaches into private properties thus the SFCJPA has been working with the property owners adjacent to the work areas and revising plans to minimize the impact. In addition, the JPA had initial meetings with the regulatory agency’s representatives to secure permits for reach 2 area. The JPA submitted the application to the regulatory agencies in mid-July 2022. The application for Reach 2 will include the replacement of Pope/Chaucer bridge, Newell Road Bridge and 5 creek widening sites. The regulatory agencies have also requested that the application include details about Searsville dam and upstream detention.
PA.3	Newell Creek Bridge replacement project to accommodate a 100-year flood event	Flood/Heavy Precipitation	In progress. On June 1, 2020, City of Palo Alto City Council issued the decision to Certify the Final Environmental Impact Report and approved the locally preferred project alternative. The project can proceed with the design and construction documents will be prepared. In 2019, Caltrans approved a grant of \$6.8M for construction (currently programmed in FY 2026) based on a \$9M estimate, with \$2M to come from the SFCJPA partners. The latest construction cost estimate is \$15M. Staff is working on finalizing the new estimate to request an additional \$6M and accelerate funding to align with an earlier construction start. Staff is also working to secure additional regulatory permits and right-of-way acquisitions (for temporary construction easements) with Caltrans needed during construction. The construction

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Action Item Number*	Action Item Description	Hazard(s) Mitigated	Current Status and Comments
			within the creek is typically limited to June 15 – October 15, as required by regulatory permitting agencies. All work in the street can occur outside of this window, with proper erosion control measures. The City anticipates the project construction will start in early 2024 and will take about a year and a half to complete.
PA.5	Matadero Creek Storm Water Pump Station Improvements	Flood/Heavy precipitation, atmospheric river	Completed
PA.6	Storm Drain System Replacement and Rehabilitation	Flood/Heavy precipitation, atmospheric river	Completed. Public Works conducts annual work to replace and repair storm drain infrastructure. In the past three years they have improved the Loma Verde Avenue Trunk Line, Louis Road pipes, and Oregon Expressway Box Culvert. Pipe replacements are ongoing of corrugated metal and concrete to HDPE. Design for new pipe and pipe replacement at East Meadow Circle and East Meadow Drive is currently ongoing and construction is anticipated to be completed in 2024.
PA.7	Recycled Water Pipeline Expansion Project to expand the recycled water purple pipeline within South Palo Alto towards Stanford Research Park	Drought	In progress. The economic feasibility of both the reverse osmosis facility and the recycled water expansion project are under review. These projects and other alternative water supply projects will be considered as part of the "One Water" planning process. https://www.cityofpaloalto.org/files/assets/public/agendas-minutes-reports/agendas-minutes/utilities-advisory-commission/archived-agenda-and-minutes/agendas-and-minutes-2021/07-07-2021-special/id-12332-item-1.pdf

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Action Item Number*	Action Item Description	Hazard(s) Mitigated	Current Status and Comments
PA.8	Continue to maintain good standing and compliance in the NFIP and improve Community Rating System Class to provide higher CRS premium discounts	Flood/Heavy precipitation, atmospheric river	Completed and ongoing. The CRS specialists approved the submittal and community maintains a rating of 6. This provides a 20% savings to the residents who have flood insurance and whose properties are located within a special flood hazard area. In addition, in February 2022, the Department of Water Resources schedule a community visit with staff. They identified a few minor items that need to be updated. Staff updated Palo Alto Municipal Code to address the issues raised.
PA.9	Complete the Strategy to Advance Flood protection, Ecosystems and Recreation SF Bay feasibility report	Severe Storm/Flood/Sea Level Rise	Completed. The strategy document is complete. Planning to implement strategies is underway.
PA.10	Construct new public Safety Building to mitigate current risks to public safety essential services	Earthquake	In progress. A construction contract was awarded to Swinerton Builders in February 2021. Construction began in March 2021 and is expected to complete in early 2024.
PA.11	Rebuild Fire Stations 3 and 4 to mitigate current risks to essential services	Earthquake/Flood/Sea Level Rise	Complete and ongoing. Fire Station 3 is complete. A design contract for Fire Station 4 was awarded in May 2022. Construction on the new Fire Station 4 is expected to begin in spring 2024.
PA.12	Continue 7-year cycle for high priority of tree trimming	Earthquake/Flood/ Heavy Rain, High Wind, Extreme Heat/Extreme Cold	Completed (as part of 2017 planning focus). A new contract began in October 2021 and will continue until October 2024. The contract scope is based on maintaining a minimum of the seven-year cycle of pruning for public trees.
PA.13	Replace the Baylands Tide Gate	Flood/Heavy precipitation, atmospheric rivers	In progress. The project continues to advance, following the completion of the MND, Valley Water advanced the design of the project and are talking with regulatory agencies to secure permits. The 90% plans were submitted to Palo Alto for review in spring 2022. Palo Alto staff reviewed these plans and provided comments. The project that includes 8 gravity force tide gates and 1 sluice gate is estimated to cost \$39M and scheduled to begin in September 2023 and completed by December 2026. Valley Water and Palo Alto are discussing a cost

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Action Item Number*	Action Item Description	Hazard(s) Mitigated	Current Status and Comments
			share agreement and coordinating with the design elements needed to connect the sluice gate to the City fiber network.
PA.14	Consider the use of alternative energy sources for critical infrastructure (essential facilities, key resources)	Earthquake, heavy precipitation, atmospheric river	Completed and ongoing. Palo Alto entities continue to explore the use of alternative forms of energy to offset vulnerabilities of carbon-based fuels. New advances in solar generation and battery technologies enable us to go "off grid" and ensure such systems can operate after a major disaster (or cyber-attack, etc.). OES received a State Homeland Security Grant for \$200,000 for a custom-built Solar Generator Trailer (SGT), which was acquired in August 2021. In addition, the City has included a Proposed Key Action "Complete a study of the reliability and resiliency needs of an electrified community and develop proposals for programs to facilitate community resiliency." in the draft Sustainability and Climate Action Plan Update, which will go to Council for approval in early 2023.
PA.15	Implement Wastewater Long-Range Facilities Plan	Flood/heavy precipitation, atmospheric, Earthquake, Sea Level Rise	Ongoing. Palo Alto continues to move forward with upgrading the Wastewater Treatment Plant; currently rehabilitating existing primary sedimentation tanks; and summer of 2022 go out to bid for the construction of the secondary treatment plant to remove nutrients.
PA.16	Foothill water reservoir upgrade.	Earthquake/Wildfire/Drought	Completed. Staff determined not to change layout of Foothills water system facilities. Corte Madera water tank replacement project (for seismic stability) was completed in April 2021. Park and Dahl Reservoirs will be repaired or retrofitted (in FY '23 and '26). Despite low water demand in foothills, Foothills water reservoirs cannot be removed due to requirements for emergency storage and firefighting storage.

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Action Item Number*	Action Item Description	Hazard(s) Mitigated	Current Status and Comments
PA.17	Consider construction of a new water reservoir in the low-lying areas of Palo Alto	Earthquake/Drought	Completed. Staff completed the cost/benefit analysis of Dahl and Park Reservoir replacement options. It was determined that rehabilitating the existing tanks is more cost-effective and beneficial than to rebuild or relocate to the low-lying areas.
PA.18	Rebuild and Reconfigure Electric System in Stanford Hospital/Mall Area to increase reliability during emergencies	Earthquake, Heavy Precipitation/Atmospheric River, Extreme Heat/Extreme Cold, High Wind	Completed. This project is complete. New substructure was installed, and some circuits were rerouted.
PA.19	Install Fiber Optic Service to Black Mountain Radio Repeater Site to improve public safety communications along Skyline Drive	Earthquake, Heavy Precipitation/Atmospheric River, Extreme Heat/Extreme Cold, High Wind, Wildfire	In progress. CPAU has initiated an Electrical Undergrounding project which will underground electrical lines within the Palo Alto Foothills area, beginning on Arastradero Road and running up beyond Montebello Reservoir. Fiberoptic cables will be installed as this undergrounding work is done. The project is underway and is expected to take 2-3 years to complete.
PA.20	Convert overhead utility lines to underground transmission. Installation of new underground electric, communication, and cable television systems in Electric Underground Districts 46 and 47	Earthquake, Heavy Precipitation/Atmospheric River, Extreme Heat/Extreme Cold, High Wind	Completed. CPAU completed undergrounding of districts 46 & 47.
PA.21	Construct a second electrical transmission interconnection to PG&E using a new corridor	Earthquake, Heavy Precipitation/Atmospheric River, Extreme Heat/Extreme Cold, High Wind	In progress. Stanford and SLAC decided against participating in establishing a new intertie with Palo Alto. Palo Alto Utilities is pursuing a new option and has contracted with a consultant to obtain the California Independent System Operator's (CAISO) approval for a transmission project to construct a 115kV circuit from Palo Alto Adobe Creek Substation to PG&E Ames Substation.

Santa Clara County Multijurisdictional Hazard Mitigation

Action Item Number*	Action Item Description	Hazard(s) Mitigated	Current Status and Comments
PA.22	Construct a second water interconnection from Palo Alto Utilities to Stanford Hospital	Earthquake, Heavy Precipitation/Atmospheric River, Extreme Heat/Extreme Cold, High Wind	In progress. A second water interconnection is in place but is waiting for a signed agreement between the City and the Hospital to be considered complete.
PA.23	Connect Palo Alto to adjacent Public Safety agencies' Public Safety Answering Points by Fiber	Earthquake, Heavy Precipitation/Atmospheric River, Extreme Heat/Extreme Cold, High Wind	Retain. This project is on hold while the construction of the new Public Safety Building is underway; the feasibility of this project is being reassessed.
PA.24	Implement a Public Safety Wireless Data Network	Earthquake, Heavy Precipitation/Atmospheric River, Extreme Heat/Extreme Cold, High Wind	Retain. This project has been tied to the Fiber to the Home/Premises concept which is still being evaluated (https://www.cityofpaloalto.org/Departments/City-Manager/City-Policy-Initiatives/Palo-Alto-Fiber). This project may not be feasible.
PA.25	Conduct a Hydrology Study on Buck-Eye Creek for flood protection and erosion control at Foothills Park	Flood, Heavy Precipitation/Atmospheric River, Extreme Heat/Extreme Cold, High Wind	Complete
PA.26	Develop a Baylands Comprehensive Conservation Plan (BCCP)	Flood, Heavy Precipitation/Atmospheric River, Extreme Heat/Extreme Cold, High Wind, Sea Level Rise	In progress. A draft BCCP was shared with the Parks & Recreation Commission in May 24, 2022. However, the City has received new recommendations from Commissioners and Stakeholders which staff is now taking into consideration. This presents a further delay in completing the plan and associated CEQA.

Santa Clara County Multijurisdictional Hazard Mitigation

Action Item Number*	Action Item Description	Hazard(s) Mitigated	Current Status and Comments
PA.27	Address hazardous fuels and reduce structural ignitability in the Foothills region in accordance with the Community Wildfire Protection Plan and Foothills Fire Management Plan	Wildfire	Complete and ongoing. Palo Alto performed the required wildfire mitigation activities in Foothills and Arastradero Nature Preserves in accordance with the FFMP. In 2022, the Public Works Department Urban Forestry Division contracted for electrical line clearance of the aboveground lines in the Foothills. The Palo Alto Fire Department conducted their annual defensible space home assessments for the residential properties in the Palo Alto WUI. They have implemented new management controls to mitigate residences not in compliance with their recommended actions.
PA.28	Encourage creation by Foothills Residents of a Firewise Ready Community	Wildfire	In progress. The Santa Cruz and Santa Clara Counties experienced wildfires in August 2020 that became federal disasters. During these incidents Palo Alto Public Safety officials met with neighborhood leaders to discuss the WUI safety of the residents in this area of Palo Alto. There has not been interest by this neighborhood to form a FireWise community.
PA.29	Consider a policy for Seismic Retrofitting of earthquake prone structures	Earthquake	Retain
PA.30	Develop a Policy for Sea Level Rise considerations (what actions should the City take)	Sea Level Rise	Completed. The Sea Level Rise Vulnerability was completed. This is being used to develop the Sea Level Rise Adaptation Plan. The broader Sustainability and Climate Action Plan, which includes a Climate Adaptation and Sea Level Rise Chapter, will be brought to Council for approval in 2023.
PA.31	Develop a post-disaster Community Long-Term Recovery Plan	All Hazards	Retain
PA.32	Conduct public education that raises awareness of Palo Alto threats and hazards and improves community resilience	All Hazards	Completed and ongoing. OES resumed public education activities utilizing in person and virtual modes of delivery to raise awareness and increase preparedness; this included 56 public education events in FY21, and 112 in FY22.

Santa Clara County Multijurisdictional Hazard Mitigation

Action Item Number*	Action Item Description	Hazard(s) Mitigated	Current Status and Comments
PA.33	Maintain Storm Ready Community designation	Severe Storm	Completed and ongoing. OES maintains this certification through annual activities and requirements set by the Storm Ready program. See https://www.weather.gov/stormready/ca-sr
PA.34	Improve Palo Alto Fire Department ISO rating	All Hazards	In progress. The Department has completed 2 years of hydrant inspections. The City has not pursued a new audit due to the lack of an additional reserve Type 1 engine. E64 was taken out of service after a crash on 8/4/19 and not been replaced. Based on preliminary calculations that may be enough to keep the City from the points necessary to reach ISO 1 rating. Palo Alto representatives will revisit when they are able to replace the reserve Type 1 engine.
PA.35	Maintain Building Effectiveness Grading Schedule classification of 1	All Hazards	In progress. The City's Building Code Effectiveness Grading Schedule (BCEGS) has not been re-evaluated since 2018. Therefore, the BCEGS Classification are Class 3 for single-family residential property and Class 3 for commercial and industrial property.
PA.36	Where appropriate, support retrofitting, purchase or relocation of structures located in high hazard areas and prioritize those structures that have experienced repetitive losses	All Hazards	In progress. The City does not currently have a policy to purchase or relocate repetitive loss structures. Additionally, sizable portions of the City are located in high hazard areas where relocation is not feasible. Retrofitting of properties is encouraged for those properties that may be impacted by floods, earthquakes, and wildfires. See also PA-29. Additionally, the City has adopted the most current State building code, which enhances the standard of new construction.
PA.37	Integrate the hazard mitigation plan into other plans, ordinances and programs that dictate land use decisions within the community	All Hazards	Complete. The Palo Alto Comprehensive Plan recently finalized in 2017 is linked to the LHMP in the Safety Element. The Safety Element informs land use planning by describing the natural hazards faced by the Palo Alto community. Additionally, the City of Palo Alto Sustainability and Climate Action planning take into account land use decisions.

Santa Clara County Multijurisdictional Hazard Mitigation

Action Item Number*	Action Item Description	Hazard(s) Mitigated	Current Status and Comments
PA.38	Actively participate in the plan maintenance protocols outlined in Volume 1 of the hazard mitigation plan	All Hazards	Completed and ongoing

* Number given to action item in 2017 Santa Clara County Operational Area Hazard Mitigation Plan

8.11. Mitigation Successes

The City of Palo Alto actively engages in mitigation actions and utilizes partnerships to build mitigation momentum. The City has adopted numerous plans and regulations that support local hazard mitigation, including the local hazard mitigation plan (LHMP), floodplain management ordinance, a THIRA, Foothills Fire Management Plan, and Sustainability and Climate Action Plan. It participates in the San Francisquito Creek Joint Powers Authority (JPA) which was established after a series of floods in 1998 to address flooding along the San Francisquito Creek and the Bay. The JPA integrates habitat protection and restoration and community recreational opportunities into its flood mitigation projects. The JPA recently completed a marsh restoration project which will protect more than 1,700 properties from the 1% flood. Palo Alto has consistently recognized the benefits of natural systems protection throughout its plans and projects. The City has taken steps to mitigate climate change and adapt to changing conditions. As described in its Urban Forest Management Plan, the City is actively increasing tree canopy cover in order to, among other things, reduce the heat island effect. Additionally, the City's Urban Water Management Plan helps residents understand how to avoid wasting water and prepare the City for times of drought. The Foothills Fire Management Plan also describes actions the City can should take to reduce wildfire risk including creating defensible space, modifying fuels, and engaging in effective fire suppression through grazing and prescribed fire.

The City is actively planning for the future impacts of climate change by completing important guidance documents that will support project planning efforts over both the short and long-term. The completion of the Sustainability Plan and the development of a Sustainability Work Plan now guide these important programs. Development of a Sea Level Rise policy and completing the Strategy to Advance Flood Protection, Ecosystems and Recreation San Francisco Bay feasibility report will promote project implementation of the Bayshore environment.

The completion of the San Francisquito Creek Lower Reach Flood Reduction and Ecosystem Restoration Project has significantly reduced the risk of flooding to East Palo Alto, a traditionally underserved community, but also sets the stage for additional flood mitigation projects upstream, which will be completed over the next five years.

The rebuilding of Fire Station 3 and the construction of a Public Safety building (currently under construction) to current building and seismic codes will increase the resilience of response operations during widespread emergencies.

Education and outreach are important steps the City takes to promote mitigation, adaptation, and resilience as well. For example, as part of the Green Stormwater Infrastructure (GSI) Plan development, Watershed Protection staff met with both residents and elected officials to present on GSI and hand out factsheets. Continuing these and other mitigation measures will help ensure a safe, resilient community moving forward.

8.12. Hazard Mitigation Action Plan and Evaluation of Recommended Actions

Table 142 lists the actions that make up the City of Palo Alto hazard mitigation action plan. The maps in Figure 89 through Figure 97 present the City's critical facilities, infrastructure, and identified hazard areas.

Descriptions of the expected time frames for actions are provided below:

- Short term: 1–5 years
- Medium term: 5–10 years
- Long term: Over 10 years

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- Ongoing: Currently being funded and implemented under existing programs

The planning partners utilized the following criteria to prioritize action items into the categories of high, medium, or low.

- High Priority— A project that:
 - Meets multiple goals and objectives (i.e., multiple hazards);
 - Addresses multiple hazards;
 - Has benefits that exceed cost;
 - Has funding secured or is an ongoing project;
 - Meets eligibility requirements for Hazard Mitigation Assistance grants;
 - Can be completed in the short term (1 to 5 years);
 - Addresses immediate short-term impacts of climate change;
 - Benefits underserved and/or socially vulnerable populations; AND
 - Considers the Multi-Benefit Criteria utilized by the Santa Clara County Climate Collaborative, including equity, long-term value, ecosystem benefit, community benefit, and cross-jurisdictional alignment.
- Medium Priority— A project that:
 - Meets multiple goals and objectives;
 - Addresses multiple hazards;
 - Has benefits that exceed costs;
 - Has funding has not been secured, but that is grant eligible under Hazard Mitigation Assistance grants or other grant programs;
 - Project can be completed in the short term (1-5 years), once funding is secured. Medium priority projects will become high priority projects once funding is secured;
 - Addresses immediate short-term impacts of climate change;
 - Benefits underserved and/or socially vulnerable populations; AND
 - Considers the Multi-Benefit Criteria utilized by the Santa Clara County Climate Collaborative, including equity, long-term value, ecosystem benefit, community benefit, and cross-jurisdictional alignment.
- Low Priority— A project that:
 - Will mitigate the risk of at least one hazard;
 - Has benefits that do not exceed the costs or are difficult to quantify;
 - Does not have secured funding;
 - Is not eligible for Hazard Mitigation Assistance grant funding;
 - Has a timeline for completion that is long term (greater than 5 years). Low priority projects may be eligible for other sources of grant funding from other programs;
 - May address impacts of climate change;
 - May benefit underserved and/or socially vulnerable populations; AND

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- Considers the Multi-Benefit Criteria utilized by the Santa Clara County Climate Collaborative, including equity, long-term value, ecosystem benefit, community benefit, and cross-jurisdictional alignment.

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Table 17: City of Palo Alto 2023 Action Items

Action Item Number	Action Item Description	Hazard(s) Mitigated	Lead Position, Office, Department, or Division Responsible for Implementation	Potential Funding Sources	Expected Timeline for Completion	Priority
PA-2 *	San Francisquito Creek Upper Reach Flood Reduction and Ecosystem Restoration Project to widen channel, improve floodwalls, and replace the Pope-Chaucer Bridge	Flood, Heavy Precipitation/Atmospheric River	San Francisquito Creek Joint Powers Authority	General Fund, Hazard Mitigation Grant Program (HMGP), Flood Mitigation Assistance (FMA)	Short-Term	High
PA-3*	Newell Creek Bridge replacement project to accommodate a 100-year flood event.	Flood, Heavy Rain, High Wind, Atmospheric River	Public Works - Engineering	CALTRANS/ Santa Clara Valley Water District (SCVWD)	Short-Term	High
PA-6*	Storm Drain System Replacement and Rehabilitation to maintain the integrity of the storm drain system of deteriorated storm drain infrastructure to eliminate potential pipeline blockages that could cause street flooding	Flood, Heavy Rain, High Wind, Atmospheric River	Public Works	Capital Improvement Project (CIP): SD-06101	Ongoing	Medium
PA-7*	Recycled Water Pipeline Expansion Project to expand the recycled water purple pipeline within South Palo Alto towards Stanford Research Park.	Drought, Climate Change	Utilities – W/G/W	CIP: WS-07001	Short-Term	Medium

Santa Clara County Multijurisdictional Hazard Mitigation

Action Item Number	Action Item Description	Hazard(s) Mitigated	Lead Position, Office, Department, or Division Responsible for Implementation	Potential Funding Sources	Expected Timeline for Completion	Priority
PA-8*	Continue to maintain good standing and compliance in the NFIP and improve Community Rating System Class to provide higher CRS premium discounts.	Flood, Heavy Rain, High Wind	Public Works - Engineering	General Fund	Long-term	High
PA-10*	Construct new public Safety Building to mitigate current risks to public safety essential services.	Earthquake, Terrorism	Public Works – Engineering	CIP: PE-15001	Short-Term	High
PA-11*	Rebuild Fire Station 4 to reduce impact from seismic events	Earthquake, Terrorism	Public Works – Engineering	CIP: PE-15003	Short-Term	High
PA-13*	Replace the Baylands Tide Gate to reduce flood hazards in the Palo Alto flood zone.	Flood, Heavy Rain, High Wind, Atmospheric River, Dam and Levee Failure, Tsunami	Santa Clara Valley Water District	Santa Clara Valley Water District funds	Long-term	Medium
PA-15*	Implement Wastewater Long-Range Facilities Plan to improve facilities for treatment and discharge of waste; and to improve water recycling opportunities	Flood, Heavy Rain, High Wind, Extreme Heat, Earthquake, Sea Level Rise	Palo Alto Public Works	CIP: WQ-10001	Ongoing	High
PA-19*	Install Fiber Optic Service to Black Mountain Radio Repeater Site to improve public safety communications along Skyline Drive.	Earthquake, Heavy Precipitation/Atmospheric River, High Wind, Wildfire, Space Weather	Palo Alto Utilities	CIP: TBD	Short-term	Low
PA-21*	Construct a second electrical transmission interconnection to PG&E using a new corridor to reduce the single dependency of our connection to the electric grid.	Wildfire, Power Outage, Heavy Precipitation / Atmospheric River, Extreme Heat/Extreme Cold, High Wind, Space Weather	Utilities – Electrical Engineering	CIP, HMGP, Pre-Disaster Mitigation (PDM)	Long-Term	Medium

Santa Clara County Multijurisdictional Hazard Mitigation

Action Item Number	Action Item Description	Hazard(s) Mitigated	Lead Position, Office, Department, or Division Responsible for Implementation	Potential Funding Sources	Expected Timeline for Completion	Priority
PA-27*	Address hazardous fuels and reduce structural ignitability in the Foothills region in accordance with the Community Wildfire Protection Plan and Foothills Fire Management Plan.	Wildfire, Extreme Temperature	Community Services Department – Open Spaces	General Fund, HGMP	Short-Term	Medium
PA-29*	Consider a policy for Seismic Retrofitting of earthquake prone structures.	Earthquake	Planning and Development Services	General Fund	Short-Term	Low
PA-32*	Conduct public education that raises awareness of Palo Alto threats and hazards and improves community resilience.	All hazards, including Earthquake, Dam Failure, Flood, Wildfire, Landslide, Tsunami, Heavy Rain, High Wind, Extreme Heat, Drought	Palo Alto Office of Emergency Services	Staff Time; General Fund	Ongoing	High
PA-36*	Where appropriate, support retrofitting, purchase or relocation of structures located in high hazard areas and prioritize those structures that have experienced repetitive losses.	All hazards, including Earthquake, Flood, Dam Failure, Heavy Rain, High Wind, Wildfire	Palo Alto Development Services	HMGP, PDM, FMA	Short-Term	Medium
PA-37*	Integrate the hazard mitigation plan into other plans, ordinances and programs that dictate land use decisions within the community.	All hazards, including Earthquake, Flood, Dam Failure, Wildfire, Landslide, Tsunami, Heavy Rain, High Wind, Extreme Heat, Drought	Palo Alto Development Services	Staff Time; General Fund	Ongoing	High
PA-38*	Actively participate in the plan maintenance protocols outlined in Volume 1 of the hazard mitigation plan.	All hazards	Palo Alto Office of Emergency Services	Staff Time; General Fund	Short-Term	High

Santa Clara County Multijurisdictional Hazard Mitigation

Action Item Number	Action Item Description	Hazard(s) Mitigated	Lead Position, Office, Department, or Division Responsible for Implementation	Potential Funding Sources	Expected Timeline for Completion	Priority
1	Seismic retrofit two existing potable water storage reservoirs. Foundation work and anchorage will be retrofitted along the lower sections of the tank shell to restrain the tank against uplift, The tanks have a combined storage capacity of 2.0 million gallons, and they are planned to store emergency water storage for the City of Palo Alto.	Earthquake, Landslide	Utilities Engineering/WGW	CIP, HMGP, Building Resilient Infrastructure and Communities (BRIC)	Short-Term	High
2	Replace non-seismically restrained potable water piping in liquefaction zones with new fused and fully restrained piping. 10 miles of unrestrained pipe within a liquefaction zone will be replaced with fused HDPE piping.	Earthquake	Utilities Engineering/WGW	CIP, HMGP, BRIC	Short-Term	Medium
3	Install two permanent standby stationary generators at Dahl and Park Pumping Potable Water Stations. These stations are located in WUI areas and service other WUI designated properties. Power lines are deenergized during wildfire events and standby stationary generators will be imperative to ensure power supply and continued operation of critical pumping facilities during a wildfire event.	Earthquake, Wildfire, Power Outages, High Wind	Utilities Engineering/WGW	CIP, HMGP, BRIC	Short-Term	High

Santa Clara County Multijurisdictional Hazard Mitigation

Action Item Number	Action Item Description	Hazard(s) Mitigated	Lead Position, Office, Department, or Division Responsible for Implementation	Potential Funding Sources	Expected Timeline for Completion	Priority
4	Wildfire hardening of critical utilities infrastructure. This action would remove and replace the existing roof and install a new roofing system, soffit, fascia, and front door with WUI compliant materials, systems, and techniques. All vent screens will be removed and replaced with WUI compliant mesh. All vegetation within 30-feet of the structures will be removed and trees limbed for adequate defensible space around each structure. There is a total of four structures located at four different sites, located in and round the Foothills Nature Preserve Area in the City of Palo Alto.	Wildfire, Smoke, Air Quality, High Wind	Utilities Engineering/WGW & CPA-OES	CIP, HMGP, BRIC	Ongoing	Low
5	Conduct an assessment for electrification of City facilities to achieve at least an 80 percent reduction in current natural gas usage by 2030. This assessment will provide a schedule, cost estimate, and timeline of what facilities this electrification must occur at to achieve the goals of the SCAP per this scenario.	Climate Change	Public Works Engineering	CIP, HMGP, BRIC, Federal Energy Related Grants	Long-Term	Low

Santa Clara County Multijurisdictional Hazard Mitigation

Action Item Number	Action Item Description	Hazard(s) Mitigated	Lead Position, Office, Department, or Division Responsible for Implementation	Potential Funding Sources	Expected Timeline for Completion	Priority
6	Apply mitigation techniques to approximately 11 miles of overhead line to mitigate the possibility of a wildfire due to overhead electric lines. This could include the utilization of more robust equipment or construction practices; rerouting to avoid vegetation and improve access for inspection and maintenance; or converting the overhead lines to underground where feasible.	Wildfire, Smoke, Air Quality, High Wind	Utilities Engineering/Electrical	CIP, HMGP, BRIC, Cal Fire Wildfire Mitigation	Short-Term	High
7	Study a location of historic seepage from the Foothills Nature Preserve Dam. This project will investigate and monitor the seepage flow by channelizing seepage flow and potentially installing weir(s).	Dam-Levee Failure, Earthquake, Flood, Landslide, Climate Change	Public Works / Engineering	CIP, HMGP	Short-Term	High
8	Restore the width and height of the earthen flood levee between Harbor Road near the Baylands Interpretive Center and the perimeter levee of the airport to six inches above its original height.	Dam-Levee Failure, Flood, Tsunami, Climate Change	CSD/Parks and Open Space	CIP	Short-Term	Medium
9	Improve the quality of the tertiary-treated recycled water by microfiltration or ultrafiltration followed by reverse osmosis to reduce the level of Total Dissolved Solids (TDS).	Drought, Climate Change	Public Works/Environmental Services	CIP	Long-Term	Medium

Santa Clara County Multijurisdictional Hazard Mitigation

Action Item Number	Action Item Description	Hazard(s) Mitigated	Lead Position, Office, Department, or Division Responsible for Implementation	Potential Funding Sources	Expected Timeline for Completion	Priority
10	Evaluate options for protecting electric substations from outside vandalism and intrusion. If necessary, fences and other protections will be repaired. Security lighting will be designed and issued for construction.	Terrorism and Weapons of Mass Destruction, Active Shooter	Utilities Engineering/Electric	CIP, HMGP, Federal-State Physical Security Funding for Utilities	Short-Term	Medium

Santa Clara County Multijurisdictional Hazard Mitigation

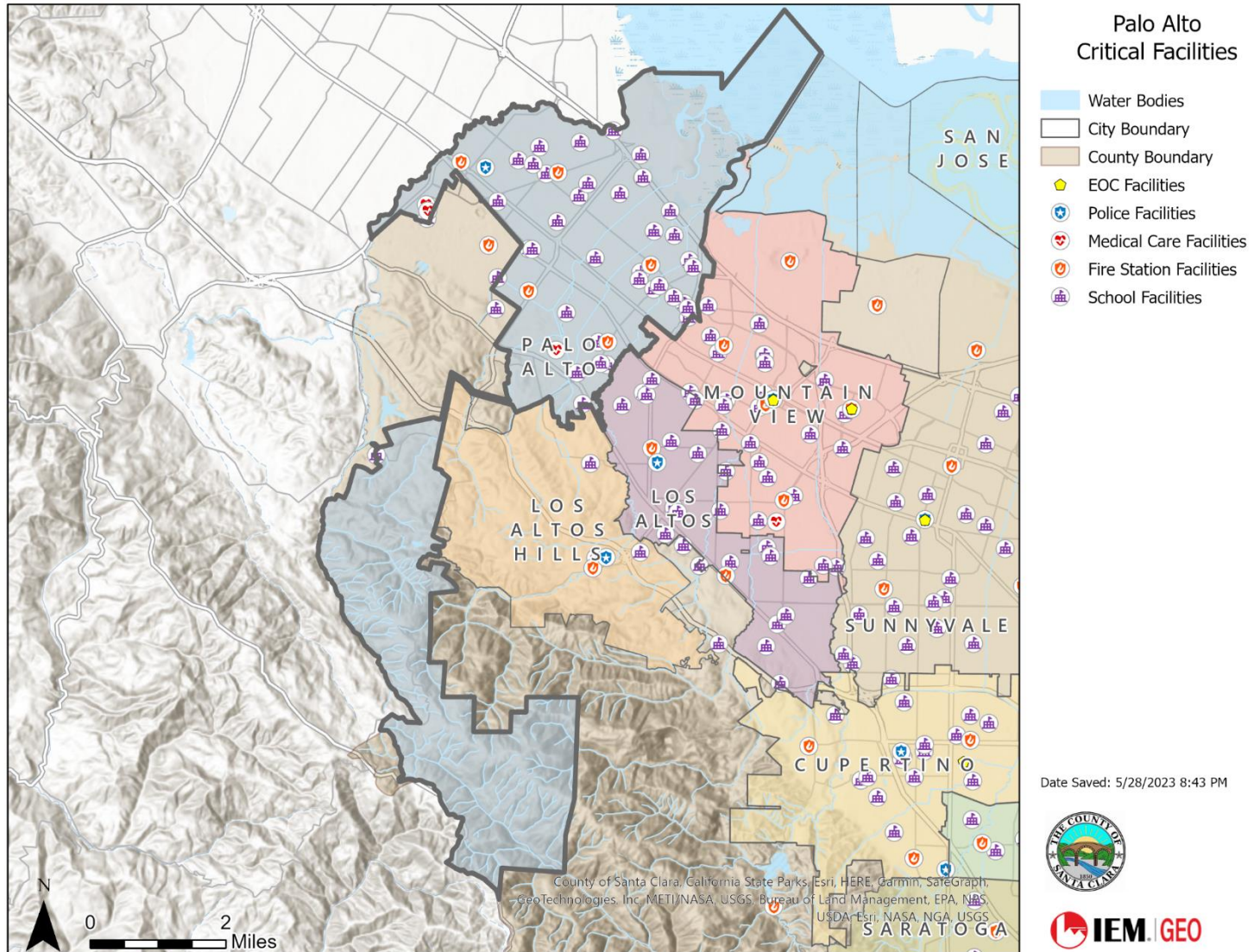


Figure 4: City of Palo Alto Critical Facilities

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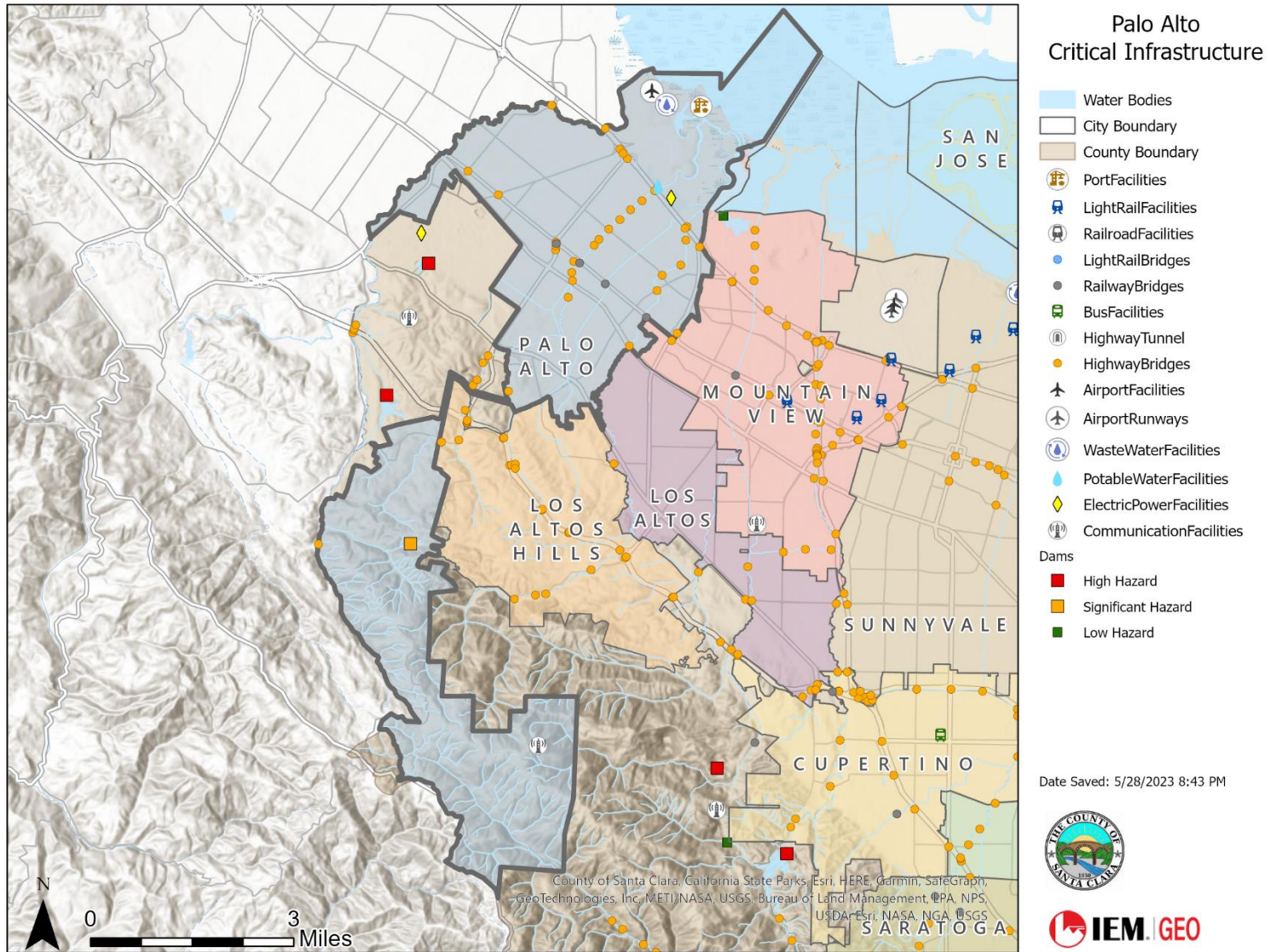


Figure 5: City of Palo Alto Critical Infrastructure

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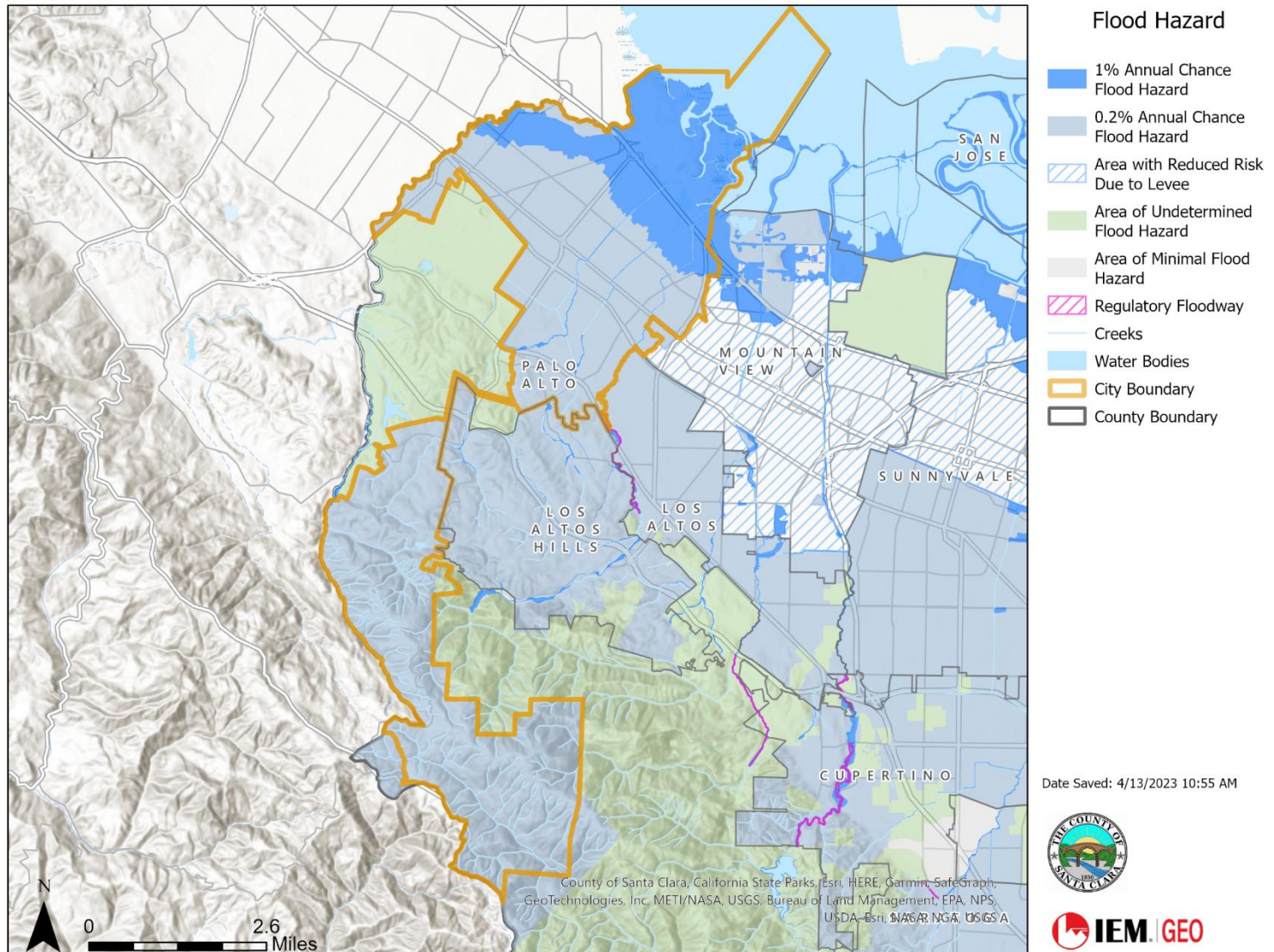


Figure 6: City of Palo Alto Flood Hazard Area

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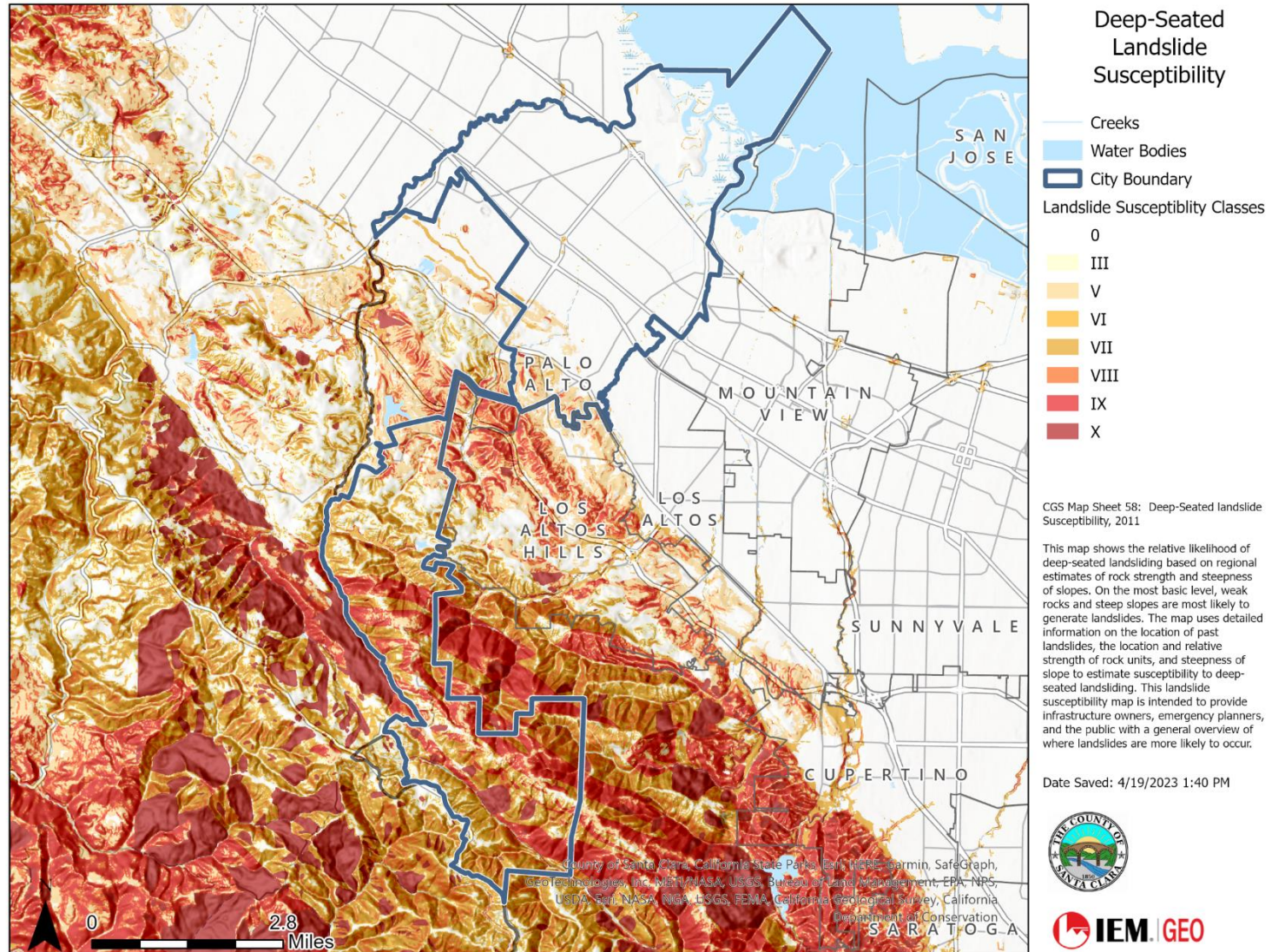


Figure 7: City of Palo Alto Deep-Seated Landslide Susceptibility

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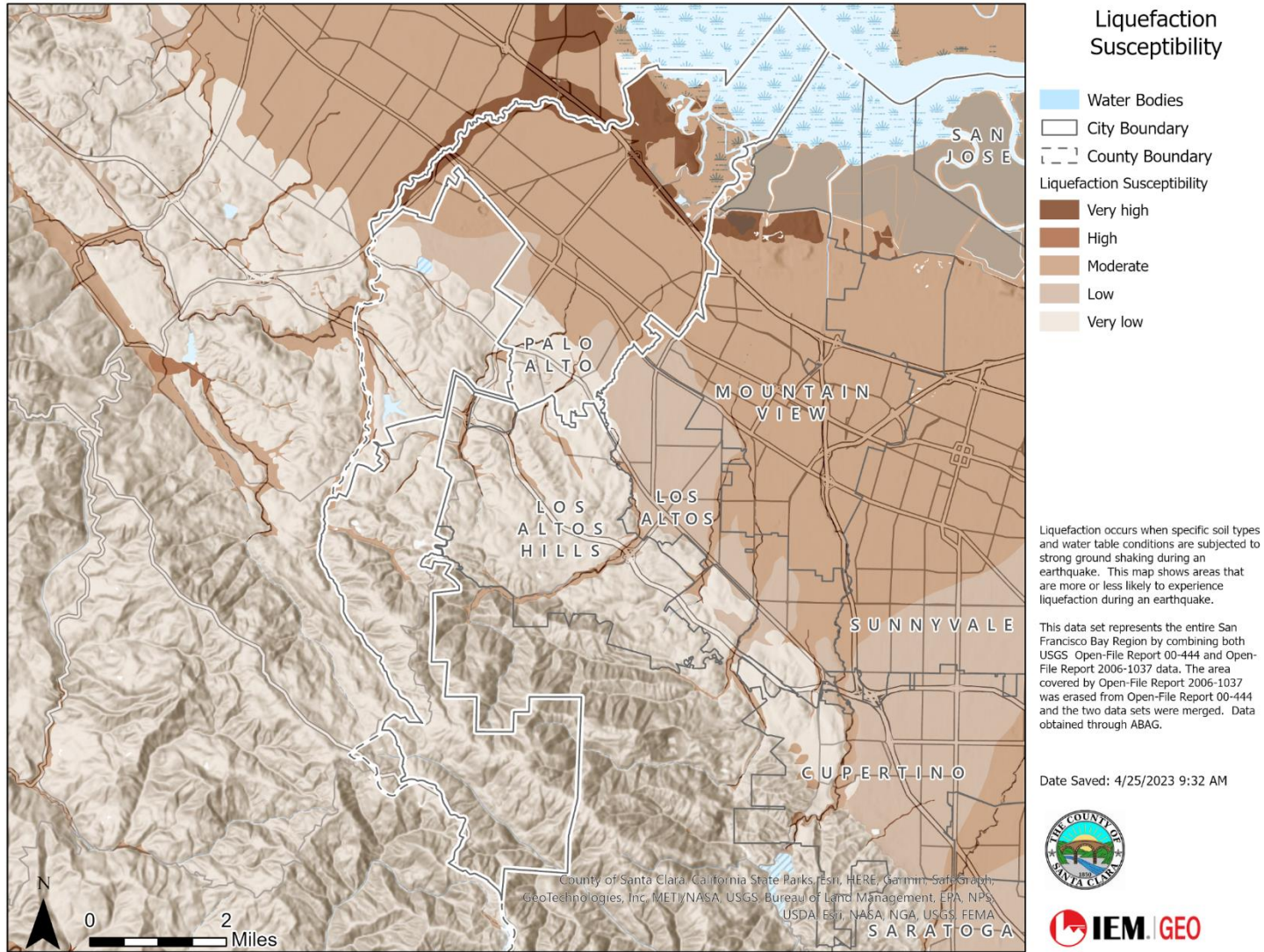


Figure 8: City of Palo Alto Liquefaction Susceptibility

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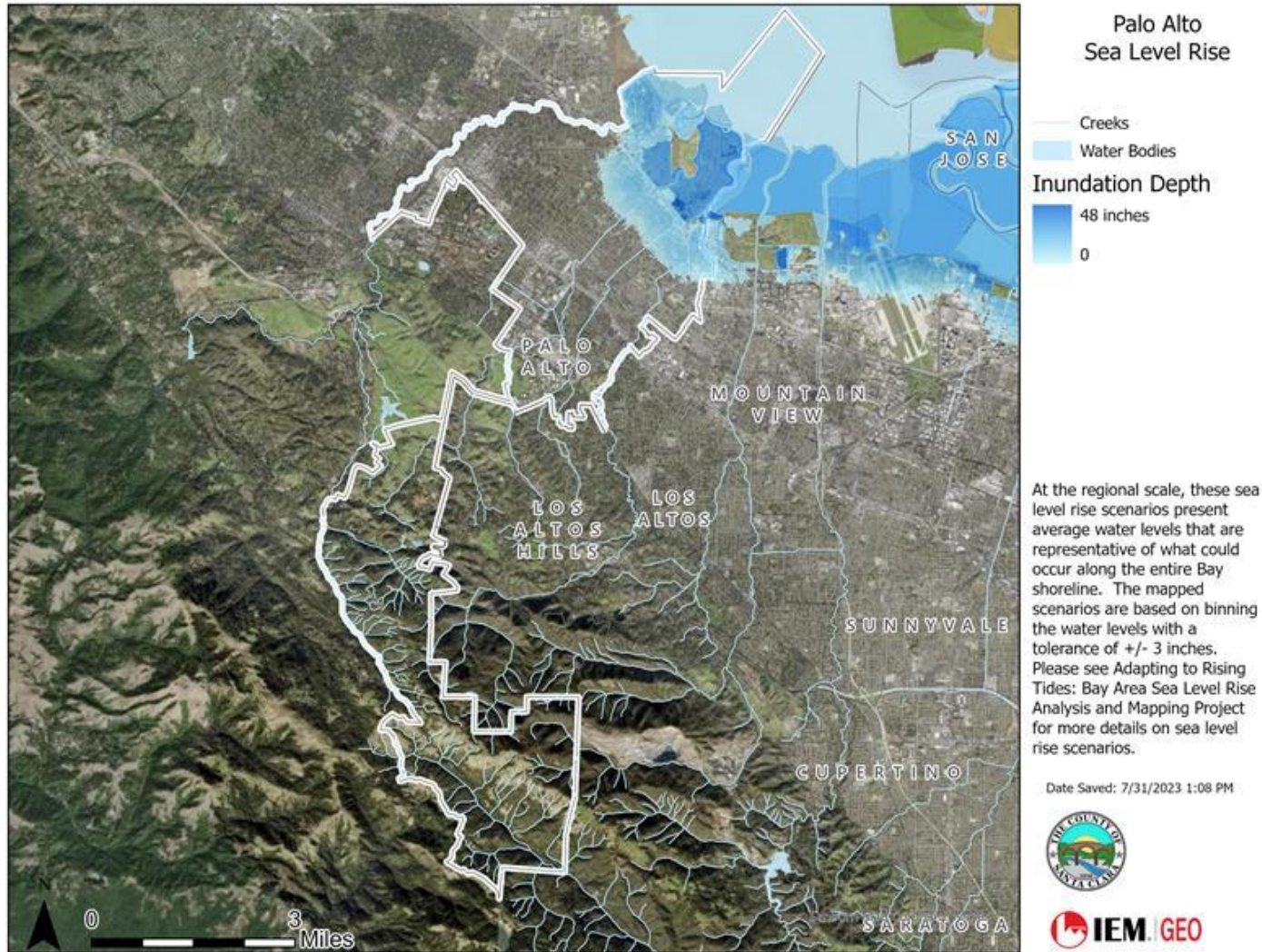


Figure 9: City of Palo Alto Sea Level Rise Map

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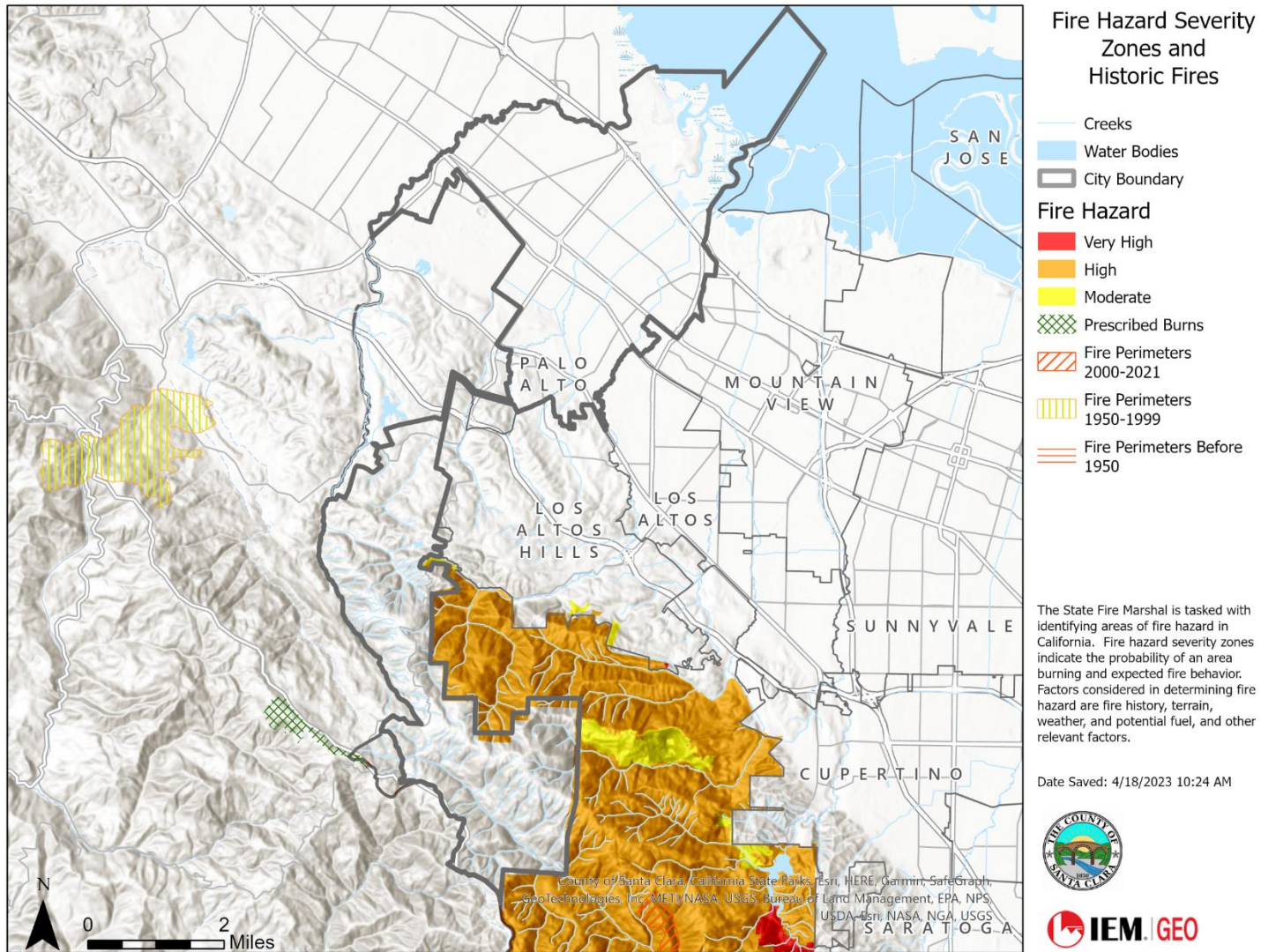


Figure 10: City of Palo Alto Fire Hazard Severity Zones

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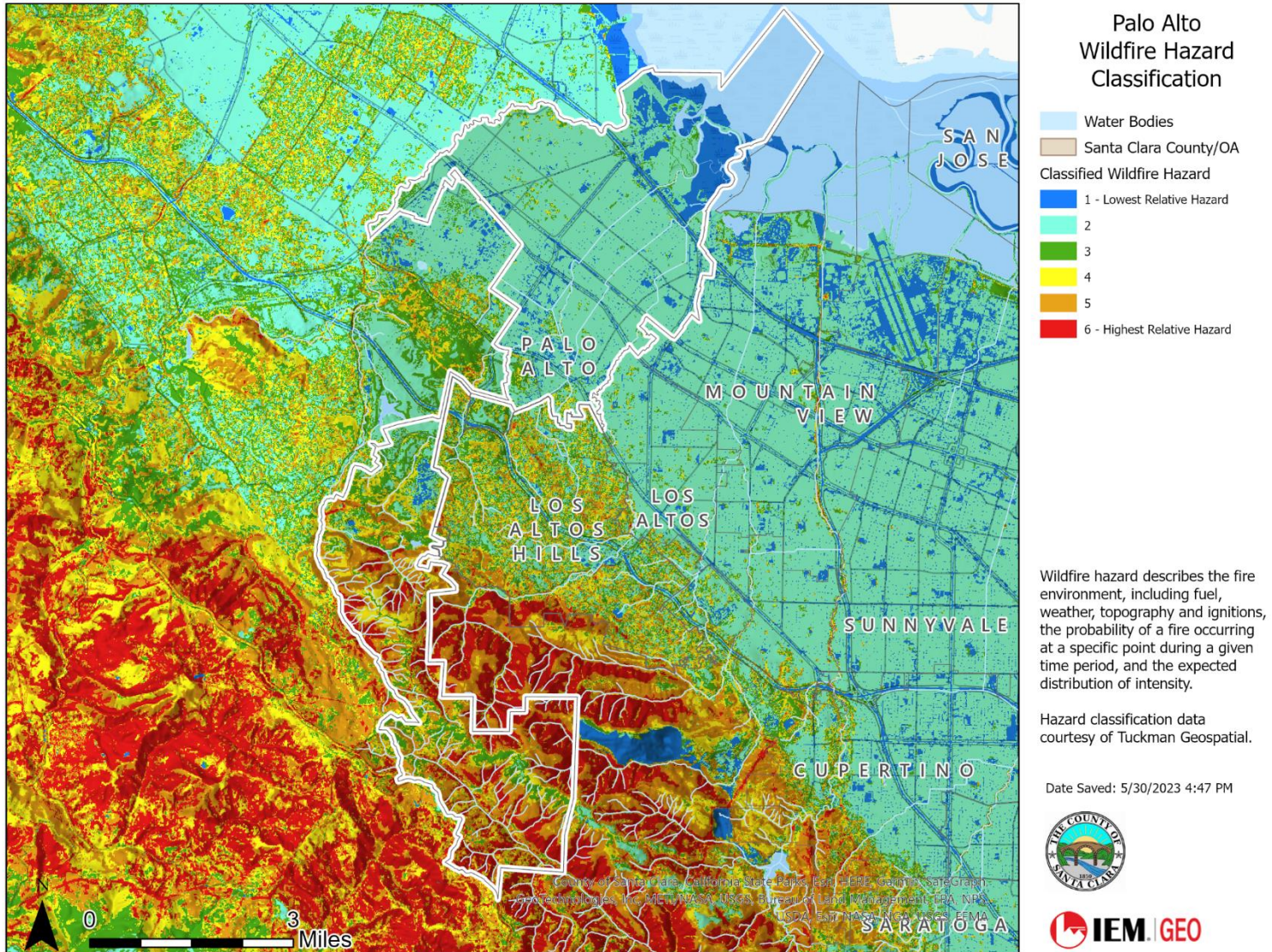


Figure 11: City of Palo Alto Wildfire Hazard Classification

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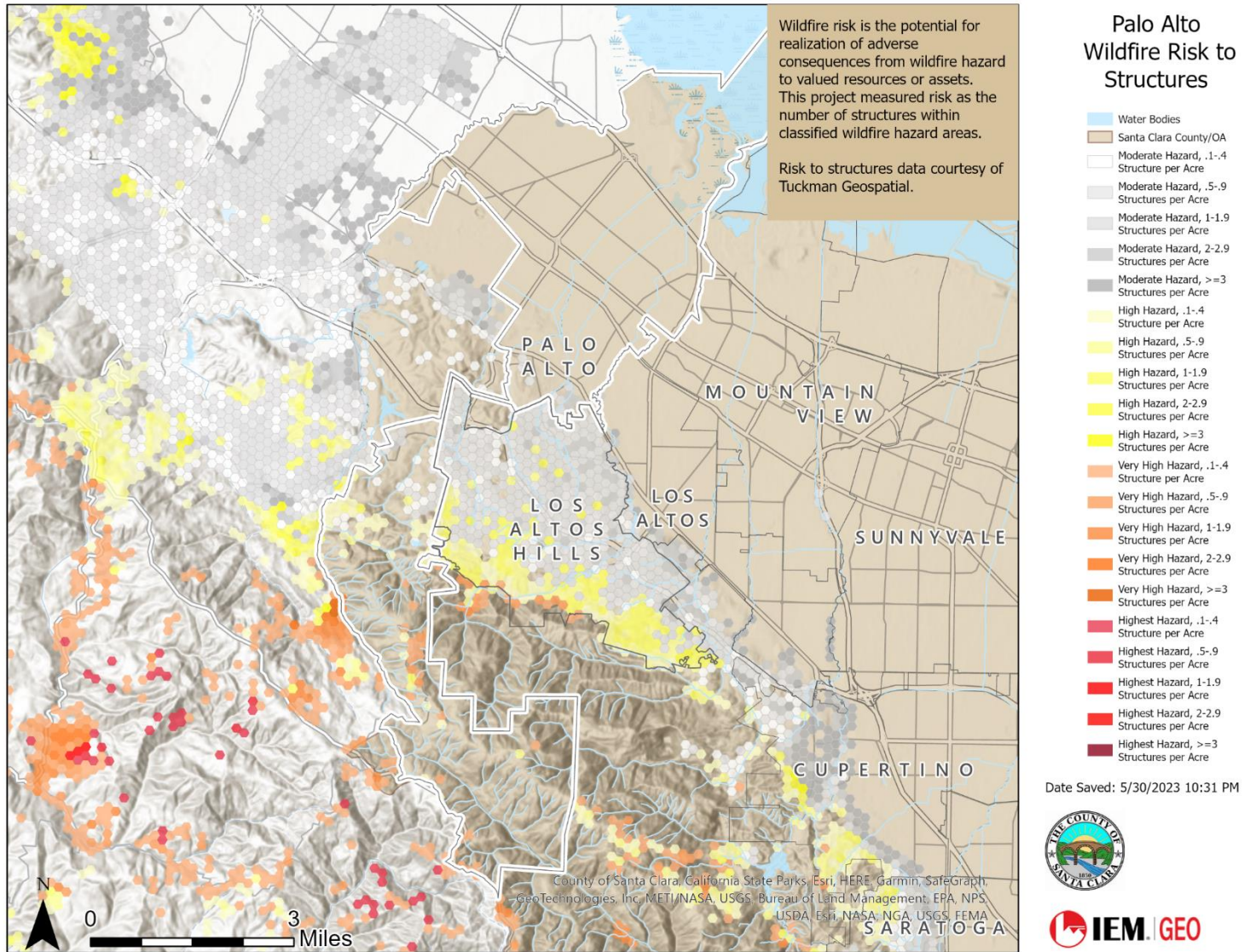


Figure 12: City of Palo Alto Wildfire Risk to Structures