

10. Safety and Noise

Overview

Protecting people and property from a variety of hazards (both natural and human-made) is one of the key missions of any city. The residents of East Palo Alto face risks from natural and human-caused hazards like flooding, extreme heat, severe weather, drought, wildfire, seismic events like earthquakes, sea level rise, and contaminated soil and groundwater. Climate change is expected to intensify many of these hazards, requiring proactive planning and adaptation.

East Palo Alto will take action to be more prepared for the dangers posed by natural hazards and more resilient when such unpredictable events occur. This element sets forth broad goals, policies, and actions to reduce harm to people and property from natural and human-made hazards and promote resilience when such events occur. For each action, this element identifies a relative timeframe for implementation. Actions that correspond to current City Council priorities, including ensuring public safety, improving livability, and preparing the City for disasters and emergencies, are labeled as short-term items to be implemented in the near future.

This Element addresses these topics:

- Emergency Preparedness and Response
- Flooding
- Sea Level Rise
- Seismic and Geologic Hazards
- Fire Hazards
- Air Quality and Public Health
- Severe Weather
- Drought
- Extreme Heat
- Hazardous Materials
- Transportation Hazards
- Noise

In addition, area roadways and nearby airports expose East Palo Alto residents to high and potentially unhealthy noise levels. The Safety and Noise Element identifies major factors of concern as well as the City's goals and policies intended to reduce risks to people and property. For greater detail on the topics included in the Safety and Noise Element, refer to the Background Report ([Appendix A](#)).

Climate Change Vulnerability

Climate change is one of the most significant challenges facing East Palo Alto. Rising global temperatures are causing more frequent and intense heat waves, storms, droughts, wildfires, and other hazards. These events frequently occur concurrently, resulting in cascading impacts that are progressively more difficult to manage, such as droughts amplifying wildfire risk or extreme heat exacerbating water scarcity. For East Palo Alto, climate change is expected to cause substantial shifts in hazard patterns, including more intense storms with heavier precipitation, increased frequency and severity of extreme heat events, rising sea levels that will expand flood-prone areas throughout the city, and emergent groundwater that will cause flooding from below and increase exposure risk from contamination buried in the ground.

East Palo Alto's Vulnerability Assessment identifies several key climate-related hazards that pose significant risks to the community. The Vulnerability Assessment process follows the methodology outlined in the California Adaptation Planning Guide, examining exposure, sensitivity, potential impacts, and adaptive capacity for various populations and community assets. This approach ensures that East Palo Alto's safety planning is grounded in the best available data and projections, including information from Cal-Adapt, the California Adaptation Planning Guide, and the San Mateo County Multi-jurisdictional Hazard Mitigation Plan. East Palo Alto's Vulnerability Assessment reveals that the

hazards posing the greatest risk to the community include flooding, severe weather, and extreme heat. However, these climate impacts will not affect all residents equally. Low-resourced households, communities of color, immigrant communities, older adults, and persons with disabilities are among the populations most vulnerable to climate change hazards. These groups often face barriers such as limited financial resources for home improvements, language barriers that hinder access to emergency information, and housing in areas with inadequate infrastructure or limited tree canopy coverage. East Palo Alto’s residents have long been on the front lines of climate change and environmental justice issues, as the city is a densely populated, ethnically diverse community with a median income lower than San Mateo County’s average. Recognizing these disparities, this Safety Element prioritizes equitable adaptation strategies that protect the most vulnerable community members while building overall community resilience. The full results of the Vulnerability Assessment are available in [Appendix B](#).

Cascading and Compounding Effects

Cascading Effects: When an extreme event causes a series of secondary events that are larger than the initial impact.

Compounding Effects: When multiple hazards or drivers occur simultaneously, amplifying their collective impact.

Source: IPCC. 2019. Extremes, Abrupt Changes and Managing Risk.

Statutory Requirements

California law requires that a general plan include elements (or chapters) specifically addressing both safety and noise. This element was prepared to meet these requirements (Government Code Sections 65302(f) and 65302(g)).

The safety section of the element must contain goals and policies to address seismic risks, including ground shaking, landslides, tsunami and seiche; flooding; fire; climate change; evacuation routes; and water supply requirements. These requirements include:

- Climate adaptation and resilience strategies based on a Vulnerability Assessment, as required by Senate Bill 379 (2015).
- Identification of residential developments with fewer than two emergency access routes and analysis of evacuation capacity, as required by Senate Bill 99 (2019) and Assembly Bill 747 (2019).
- Evaluation of flood risks and policies to minimize flood risks to new development, as required by Assembly Bill 162 (2007).

As required by Senate Bill 1000 (2016), this General Plan includes an Environmental Justice Element to address the unique or compounded health risks in disadvantaged communities by reducing pollution exposure, increasing community assets, and improving overall health. California law defines environmental justice as “the fair treatment and meaningful involvement of all people regardless of race, color, national origin or income, with respect to the development, adoption, implementation, and enforcement of environmental laws, regulations, and policies”. Many environmental justice issues—such as pollution exposure, access to safe homes, and access to effective public services—are closely connected to safety concerns addressed in this element. The goals and policies in this Safety and Noise Element work in coordination with the Environmental Justice Element to ensure that safety planning addresses the disproportionate risks faced by East Palo Alto’s most vulnerable communities.

The San Mateo County Multi-jurisdictional Local Hazard Mitigation Plan (MJLHMP) assesses the risks of hazards and vulnerabilities from natural and human-caused hazards. The MJLHMP identifies short-term (five-year) mitigation actions to reduce these risks. It includes a dedicated annex for East Palo Alto, which specifies the community’s characteristics and history, development trends, hazard mitigation capabilities, integration with other hazard mitigation planning efforts, and vulnerabilities of specific facilities and infrastructure. San Mateo County led the development of the MJLHMP in partnership with all incorporated communities, including East Palo Alto, and a number of special districts, in accordance with the federal Disaster Mitigation Act of 2000 and the Federal Emergency Management Agency’s

(FEMA) hazard mitigation assistance guidance. This Safety and Noise Element incorporates by reference the current San Mateo County Multi-jurisdictional Local Hazard Mitigation Plan and East Palo Alto Annex, as permitted by Government Code Section 65302.6. It is available online at <https://www.smcgov.org/ceo/2021-multijurisdictional-lhmp>.

This Safety and Noise Element also integrates with the City's 2030 Climate Action Plan and Adaptation Strategies, which outlines strategies at both the municipal and community-wide level to mitigate and adapt to climate change. The Climate Action Plan addresses energy efficiency, renewable energy use, material reuse and recycling, public transportation, bicycle and pedestrian facilities, urban green spaces, and compact development patterns as important strategies in reducing greenhouse gas emissions. The plan also includes adaptation measures for flooding, sea level rise, and other climate-related hazards that threaten the community.

The noise section of the element must identify and appraise noise problems in the community from a variety of sources, establish a land use pattern that minimizes exposure of residents to excessive noise, and include possible solutions to address existing and foreseeable noise problems.

Issues and Opportunities

Safety

Emergency Services and Preparedness

The City of East Palo Alto employs a multipronged approach for mitigating, responding to, and recovering from emergencies, integrating local police and fire services with county-wide emergency management systems and regional coordination efforts. This comprehensive emergency preparedness framework addresses the diverse natural and human-caused hazards that can affect the community, from earthquakes and flooding to hazardous materials incidents and severe weather events.

Police Services

The East Palo Alto Police Department is led by the Chief of Police who manages a staff of (2) Captains, (4) Sergeants, (3) CSO's, (8) Civilians, (2) Recruits and (25) Officers / Detectives. There was a total of 1,590 Group A Offenses per the National Incident-Based Reporting System (NIBRS) in East Palo Alto in 2024 and a total of 1,634 Group A Offenses per NIBRS in 2023, resulting in a -3% change between these years. In 2023, 170 of the crimes were classified by NIBRS as violent crimes and in 2024 171 of the crimes were classified as violent.

The East Palo Alto Police Department plays a crucial role in emergency response coordination, working closely with the Menlo Park Fire Protection District (MPFPD), the San Mateo County Department of Emergency Management, and emergency responders in neighboring communities. During emergency evacuations, Police Department officers lead evacuation efforts to ensure they are conducted as quickly and safely as possible.

Fire and Emergency Medical Services

The City of East Palo Alto receives fire and emergency services through MPFPD, which has seven stations and serves the Cities of Atherton and Menlo Park and other portions of unincorporated San Mateo County. MPFPD provides a comprehensive array of life safety services to East Palo Alto, including fire prevention, inspection, and investigation, as well as firefighting, hazardous materials response, search-and-rescue, and paramedic services. MPFPD operates with 150 personnel, responding to approximately 11,000 calls for service annually. Staff at Station 2, which is in East Palo Alto, respond to approximately 2,000 incidents annually, comprising about one quarter of all of MPFPD's annual emergency responses, with more than half of annual calls being medical emergencies. MPFPD reconstructed Station 2 starting in 2012 as an essential service building, designed to withstand and continue operating throughout any type of major emergency.

For immediate response, at least 33 personnel are on duty across MPFPD's service territory at all times, including two Battalion Chiefs responsible for commanding incidents and relieving company officers during multicompany emergency operations. Each

station provides at least one heavy fire engine and is continuously staffed by at least three crew members. MPFPD maintains seven engine fire companies, two Truck/Ladder Companies, one EMS Rescue, one Type 1 Heavy Rescue Unit, and several water rescue crafts, including airboat, rigid bottom inflatable boat, and jet skis. MPFPD also sponsors Federal Emergency Management Agency (FEMA) Urban Search and Rescue Team Task Force 3.

Emergency Alert and Communication Systems

East Palo Alto uses multiple emergency alert systems to ensure comprehensive communication with residents during emergencies. SMC Alert serves as the primary alert system, used by numerous San Mateo County agencies to issue flood, fire, severe weather, or tsunami warnings; notify the community about emergency shelter locations; provide information about evacuation routes; and activate special teams such as Community Emergency Response Team (CERT) volunteers. The system was upgraded in December 2022 with Rave Mobile Safety as the new alerting platform. Community members can receive alerts via email, cell phone, and voice message to landline phones, with alerts available in multiple languages, including English, Spanish, and Filipino.

Additional alert systems include Wireless Emergency Alerts (WEAs), which broadcast short emergency messages from authorized public alerting authorities to mobile devices in targeted areas, and the Genasys app (formerly Zonehaven), which provides evacuation zone mapping and real-time evacuation orders.

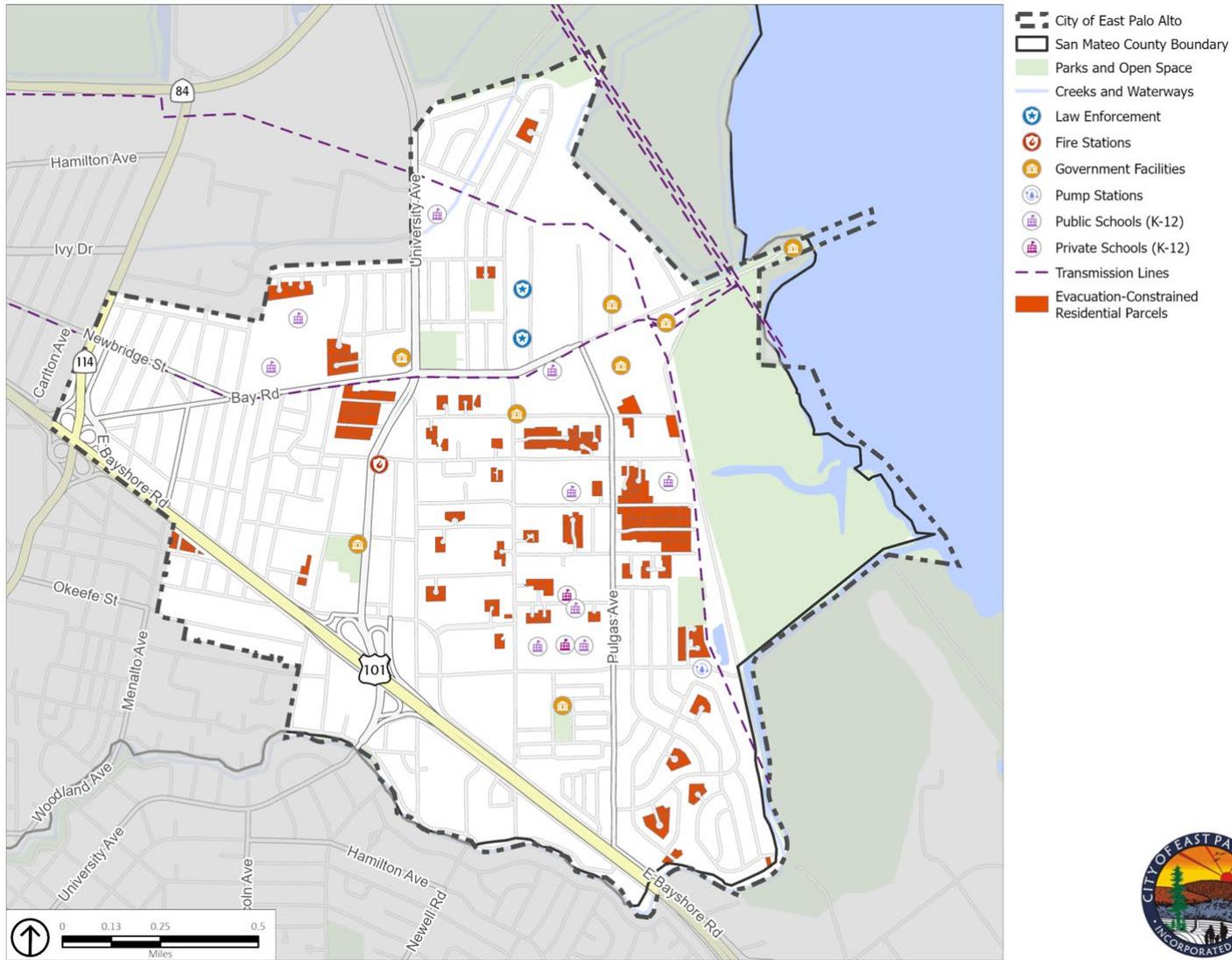
Evacuation Planning and Emergency Operations

The City supports community preparedness through various volunteer programs, including CERT volunteers trained by the MPFPD. San Mateo County's Coastside Emergency Corps provides additional volunteer support for public safety and health efforts during emergencies, with specialized training in CERT, Ham radio, medical response, large animal evacuation, Incident Command System and Emergency Operations Center activities, and Red Cross shelter operations.

Currently, there is no standardized county-wide evacuation plan and East Palo Alto does not have a publicly available evacuation plan. However, the City is participating in the county-wide All-Hazards Evacuation Plan, which began in 2024 and is expected to finish in 2026. This comprehensive study, led by the San Mateo County Department of Emergency Management, will analyze potential evacuation scenarios across San Mateo County, identify potential evacuation routes, and recommend improvements to meet State requirements under California Government Code Section 65302.15 also referred to as Assembly Bill 747.

In the interim, City staff have identified primary evacuation routes, including Highway 101, State Route 84 (Bayfront Expressway and Dumbarton Bridge), Pulgas Avenue, Bay Road/Newbridge Street, University Avenue, and Bayshore Road. Parts of East Palo Alto lack access to multiple evacuation routes and have only a single point of ingress and egress in their neighborhood or community. Some emergencies, such as floods or fallen trees from high winds, may cut off these single points of access. If this happens, community members may be unable to evacuate, and emergency responders may not be able to reach all people needing help. The project team identified the residential parcels in East Palo Alto that can only be accessed through a single point, as required by California Government Code Section 65302(g)(5) (also referred to as Senate Bill 99). **Figure 10-1** shows these evacuation-constrained residential parcels, which are concentrated in several areas of the city. The largest concentration is on dead-end streets off University Avenue near the intersection with Bay Road. These parcels have a single point of ingress and egress due to their location on cul-de-sacs, dead-end streets, or streets with limited connections to the broader road network. Through the policies in this element and the ongoing All-Hazards Evacuation Plan, East Palo Alto will take steps to better ensure safe, timely, and thorough evacuations if needed.

Figure 10-1: Residential Parcels with a Single Point of Ingress and Egress



Source: ESRI, 2023; County of San Mateo, 2025; PlaceWorks, 2025

Regional and County Coordination

East Palo Alto participates in extensive regional emergency management coordination through San Mateo County’s emergency management structure. The County Department of Emergency Management (DEM) coordinates countywide preparedness, response, and protection services. DEM develops and maintains plans and procedures for all jurisdictions, conducts exercises to evaluate operational capabilities, and activates the County Emergency Operations Center to support local jurisdictions during significant incidents.

The San Mateo County Operational Area Emergency Services Council, composed of all local governments in the county, provides coordinated plans for the protection of people and property during emergencies. East Palo Alto also benefits from mutual-aid agreements through the California Disaster and Civic Defense Master Mutual Aid Agreement.

Goals and Policies

Goal SN-1. Provide efficient and effective emergency response in the immediate aftermath of a natural or human caused disaster.

Intent: To ensure a safe and timely response by City residents and services during emergency events.

Policies:

1.1 Community preparedness. Reduce harm from natural hazards by promoting a culture of preparedness in the community through regular, localized emergency preparedness training programs that include practice drills and scenario-based exercises. Provide public education relating to seismic and flooding hazards.

1.2 Hazard mitigation planning. Continue to participate in Local Hazard Mitigation Planning through the Association of Bay Area Governments (ABAG), San Mateo Office of Emergency Services, FEMA, and surrounding jurisdictions. Incorporate the San Mateo Multi-jurisdictional Local Hazard Mitigation Plan and the East Palo Alto Annex, as approved by the Federal Emergency Management Agency, into this Safety and Noise Element by reference, as permitted by California Government Code Section 65302.6.

1.3 Risk evaluation. Encourage business and property owners to evaluate and minimize their risks to fire, flooding, and other hazards.

1.4 Emergency access routes. Collaborate with surrounding jurisdictions, emergency responders, and Caltrans to ensure the ongoing maintenance and readiness of potential evacuation routes serving East Palo Alto.

1.5 Reconstruction. Following a major disaster, ensure expedient, sound, and equitable reconstruction of the affected community through measures such as development of a Pre-Disaster and Recovery Action Plan that focus on community resilience, sustainability, and an evaluation for redevelopment potential following a major disaster.

1.6 Partnerships for disasters. Promote partnerships between the City and government and nongovernmental agencies, including public/private partnerships, to ensure support is ready to step in after a disaster.

1.7 Coordinated emergency response. Coordinate emergency response with the Menlo Park Fire Protection District, major transportation agencies, and adjacent jurisdictions.

- 1.8 Promote Community Preparedness.** Support and promote community preparedness groups, Community Emergency Response Teams (CERT) with Menlo Park Fire Protection District, and other preparedness training for residents and businesses.
- 1.9 Preparation Assistance.** In partnership with community-based organizations, provide financial and labor assistance to help community members prepare for disaster conditions, emphasizing the needs of low-resourced community members, older adults, and persons with access and functional needs.
- 1.10 Safety Ambassadors.** Explore creating a paid Safety Ambassador program to support efforts by local experts to improve community resilience.
- 1.11 Location of Critical Facilities.** Locate critical facilities outside of identified hazard areas (see **Figures 10-2** through **10-10**) and in areas easily accessible by transit whenever possible, accounting for how climate change may increase the frequency and intensity of hazards. If critical facilities must be in hazard areas, continue to ensure these facilities and their access routes are protected from the hazard risks characteristic to each location. This includes constructing these facilities to standards necessary to maintain operations during and after disaster events.
- 1.12 Community Resilience Centers.** Coordinate with surrounding jurisdictions, school districts, recreation and park districts, and community-based organizations to establish and maintain a network of equitably located emergency shelters, community resilience centers, and alternate care sites that provide emergency resources and services throughout the community.
- 1.13 Flexible-Use Public Facilities.** Ensure the designs for new and significantly renovated community-oriented City facilities allow for flexible uses and support multiple community purposes, including being used as community resilience centers.
- 1.14 Resilient City Facilities.** Renovate existing City-owned facilities and design new City facilities to incorporate renewable energy generation systems, battery energy storage systems, and energy-efficient design and features, as feasible.
- 1.15 Coordinated Evacuation Efforts.** Coordinate with transit agencies, school districts, community service organizations, and faith-based organizations to assist with evacuation efforts, ensuring evacuation services are available to vulnerable populations, including those with limited English proficiency, limited mobility, or limited access to transportation, communication, and other lifeline resources and services.
- 1.16 Emergency Operations Plan.** Maintain an Emergency Operations Plan that meets current and anticipated community needs in the event of a major disaster or hazardous event and conforms with the California Standardized Emergency Management System (SEMS).
- 1.17 Emergency Alert Systems.** Ensure emergency alert systems provide community members with alerts about upcoming or current emergency events in languages and formats accessible to the entire community. Use diverse outreach methods and partner with trusted community organizations to continue to increase enrollment rates and reach all segments of the community.

- 1.18 Mutual Aid Coordination.** Continue to coordinate with the emergency service and medical service providers to ensure preparedness and provide emergency response.
- 1.19 Recovery Educational Materials.** Ensure that communication, education, and information materials on short-term recovery activities are available to all residents with a focus on accessibility for vulnerable populations.
- 1.20 Visitor and Tourist Emergency Management.** Develop protocols for managing non-resident populations during emergency events, including evacuation procedures, resource allocation planning, and coordination with local businesses to ensure adequate emergency response capacity.
- 1.21 Equitable Emergency Response.** Work with emergency service providers to ensure response times and service levels in East Palo Alto are comparable to surrounding communities, with regular monitoring and reporting of response time data.

Seismic and Soil-Related Hazards

Earthquakes

As in most of the San Francisco Bay Area, seismic events are considered a fact of life in East Palo Alto; more of a “when” than an “if”. Earthquakes cannot be reliably predicted or avoided, but communities like East Palo Alto can be prepared to face these risks and establish policies to ensure the resilience of the community.

The United States Geological Survey (USGS) considers most of the San Francisco Bay Area, including all of San Mateo County, to be at very high risk of experiencing a major earthquake in the next 50 years. As shown in **Figure 10-2**, East Palo Alto’s proximity to several active faults— including the San Jose Fault (shown in **Figure 10-2**) Hayward Fault (10 miles east), San Andreas Fault (7 miles west), and

the San Gregorio Fault (20 miles west)—represents a significant factor in planning for a safer future.

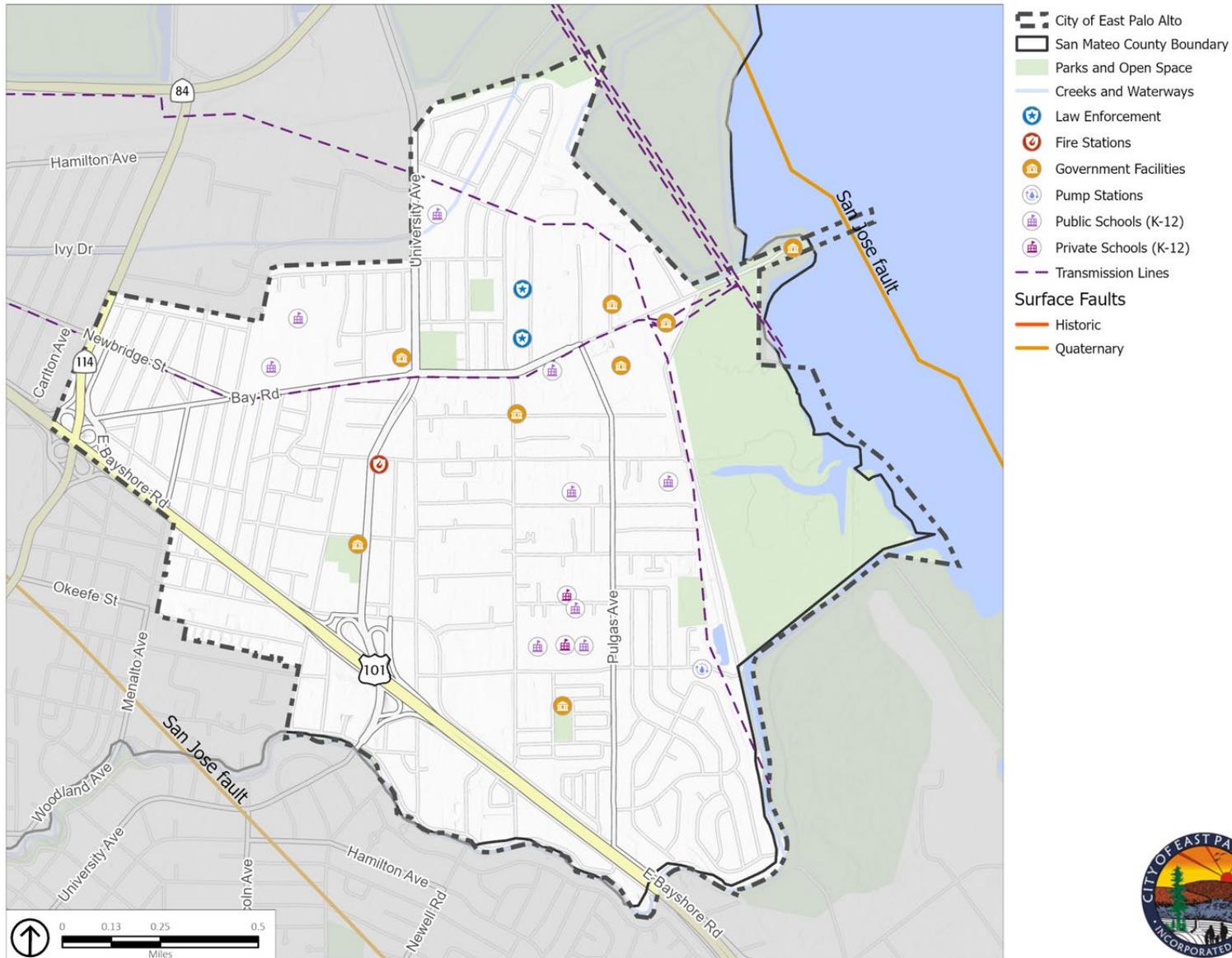
Geologists use the terms “magnitude” and “intensity” to describe and measure the degree of ground shaking in an earthquake. Magnitude measures the amount of energy released by an earthquake. Intensity is a more subjective measure of effects that people can perceive or see. Magnitude and intensity form the basis of the Modified Mercalli Intensity Scale (MMI). The MMI is a scale of 1 to 12 (I to XII) with higher numbers representing higher intensity. For reference, the 1906 San Francisco earthquake (whose epicenter was located in Marin County) is estimated to have resulted in an MMI of VII to VIII in East Palo Alto. The 1989 Loma Prieta earthquake (whose epicenter was in the Santa Cruz Mountains) registered an MMI of VIII in East Palo Alto.

The USGS predicts that the San Andreas Fault has a 21 percent chance, the Hayward Fault has a 31 percent chance, and the San Gregorio Fault has a 6 percent chance of producing a magnitude 6.7 or greater earthquake in the next 30 years. There is no data for the San Jose quaternary fault. None of these faults run directly through East Palo Alto, reducing the potential for direct surface fault rupture. Surface rupture occurs when fault movement during an earthquake literally breaks or ruptures the ground. However, a major earthquake on one of these faults would still cause severe ground shaking throughout East Palo Alto, potentially triggering secondary hazards such as liquefaction, landslides, and infrastructure damage.

Past Seismic Events

The last significant earthquake in the Bay Area was the magnitude 7.1 Loma Prieta earthquake in 1989, which caused significant damage throughout the region. Other notable earthquakes include the 1906 San Francisco earthquake (magnitude 7.8) and the 2014 South Napa earthquake (magnitude 6.0). The region has experienced multiple moderate earthquakes (magnitude 5.0-5.9) in recent decades.

Figure 10-2: Local Faults



Liquefaction

East Palo Alto’s location makes it particularly susceptible to liquefaction. Liquefaction occurs when soils take on liquidlike qualities during a seismic event. A key consequence of liquefaction is ground failure. Ground failure occurs when the soil loses its load-bearing capacity, causing buildings and foundations to sink or settle unevenly, underground infrastructure to destabilize, and roadways and utilities to buckle or break. This can have serious implications for older structures that were built before state and local building codes were updated (in the early 1970s) to be more resilient against seismic and soils-related hazards. As shown in **Figure 10-3**, all of East Palo Alto is at risk of liquefaction.

Tsunami and Seiche

Coastal and shoreline portions of California must consider the potential for tsunamis and seiches. Tsunamis, like the surges generated by the March 11, 2011, Tōhoku earthquake in northeastern Japan, resulted in substantial damage to harbors in Crescent City and Santa Cruz. As shown in **Figure 10-4**, East Palo Alto’s position within San Francisco Bay limits the potential for tsunami damage, but tsunami waves may impact areas of the city directly adjacent to the bay.

Seiches are another bay-related seismic hazard. Seiches are earthquake-generated waves within an enclosed body of water like a lake or a reservoir. East Palo Alto lacks major enclosed bodies of water, but shoreline areas of the community are at risk of inundation from a seiche.

Soils-Related Hazards

While seismic hazards pose the most acute risk to safety in East Palo Alto, a number of other soils-related hazards can also result in harm to people and damage to property.

Subsidence means a failure or collapse of the existing ground surface. This is usually caused when subsurface materials, such as groundwater, are extracted or dissolved, which can create a subsurface void leading to a surface failure. Groundwater extraction in East Palo Alto has been minimal, allowing groundwater recharge to limit the potential for subsidence to occur in the community.

Differential settlement is a type of subsidence. Differential settlement describes a condition in which

adjacent areas of soil sink or settle at different rates. When buildings or structures straddle lands with differing settlement rates, the portion of the building or structure below the sinking soil can be damaged. Over time, differential settlement can result in substantial damage to buildings and structures. Areas of East Palo Alto built on former tidal flats – including neighborhoods along the bay shoreline, bordering San Francisquito creek, Cooley Landing, and Ravenswood – could be susceptible to differential settlement where low-strength native soils are immediately adjacent to loose or unconsolidated fill.

Due to its relatively flat topography, the city faces little risk of landslides or debris flows. As shown in **Figure 10-5**, there are no identified landslide hazard areas in the city.

Future Conditions

Earthquake frequency and magnitude are not expected to change due to climate change, but climate-related hazards may compound the impacts of earthquakes. For example, liquefaction risks may increase in areas where groundwater levels rise due to sea level rise, as discussed in the Emergent Groundwater section. Additionally, seismic events could trigger secondary hazards such as levee failures during periods of high-water levels, potentially causing more severe flooding than would occur from either hazard alone.

Climate change may exacerbate soil-related hazards in East Palo Alto. Rising groundwater levels from sea level rise can increase the potential for subsidence and differential settlement, particularly in areas with organic soils. More significantly, the combination of rising groundwater and increased soil saturation during extreme storms can substantially increase liquefaction susceptibility during seismic events, especially in areas along the baylands and near San Francisquito Creek.

Rising sea levels will increase the base water level, potentially allowing tsunami and seiche waves to reach farther inland than currently expected. Additionally, compound events where storms coincide with seismic activity could create more severe flooding scenarios, and increase dam failure risks when aging infrastructure faces stress from both extreme precipitation and ground shaking.

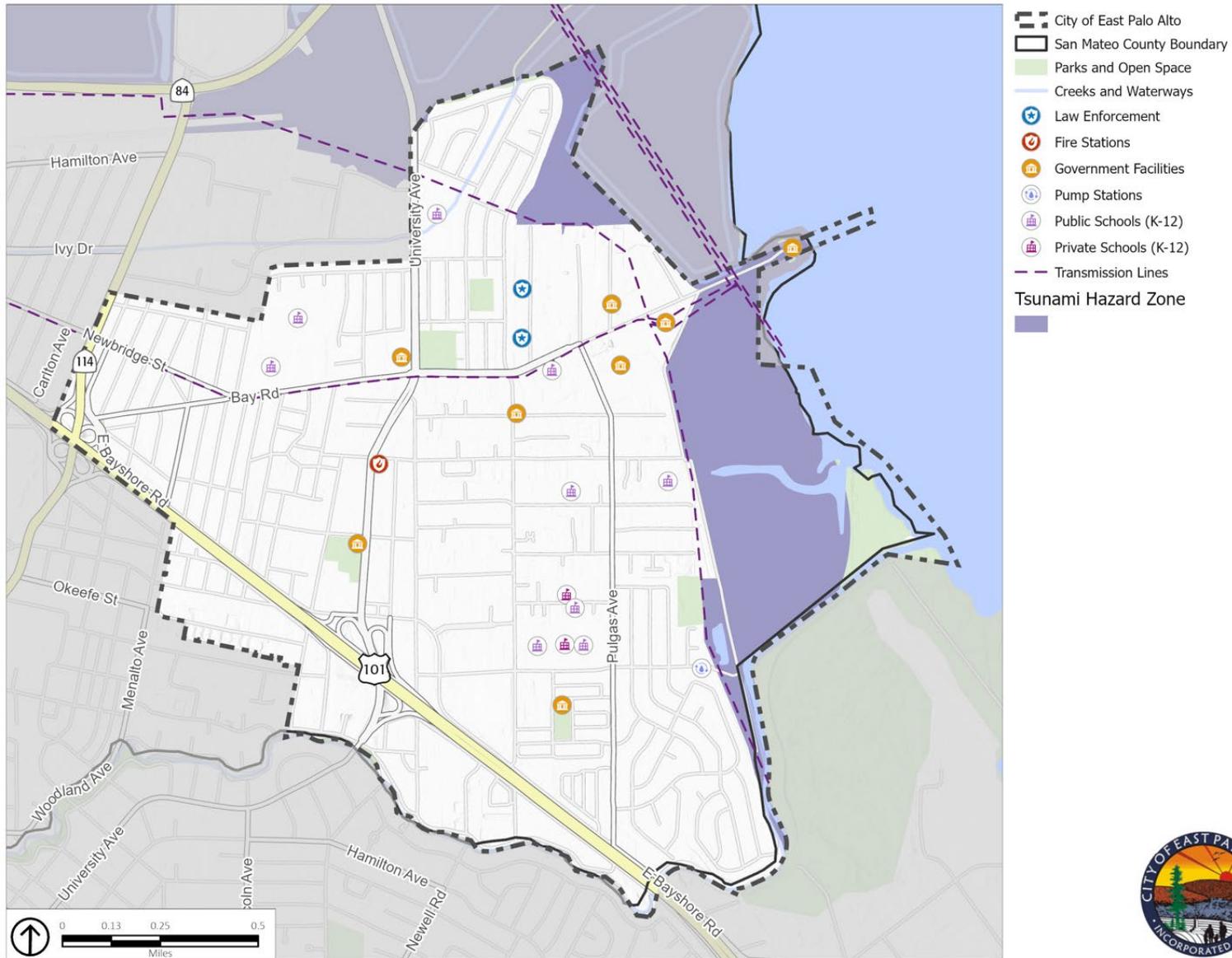
Figure 10-3: Liquefaction and Ground Shaking



Source: ESRI, 2023; County of San Mateo, 2023; PlaceWorks, 2023; ; CGS, 2021



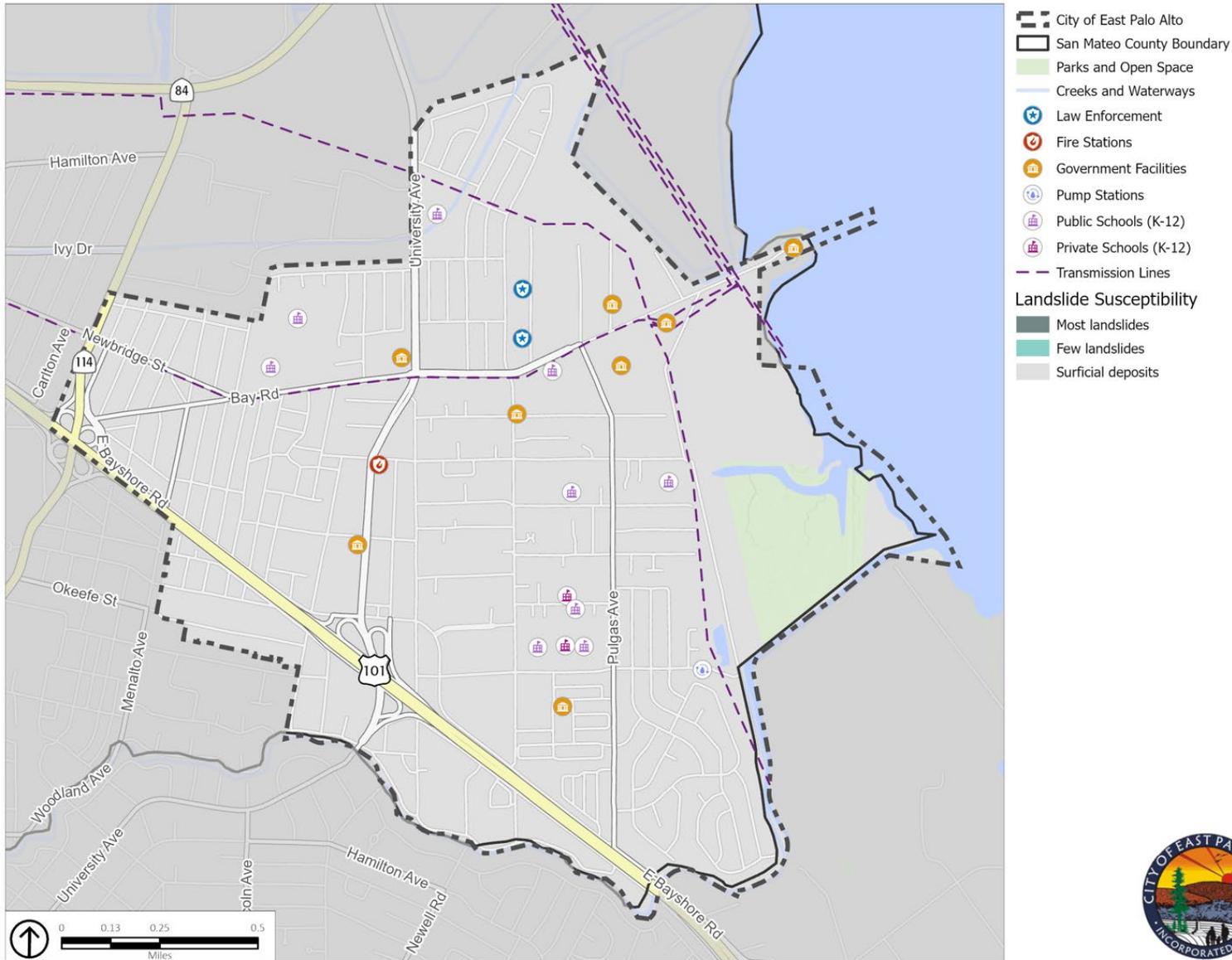
Figure 10-4: Tsunami Hazard Zones



Source: ESRI, 2023; County of San Mateo, 2023; PlaceWorks, 2023; ; CGS, 2021



Figure 10-5: Landslide Susceptibility



Source: ESRI, 2023; County of San Mateo, 2023; PlaceWorks, 2023; ; USGS



Goal SN-2. Reduce the risk to people and property from earthquakes and other geologic hazards.

Intent: To lessen the impacts of earthquakes and geologic threats on City residents.

Policies:

- 2.1 Construction requirements.** Apply the proper development engineering and building construction requirements and best practices, including review by a state-licensed geologist, to avoid or minimize risks from seismic and geologic hazards.
- 2.2 Robust seismic guidance.** Enforce the most recent State guidance for seismic and geologic hazards when evaluating development proposals.
- 2.3 Seismic upgrades.** Examine necessity of seismic upgrades to existing public facilities, existing multifamily housing constructed prior to 1971, and existing soft-story multifamily housing.
- 2.4 Site-Specific Geotechnical Investigations.** Require individual site-specific geotechnical investigations for new construction and substantial improvement projects within liquefaction hazard zones and tsunami-prone areas, as shown on **Figures 10-3** and **10-4**, to determine the depth of bedrock, soil stability, location of rift zones, and other localized geotechnical problems as part of the environmental and/or development review process for all structures.

Flooding

Flooding occurs when water surpasses the capacity of local water bodies to contain it, creeks to carry it, or soil to absorb it. There are five types of flooding that affect East Palo Alto:

- **Riverine flooding** occurs when San Francisquito Creek overruns its banks.

Understanding Flood Terminology

Floodplain: Areas that become inundated by high volumes of water, usually adjacent to rivers, creeks, lakes, or along the ocean. These areas are officially mapped by the Federal Emergency Management Agency (FEMA) using Digital Flood Insurance Rate Maps (DFIRMs).

100-Year Floodplain: The area that has a 1 percent (1 in 100) chance of being flooded in any given year, also known as a “base flood”. This does not mean flooding occurs only once every 100 years—rather, there is a percent probability of this level of flooding happening each year.

500-Year Floodplain: The area that has a 0.2 percent (1 in 500) chance of being flooded in any given year. These areas face lower probability but more severe potential flooding than 100-year floodplains.

- **Stormwater flooding** occurs when rainfall accumulates in areas with insufficient drainage throughout the community, and especially in the Gardens neighborhood.
- **Flash floods** are sudden events caused by intense localized storms.
- **Shoreline floods** occur when the bay inundates normally dry lands due to storm surges or extreme high tides.
- **Dam failure flooding** can occur as a result of seismic or other causes, resulting in swift inundation of downstream areas.

East Palo Alto has a history of flooding problems due to its low-lying location along the bay, particularly in areas along San Francisquito Creek. The city has experienced eight major flood events since 1940, with many residents experiencing multiple flood events over their tenure in the city. High tides, heavy rains causing high water levels in San Francisquito Creek, and an inadequate storm drain system are the major sources of flooding in East Palo Alto.

Alto. High tides combined with strong easterly winds can generate storm surge or wave runup, potentially causing widespread coastal flooding. Heavy precipitation can also overwhelm San Francisquito Creek's capacity, leading to significant riverine flooding if floodwaters cannot drain effectively into the bay.

Special Flood Hazard Areas

FEMA prepares a detailed technical study, known as the Flood Insurance Study, and maintains maps of floodways and floodplains for the entire United States. FEMA maps these areas on Flood Insurance Rate Maps (FIRM). A typical FIRM will show Special Flood Hazard Areas within reach of a 100-year flood, estimate the height of floodwaters, and delineate areas subject to high velocity wave action and a 500-year flood. Cities and other jurisdictions use FIRMs to establish zoning districts, buffers, or other regulatory requirements intended to protect people and property from flood damage and minimize the cost of physical flood control mechanisms. In East Palo Alto, the City uses FEMA flood maps to enforce its Floodplain Management Ordinance, which requires flood-resistant building standards in the 100-year floodplain, including mandatory elevation of structures to 18 inches above the base flood elevation.

As illustrated in **Figure 10-6**, data from the relevant FIRMs indicates that areas along the bay and near the San Francisquito Creek face the highest flood risks during storm events and/or high tide events. The current FIRMs were adopted in 2021 and reflect historical flood patterns. Climate change and sea level rise are expected to expand flood zones significantly beyond areas currently mapped by FEMA, as rising Bay water levels and more intense precipitation events increase flood risks. To address these future hazards, the City is working with OneShoreline to use the best available sea level rise projections and identify areas vulnerable to future flooding beyond what FEMA maps currently show. Approximately half of the parcels in East Palo Alto are in a mapped floodplain. Based on this analysis and past flooding incidents, the following areas within the city are particularly vulnerable to flooding:

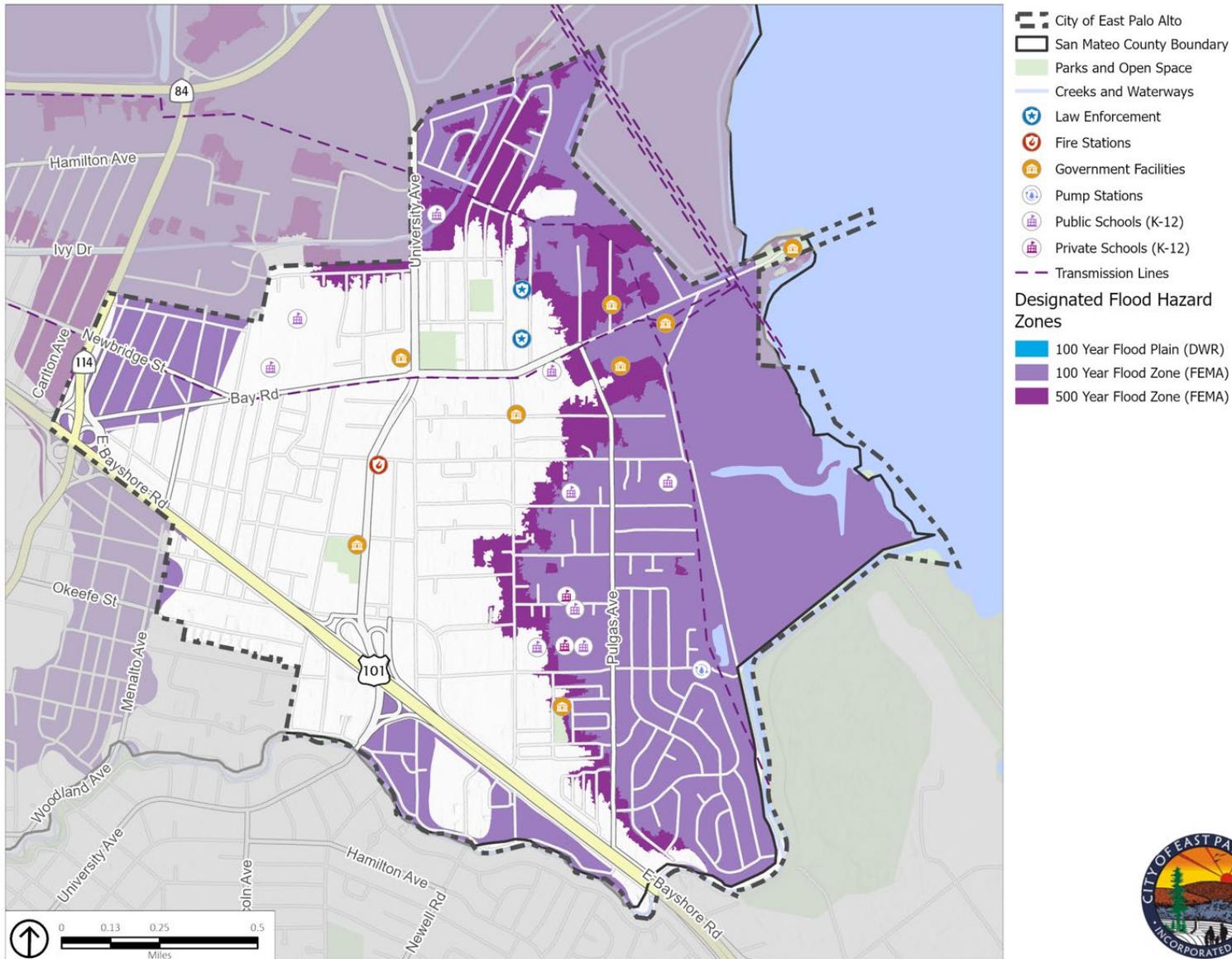
- The Weeks and Garden Neighborhoods, east of Pulgas Avenue.

- The Woodland Neighborhood, between San Francisquito Creek and the Bayshore Freeway.
- The University Village Neighborhood, north of Notre Dame Avenue.
- The portion of the Ravenswood Employment District closest to the Baylands.
- The Kavanaugh Neighborhood.
- The Palo Alto Park Neighborhood, west of Menalto Avenue.

East Palo Alto has participated in FEMA's Community Rating System (CRS) since 2010. CRS is a voluntary program that recognizes and encourages community floodplain management activities that exceed the minimum National Flood Insurance Program (NFIP) requirements. The CRS provides flood insurance premium discounts to residents based on the community's flood mitigation and education efforts.

The CRS uses a rating scale from 1 to 10, with Class 1 representing the highest level of flood protection activities and Class 10 indicating that the community only meets the minimum NFIP requirements. Each CRS class improvement results in a 5 percent discount on flood insurance premiums for residents, with potential savings ranging from 5 percent (Class 9) to 45 percent (Class 1). East Palo Alto has a current CRS class rating of 7, which equates to a 10 percent flood insurance premium discount. The City is committed to improving its CRS rating through enhanced floodplain management activities, which will provide greater flood insurance savings for residents while improving overall community flood resilience.

Figure 10-6: Flood Hazard Zone



Source: ESRI, 2023; County of San Mateo, 2023; PlaceWorks, 2023; ; FEMA; DWR, 2021

Dam Failure

The failure of a dam can result in swift flooding and inundation of downstream areas, potentially causing harm to people and property in the path of released waters. San Mateo County has mapped areas susceptible to the failure of dams located in or near the county. The County has identified the Searsville Dam, which impounds a creek tributary to San Francisquito Creek, as posing a potential dam failure hazard to portions of the Stanford campus, the City of Palo Alto, and the lower reaches of San Francisquito Creek, which forms the boundary of East Palo Alto and Palo Alto as it enters San Francisco Bay. As shown in **Figure 10-7**, the city is also within the inundation area of the Felt Lake Dam. Both dams are owned by Stanford University and have received satisfactory ratings from the California Division of Safety of Dams.

Existing Action

The City has undertaken many actions and activities to avoid or reduce flood risks. These activities include mailing a relevant brochure to all properties in the community on an annual basis, explaining the risks and hazards related to flooding, and establishing benchmarks so developers have accurate elevation figures. The City has enacted stringent building codes, such as the mandatory elevation of structures to 18 inches above the height of flood waters, which mitigate risk due to inundation. Additionally, East Palo Alto reviews the effectiveness of these activities annually and provides FEMA a progress report each year that identifies action taken to reduce the potential for loss of life and damage to property. FEMA rewards voluntary actions that reduce potential loss of life and damage to property in a flood by reducing flood insurance premiums. The City has undertaken activities to alleviate potential flooding hazards, which has resulted in savings on insurance premiums. As of 2021, 941 flood insurance policies are in force in East Palo Alto and there were 32 total payouts for approximately \$157,000 in losses. These policy holders pay approximately \$1.04 million annually in premiums.

The City's Storm Drain Master Plan, adopted in 2015, identified significant deficiencies in the drainage system. Many of the streets in East Palo Alto still lack storm drains, and where they exist, they lack the capacity to handle stormwater during heavy rain events. Over half of the city (56 percent) is in areas with elevated flood risk, and more

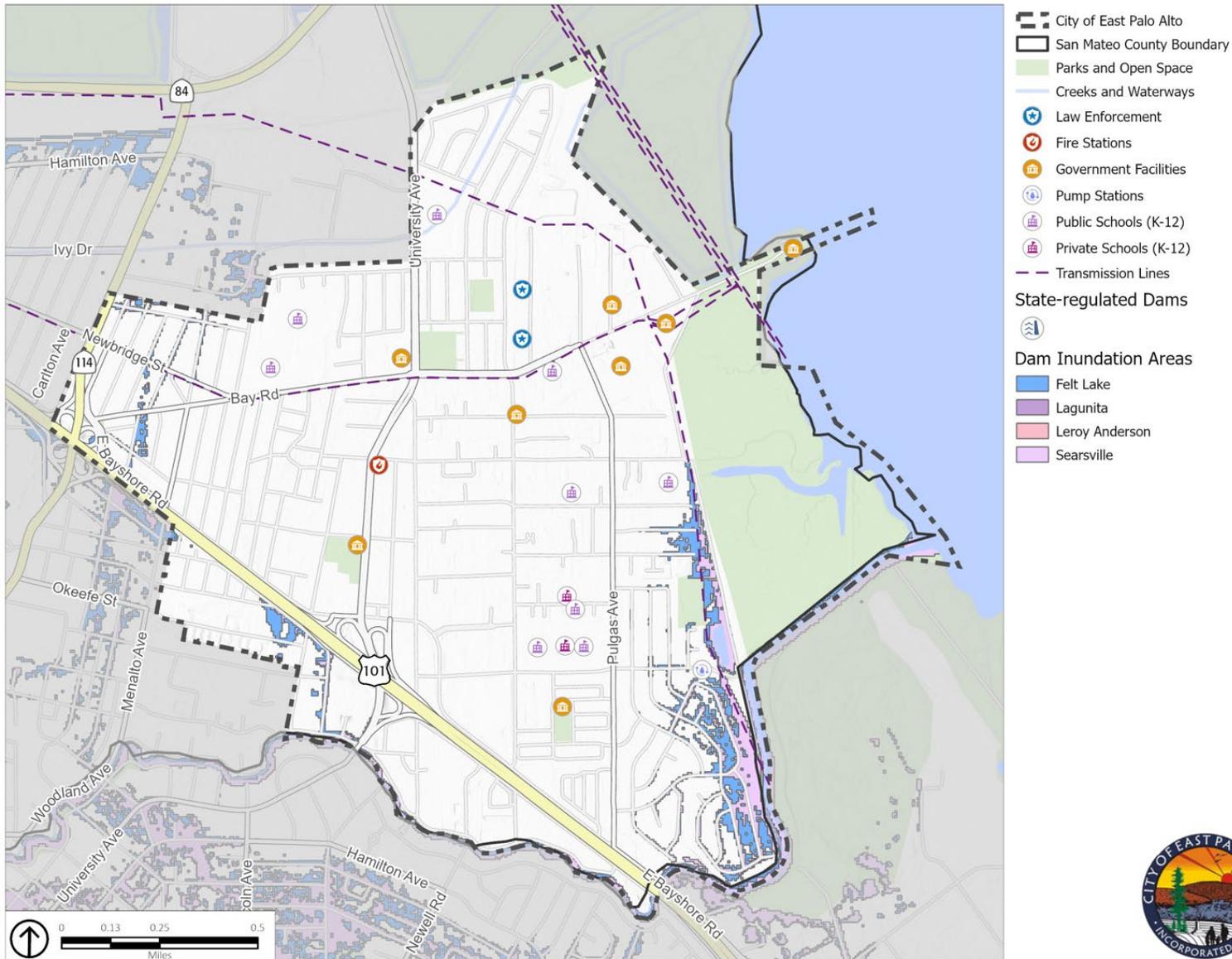
than half of the drainage area relies on pumping from the O'Connor Pump Station, which requires near-term improvements to maintain its existing capacity. The Master Plan identified approximately \$37.5 million in needed capital improvements, including pipe improvements, system expansion, pump station retrofit, and other critical infrastructure upgrades. During 10- and 20- year storm events in East Palo Alto, storm drains can overflow and flood the streets. Low-lying areas face extra risk of floods related to levee breaks, ruptures, or overtopping, particularly when combined with overtopping from San Francisquito Creek.

San Francisquito Creek Joint Powers Authority

A proactive step the City has taken to reduce flooding risk involves joining with the cities Menlo Park and Palo Alto, along with the San Mateo County Flood Control District and the Santa Clara Valley Water District in a Joint Powers Authority (JPA), formed in 1999 to develop and maintain projects along the creek that reduce flood threats and benefit the environment. In 2019, the JPA completed a project on the "Reach 1" section of San Francisquito Creek, which improved the lower reaches of the creek, from Highway 101 to the bay. The Reach 1 project widened the creek to better convey 100-year storm flows (also taking into account high tides and up to 3 feet of sea level rise), excavated sediment from the mouth of the bay, and constructed new floodwalls and engineered levees. The project protects more than 1,700 properties from a 100-year creek flood during a King tide event and resulted in more than 22 acres of new or improved marsh habitat. The City is currently working with the JPA on the Reach 2 project, which will address the next segment of the creek upstream from Highway 101.

Many bayfront areas near East Palo Alto feature earthen levees intended to protect against tidal influx. Notwithstanding that FEMA has accredited many of the levees along the bayfront, SFHAs are still present throughout substantial portions of the community as noted above.

Figure 10-7: Dam Inundation



Source: ESRI, 2023; County of San Mateo, 2023; PlaceWorks, 2023; ; California Division of Safety of Dams, 2023

Past Events

Significant flood events have caused substantial damage to East Palo Alto, including:

- 1972: Tidal flood waters completely submerged streets in the University Village neighborhood.
- February 1998: Parts of East Palo Alto experienced significant flooding along San Francisquito Creek, impacting more than 1,100 homes and businesses and causing over \$28 million in damages. Hundreds were forced to evacuate and major thoroughfares were closed.
- December 2012: A storm caused water to flow over a 600-foot section of levee between Verbena Drive and Daphne Way, forcing evacuations for 36 residents. One home was declared uninhabitable.
- December 2022: Heavy rains caused flooding near San Francisquito Creek, with residents losing belongings and incurring hundreds of thousands of dollars in property damage.

Future Conditions

Climate change will likely cause these flood zones to expand as sea levels rise and the tide regularly moves farther inland (see the Sea Level Rise section that follows and **Figure 10-8**). Additionally, as rising groundwater emerges at the surface, many areas will experience flooding from below, even in areas that appear protected from coastal flooding (see the Emergent Groundwater section and **Figures 10-9** and **10-10**). As the risk of intense storms increases, many of these areas—which include residential neighborhoods with schools and community-serving facilities—could be damaged or destroyed by major flooding. Industrial and commercial areas also face flood risks that could cause the movement of pollution and hazardous materials through soil and groundwater.

Climate change is expected to increase both the frequency and intensity of extreme precipitation events in East Palo Alto. Warmer temperatures allow the atmosphere to hold more moisture, leading to more intense storms. Additionally, aging stormwater infrastructure will face increasing stress from these extreme events, resulting in system overflows,

infrastructure failures, loss of drainage capacity, and pump station breakdowns. The combination of more intense rainfall, inadequate drainage capacity, and rising bay water levels will exacerbate flood risks throughout the community, particularly in the vulnerable neighborhoods identified above.

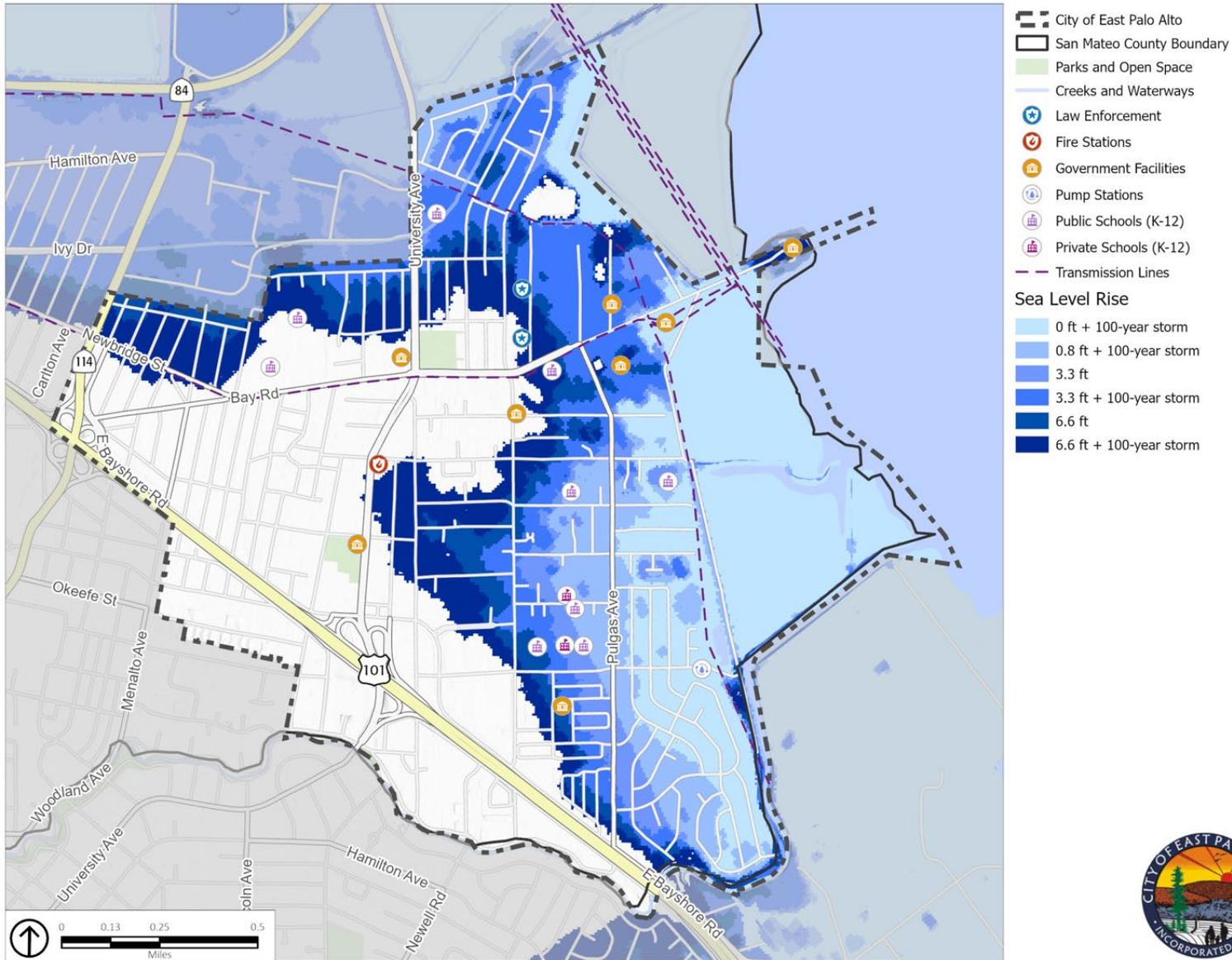
Goal SN-3. Provide adequate flood control and storm drainage facilities to minimize the risk of flooding.

Intent: To lessen the impacts of flood events on City residents by avoiding placing residents in harm's way.

Policies:

- 3.1 Flood Insurance Program.** Continue to participate in the National Flood Insurance Program and FEMA's voluntary programs, such as the Community Rating System.
- 3.2 Innovative Insurance Solutions.** Partner with San Mateo County, OneShoreline, community-based organizations, and other stakeholders to study and explore new and innovative flood insurance approaches that increase financial resilience for vulnerable residents, prioritizing low-income households and renters in flood hazard zones.
- 3.3 Community Rating System Improvement.** Identify and implement programs and projects that maximize the City's Community Rating System (CRS) to reduce flood insurance premiums for residents, including enhanced floodplain management activities, public information programs, and flood mitigation projects. Ensure sharing of information with the public around these processes, their timelines, and how they will benefit residents.

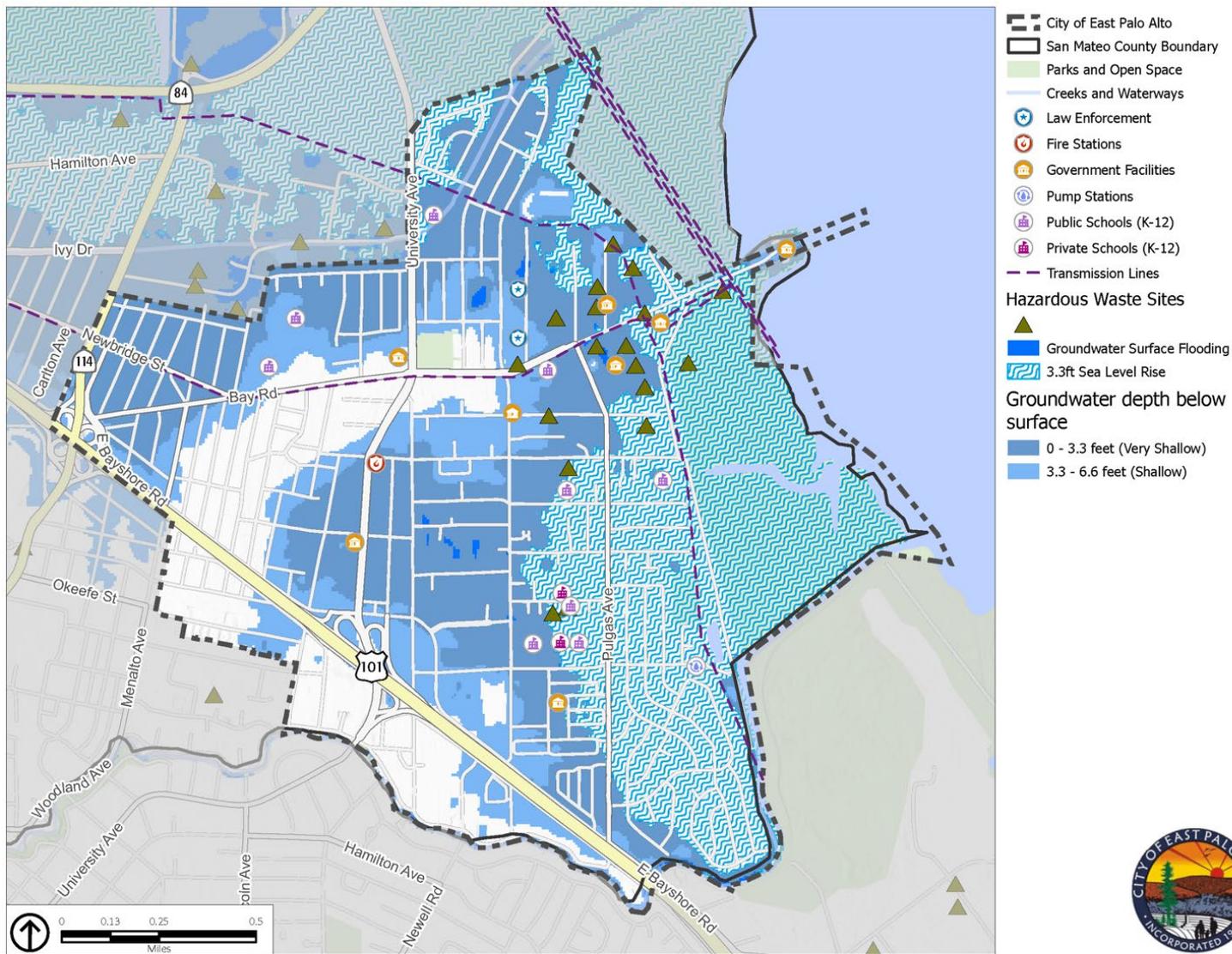
Figure 10-8: Sea Level Rise



Source: ESRI, 2023; County of San Mateo, 2023; PlaceWorks, 2023; ; USGS CoSMoS

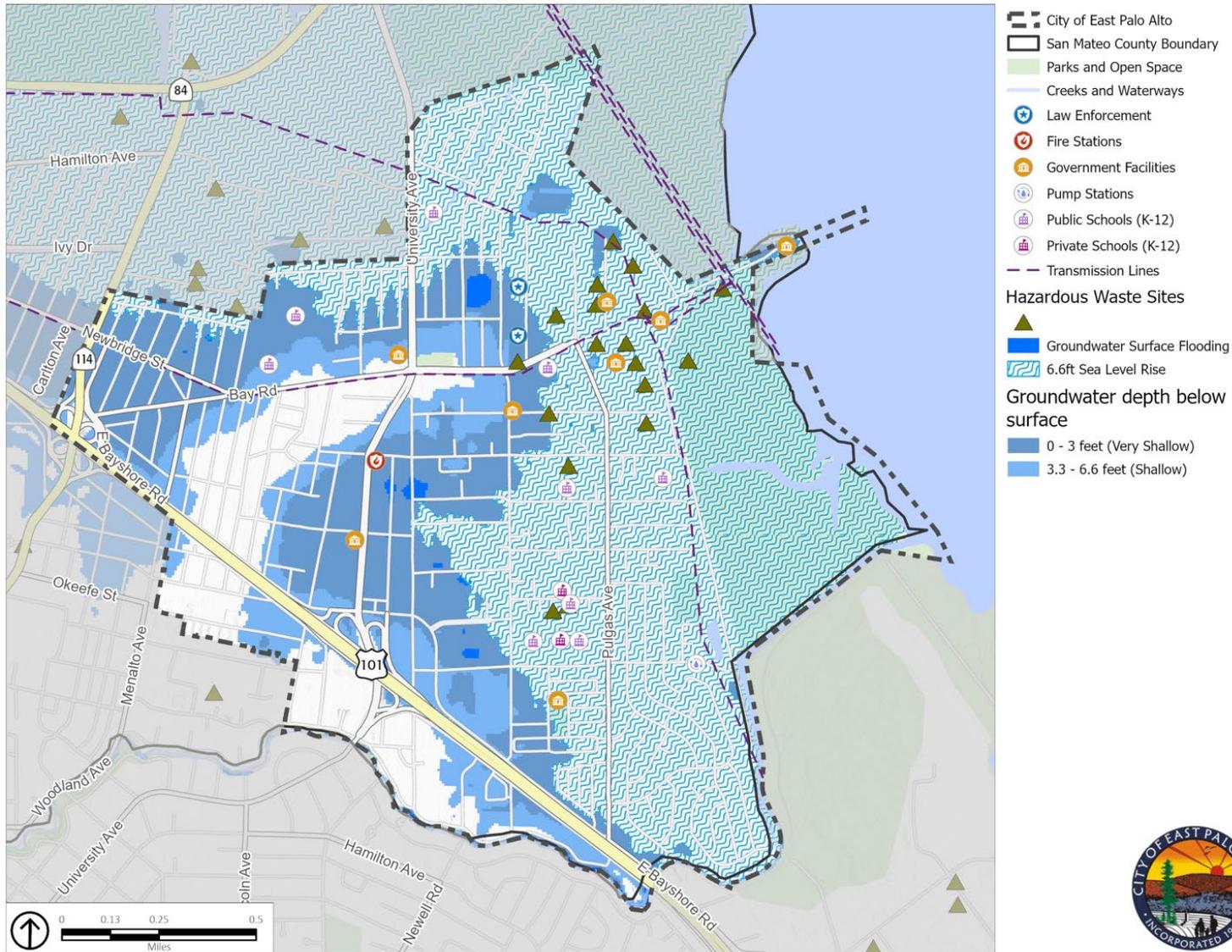


Figure 10-9: Emergent Groundwater in East Palo Alto by 2050



Source: ESRI, 2023; County of San Mateo, 2023; PlaceWorks, 2023; California Office of Environmental Health Hazard Assessment, 2021; USGS, 2020

Figure 10-10: Emergent Groundwater in East Palo Alto by 2100



Source: ESRI, 2023; County of San Mateo, 2023; PlaceWorks, 2023; California Office of Environmental Health Hazard Assessment, 2021; USGS, 2020



- 3.4 Development in floodways.** Continue to minimize or restrict development in the floodway and floodway fringe.

IM 3.4a: Require new development that impacts floodplain areas to provide replacement flood storage capacity, ensuring a positive gain and no net loss of flood storage in the community.

Timeframe: Short-Term

- 3.5 Floodplain Management Ordinance.** Continue to enforce and consider strengthening the City's Floodplain Management Ordinance to protect against changing flood hazard conditions.

IM 3.5a: Review and update the Floodplain Management Ordinance when FEMA updates flood maps to incorporate current FEMA guidance and climate projections.

Timeframe: Short-Term

- 3.6 Public buildings.** Enhance flood protection for essential public buildings and associated parking areas. Specifically, considering which public buildings are at the highest risk and prioritizing infrastructure updates.

- 3.7 San Francisquito Creek Joint Powers Authority (JPA):** Continue to work with the JPA on projects that will reduce the risk of flooding in East Palo Alto. Present this information, including projects and timelines, in public forums like the SAFER Bay projects, public workshops, tours, and Advisory Group regularly to ensure residents are informed and involved in the decisions made in partnership with the JPA.

- 3.8 Safeguarding Underground Utilities in Flood-Prone Areas.** Coordinate with utility providers to protect or relocate underground utility infrastructure that is in areas prone to flooding. Identify the most vulnerable underground utilities and prioritize infrastructure updates by working with the relative agencies and owners.

- 3.9 Home Hardening Against Flooding.** Partner with Community-Based Organizations to provide educational resources, secure grants, and provide financial assistance to low-resourced households and rental properties in flood hazard zones to harden homes against flooding.

IM 3.9a: Investigate the feasibility of establishing a residential flood retrofit grant program prioritizing low-income households in flood-prone areas.

Timeframe: Short-Term

- 3.10 Drainage and Flood Control Systems.** Design and implement integrated stormwater management systems that combine traditional drainage infrastructure with green infrastructure elements (such as bioswales, rain gardens, and permeable surfaces) to improve flood control while enhancing local ecosystems.

- 3.11 Drainage Improvements.** Regularly remove debris and increase the amount of landscaped areas and other permeable surfaces in public and private projects to improve drainage, especially in flood-prone areas adjacent to San Francisquito Creek and the San Francisco Bay.

IM 3.11a: Establish regular maintenance schedules for City storm drain infrastructure.

Timeframe: Short-Term

IM 3.11b: Update landscaping ordinances to promote permeable surfaces in flood-prone areas.

Timeframe: Short-Term

- 3.12 Storm Drain System Upgrades.** Implement the Storm Drain Master Plan by prioritizing capital improvements to upgrade storm drain capacity, including pipe improvements, system expansion, installation of new storm drains in areas currently lacking coverage, and pump station retrofits to handle increased stormwater volumes and climate change impacts.

3.13 Flooding Preparation and Response. Co-create flooding preparation and response action plans with community members to ground technical expertise in local knowledge. Conduct community outreach to a significant number of residents and make sure the finished action plans are thoroughly shared and understood throughout the community through focus groups and workshops.

3.14 Flood Impact Assistance. Develop programs to assist residents and businesses with flood preparation and recovery, with particular focus on historically impacted areas such as the O'Keefe area and areas near San Francisquito Creek. This includes emergency planning support, post-flood cleanup assistance, and coordination with recovery resources.

Sea Level Rise

As global temperatures rise, glaciers and other polar ice melt, causing sea levels to rise. High average temperatures can also cause ocean water to expand, causing further rising of sea levels. Flooding and sea level rise create disproportionate impacts for:

- Low-resourced households lacking resources for home repairs, weatherization, and flood-proofing.
- Older adults with reduced mobility, impaired vision, and hearing loss who face evacuation challenges.
- Immigrant communities who may distrust government evacuation orders due to citizenship concerns.
- Residents who are dependent on medications or medical devices that may be lost or damaged.
- People living in older buildings with poor maintenance and structural vulnerabilities.

Affected Areas

As shown in **Figure 10-8**, over half of East Palo Alto is vulnerable to sea level rise impacts. The areas at greatest risk include:

- Neighborhoods north of Bay Road and east of University Avenue

- Areas along Pulgas Avenue
- Cooley Landing and surrounding areas
- Neighborhoods near Costaño Elementary School
- The Ravenswood Slough near the Baylands

These low-lying areas face permanent inundation from rising water levels, contamination risk from rising groundwater, and temporary flooding during storm events that will reach farther inland as baseline water levels increase.

Past Trends

Over the past century, water levels in San Francisco Bay have risen by eight inches. While this change has been gradual, it has already begun to increase the frequency of nuisance flooding during high tides and has reduced the capacity of storm drainage systems during rain events.

Future Projections

According to the 2024 State of California Sea Level Rise Guidance, East Palo Alto should prepare for as much as:

- 0.4 feet (5 inches) of sea level rise by 2030
- 1.3 feet (16 inches) of sea level rise by 2050
- Up to 6.5 feet (78 inches) of sea level rise by 2100

However, sea levels could rise faster than these projections. Storm surge and King Tide events can add an additional 24 to 36 inches of temporary flooding on top of baseline sea level rise, pushing floodwaters even farther inland.

By 2050, many neighborhoods along Pulgas Avenue, Cooley Landing, and areas near Costaño Elementary School may be permanently inundated. This area includes nearly all schools in East Palo Alto, police stations, four government facilities and community centers, and the critical O'Connor pump station.

Sea level rise will also cause rising groundwater levels in areas away from the shoreline, as discussed in the Emergent Groundwater section. Due to the prevalence of contaminated sites in East Palo Alto, rising groundwater that may harbor contaminants puts residents at an

additional risk. The combined effects of permanent inundation, more frequent flooding, and groundwater emergence with a risk of contamination pose significant long-term challenges for community safety and resilience.

Goal SN-4. Protect the community from sea level rise impacts through adaptive planning, regional coordination, and resilient infrastructure development.

Intent: To reduce risks from permanent and temporary inundation due to sea level rise and ensure that planning and development decisions account for projected future conditions over the life of projects.

Policies:

4.1 Flooding related to sea level rise. Apply flood control and mitigation requirements to properties vulnerable to sea level rise hazards as indicated on **Figure 10-8** to provide flood protection over the lifetime of the project.

IM 4.1a: Update the Floodplain Management Ordinance to incorporate sea level rise projections under medium-high risk scenarios by 2100, as shown on **Figure 10-8**, or the most current projections adopted by the State of California or Bay Conservation and Development Commission.
Timeframe: Short-Term

4.2 Sea Level Rise Vulnerability Assessment and Adaptation Planning. In partnership with OneShoreline, use the best-available sea level rise projections to regularly identify the areas of the city that are vulnerable to temporary and permanent inundation from sea level rise by evaluating multiple sea level rise scenarios, establishing monitoring systems to track changing conditions, and adjusting strategies as new scientific information becomes available or conditions exceed projections. Use this information to continue to develop or adjust land use and permitting requirements and municipal adaptation strategies.

4.3 Resilient Siting and Design for Critical Facilities. Site new critical facilities and public infrastructure in areas that are not vulnerable to sea level rise hazards as indicated on **Figure 10-8**. If new critical facilities and public infrastructure cannot be located outside of areas prone to sea level rise, ensure that facilities are constructed to appropriate standards to maintain operations under these future conditions over the life of the project.

IM 4.3a: Adopt siting standards requiring new critical facilities to be located outside projected sea level rise inundation areas as shown on **Figure 10-8** or based on the most current projections adopted by the State of California or Bay Conservation and Development Commission.
Timeframe: Short-Term

4.4 Sea Level Rise in Capital Planning. Integrate sea level rise considerations into the planning of Capital Improvement Projects, including siting and design features to mitigate risk of damage or other harm.

4.5 Regional Sea Level Rise Coordination. Collaborate with OneShoreline to develop and regularly update standardized datasets for modeling sea level rise impacts at both regional and local scales that account for San Francisco Bay geomorphic features.

IM 4.5a. Participate in coordinated adaptation planning within the same Operational Landscape Unit as defined by the San Francisco Bay Shoreline Adaptation Atlas.
Timeframe: Long-Term

4.6 Subregional Shoreline Adaptation Plan Development. In coordination with OneShoreline and consistent with Bay Conservation and Development Commission guidelines, prepare a Subregional Shoreline Adaptation Plan that identifies nature-based solutions, infrastructure improvements, and policy strategies to address sea level rise impacts within the same Operational Landscape Unit as defined by the San Francisco Bay Shoreline Adaptation Atlas.

- 4.7 Private Building Sea Level Rise Protection.** Require new private development in areas vulnerable to sea level rise to elevate habitable areas above projected sea level rise elevations based on medium-high risk scenarios through 2100, or implement alternative flood-resistant design measures.
- 4.8 Existing Private Building Adaptation Assistance.** Support property owners in sea level rise vulnerable areas by facilitating access to technical and financial assistance programs for retrofitting existing buildings with flood-resistant measures, prioritizing low-income households and communities of concern.
- 4.9 Equitable Sea Level Rise Adaptation.** Prioritize sea level rise adaptation investments and resiliency programs in historically disadvantaged communities and areas with high concentrations of vulnerable populations, including renters, low-income households, and communities of color.
- 4.10 Anti-Displacement Protections.** Develop policies and programs to prevent displacement of residents in medium- to high-risk sea level rise scenarios by 2100 due to sea level rise impacts, including tenant protections, enforcement of relocation assistance requirements, and affordable housing preservation in safer areas.

IM 4.10a: Enforce the City’s tenant protection ordinance preventing no-fault evictions in areas subject to sea level rise adaptation projects.

Timeframe: Short-Term (Ongoing)

IM 4.10b: Provide rental assistance for residents displaced by sea level rise impacts or adaptation measures.

Timeframe: Medium-Term

Emergent Groundwater

Emergent groundwater is a consequence of sea level rise. As ocean levels rise, denser saltwater moves inland beneath the ground, pushing up the layer of less dense freshwater that floats above it. When this freshwater is forced upward to the ground surface, it creates flooding

from below—even in areas that appear protected from coastal flooding.

How It Affects East Palo Alto

Emergent groundwater poses unique challenges because it:

- Floods basements and underground infrastructure from below.
- Infiltrates storm drains, reducing their capacity during rain events.
- Destabilizes building foundations and underground pipes.
- Corrodes infrastructure not designed for saline water exposure.
- Spreads soil and groundwater contamination.
- Increases liquefaction risk during earthquakes.

As shown in **Figure 10-9** and **Figure 10-10**, emergent groundwater is projected to impact the majority of East Palo Alto under a high sea level rise scenario by 2050, with even further encroachment occurring by 2100. This includes all schools, community facilities, pump stations, and parks throughout the city. Groundwater is expected to rise at the same rate as sea levels. Though these maps show emergent groundwater areas factoring in sea level rise inundation, it is important to note that even if levees and shoreline barriers successfully protect against direct coastal flooding, emergent groundwater would still rise beneath the ground throughout most of the city.

Contamination Concerns

Of particular concern are the dozens of sites with current or past contamination shown on **Figure 10-9** and **Figure 10-10**. Many of these contaminated sites are in residential neighborhoods. As groundwater rises, it can seep into these toxic sites from below, spreading hazardous materials and pollutants far beyond the original contamination boundaries. This spread of hazardous materials and the increased risk of exposure to them could directly impact public health, especially in environmental justice communities. This is discussed further in the Hazardous Materials section.

Past and Current Conditions

While emergent groundwater has not yet caused widespread surface flooding in East Palo Alto, the city's naturally high water table means that many areas are already experiencing early impacts. Basements in low-lying areas occasionally experience water intrusion during wet winters, and some underground utilities show signs of corrosion from increasingly saline groundwater.

Future Projections

Groundwater emergence will worsen progressively with sea level rise:

- Areas with groundwater currently three to six feet below the surface are expected to begin experiencing groundwater emergence by 2050.
- By 2100, groundwater could emerge at the surface across most of the city during wet seasons.
- Storm drainage systems will lose capacity as groundwater infiltrates pipes.
- The interaction between emergent groundwater and stormwater will cause more severe inland flooding.

Unlike coastal flooding that can potentially be addressed with levees or seawalls, emergent groundwater cannot be easily blocked. It requires comprehensive solutions including improved drainage, building retrofits, and careful management of contaminated sites to protect public health and safety.

Goal SN-5. Safeguard residents and infrastructure from emergent groundwater hazards while preventing contamination mobilization in vulnerable communities.

Intent: To address the unique challenges posed by rising groundwater levels, including structural damage, infrastructure failure, and the mobilization of soil and groundwater contamination, with particular attention to environmental justice communities.

Policies:

- 5.1 Emergent Groundwater in Capital Planning.** Integrate emergent groundwater from sea level rise into the planning of Capital Improvement Projects.
- 5.2 Development Requirements in Emergent Groundwater Areas.** Encourage construction and substantial improvements in areas at risk of emergent groundwater to conduct geotechnical investigations that assess vulnerability to shallow groundwater rise and incorporate project measures to monitor and reduce impacts from buoyancy, seepage, infiltration, liquefaction, corrosion, and contaminant mobilization hazards.
- 5.3 Regional Groundwater Rise Planning.** Coordinate with OneShoreline and adjacent jurisdictions to establish detailed understanding of shallow groundwater rise effects on people, ecological assets, and the built environment. Incorporate regionally coordinated adaptation strategies for emergent groundwater into the City's General Plan, Capital Improvement Plan, and Municipal Code.
- 5.4 Geotechnical Assessment and Mitigation for Emergent Groundwater Areas.** Require new development or redevelopment in emergent groundwater areas, as identified on **Figure 10-9** and **Figure 10-10**, to assess the vulnerability to shallow groundwater rise through a geotechnical investigation and incorporate project measures to monitor and reduce seasonal and permanent impacts, including buoyancy, seepage, infiltration, liquefaction, corrosion, and contaminant mobilization hazards.
- 5.5 Contaminated Site Cleanup in Emergent Groundwater Areas.** Proactively coordinate with the San Mateo County Certified Unified Program Agency (CUPA), California Department of Toxic Substances Control, and State Water Resources Control Board to prioritize the cleanup and remediation of contaminated sites located in areas vulnerable to emergent groundwater, as shown on **Figure 10-9** and

Figure 10-9, where rising groundwater threatens to mobilize contaminants, with particular emphasis on protecting environmental justice communities and residential neighborhoods.

Fire Hazards

While East Palo Alto does not have designated wildfire hazard severity zones, the community faces risks from structural fires, as exemplified by the 1997 structural fire that resulted in 9 deaths. These fires can destroy buildings and infrastructure and endanger human lives due to faulty wiring, mechanical equipment failures, or combustible construction materials. Older buildings that lack modern fire safety features, including many of the city's soft-story multifamily buildings, face greater risk of damage from fires. Higher-density residential structures and industrial structures – both of which figure prominently in East Palo Alto – are at elevated fire risk.

In addition to the risk posed by structural fires, the State Fire Marshal has identified portions of the bay shoreline (outside city limits and populated areas) as having an elevated risk from grass fires. Local fire agencies have had a long-standing weed abatement program intended to minimize such risks. East Palo Alto may also be affected by fires elsewhere in the region, which may not directly threaten the community but could affect regional infrastructure used by community members, such as transportation networks and water systems.

Fire Protection Services

The Menlo Park Fire Protection District (MPFPD) provides a variety of life safety related services to the entirety of East Palo Alto. These services include fire prevention, inspection, and investigation, as well as firefighting, hazardous materials response, search-and-rescue, and paramedic services. MPFPD serves a 33 square mile service area comprising the cities of East Palo Alto, Menlo Park, Atherton, and portions of unincorporated San Mateo County. MPFPD operates a station (Station 2) within East Palo Alto at 2290 University Avenue. Station 2 staff responds to approximately 2,000 incidents annually, comprising about one-quarter of all of MPFPD's annual emergency responses. More than half of annual calls are medical emergencies.

Each of MPFPD's seven stations provides at least one heavy fire engine and is continuously staffed by at least three crew members.

MPFPD reconstructed Station 2 starting in 2012 as an essential service building, meaning that it is being reconstructed to be able to withstand and continue to operate throughout any type of major emergency.

While MPFPD is able to meet its response and service goals, ongoing and increasing traffic in the service area pose operational challenges, particularly along University Avenue in East Palo Alto and other nearby major routes like Willow Road and Marsh Road. In many circumstances, emergency responders must drive against the flow of traffic. The Belle Haven and east sides of East Palo Alto can be more challenging to access when traffic is congested.

Wildfire Smoke Impacts

While East Palo Alto is unlikely to experience major wildfires within its boundaries, the city is highly vulnerable to smoke from wildfires occurring throughout the region and state. Wildfire smoke contains complex mixtures of gases and fine particulate matter (PM_{2.5}) that penetrate deep into lung tissue and impact cardiovascular health. Limited air monitoring resources in the city have historically made it difficult to determine the scale of impacts and provide adequate warnings to residents.

The health risks from wildfire smoke are particularly severe for vulnerable populations, including:

- Children and older adults
- Individuals with pre-existing respiratory conditions like asthma
- People with cardiovascular conditions
- Low-income residents who may lack access to air filtration or cannot afford to stay indoors.

Past Events

While San Mateo County has experienced fires before, few of its fires have caused sufficient damage to trigger a State or federal disaster declaration. East Palo Alto has been affected by smoke from wildfires throughout the state and region.

The most significant recent impact was during the 2020 CZU Lightning Complex fires, which triggered 25 consecutive days of air quality alerts from the Bay Area Air District. During this period, East Palo Alto residents experienced hazardous air quality conditions that limited outdoor activities, exacerbated respiratory conditions, and disproportionately impacted vulnerable populations who could not access clean air facilities.

Future Conditions

Climate change is expected to increase both the frequency and severity of wildfires throughout California, leading to more frequent and prolonged periods of poor air quality from smoke. Warmer temperatures and altered precipitation patterns will extend the fire season year-round and create conditions for larger, more intense fires.

For East Palo Alto, this means:

- More frequent "Spare the Air" days restricting activities.
- Increased health impacts, particularly for environmental justice communities.
- Greater need for clean air facilities and home filtration systems.
- Economic impacts from reduced outdoor work and recreation opportunities.

The combination of existing local air pollution sources and increasing wildfire smoke creates cumulative impacts that threaten public health and quality of life, requiring comprehensive strategies to protect residents from poor air quality.

Goal SN-6. Reduce the risk of fire and wildfire hazards in the community.

Intent: To lessen the impacts of fire on City residents by decreasing likelihood of fire and improving response time.

Policies:

6.1 Response times. Continue to support Menlo Park Fire Protection District (MPFPD) in helping maintain adequate emergency response times. Work with MPFPD to identify choke points to help ensure

continuation of adequate emergency response in all of East Palo Alto.

6.2 Fuel reduction strategies. Continue to coordinate with the Mid-Peninsula Regional Open Space District, Caltrans, the Cities of Menlo Park, and Palo Alto, and other bayfront property owners to implement fuel reduction/weed abatement in areas of highest risk.

6.3 Fire-resilient critical services and facilities. Ensure that facilities are constructed to appropriate standards to maintain operations during and after disaster events.

6.4 Fire Safe San Mateo County. Continue to support Menlo Park Fire Protection District's participation in the Fire Safe San Mateo County program.

6.5 Fire Service Capabilities. Support the Menlo Park Fire Protection District in maintaining and enhancing fire service capabilities through proactive maintenance of fire equipment and training fire personnel.

6.6 Fire Safe Education. Support fire prevention and implement public education, early detection programs, and property inspections to identify and avoid fire hazards. Educate property owners and residents about fire safety risks associated with outdated electrical systems and provide information about upgrading wiring to meet current safety standards, ensuring public education is provided regularly and in multiple languages and formats to reach all residents.

IM 6.6a: Collaborate with local and regional fire safe councils, CAL FIRE Santa Clara Unit, and other fire protection agencies to develop a fire safe education program to provide information about State fuel modification, defensible space, access, water, signage, and other fire safe regulations.

Timeframe: Medium-Term

6.7 Emergency Services Training. Support programs for ongoing staff training focused on understanding risks posed by older structures and infrastructure, as well as risk-reduction activities.

6.8 Adequate Water Supply. Maintain and enhance water supply infrastructure to ensure adequate supplies for existing and future daily demands and firefighting suppression requirements.

Air Quality and Public Health

Air quality is a significant concern for East Palo Alto, with asthma-related emergency visit rates for children almost twice the average of the rest of the County. Poor air quality poses significant health risks, including respiratory and cardiovascular illness, with East Palo Alto's frontline populations experiencing some of the highest air pollution levels in San Mateo County. The health risks associated with wildfire smoke are particularly severe for frontline populations, including children, older adults, individuals with pre-existing respiratory or cardiovascular conditions, and low-resourced residents, who may experience more severe acute and chronic health effects.

Air pollutants in East Palo Alto come from multiple sources, including mobile sources such as cars and trucks, stationary sources like factories and other industrial sites, dust from construction sites, smoke from wildfires, and other regional sources. The financial burden of poor air quality in the Bay Area is estimated at \$32 billion annually, which includes costs associated with premature deaths, healthcare expenses, reduced productivity, and other related issues.

Human Health Hazards and Vector-Borne Disease

Human health hazards, including bacteria, viruses, parasites, and other pathogens, pose significant concerns in East Palo Alto. These conditions can result in physical injuries, fatalities, and mental health issues, and they exacerbate pre-existing conditions like asthma and allergies. Rats, mice, ticks, and mosquitoes are common vectors that often spread the pathogens that can cause illness. Mosquitoes may breed in standing water in gardens and yards, storm drains and underground pipes, and even in saltwater marshes. Mosquitoes can spread diseases through their bites, including West Nile virus. Ticks can also

spread diseases through their bites. According to testing conducted by the San Mateo County Mosquito and Vector Control District, approximately 1 to 3 percent of San Mateo ticks carry the agent for Lyme disease.

Healthcare Access and Vulnerable Populations

East Palo Alto has limited healthcare providers, which can limit access to healthcare and exacerbate disparities in healthcare quality and access. According to the US Census Bureau and San Mateo County Health, almost 10 percent of people in East Palo Alto live with a disability, compared to approximately 7 percent in the total of San Mateo County. Nearly 17 percent East Palo Alto's population has asthma and 11 percent have diabetes, while those numbers are 15 percent and 10 percent, respectively, in San Mateo County. During community-wide health emergencies, the demand for health services can rise significantly, often surpassing the available staff and resources. Many residents already face systemic barriers to healthcare, such as limited medical facilities in the city and challenges related to affordability and transportation to these facilities. When hazards like extreme heat or infectious disease outbreaks push these resources beyond capacity, marginalized communities are disproportionately affected. Persons with chronic illnesses or disabilities experience increased sensitivity to the health effects of heat and poor air quality. They may also face barriers such as limited mobility, dependence on assistive equipment or caregivers, inaccessible communication methods, and a lack of transportation or medically appropriate shelters—making it more difficult to receive emergency alerts, evacuate safely, or access support resources.

Past Health Events and Regional Response

San Mateo County, like the rest of the United States, was included in the March 2020 FEMA major disaster declaration for the COVID-19 coronavirus pandemic. As of winter 2023, the county has reported a total of 184,001 COVID-19 cases and 912 deaths since monitoring began in January 2020. As recently as 2019, a major mosquito problem was reported by approximately 50 East Palo Alto residents and may have affected significantly more residents. While West Nile virus is the main mosquito-borne disease of concern in the area, San Mateo County has rarely had West Nile virus cases in the past two decades, and those that have occurred were acquired

outside of the county. San Mateo County Health received confirmation in April 2016 that the first San Mateo County resident tested positive for Zika virus, with 13 cases reported in the county in 2016.

The Bay Area Air District has played a key role in monitoring and improving air quality throughout the region, resulting in notable progress even as population, traffic, and industrial activities have grown. The Air District operates several programs to reduce air pollution, including the Spare the Air Program, which issues alerts on days when air quality is expected to be poor due to high levels of ozone or particulate matter. On Spare the Air days, residents are encouraged to limit activities that contribute to air pollution, such as driving, using gas-powered equipment, or wood burning. Employers with 50 or more full-time employees in the Bay Area are required to provide Commuter Benefits Programs to encourage the use of alternative modes of transportation.

Regional Health Management and Response

San Mateo County Health provides health services, including vaccination clinics, disease testing, and emergency response support, to residents throughout the county. The San Mateo County Mosquito and Vector Control District operates as the county's community-based mosquito control program, using surveillance, prevention, and control methods to help control the risk of disease. Contact tracing is used as a public health practice to identify and notify people who have been exposed to someone with an infectious disease, particularly important during pandemic events. The Health Alert Network serves as the Centers for Disease Control and Prevention's (CDC's) primary method of sharing urgent public health information with public health practitioners, clinicians, and laboratories throughout the region.

Future Conditions

Climate change is expected to significantly affect the frequency and severity of future poor air quality events and human health hazards in East Palo Alto. Warmer temperatures will continue to increase ozone formation and extend allergen seasons, while more frequent and intense wildfires across Northern California will create repeated episodes of hazardous air quality from smoke exposure. Rising temperatures and changing precipitation

patterns will promote the proliferation of disease-carrying vectors, expanding their geographic range and increasing the transmission of vector-borne diseases. Proactive public health measures, enhanced regional coordination, and expanded access to clean air facilities and healthcare services will become increasingly critical to protect East Palo Alto residents from these evolving health threats.

Goal SN-7. Ensure clean air and protect public health through regional collaboration, equitable planning, and sustainable development.

Intent: To protect public health and improve air quality through strategies that reduce exposure to air pollution and promote cleaner environments for all residents.

Policies:

- 7.1 Regional Collaboration for Air Quality Management.** Continue to collaborate with Bay Area Air District and surrounding jurisdictions to address regional air quality impacts, implement coordinated response strategies, and support regional programs that improve indoor and outdoor air quality, including clean air filtration initiatives for vulnerable populations.
- 7.2 Compliance with Air District Standards for New Development.** Exceed compliance with Bay Area Air District requirements for new development, including health risk assessments, air filtration systems, setback requirements, construction and operation standards, and indoor air quality measures that protect residents from exposure to poor air quality.
- 7.3 Building Standards to Safeguard Against Poor Air Quality.** Exceed development and building standards and site design features that protect residents from exposure to poor air quality, including wildfire smoke, and traffic-related pollution, with enhanced protection measures for residential areas near freeways and other high-pollution corridors.

IM 7.3a: Require new buildings housing sensitive receptors adjacent to Highway 101 and other major roadways, consistent with Bay Area Air District standards, to incorporate mechanical ventilation systems with a filter with a Minimum Efficiency Reporting Value rating of 13 (MERV 13) or higher, capable of capturing at least 90 percent of medium and large-size particles.

Timeframe: Short-Term

IM 7.3b: Require adequate ventilation systems and indoor air quality testing for new multifamily residential developments.

Timeframe: Short-Term

7.4 Air Quality Planning for Capital Improvement Projects. Integrate air quality considerations into the planning of Capital Improvement Projects, with emphasis on reducing exposure for environmental justice communities and other vulnerable populations.

7.5 Funding for Clean Air Facilities. Support and apply for funding for clean air facilities that provide refuge during poor air quality and extreme heat events. This includes maintaining the existing permanent clean air facilities, incorporating air filtration systems in new and renovated resilience centers, supporting comparable private facilities, and prioritizing locations accessible to transit-dependent and vulnerable populations.

IM 7.5a: Apply for State and federal grants to support clean air facility operations and maintenance, including Air District Community Health Protection Program funding.

Timeframe: Short-Term (Ongoing)

IM 7.5b: Establish partnerships with schools, libraries, and community centers to create additional clean air refuge locations accessible to vulnerable populations.

Timeframe: Short-Term (Ongoing)

7.6 Expanding Access to Clean Air Filtration for Vulnerable Communities. Expand participation in the Air District’s Clean Air Filtration Program by supporting and providing residential filter installation and maintenance.

IM 7.6a: Partner with community-based organizations for program implementation, prioritizing environmental justice communities and vulnerable populations.

Timeframe: Short-Term (Ongoing)

7.7 Prioritizing Air Quality Protection for Vulnerable Populations. Prioritize the protection of vulnerable populations from adverse air quality impacts through appropriate land use decisions and development standards.

7.8 Promoting Low-Cost Transit on Spare the Air Days. Coordinate with San Mateo County Transit District to provide free or reduced-cost public transportation during Spare the Air days to reduce vehicle emissions.

7.9 Collaborative Planning for Vector-Borne Disease Prevention. Engage with the San Mateo County Mosquito and Vector Control District, as well as San Mateo County Health to prepare for increased episodes of vector-borne diseases in East Palo Alto and the surrounding area.

7.10 Community Partnerships for Equitable Healthcare Access. Work with local community-based organizations to improve access to healthcare, preventive services, and address health inequities throughout the community.

IM 7.10a: Require adequate ventilation systems and indoor air quality testing for all multifamily residential housing.

Timeframe: Short-Term

7.11 Urban Greening Priority. Prioritize tree planting and urban greening initiatives in areas with high pollution exposure and inadequate tree canopy coverage.

Severe Weather

Severe weather in East Palo Alto includes intense storms that bring heavy rain, high winds, and thunderstorms. These events pose significant threats by disrupting daily life, compromising public safety, and damaging infrastructure throughout the community. According to the East Palo Alto Vulnerability Assessment, severe weather events particularly threaten:

- Low-resourced households lacking reliable transportation for evacuations or financial means to leave.
- Older adults who face mobility challenges during evacuations and power outages affecting medical equipment.
- People with chronic illnesses who are more susceptible to temperature fluctuations and stress.
- Residents of mobile homes due to structural vulnerabilities of older manufactured housing.

Types of Severe Weather

The most common severe weather events affecting East Palo Alto are heavy rain events often associated with atmospheric rivers, windstorms, and occasional thunderstorms. Atmospheric rivers are long, narrow bands of moisture in the atmosphere that transport water vapor from the tropics. When these systems make landfall, they can release intense precipitation causing flooding and related hazards. While these storms provide critical water supply for California, they also create significant risks for low-lying communities like East Palo Alto.

Windstorms involving gusts exceeding 50-60 miles per hour occur throughout the year and can cause extensive damage. High winds topple trees and power lines, damage buildings, and create hazardous conditions. During wet winters, saturated soils make trees particularly vulnerable to uprooting, while dry conditions can lead to increased fire risk from downed power lines. Thunderstorms, while less common in the Bay Area, can produce lightning strikes, heavy rain, and damaging winds.

Past Events

East Palo Alto has experienced numerous severe weather events that have caused significant damage and disruption. Major events include:

- Severe winter storms in February 1998, which brought heavy flooding that forced the evacuation of hundreds of residents, damaged millions of dollars of property, and closed major roads throughout the city. This event triggered a federal disaster declaration.
- In October 2009, a severe windstorm caused widespread damage across San Mateo County, knocking down 47 trees and 31 sets of power lines. Approximately 58,000 county residents lost power, with damages reaching \$13 million.
- A series of atmospheric river storms in December 2012, which caused severe flooding in East Palo Alto, triggering a levee breach between Verbena Drive and Daphne Way that forced evacuations and left one home uninhabitable.
- Most recently, severe storms from December 2022 through March 2023 brought flooding along San Francisquito Creek, damaged property and buildings, flooded Highway 101, and caused widespread power outages. Downed power lines forced closures of University Avenue and Cooley Avenue.

Secondary Impacts

Severe weather creates cascading impacts beyond immediate wind and water damage. Power outages from downed lines can last for days, affecting vulnerable populations who rely on electricity for medical equipment or lack resources to replace spoiled food. Storm debris blocks roads and hinders emergency response. Saturated soils increase the risk of infrastructure damage and tree failures long after storms pass.

Public Safety Power Shutoff (PSPS) events, while not weather events themselves, compound severe weather impacts. Pacific Gas and Electric Company (PG&E) may preemptively cut power during high wind conditions to prevent wildfire ignitions, leaving residents without electricity during critical times.

Future Conditions

Climate change is expected to intensify severe weather patterns affecting East Palo Alto. While annual average precipitation levels may increase only slightly, the nature of storms will change dramatically. Atmospheric rivers are projected to become more intense, delivering larger amounts of precipitation in shorter timeframes. This pattern of fewer but more extreme storms will increase flood risk, overwhelm drainage systems, and create longer dry periods between events that harden soils and worsen subsequent flooding. The combination of more intense storms and aging infrastructure poses growing challenges for community safety and resilience.

Goal SN-8. Enhance community resilience to severe weather events through improved infrastructure, emergency preparedness, and coordinated response capabilities.

Intent: To protect residents and property from atmospheric rivers, windstorms, and other severe weather events that can cause flooding, power outages, and infrastructure damage, while ensuring vulnerable populations have adequate support during and after events.

Policies:

8.1 Severe Weather Infrastructure Resilience.

Implement proactive infrastructure hardening measures to withstand atmospheric rivers, windstorms, and severe precipitation events, including upgrades to stormwater systems, strengthening of critical utility infrastructure, and installation of backup power systems at essential facilities to maintain operations during extended outages.

8.2 Severe Weather Early Warning and Response.

Enhance community alert systems specifically for severe weather events, including atmospheric rivers and windstorms, with multilingual and multi-format communications that provide actionable guidance for residents. Coordinate with Pacific Gas and

Electric Company regarding Public Safety Power Shutoff events to ensure vulnerable populations receive advance notice and resource support.

8.3 Post-Storm Recovery and Debris Management.

Establish rapid response protocols for post-storm recovery that prioritize clearing of evacuation routes and restoration of services to critical facilities. Develop pre-positioned contracts for debris removal and infrastructure repair to reduce recovery time, particularly in areas serving vulnerable populations identified in the vulnerability assessment.

8.4 Private Property Severe Weather Resilience.

Support property owners in implementing severe weather protection measures for homes and businesses, with priority assistance for vulnerable populations and essential local businesses.

IM 8.4a: Develop design guidelines for residential severe weather protection as part of emergency preparedness, including roof tie-downs, storm shutters, and landscaping practices to minimize wind damage.

Timeframe: Medium-Term

IM 8.4b: Partner with local non-profits to explore assisting property owners with tree management, such as free or low-cost tree trimming and removal services for hazardous trees on private property that threaten public safety, where feasible.

Timeframe: Medium-Term

8.5 Utility Resilience and Backup Power Support. Work

with the Pacific Gas and Electric Company to enhance community resilience to power outages through improved utility coordination and expanded access to backup power systems.

IM 8.5a: Develop and implement proactive protocols for Public Safety Power Shutoff (PSPS) events, including advance community notification and outreach in multiple languages, prepositioning of backup batteries and mobile power units at critical facilities and resilience centers, deployment of temporary cooling and charging stations, and coordination with vulnerable populations to ensure

access to medical equipment and life-sustaining resources during planned outages.

Timeframe: Short-Term

Extreme Heat

Extreme heat threatens public health, infrastructure, and the environment in East Palo Alto. Extreme heat days are when temperatures exceed 98 percent of historical highs for the area, as measured between April and October from 1961 to 1990. In East Palo Alto, an extreme heat day is one where the maximum temperature is above 92.4 degrees Fahrenheit. Extended periods of extreme heat, known as heat waves, threaten community health and increase energy costs. When daily minimum temperatures remain significantly above normal, warm nights can worsen an extreme heat day because overnight temperatures do not provide the community with relief from high temperatures. A warm night in East Palo Alto is when temperatures remain above 60.9 degrees Fahrenheit.

CalHeatScore: A Local Heat-Risk Tool

CalHeatScore is California’s new statewide tool for identifying and communicating heat-health risks at the ZIP-code level. Developed by CalEPA and partners, the system uses a 0–4 scale to rate daily heat risk based on forecasted temperatures, historical health data, and community vulnerability. A score of 4 indicates severe health risk—more than double the typical rate of heat-related illness. This tool helps residents, local governments, and emergency planners better understand, prepare for, and respond to extreme heat events. Visit calheatscore.calepa.ca.gov for real-time local scores and safety resources.

Extreme heat is one of the deadliest climate-related hazards nationwide, with the Center for Disease Control and Prevention noting a rise in heat-related deaths from 297 in 2004 to over 2,300 in 2023. Extreme heat can be particularly dangerous in places like East Palo Alto, where a typically mild climate means that community members are unaccustomed to very high temperatures and may be less able to adapt. Even slight increases in temperature can overwhelm the ability of community members to cope with extreme heat and warm nights, straining public health systems and infrastructure. This leads to heightened risks

of dehydration, heat-related illnesses, and respiratory issues, disrupting daily life and economic activity. Extreme heat also stresses infrastructure, as heightened air conditioning demand risks overloading the power grid and causing outages, and very high heat can degrade transportation systems leading to delays and damage.

Extreme heat poses particularly severe risks for vulnerable populations, including:

- Older adults with chronic health conditions like heart disease, diabetes, and respiratory issues.
- Low-resourced households who may lack air conditioning or cannot afford higher energy costs.
- People with disabilities who depend on electricity for medical devices or medication storage.
- Residents of mobile homes lacking adequate ventilation systems.
- Outdoor workers in landscaping, construction, and other industries.

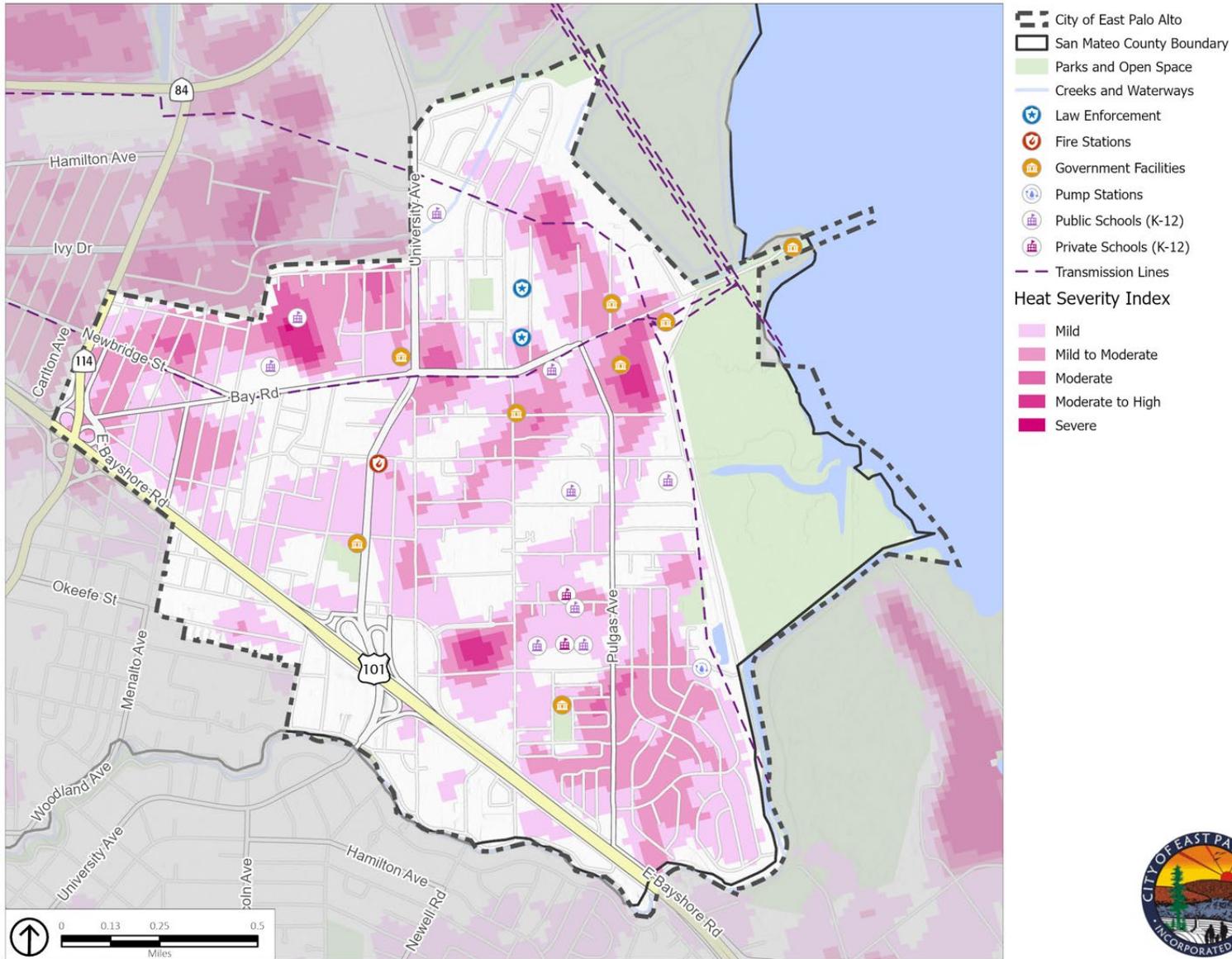
Figure 10-11 shows the areas of East Palo Alto that may experience higher temperatures on extreme heat days due to limited shade cover and presence of heat-absorbing materials. Areas most at risk include the neighborhood surrounding Cesar Chavez Ravenswood Middle School, the Gateway 101 Shopping Mall, and the commercial/industrial center along Bay Road towards Cooley Landing. Warmer temperatures and the urban heat island effect can exacerbate extreme heat impacts in densely populated areas, especially those that have limited tree canopy.

Past Events

Historically, East Palo Alto has experienced an average of five extreme heat days per year, with extreme heat days being most frequent in September in recent years. The city has recorded several notable extreme heat events that have impacted the community:

- **July 22, 2006:** High temperatures reached 103 degrees Fahrenheit with nighttime lows only falling into the lower 70s.

Figure 10-11: Heat Severity Index



Source: ESRI, 2023; County of San Mateo, 2023; PlaceWorks, 2023; ; The Trust for Public Land, 2019

- **September 1, 2017:** A strong upper-level ridge brought widespread hot temperatures, breaking numerous daily and monthly records, with three San Mateo County residents dying from heat-related causes.
- **June 10, 2019:** An early season heat wave triggered power outages affecting 57,000 people across nine counties, including San Mateo County, over two days.
- **August 19, 2020:** A prolonged heat wave lasting almost a week brought widespread record-breaking temperatures with multiple days of triple-digit afternoon highs.
- **September 6, 2022:** A strong ridge of high pressure led to anomalously hot temperatures, shattering several daily, monthly, and all-time temperature records, with reports of power outages, heat-related illnesses, and deaths.

Urban Heat Island Effect

The **Urban Heat Island Effect** occurs when urban areas experience significantly warmer temperatures than surrounding rural areas. This happens because concrete, asphalt, and buildings absorb and retain heat more than natural landscapes. Urban areas can be 2-5°F warmer during the day and up to 22°F warmer at night compared to nearby rural areas. Areas with limited tree cover and green space experience the most intense heat island effects.

Future Conditions

Climate change is expected to significantly increase the frequency and intensity of extreme heat events in East Palo Alto. Extreme heat days are expected to increase from a historic annual average of 5 days per year to an average of 14 days per year by mid-century (2035-2064) and 25 days per year by late century (2070-2099). Warm nights are projected to increase dramatically from a historic 5 nights per year to 39 nights per year by mid-century and 100 nights per year by late century. These projections indicate that extreme heat will become a much more frequent and persistent threat to the East Palo Alto community, with warm nights preventing nighttime recovery from daytime heat exposure.

Goal SN-9. Enhance community resilience to extreme heat.

Intent: To lessen the impacts of extreme heat on City residents and property.

Policies:

9.1 Drought-Tolerant Green Infrastructure. Promote the use of drought-tolerant green infrastructure, including landscaped areas, as part of cooling strategies in public and private spaces. Prioritize installation of green infrastructure and trees in areas most vulnerable to heat.

IM 9.1a: Implement and maintain green infrastructure requirements for all feasible public and private projects in accordance with the City’s Green Infrastructure Plan, emphasizing the use of drought-tolerant vegetation, low-impact development practices, and design strategies that enhance cooling, stormwater management, and climate resilience.

Timeframe: Short-Term

9.2 Urban Tree Canopy. Expand the urban tree canopy to reduce extreme heat impacts and support carbon sequestration, while proactively managing and maintaining the urban forest to increase tree resilience and reduce the risk of downed trees during severe weather.

9.3 Urban Tree Planting. Expand urban tree-planting programs in areas with high pedestrian activity and in neighborhoods with low tree canopy coverage and high exposure to urban heat island effects. Ensure community participation in the selection of tree species and planting locations to address local needs.

9.4 Installation of Shade Structures and Trees. Install shade structures and trees, both green and built infrastructure, at parks, schools, along public streets, walkways, and trails, and at other public spaces to reduce ground surface temperatures.

IM 9.4a: Coordinate with SamTrans to install shade structures at all City bus stops within areas scoring "Moderate" to "Severe" on Heat Severity Index by 2028.

Timeframe: Medium-Term

- 9.5 Sustainable, Energy-Efficient, and Environmentally Regenerative Features.** Encourage new developments and existing property owners to incorporate sustainable, energy-efficient, and environmentally regenerative features into their facilities, landscapes, and structures to reduce energy demands and improve on-site resilience. Include support for emergency power supplies, including solar panels and battery energy storage systems. Support financing efforts to increase community access to these features.

IM 9.5a: Explore expediting the permitting process for heat mitigation improvements including solar energy installations, cool roofs, and energy-efficient cooling systems.

Timeframe: Medium-Term

- 9.6 Sustainable Features for Rental Properties.** Create incentive programs and requirements for rental property owners to incorporate sustainable, energy-efficient cooling features to protect tenants during extreme heat events. Support financing efforts to increase property owner and tenant access to these features.

- 9.7 Extreme Heat Public Outreach.** Develop and implement public outreach campaigns to educate residents about the risks of extreme heat, effective heat-mitigation strategies, and available resources during heat events, as well as providing updates on City initiatives in progress. Ensure campaigns are multilingual, multimodal, and iterative to reach all community members.

- 9.8 Shading and Heat-Mitigating Materials.** Coordinate with SamTrans to increase shading and use of heat-mitigating materials at transit stops.

- 9.9 Rental Housing Climate Controls.** Encourage landlords to meet minimum cooling needs for rental housing to protect tenant health during extreme heat events, including providing adequate cooling systems.

- 9.10 Home Weatherization and Retrofit Programs.** Conduct focused outreach to raise awareness about home weatherization and retrofit programs, including available financial incentives, in low-income neighborhoods and households with limited English proficiency.

- 9.11 Extreme Heat Emergency Response.** Develop comprehensive emergency response protocols for extreme heat events to protect public health and ensure coordinated community support consistent with AB 2684 requirements.

IM 9.11a: Create mobile cooling unit program to serve residents unable to access fixed cooling centers, prioritizing households with medical vulnerabilities.

Timeframe: Medium-Term

IM 9.11b: Collaborate with neighboring jurisdictions on development and implementation of a regional extreme heat response plan. The plan will include the creation of equitably distributed and accessible community cooling centers, weatherization of public buildings to enhance heat resilience, temperature thresholds for activating cooling centers, and targeted cooling strategies to protect outdoor workers and individuals experiencing homelessness.

Timeframe: Short-Term

Drought

Drought is a significant decrease in water supply relative to what is needed to meet typical demand, leading to a water shortage for some activity, group, or environmental sector. While drought is a normal occurrence for Mediterranean climates such as that of San Mateo County, long and severe droughts have the potential to impact ecosystems and economic activity across the entire community. Most droughts are defined based on declines in average precipitation levels, declines in agricultural production, declines in streamflow and groundwater levels, or

socioeconomic impacts from water shortages. The severity of any given drought depends on the degree of moisture deficiency, the duration, and the size and location of the affected area.

Drought Hazards

While drought does not typically directly result in loss of life or damage to structures, drought can have widespread impacts on the environment and the economy. Potential drought impacts include loss of crops, costs incurred by having to drill new wells, increased costs for water straining household finances and reducing commercial profits, reduced habitat and food supply for plants and animals, and increased risk of wildfire. A prolonged lack of precipitation dries out vegetation and makes plants more vulnerable to pests, both of which can increase susceptibility to wildfires. Drought conditions especially burden:

- Low-resourced households who face water affordability concerns and cannot afford water-efficient appliances.
- Food-insecure residents who may see increased food prices due to agricultural impacts.
- Community gardens and local food programs that support vulnerable populations.
- Residents who are dependent on community-based food distribution programs.
- Households already struggling with utility costs who face additional conservation pricing.

Drought response is determined case by case, and response priorities are typically based on imminence of potential water shortages.

In East Palo Alto, a history of regulatory decisions and limited infrastructure have constrained the City's water supply and exacerbated drought conditions. Despite the city's low per-capita water consumption, the city's water demand exceeded its available supply several times since 2001 due to limited water allocations from the SFPUC Regional Water System that did not keep pace with population growth. Due to the inability of its water allocations to support new development, the City issued a two-year moratorium on new construction in 2016 and did

East Palo Alto's Water Supply

The City of East Palo Alto purchases most of its potable water from the San Francisco Public Utilities Commission (SFPUC) Regional Water System. Approximately 85 percent of the water supply to the SFPUC system originates in the Hetch Hetchy watershed in Yosemite National Park and flows down the Tuolumne River. The remaining 15 percent of the water supply originates locally in the Alameda and Peninsula watersheds. The City also sources a small amount of groundwater from the San Mateo Plain groundwater subbasin, which is part of the Santa Clara Valley Groundwater Basin.

not allow new developments to progress unless developers could show that they had access to the necessary water. The City ultimately pursued two strategies for expanding its water supply: seeking more water from the SFPUC system and developing groundwater supplies, including water transfers with neighboring jurisdictions and expanding operations at the Gloria Well. These efforts have helped to fortify the City's water supply; however, East Palo Alto still faces water supply and quality challenges that are being addressed through current countywide drought resiliency planning efforts.

Past Events

San Mateo County has a history of severe droughts, with data from the early 1900s showing multi-year droughts from 1912 to 1913, 1918 to 1920, 1922 to 1924, and 1928 to 1934. More recent prolonged droughts that have impacted the planning area include:

- **1976 to 1977:** California had a severe drought due to lack of rainfall, with 1977 being the driest period on record in California at that time. Over \$2.6 billion in crop damage was recorded in 31 counties, and FEMA declared a drought emergency for all California counties.
- **1987 to 1992:** California received precipitation well below average levels for four consecutive years. By February 1991, all 58 counties in California were experiencing drought, with the State Water Project sharply decreasing deliveries to water suppliers.

- **2007 to 2009:** The state proclaimed a statewide drought emergency in June 2008 after spring 2008 was the driest spring on record. State courts imposed what was, at the time, the largest court-ordered water restriction in state history.
- **2012 to 2017:** This drought set several records for the state, with 2012 to 2014 ranking as the driest three consecutive years for statewide precipitation. Calendar year 2014 set new records for statewide average temperatures and for low water allocations from the State Water Project.
- **2020 to 2023:** The U.S. Department of Agriculture declared a drought disaster that included San Mateo County in April 2020. Between April and December 2021, San Mateo County was at the D3—Extreme Drought level, putting the county at risk for wildfire on a year-round basis.

Future Conditions

Climate change is likely to result in more frequent and severe droughts across the state. Overall, precipitation levels are expected to increase slightly in East Palo Alto, from a historical annual average of 16.3 to 17.9 inches by mid-century (2035 to 2064) and 19.9 inches by late-century (2070 to 2099). However, more years with extreme levels of precipitation, both high and low, are likely as a result of climate change. Reduced winter precipitation levels and warmer temperatures have greatly decreased the size of the Sierra Nevada snowpack, which in turn makes less fresh water available for communities throughout California. More intense droughts are expected to compact and harden soils, so when rain does return, more water will run off as stormwater rather than infiltrate into soils, potentially causing downstream flooding while reducing groundwater recharge.

Goal SN-10. Ensure water security and community resilience during drought conditions through conservation, efficiency measures, and sustainable water management practices.

Intent: To maintain adequate water supplies for residential, commercial, and emergency needs during drought periods while promoting conservation practices that reduce long-term vulnerability to water shortages.

Policies:

- 10.1 Drought-Tolerant Landscaping Standards.** Ensure drought-tolerant landscaping for new development complies with state Water Efficient Landscape Ordinance standards while ensuring landscaping choices do not create wildfire or flooding risks.
- 10.2 Public Right-of-Way Rainwater Harvesting.** Install rainwater catchment and bioretention systems in public rights-of-way to support groundwater recharge and drought resilience.
- 10.3 Municipal Landscape Drought Adaptation.** Retrofit City-owned landscapes, parks, and facilities with drought-resistant and native plant species.
- IM-10.3a Smart Irrigation and Alternative Water Use.** Install smart irrigation controllers in retrofitted areas and utilize recycled water, graywater, or captured rainwater where irrigation remains necessary.
Timeframe: Medium-Term
- 10.4 Community Water Stewardship Education.** Provide comprehensive multilingual education programs that teach residents advanced water conservation practices and drought preparedness strategies.
- 10.5 Alternative Water Systems Development.** Promote development and use of greywater, recycled water, and other alternative water systems to reduce dependence on potable water supplies.

IM 10.5a: Update building code to streamline permitting for residential graywater and rainwater harvesting systems.

Timeframe: Medium-Term

Transportation Hazards

Airport Operations

Safety risks associated with airport operations comprise a distinct hazards category. Lands surrounding or near an airport have an increased risk of experiencing accidents involving aircraft.

The Palo Alto Airport is a general aviation facility located just south of East Palo Alto. The airport is owned and operated by the City of Palo Alto. Santa Clara County managed the airport until 2017, when the City of Palo Alto assumed operations following the end of a 50-year lease. Airport and land use compatibility issues are overseen by the Santa Clara County Airport-Land Use Commission.

As shown in **Figure 10-12**, the northern edge of the airport's runway is immediately adjacent to San Francisquito Creek, which in this location serves as both City and County boundary. The County has prepared a comprehensive land use plan (CLUP), last amended in 2020, for the Palo Alto Airport, which identifies zones around the airport where land use and building height restrictions are needed to guard against potential conflicts with airport operations.

California law (Government Code 65302.3) requires that a local general plan be consistent with the applicable airport land/use plan compatibility criteria in the relevant adopted airport land use plan.

The Palo Alto Airport land use plan identifies building height restrictions (pursuant to Federal Aviation Regulations part 77) to ensure no obstructions to air navigation are created. A portion of the height restriction zone extends into the Baylands area of East Palo Alto which is commonly known as the Faber-Laumeister Tract and is part of the Don Edwards San Francisco Bay National Wildlife Refuge (Refuge). The Baylands are the only portion of East Palo Alto within the Palo Alto Airport Influence Area (AIA). This General Plan maintains the refuge in open space use. The open space designation is focused on maintaining and preserving open space and other public recreational

uses. The General Plan proposes no new residential or commercial development in the Baylands area. Given the open space designation, there would be no navigation obstruction.

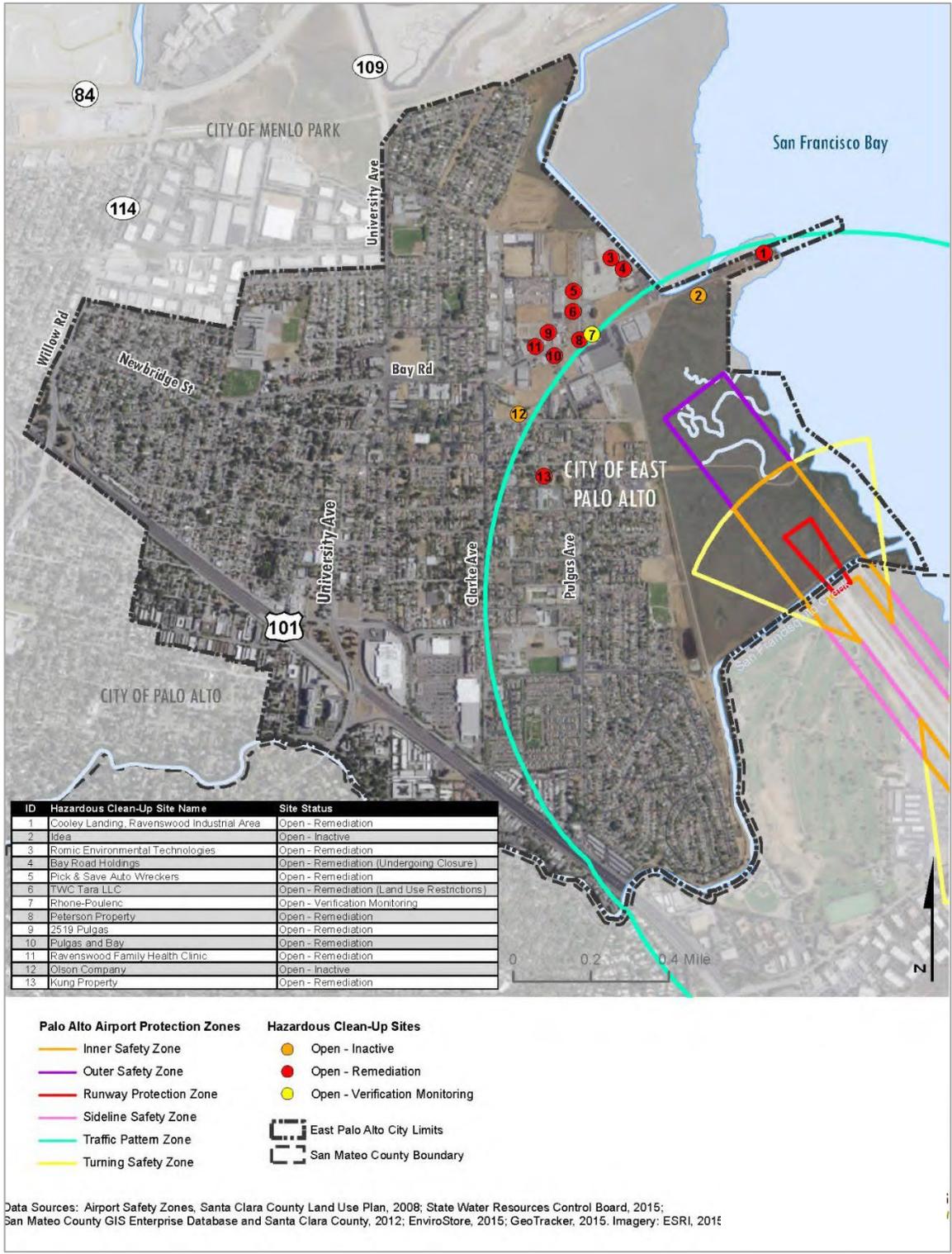
The Palo Alto Airport is one of the busiest general aviation airports in the Bay Area. Over the past decade, the airport has averaged approximately 155,000 operations (takeoffs and landings) annually. Recent projections indicate operations may climb toward 200,000 annually within 15 years. As of 2024, approximately 353 aircraft lease space at the airport.

The City of Palo Alto recently started a long-term planning process to determine necessary improvements over the next 20 years to ensure pilot safety and address sea level rise impacts on the Baylands environment. This process explored options for extending the airport's 2,443-foot runway to meet Federal Aviation Administration guidelines recommending a runway length of 3,500 feet. However, in September 2024, the Palo Alto City Council paused this planning effort following substantial community opposition.

The airport serves important community functions, including as the main refueling location for life flight helicopters serving Stanford Medical Center and as a destination for Angel Flight aircraft bringing patients to Palo Alto for medical care.

The frequency and severity of future airport hazards in East Palo Alto will depend on the scale of future activities. Given projections for increased operations, along with ongoing regional aviation growth, monitoring and coordination with airport operators and regional planning agencies will remain important for managing potential impacts on East Palo Alto.

Figure 10-12: Airport Safety Zones and Hazardous Sites



Surface Transportation/Pedestrian

Surface transportation, such as cars and trucks, also poses risks to the safety and well-being of people. East Palo Alto has historically experienced high rates of vehicle collisions with pedestrians and bicyclists, particularly among major arterials such as University Avenue and at key intersections.

Between 2018 and 2022, East Palo Alto reported 458 fatal and injury crashes on surface streets (at-grade roadways), including 48 fatal/severe injury crashes. Pedestrians were involved in 27 percent of fatal/severe injury crashes and 12 percent of all crashes. Bicyclists were involved in 21 percent of fatal/severe injury crashes and 16 percent of all crashes. The City's 2024 Local Roadway Safety Plan identifies University Avenue as a high-priority corridor, with multiple intersections along University Avenue ranking among the top locations for safety improvements due to documented collision patterns.

The City has made significant improvements in recent years. The 2025 University Avenue Safety Enhancements Project has a goal of reducing collisions at four high-priority intersections along University Avenue, identified through a community-wide safety analysis. The project includes improved pedestrian crossings, upgraded signal equipment for visibility, and protected left-turn phases to separate conflicting vehicle movements. In 2025, the City also opened a pedestrian overcrossing at University Avenue and Highway 101, addressing a documented hazard area where 26 bicycle collisions occurred within one block between January 2024 and June 2025.

While these improvements are expected to reduce collisions, pedestrian and bicycle safety remains a priority concern. This is particularly true given that East Palo Alto is a major commuter corridor due to its proximity to Highway 84 (Dumbarton Bridge) and the concentration of residential neighborhoods near major arterials.

Goal SN-11. Protect the community from public safety hazards related to aircraft and surface transportation.

Intent: To help City residents avoid human-made hazards and maintain lives of maximum security and freedom from harm.

Policies:

11.1 Transportation safety. Minimize transportation accidents by considering pedestrian safety in all land use planning decisions and working closely with CHP, Caltrans, SamTrans, and other relevant agencies to identify safety problems and implement corrective measures.

IM 11.1a: Implement safety improvements identified in the 2024 Local Roadway Safety Plan and coordinate with regional partners, including the City/County Association of Governments of San Mateo County (C/CAG) and the San Mateo County Transportation Authority, to pursue Highway Safety Improvement Program (HSIP) funding and other safety grant opportunities.

Timeframe: Short-Term/Ongoing

11.2 Airport land use plan. Coordinate with the Santa Clara County Airport Land Use Commission and Palo Alto Airport Comprehensive Land Use Plan (CLUP) and consider the CLUP in making any land use decisions in the airport influence area.

11.3 Traffic Safety Infrastructure Maintenance. Maintain and enhance traffic control infrastructure, including traffic signals, crosswalks, speed control measures, and pedestrian safety features to ensure both daily safety and emergency response capability. Implement proactive maintenance programs to prevent traffic signal outages and address infrastructure failures that compromise pedestrian and vehicle safety.

Hazardous Materials

Hazardous materials are materials that pose a significant risk to public safety or human or environmental health, including toxic chemicals, flammable or corrosive materials, petroleum products, and unstable or dangerously reactive materials. They can be released through human error, malfunctioning or broken equipment, or as an indirect consequence of other emergencies such as earthquakes, floods, or severe weather. Hazardous materials can also be released accidentally during transportation as a consequence of vehicle accidents. A release or spill could result in fire, explosion, toxic cloud, or direct contamination of water, people, and property, with effects potentially involving a local site or many square miles.

As cities age and patterns of development change, former industrial properties, gasoline stations, and other parcels with land uses associated with hazardous materials (which can include agricultural uses) are often abandoned. These properties, where soils and groundwater are known or suspected to be contaminated, are often referred to as “brownfields”. The threat of contamination and potential liability for cleanup costs drives developers away from brownfields and encourages growth on previously undeveloped parcels at the outskirts of urban areas. This results in the inefficient use of land, blight in older portions of cities and, most importantly, the potential for adverse health impacts on nearby residents.

Several different types of hazardous material contamination have been documented in East Palo Alto in numerous previous studies (including but not limited to the Ravenswood Business District/4Corners (RBD) Specific Plan EIR, the Facebook EIR, and the 2016 General Plan EIR), as shown in **Figure 10-9** and **Figure 10-10**.

The greatest concentration of affected sites is in the Ravenswood TOD Specific Plan Area, centered around Bay Road and the Cooley Landing area. This area was historically home to numerous industrial uses dating back to the 19th century. The handling, use, and disposal of hazardous materials were not as tightly regulated as they are today; consequently, many historic industrial sites are marked with substantial contamination of soils and groundwater.

PCBs, metals, petrochemicals, and other harmful materials can be found at such sites. Many of these sites are currently undergoing clean-up activities, and others have restrictions that prohibit sensitive uses like homes or schools being placed on top.

General aviation aircraft have historically used leaded aviation gasoline (100LL - 100 octane low lead), which contains tetraethyl lead as an octane booster. Palo Alto Airport is transitioning to unleaded aviation fuel to eliminate lead emissions. In December 2024, the airport introduced Swift 100R, a high-octane unleaded aviation fuel that can be used as a drop-in replacement for 100LL in most piston-engine aircraft. The transition to unleaded fuel will eliminate a source of lead emissions that can impact air quality and public health, particularly for communities near the airport flight path.

Besides industrial sites, other documented sources of hazardous materials in the city include areas of uncontrolled fill, former gas stations (particularly if underground storage tanks leaked), and areas formerly in agricultural use. Though agricultural uses may sound relatively benign when compared to industrial uses or gas stations, former agricultural properties will often have pesticide residue in the top two feet or more of soil. In addition, buildings constructed and/or painted before the late 1970s may contain asbestos and/or lead-based paint; demolition or removal of such buildings must conform to federal and state policies to ensure the safe handling and disposal of hazardous materials.

As a result of a cluster of agricultural, heavy manufacturing, chemical manufacturing and auto wrecking uses, the City of East Palo Alto was nominated a Brownfields Showcase Community in 1997. The Gateway 101 and University Circle area brownfields were redeveloped, and now contribute significant revenue to the City’s general fund. The adoption of the Ravenswood TOD Specific Plan is the first major step to remediate the City’s remaining brownfields, which are clustered in the Ravenswood Employment District.

Current hazardous materials management is overseen by multiple agencies working in coordination, such as the Environmental Protection Agency, State Regional Water Quality Board, and the Department of Toxic Substances Control. San Mateo County Environmental Health Services

serves as the Certified Unified Program Agency (CUPA) for the county, managing hazardous materials and waste regulation including Hazardous Materials Management, California Accidental Release Prevention, Hazardous Waste Management, Underground Storage Tanks, Aboveground Storage Tanks, and Emergency Response programs. The Menlo Park Fire Protection District issues operational permits for the storage and use of hazardous materials and works with the CUPA to coordinate proper handling and enforcement.

Past Events

Hazardous materials incidents have occurred periodically in East Palo Alto and the surrounding region. Eighteen hazardous materials incidents have been reported in East Palo Alto since 2006, with fifteen of these incidents related to petroleum exposure and three classified as chemical incidents. While these local incidents were relatively minor, the 2010 San Bruno natural gas pipeline rupture demonstrates the potential for more severe regional impacts, where eight people lost their lives, 51 required hospitalization, 38 homes were destroyed, and property damage exceeded \$220 million.

Future Conditions

The frequency and severity of future hazardous materials releases in East Palo Alto will depend on the scale of future activities but increases in the frequency and severity of other natural hazards, such as floods, can affect the frequency and severity of future hazardous materials releases. Climate change impacts such as sea level rise and emergent groundwater pose particular concerns for contaminated sites in East Palo Alto, as rising groundwater levels could mobilize existing soil and groundwater contamination, potentially spreading pollutants to previously uncontaminated areas and complicating ongoing remediation efforts.

Goal SN-12. Protect community health and safety from hazardous materials exposure through responsible management, remediation of contaminated sites, and prevention of new contamination.

Intent: To help City residents avoid human-made hazards and maintain lives of maximum security and freedom from harm

Policies:

- 12.1 Contamination.** Avoid or minimize risk to the community from exposure to contaminated soils or groundwater.
IM 12.1a: Coordinate with San Mateo County Environmental Health Services (CUPA) to maintain an updated database of all known and suspected contaminated sites. Ensure sharing of this database with community members and hold public, multilingual workshops to understand the information therein.
Timeframe: Short-Term (Ongoing)
- 12.2 Management of hazardous materials.** Continue to cooperate with federal, state, and county agencies to effectively regulate the management of hazardous materials and hazardous waste.
- 12.3 Risk Management Plans.** Continue to cooperate with the Certified Unified Program Agency (CUPA) for East Palo Alto (the County of San Mateo Health System) and the Menlo Park Fire Protection District to administer Risk Management Plans for businesses within the city.
- 12.4 Safe Siting and Design for Hazardous Material Facilities.** Protect public health through appropriate siting and design requirements for facilities that use, manufacture, or store hazardous materials.

IM 12.4a: Coordinate with Caltrans and CHP to establish designated hazardous materials transportation routes avoiding residential areas and schools.

Timeframe: Short-Term

12.5 Prohibit Hazardous Facilities in Groundwater Areas.

Prohibit new facilities that use, manufacture, store, or transport hazardous materials in emergent groundwater areas, as shown on **Figure 10-9** and **Figure 10-10**.

12.6 Gas pipeline emergency prevention and planning.

Coordinate with the Menlo Park Fire Protection District, and other local, regional, and state agencies to ensure that emergency evacuation plans are in place and any major pipelines in the community are appropriately inspected and marked to prevent accidental rupture.

12.7 Mitigate Hazardous Material Risks from Groundwater.

Require existing facilities in emergent groundwater areas that handle hazardous materials to implement comprehensive monitoring, containment, and emergency response measures to prevent contamination from groundwater intrusion. Establish requirements for relocating or decommissioning highest-risk facilities based on vulnerability assessments.

Noise

Noise is typically defined as unwanted sound and is usually objectionable because it is disturbing or annoying. Excessive noise may result in hearing loss, interference with normal activities such as sleep, speech communication, work, and recreation, or annoyance, which may impact quality of life.

The City's noise ordinance is designed to protect people from non-transportation noises sources such as music, construction activity, machinery and pumps, and air conditioners. The Noise Ordinance does not apply to railroad operation, maintenance and construction activities occurring within the Union Pacific right-of-way or the permitted hours for such activities. The ordinance also

does not apply to noise generated by aircraft activity at Palo Alto Municipal Airport.

Noise from transportation activity is the primary component of the noise environment in East Palo Alto. Transportation corridors that traverse East Palo Alto, such as Highway 101; major arterial roadways, such as Willow Road, University Avenue, and Bay Road; and collector roadways, such as Clarke Avenue and Pulgas Avenue, are the predominant sources of environmental noise. **Figure 10-13** shows existing noise exposure generated by traffic in East Palo Alto, based on 2015 conditions. **Figure 10-14** shows estimated 2040 noise exposure generated by traffic in East Palo Alto, accounting for conditions resulting from new development proposed by this General Plan.

The most effective methods for mitigating transportation noise impacts on new noise-sensitive land uses involve appropriate planning, such as the site design review process and CEQA (when applicable). During these stages of the development process, potential impacts from transportation noise will be identified and mitigation measures will be required as needed to meet City noise standards. Site planning, topography and the design and construction of noise barriers (walls, berms, or combination of walls/berms) are the most common methods of alleviating traffic and train noise impacts. Setbacks and buffers can also be used to achieve small noise reductions. Careful consideration should be given to proposed projects that qualify for statutory or infill exemptions in order to avoid potential noise impacts due to transportation noise. The noise contour maps contained in the noise element should be reviewed by planning staff to ensure that the noise environment at a particular project site is appropriate for the proposed land use.

Aircraft activity from the Palo Alto Municipal Airport forms the primary source of noise in the eastern portion of the city, where roadway traffic noise sources are limited. This area is located below the flight path for the Palo Alto Municipal Airport. In addition to local airplane activity, overflight from jet aircraft is another source of noise associated with aircraft, particularly from aircraft arriving at San Francisco International Airport. Aircraft noise primarily affects people who live, work, or play in the vicinity of the airport. Bayfront areas are also home to certain animals that can be sensitive to noise. **Figure 10-15**

shows the aircraft noise contours generated by the Palo Alto Municipal Airport based on the 2008 Comprehensive Land Use Plan for Palo Alto Airport prepared by the Santa Clara County Airport Land Use Commission.

In March 2024, the City of Palo Alto installed a software monitoring system at the Palo Alto Airport that uses geofencing technology to track aircraft movements over East Palo Alto and notify pilots who do not follow voluntary noise abatement procedures. These procedures request that pilots departing from the runway climb over the bay and reach the area of the Dumbarton Bridge before turning left to fly south or to the Peninsula. Nearly 100 percent of the airport's 150,123 operations in 2024 complied with noise abatement rules, with only 35 violations documented.

Palo Alto Airport's Long-Range Facilities and Sustainability Plan addresses improvements related to noise generated by this airport, although, as of January 2026, this effort is on pause. Based on City Council feedback at the September 16, 2024, study session and to meet constraints not to expand the airport's footprint, City staff are reconsidering planning alternatives while making near-term progress on leaded fuel and noise issues.

The Union Pacific Railroad tracks (Dumbarton Rail Corridor) are located along the northern boundary of the city. These tracks are currently not in use for passenger service. The Dumbarton Rail project, which would provide commuter rail service across the bay between the Peninsula and the East Bay, has been under study since the early 2000s. The 2017 Dumbarton Transportation Study recommended a phased approach that includes rail shuttle service between Redwood City and Newark as a medium-term option (2025-2030), with potential long-term extension to Union City and integration with the Caltrain mainline. SamTrans is conducting the Reimagine Dumbarton Busway Feasibility Study (2025-2027) to evaluate converting the unused Dumbarton freight railroad corridor to provide bus service and improvements for people biking and walking. The study area extends from University Avenue in East Palo Alto west to Redwood City Transit Center, serving the communities of Southeast San Mateo County, including East Palo Alto, Belle Haven, Redwood City, Atherton, and North Fair Oaks. Should commuter rail service or other significant intensification of rail use be initiated, noise

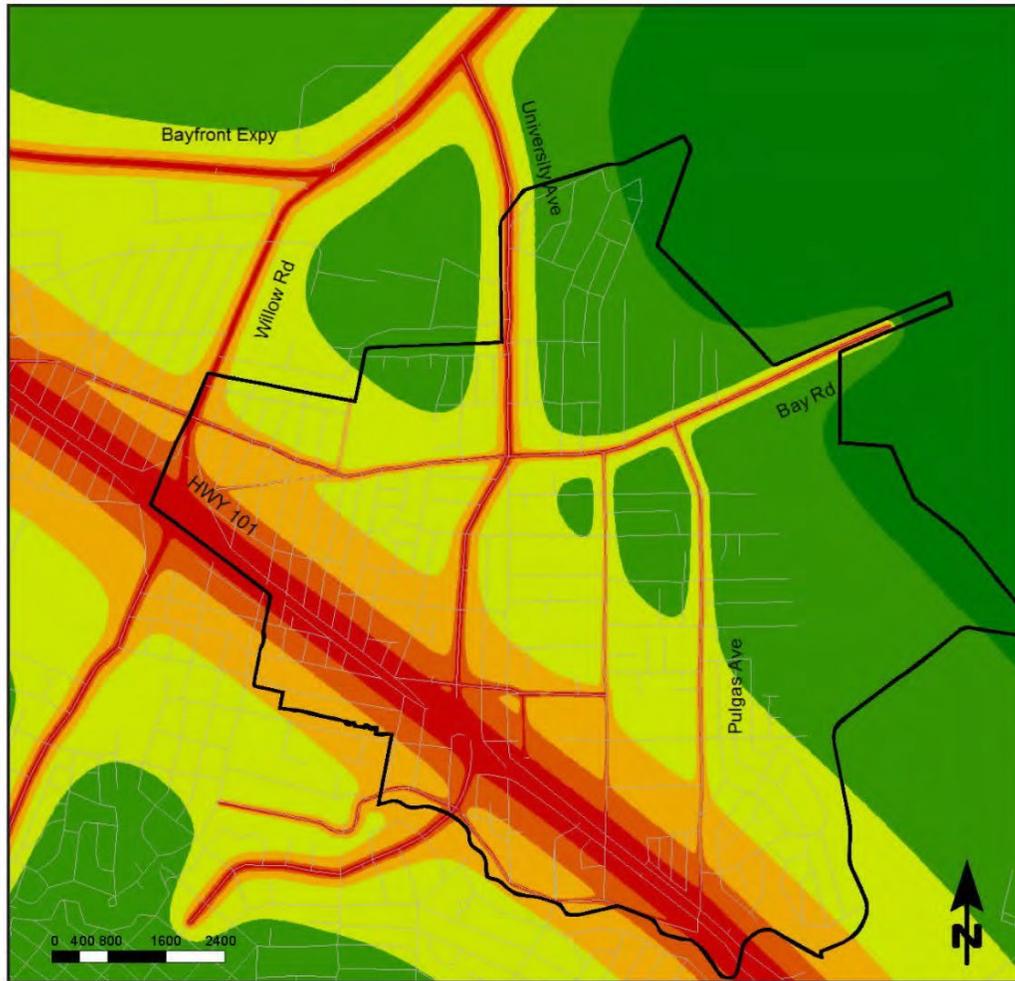
impacts on adjacent residential areas would need to be addressed through appropriate noise barriers and mitigation measures.

Commercial and industrial operations are the primary stationary noise sources that make a significant local contribution to community noise levels. Such uses can generate noise due to the regular operation of equipment, including fans, blowers, chillers, compressors, boilers, pumps, and air conditioning systems that may run continuously. Other intermittent sources of noise include horns, buzzers, and loading activities. In general, these stationary noise sources are often located in areas that are isolated from noise sensitive land uses. However, the possibility of sensitive development encroaching on some of these stationary noise sources remains, which could result in some land use conflicts.

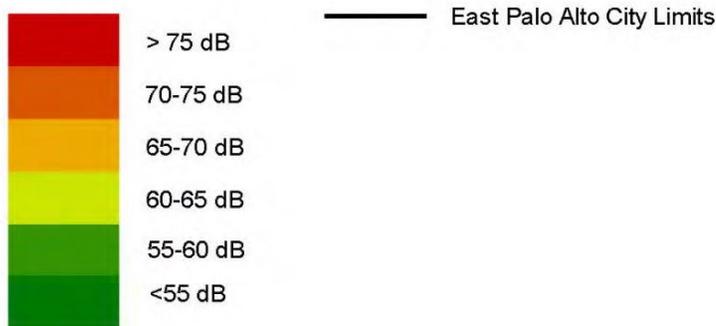
Noise sources that affect sensitive receptors within the community also include commercial land uses or those normally associated with and/or secondary to residential development. These include entertainment venues, nightclubs, outdoor dining areas, gas stations, car washes, fire stations, drive-thru restaurants, air conditioning units, swimming pool pumps, residential gatherings or parties, school playgrounds, athletic and music events, and public parks. These non-transportation noise sources are local and typically only affect their adjacent neighbors.

Another source of noise in East Palo Alto relates to intermittent construction activities. Construction noise can be significant for short periods of time at any particular location as a result of public improvement projects, private development projects, remodeling, etc. The highest construction noise levels are normally generated during grading and excavation, with lower noise levels occurring during building construction. Each project is required to follow the hours of construction activity stated in its Municipal Code.

Figure 10-13: Existing (2015) Traffic Noise



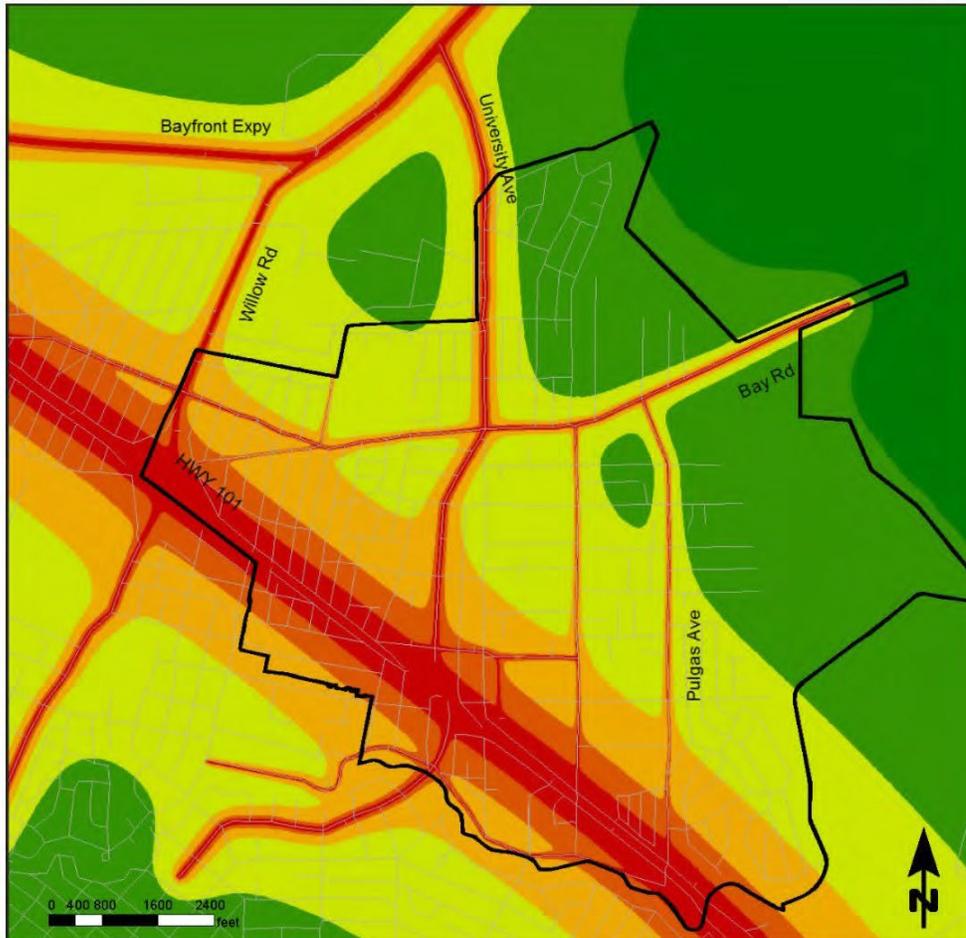
Existing Noise Levels from Vehicle Traffic along Major Roadways in decibels (dB)



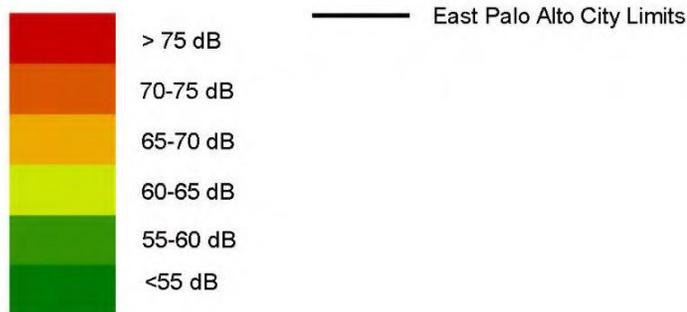
Data Source: City of East Palo Alto General Plan Update EIR Draft, Noise and Vibration Assessment, 2015.



Figure 10-14: 2040 Future Plus Project Traffic Noise Contours



Existing Noise Levels from Vehicle Traffic along Major Roadways in decibels (dB)



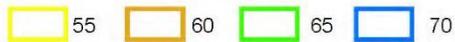
Data Source: City of East Palo Alto General Plan Update EIR Draft, Noise and Vibration Assessment, 2015.



Figure 10-15: Palo Alto Airport Noise Contours



Noise Contours (CNEL)*



*Community Noise Equivalent Level (CNEL) is a method of averaging single-event noise levels occurring during a typical 24-hour day. This system is used to measure community exposure to airport noise.

This map was created by Santa Clara County Planning Office. The data used was compiled from various sources, including aerial photography, GIS data, and other public information. 20250228 - C:\MapData\UCP\MapData\WPA_Rpt_5_1.mxd

Data Source: Comprehensive Land Use Plan—Palo Alto Airport, Santa Clara County Airport Land Use Commission, 2008.



Ground-borne Vibration

Ground-borne vibration consists of rapidly fluctuating motions or waves with an average motion of zero. In urban environments, sources of ground-borne vibration include construction activities such as pile driving and the movement of heavy equipment, light and heavy rail transit, and heavy trucks and buses. Low-level vibrations at a structure frequently cause irritating secondary vibration, such as a slight rattling of windows, doors, or stacked dishes. The rattling sound can give rise to exaggerated vibration complaints, even though there is very little risk of actual structural damage.

There are currently no active rail lines within the City of East Palo Alto; however, Union Pacific reserves the right to run freight operations on these tracks and there are plans to extend commuter rail service between the Peninsula and the East Bay as previously noted.

Ground-borne vibration would occur in areas adjacent to the rail lines when railroad trains pass through East Palo Alto. Ground vibration levels along the railroad corridor would be proportional to the speed and weight of the trains, as well as the condition of the tracks, train engine, and car wheels. Vibration levels resulting from railroad trains vary by site but are generally perceptible within 100 feet of the tracks.

Construction activities such as demolition, site preparation, excavation, and foundation work can generate groundborne vibration at land uses adjoining construction sites. Impact pile driving has the potential of generating the highest ground vibration levels and is of primary concern to structural damage. Other project construction activities, such as caisson drilling, the use of jackhammers, rock drills, and other high-power or vibratory tools, and rolling stock equipment (tracked vehicles, compactors, etc.) can generate substantial vibration levels in the immediate vicinity.

Options for Noise Reduction

Because ground transportation noise is the dominant source of noise in East Palo Alto, it is unlikely that proposed actions would cause a substantial increase in

noise in the community. There is currently ongoing research on the effects of different types of pavement surfaces on the noise generated by vehicular traffic. The interaction of tires and pavement is the main source of traffic noise. The City of East Palo Alto has no jurisdiction over the noise generated by automobiles, the types of tires drivers select, etc., but the City can select the type of pavement that it uses to repave its streets. The consideration of quiet pavement surfaces in the City's repaving plans provides an opportunity to make a noticeable reduction in traffic noise along City streets in East Palo Alto. As part of the Ravenswood/4 Corners (RBD) Specific Plan Update (2024), mitigation measures are included to address noise, such as "quiet" construction equipment models and noise-control blanket barriers for impact piling driving. In addition, future development projects will be required to pay their fair-share contribution toward installing quieter pavement types along designated roadway segments within the Plan Area.

Placing residents in proximity to non-residential land uses can result in isolated noise problems. For instance, music played at outdoor dining areas or bars can annoy adjacent residences and be a source of ongoing complaints. Other urban noise sources, such as the collection of large garbage dumpsters early in the morning, the noise of heating, ventilating, and air conditioning equipment, and outdoor maintenance activities, are all more frequent in an urban setting. The purpose of a quantitative noise ordinance is to address these types of issues. Reviewing and updating applicable City ordinances is something the City could consider in the future if the change in land use patterns results in conflicts that cannot be resolved through existing regulations.

The most common noise issue that is likely to be faced by the City can be addressed as it has been historically by evaluating land use proposals in noisy areas and incorporating noise control treatments to these projects.

Goal SN-13. Minimize the effects of noise through proper land use planning.

Intent: To ensure that new noise-sensitive land uses in the City are located in a compatible noise environment or adequately mitigated in order to provide a compatible exterior and interior noise environment.

Policies:

- 13.1 Noise standards.** Use the Exterior and Interior Noise Standards (Table 10-1 and Table 10-2) for evaluating noise sources when making planning and development decisions. Require that applicants demonstrate that the noise standards will be met prior to project approval and include Conditions of Approvals to ensure the standards will be met.
- 13.2 Updates to noise standards.** Periodically, during comprehensive General Plan updates or more often as needed, review the City’s noise standards. Update the standards and conduct new noise studies as necessary to ensure noise levels remain safe and compatible with the community.
- 13.3 Compatibility standards.** Utilize noise/land use compatibility standards and the Noise Ordinance as guides for future development decisions.
- 13.4 Noise control.** Provide noise control measures, such as berms, walls, and sound attenuating construction in areas of new construction or rehabilitation.
- 13.5 Vibration impacts.** The City shall require new development to minimize vibration impacts to adjacent uses during demolition and construction. For sensitive historic structures, a vibration limit of 0.08 in/sec PPV will be used to minimize the potential for cosmetic damage to the building. A vibration limit of 0.30 in/sec PPV will be used to minimize the potential for

cosmetic damage at buildings of normal conventional construction.

- 13.6 Airport-adjacent land uses.** Maintain the nonresidential designation for land near the airport to prevent new noise-sensitive residential uses from being constructed in areas with excessive aircraft noise and to ensure land use compatibility with Palo Alto Airport operations and safety zones, as defined in the Santa Clara County Comprehensive Land Use Plan for Palo Alto Airport.

Goal SN-14. Minimize transportation- and non-transportation-related noise impacts, especially on noise-sensitive land uses.

Intent: To maintain and improve the noise environment at noise-sensitive land uses throughout the city.

Policies:

- 14.1 Noise ordinance.** Continually enforce and periodically review the City’s Noise Ordinance for adequacy (including requiring construction activity to comply with established work schedule limits). Amend as needed to address community needs and development patterns.
- 14.2 CEQA acoustical analysis.** Require an acoustical analysis to evaluate mitigation measures for noise generating projects that are likely to cause the following criteria to be exceeded or to cause a significant adverse community response:
 - Cause the Ldn/CNEL at noise-sensitive uses to increase by 3 dBA or more and exceed the “normally acceptable” level.
 - Cause the Ldn/CNEL at noise-sensitive uses to increase 5 dBA or more and remain “normally acceptable”.

- 14.3 Highway noise barriers.** Ensure that noise barriers are considered in the design of roadway, freeway, and rail improvements to mitigate significant noise impacts. Support efforts by Caltrans and other transportation providers to provide acoustical protection for noise sensitive development (especially along Highway 101).
- 14.4 Vehicle noise standards.** Coordinate with the California Highway Patrol and other law enforcement agencies to enforce noise standards for cars, trucks, and motorcycles.
- 14.5 Traffic and truck noise.** Regulate traffic flow to enforce speed limits to reduce traffic noise. Periodically evaluate and enforce established truck and bus routes to avoid noise impacts on sensitive receptors.
- 14.6 Coordination with Airport Land Use Commission.** Work with the Santa Clara County Airport Land Use Commission and the Palo Alto Airport to ensure land use decisions in East Palo Alto are consistent with the Airport Comprehensive Land Use Plan, including noise compatibility standards and safety zones.
- 14.7 Site design review.** Utilize site design review to identify potential noise impacts on new development, especially from nearby transportation sources. Encourage the use of noise barriers (walls, berms, or landscaping), setbacks and/or other buffers.
- 14.8 Quiet asphalt.** Consider a “quieter” pavement that also meets other criteria established by the City for use in resurfacing roadways. Encourage its use in future capital projects. Projects within the Ravenswood/4 Corners Specific Plan area are required to pay their fair-share contribution towards quieter pavement installation.
- 14.9 Noise barriers along future rail.** Should commuter transit service along the Dumbarton Corridor or other significant intensification of rail

use be initiated, the City shall work with SamTrans, Union Pacific, and other responsible agencies to require construction of noise barriers adjacent to existing unprotected residential areas near the rail line.

- 14.10 Airport noise.** Work with Palo Alto Airport, San Francisco International Airport, San Carlos Airport, and the Federal Aviation Administration to minimize aircraft noise impacts on East Palo Alto through flight path routing, time-of-day operation considerations, community notifications, and voluntary noise abatement procedures.

- 14.11 Construction noise.** The City shall require that contractors use available noise suppression devices and techniques and limit construction hours near residential uses. Reasonable noise reduction measures shall be incorporated into the construction plan and implemented during all phases of construction activity to minimize the exposure of neighboring properties. The City considers significant construction noise impacts to occur if a project located within 500 feet of residential uses or 200 feet of commercial or office uses would:

- Involve substantial noise generating activities (such as building demolition, grading, excavation, pile driving, use of impact equipment, or building framing) continuing for more than 12 months.

For such large or complex projects, a construction noise logistics plan that specifies hours of construction, noise and vibration minimization measures, posting or notification of construction schedules, and designation of a noise disturbance coordinator who would respond to neighborhood complaints will be required to be in place prior to the start of construction and implemented during construction to reduce noise impacts on neighboring residents and other uses. A typical construction noise logistics plan would include, but not be limited to, the following measures to reduce construction noise levels as low as practical:

- Limit construction activity to the hours specified in the Municipal Code;
- Utilize ‘quiet’ models of air compressors and other stationary noise sources where technology exists;
- Equip all internal combustion engine-driven equipment with mufflers, which are in good condition and appropriate for the equipment;
- Locate all stationary noise-generating equipment, such as air compressors and portable power generators, as far away as possible from adjacent land uses;
- Locate staging areas and construction material areas as far away as possible from adjacent land uses;
- Prohibit all unnecessary idling of internal combustion engines;
- If impact pile driving is proposed, multiple pile drivers shall be considered to expedite construction. Although noise levels generated by multiple pile drivers would be higher than the noise generated by a single pile driver, the total duration of pile driving activities would be reduced;
- If impact pile driving is proposed, temporary noise control blanket barriers shall shroud pile drivers or be erected in a manner to shield the adjacent land uses. Such noise control blanket barriers can be rented and quickly erected;
- If impact pile driving is proposed, foundation pile holes shall be pre-drilled to minimize the number of impacts required to seat the pile. Pre-drilling foundation pile holes is a standard construction noise control technique. Pre-drilling reduces the number of blows required to seat the pile. Notify all adjacent land uses of the construction schedule in writing;
- Designate a "disturbance coordinator" who would be responsible for responding to any local complaints about construction noise. The disturbance coordinator will determine the cause of the noise complaint (e.g., starting too early, bad muffler, etc.) and will require that reasonable

measures warranted to correct the problem be implemented; and

- Conspicuously post a telephone number for the disturbance coordinator at the construction site and include it in the notice sent to neighbors regarding the construction.

Goal SN-15. Coordinate land use planning to prevent new odor complaints.

Intent: To avoid conflicts related to bad odors, especially between incompatible uses.

- 15.1 Identify potential for odor complaints.** Use BAAQMD Odor Screening Distances or City-specific screening distances to identify odor potential. Evaluate odors from sources within these screening distances based on odor potential, wind conditions, setback distance, and receptor type.
- 15.2 Odor sources.** Prohibit new sources of odors that have the potential to result in frequent odor complaints unless it can be shown that potential odor complaints can be mitigated.
- 15.3 Sensitive receptors near odor sources.** Prohibit sensitive receptors from locating near odor sources where frequent odor complaints would occur, unless it can be shown that potential odor complaints can be mitigated.

Table 10-1. Exterior Noise Standards – Receiving Land Use: Single or Multiple Family Residence, School, Hospital, Church, or Public Library Properties

Category	Cumulative Number of Minutes in Any One Hour Time Period	Daytime (7 am to 10 pm)	Nighttime (10 pm to 7 am)
1	30	55 dBA	50 dBA
2	15	50 dBA	55 dBA
3	5	65 dBA	60 dBA
4	1	70 dBA	60 dBA
5	0	75 dBA	70 dBA

Notes:

1. In the event the measured background noise exceeds the applicable noise level standard in any category above, the applicable standard shall be adjusted in five dBA increments so as to encompass the background noise level.
2. Each of the noise level standards specified above shall be reduced by five dBA for simple tone noises, noises consisting primarily of speech or music, or for recurring or intermittent impulsive noises.
3. If the intruding noise source is continuous and cannot be reasonably stopped for a period of time whereby the background noise level can be measured, the noise level measured while the source is in operation shall be compared directly to the noise level standards in Table 10-1.

Table 10-2. Interior Noise Standards – Dwelling Unit

Category	Cumulative Number of Minutes in Any One Hour Time Period	Daytime (7 am to 10 pm)	Nighttime (10 pm to 7 am)
1	5	45 dBA	40 dBA
2	1	50 dBA	45 dBA
3	0	55 dBA	50 dBA

Notes:

4. In the event the measured background noise exceeds the applicable noise level standard in any category above, the applicable standard shall be adjusted in five dBA increments so as to encompass the background noise level.
5. Each of the noise level standards specified above shall be reduced by five dBA for simple tone noises, noises consisting primarily of speech or music, or for recurring or intermittent impulsive noises.
6. If the intruding noise source is continuous and cannot be reasonably stopped for a period of time whereby the background noise level can be measured, the noise level measured while the source is in operation shall be compared directly to the noise level standards in Table 10-2.