City of Los Altos

SAFETY ELEMENT

City of Los Altos, April 2025

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1.0 Introduction

1.0 INTRODUCTION

A community's safety and well-being can be influenced by many natural and man-made hazards. The Safety Element is a mandatory chapter of a jurisdiction's General Plan, as required by State law, and addresses the need to protect citizens from risks associated with natural and man-made hazards. The Safety Element contains goals, policies, and actions to reduce the risk associated with these hazards.

1.1. Related Laws, Plans, and Programs

There are several existing plans and programs that directly relate to the goals of the Safety Element. Enacted through state and local action, these plans and programs are administered by agencies with responsibility for their enforcement.

1.1.1. California Environmental Quality Act

The California Environmental Quality Act (CEQA) was adopted by the state legislature in response to a public mandate for a thorough environmental analysis of projects that might adversely affect the environment. The provisions of the law, review procedures, and any subsequent analysis are described in the CEQA Statutes and Guidelines as amended in 1998. Safety hazards, as well as noise and air quality impacts, are recognized as environmental impacts under CEQA.

1.1.2. Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act requires the State Geologist to identify earthquake fault zones along traces of both recently and potentially active major faults. Cities and counties that contain such zones must inform the public regarding zone location.

1.1.3. Seismic Hazards Mapping Act

Pursuant to the Seismic Hazards Mapping Act, the State Geologist compiles maps identifying seismic hazard zones. Development in seismic hazard areas is subject to policies and criteria established by the State Mining and Geology Board. Additionally, approval of development on a site within a seismic hazard area mandates the preparation of a geotechnical report and local agency consideration of compliance with applicable state requirements.

1.1.4. Landslide Hazard Identification Program

The Landslide Hazard Identification Program requires the State Geologist to prepare maps of landslide hazards within urbanizing areas.

1.1.5. Colbey-Alquist Floodplain Management Act

The Colbey-Alquist Floodplain Management Act encourages local governments to plan, adopt, and enforce land use regulations for floodplain management in order to protect people and property from flooding hazards. This act also identifies requirements that jurisdictions must meet to receive state financial assistance for flood control.

1.1.6. Santa Clara County General Plan Safety Element

The Santa Clara County General Plan Safety Element identifies geologic and other natural hazards. A key strategy of the element for reducing the potential risks to life and property from natural hazards is to minimize the number

of people who permanently reside in high hazard areas.

1.1.7. Los Altos Flood Hazard Area Regulations Ordinance

The City's Flood Hazard Area Regulations (adopted as part of the Municipal Code) establish regulations of use, structures, grading and streambed alteration within designated flood, flood-related erosion, and mudslide hazard areas. These provisions apply to property identified in the Flood Insurance Study for the City of Los Altos (dated July 16, 1980) and the Flood Insurance Rate Map generated by the Federal Emergency Management Agency (FEMA).

1.1.8. Hazardous Waste Management Plan

The Santa Clara County Hazardous Waste Management Plan provides basic policy direction to address current and future hazardous waste management issues. All facilities and personnel of the County and affected cities are organized in the plan to effectively respond to hazardous materials emergencies.

1.1.9. Emergency Operations Plan

The City of Los Altos Emergency Operations Plan outlines authorities, organizational structures, and procedures used to coordinate activities related to local and regional emergencies or disasters. Taken with the Safety Element, the Emergency Operations Plan is a critical planning document that ensures the City is adequately prepared to respond to extreme hazard events.

The plan was developed in 2015 as part of the North Santa Clara County common-format Emergency Operations Plan for the Cities of Los Altos, Palo Alto, Mountain View, and Sunnyvale. The plan was reviewed and revised by the City of Los Altos in January 2021.

1.1.10. County's Multi-Jurisdictional Hazard Mitigation Plan

The City of Los Altos is a jurisdictional partner in the Santa Clara County Multi-Jurisdictional Hazard Mitigation Plan (MJHMP). The MJHMP for Santa Clara County was developed in accordance with the Disaster Mitigation Act of 2000 and followed FEMA's 2023 Local Hazard Mitigation Plan guidance. The MJHMP was locally adopted by the City on August 27, 2024.

The MJHMP incorporates a process where hazards are identified and profiled, the people and facilities at risk are analyzed, and mitigation actions are developed to reduce or eliminate hazard risk. The implementation of these mitigation actions, which include both short-term and long-term strategies, involve planning, policy changes, programs, projects, and other activities.

Assembly Bill (AB) 2140 authorizes local governments to adopt the Local Hazard Mitigation Plan (LHMP) with the General Plan Safety Element, through integration or incorporation by reference. The MJHMP is fully integrated into the Safety Element in accordance with AB 2140, Government Code 65302 (g)(4)(D)(ii), and is located at https://emergencymanagement.sccgov.org/partners/hazard-mitigation-program.

The vulnerability assessment conducted as part of the MJHMP satisfies the requirement to address climate resiliency and adaptation in the Safety Element (per Senate Bill [SB] 379).

1.1.11. Climate Action & Adaptation Plan

The 2022 Climate Action and Adaptation Plan (CAAP) assesses the impacts of Los Altos on the climate, how Los Altos can reduce its impact on

the climate, and how Los Altos can adapt to the changing climate.[1] The CAAP includes a qualitative and quantitative assessment of the impacts of City of Los Altos on climate change. An updated greenhouse gas (GHG) emissions inventory was conducted as part of this update. The CAAP also includes an assessment of climate impacts on the City as well as mitigation strategies, priority actions, and implementation measures to address climate change. The CAAP Climate Hazards Ranking is fully integrated into the Safety Element.

[1] City of Los Altos, *Los Altos Climate Action and Adaptation Plan*, 2022,

2.0 Natural & Human-Made Hazards Analysis

2.0 NATURAL & HUMAN-MADE HAZARDS ANALYSIS

As in all communities, natural conditions and human activities occur in Los Altos that have an effect on the quality of life of its residents. Reducing the risks associated with such hazards and being prepared for emergency situations is essential for creating an attractive and healthy environment for all residents and businesses within the City. This section of the Safety Element identifies the City's approach for reducing potential hazards from natural conditions and human activities, along with the City's emergency planning and response.

2.1. Planning Area

The Safety Element relates to the entire City of Los Altos, which is an incorporated city in Santa Clara County. Santa Clara County is located in the southeastern region of the San Francisco Bay Area. The City is located in the northwestern portion of Santa Clara County within the San Francisco Peninsula, between the southern reaches of the San Francisco Bay and the Santa Cruz Mountains.

Los Altos is bordered by the City of Palo Alto and the City of Mountain View to the north; the City of Sunnyvale to the east; the City of Cupertino and the unincorporated areas of Santa Clara County to the south; and the Town of Los Altos Hills to the west. Los Altos also abuts the Santa Cruz Mountains, which run southeast from the San Francisco Peninsula along the western border of Santa Clara County.

The analysis of existing conditions and potential hazards for this Safety Element applies to the entirety of the City of Los Altos. Certain hazards and disaster events are regional and/or interrelated, such as earthquake and tsunami, and may transcend geographic boundaries. Thus, this Safety Element also considers potential hazards outside of the planning area that may occur or originate in other jurisdictions when the potential impact of those hazards might impact the City.

2.2. Geologic Hazards

Santa Clara County has a geologically diverse composition of bayside alluvial plains, hills, valleys, and mountains and is located in the Coast Ranges Geomorphic Province, which extends roughly 400 miles from Oregon to Southern California. To the west is the Pacific Ocean, where the coastline is uplifted, terraced, and wave-cut. To the east is the Central Valley of California. Major geological and hydrogeological features of Santa Clara County include the San Francisco Bay to the north and Santa Clara Valley, the geologic trough that extends roughly 90 miles from the San Francisco Bay to the City of Hollister. The Coast Ranges are subparallel to the Holocene-Active San Andreas fault, and Santa Clara County intersects with various faults that run parallel to the San Andreas fault. The proximity of the many faults in the area may exacerbate geologic and seismic hazards.

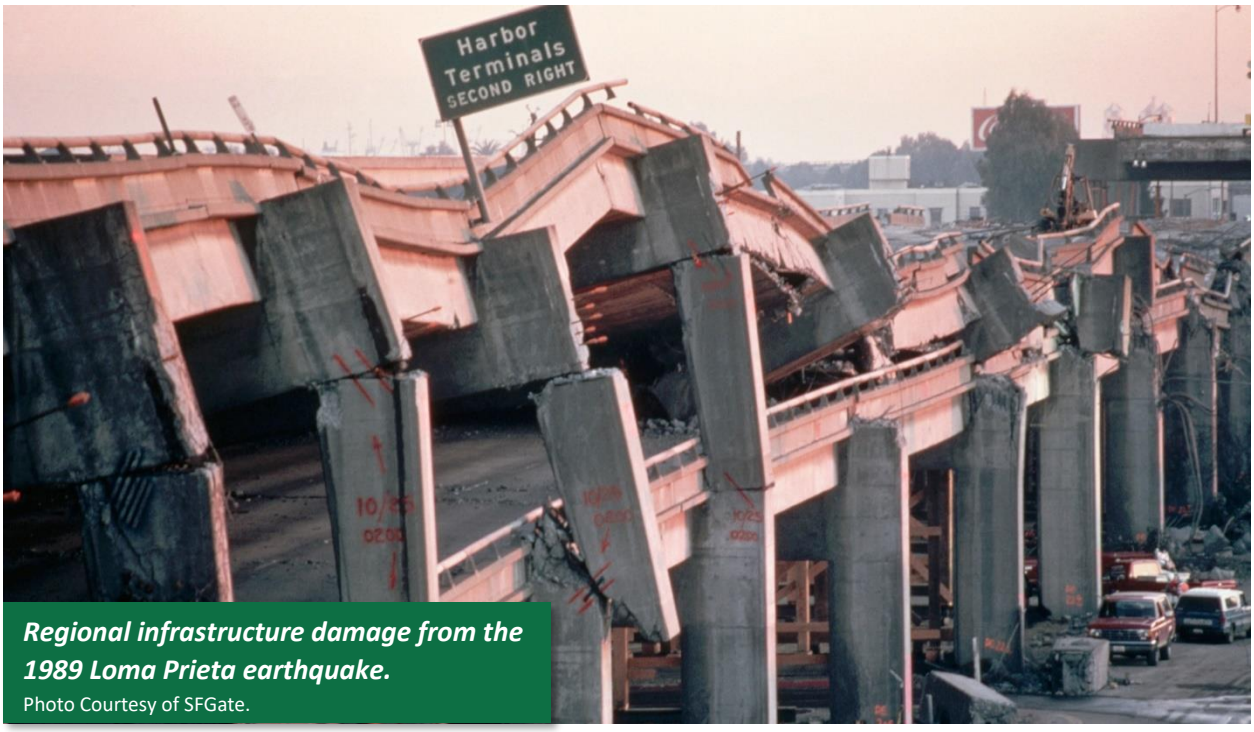
The City is primarily underlain by marine and continental sedimentary rocks and soil types that range from unconsolidated to semi- or loosely consolidated. Unconsolidated soil types may be more susceptible to geologic hazards. **Figure 1** and **Table 1** show the geologic makeup of the City of Los Altos.

Topographically, Los Altos is relatively flat and is located where the foothills of the Santa Cruz Mountains meet the Santa Clara Valley. Various creeks and riparian areas, including Adobe Creek, Hale Creek, Permanente Creek, and Stevens Creek, run down the foothills into the City. The foothills that abut the City to the south are prone to geologic hazards. The primary geologic concerns within Los Altos include landslides and seismic impacts related to earthquakes. Seismic hazards can lead to fault rupture, ground shaking, and liquefaction. They can also be one of the causes of landslides, subsidence, tsunamis, and seiches. Other geologic hazards include subsidence, expansive soils, tsunamis, and seiches.

Table 1: Geology

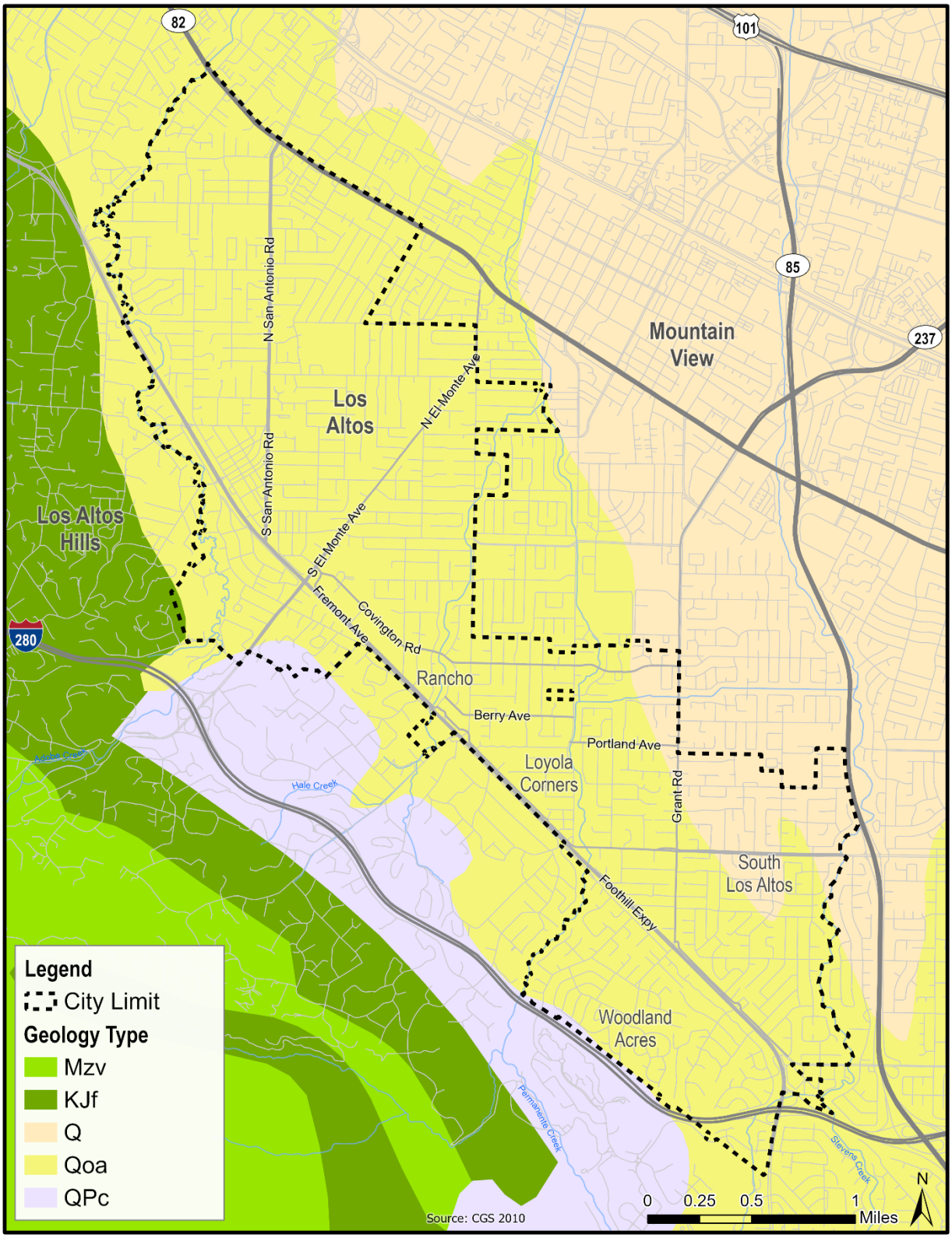
Rock Types	General Lithology	Age	Description
Q	Marine and nonmarine (continental) sedimentary rocks	Pleistocene-Holocene	Alluvium, lake, playa, and terrace deposits; unconsolidated and semi-consolidated. Mostly nonmarine but includes marine deposits near the coast.
QPc	Nonmarine (continental) sedimentary rocks	Pliocene	Sandstone, shale, and gravel deposits; are mostly loosely consolidated.
Qoa	Marine and nonmarine (continental) sedimentary rocks	Pleistocene	Older alluvium, lake, playa, and terrace deposits.
KJf	Marine sedimentary and metasedimentary rocks	Cretaceous-Jurassic	Cretaceous and Jurassic sandstone with smaller amounts of shale, chert, limestone, and conglomerate. Includes Franciscan melange, except where separated.
Mzv	Metavolcanic rocks	Mesozoic	Undivided Mesozoic volcanic and metavolcanic rocks. Andesite and rhyolite flow rocks, greenstone, volcanic breccia and other pyroclastic rocks; in part strongly metamorphosed. Includes volcanic rocks of Franciscan Complex: basaltic pillow lava, diabase, greenstone, and minor pyroclastic rocks.

Source: California Geological Survey, https://maps.conservation.ca.gov/cgs/gmc/App/.



Regional infrastructure damage from the 1989 Loma Prieta earthquake.
Photo Courtesy of SFGate.

Figure 1: Geology



Source: California Department of Geology and Mines; Esri; City of Los Altos.

2.2.1. Seismic Hazards

The City of Los Altos is located in a region with active seismic faults and is therefore subject to risk of hazards associated with earthquakes. Seismic activity poses two types of hazards: primary and secondary. Primary hazards include ground rupture, ground shaking, ground displacement, and subsidence and uplift from earth movement. Primary hazards can induce secondary hazards, such as ground failure (lurch cracking, lateral spreading, and slope failure), liquefaction, water waves (tsunamis and seiches), movement on nearby faults (sympathetic fault movement), dam failure, and fires.

2.2.1.1. Fault Rupture

The City of Los Altos is situated in the central area of the Coast Ranges Geomorphic Province, a region with characteristic northwest-trending landforms and geologic structures. The Coast Range Geomorphic Province is an area of moderate-to-high seismic activity. Earthquake severity is typically categorized according to magnitude (a measure of the amount of energy released when a fault ruptures) and seismic intensity (a qualitative estimate of the damage caused by an earthquake at a given location). Because the amount of destruction generally decreases with distance from the epicenter (the point at the earth's surface directly above where the earthquake originated), earthquakes are assigned several intensities. The most commonly used seismic intensity scale is the Modified Mercalli Intensity scale, which has 12 levels of damage. The higher the number, the greater the damage.

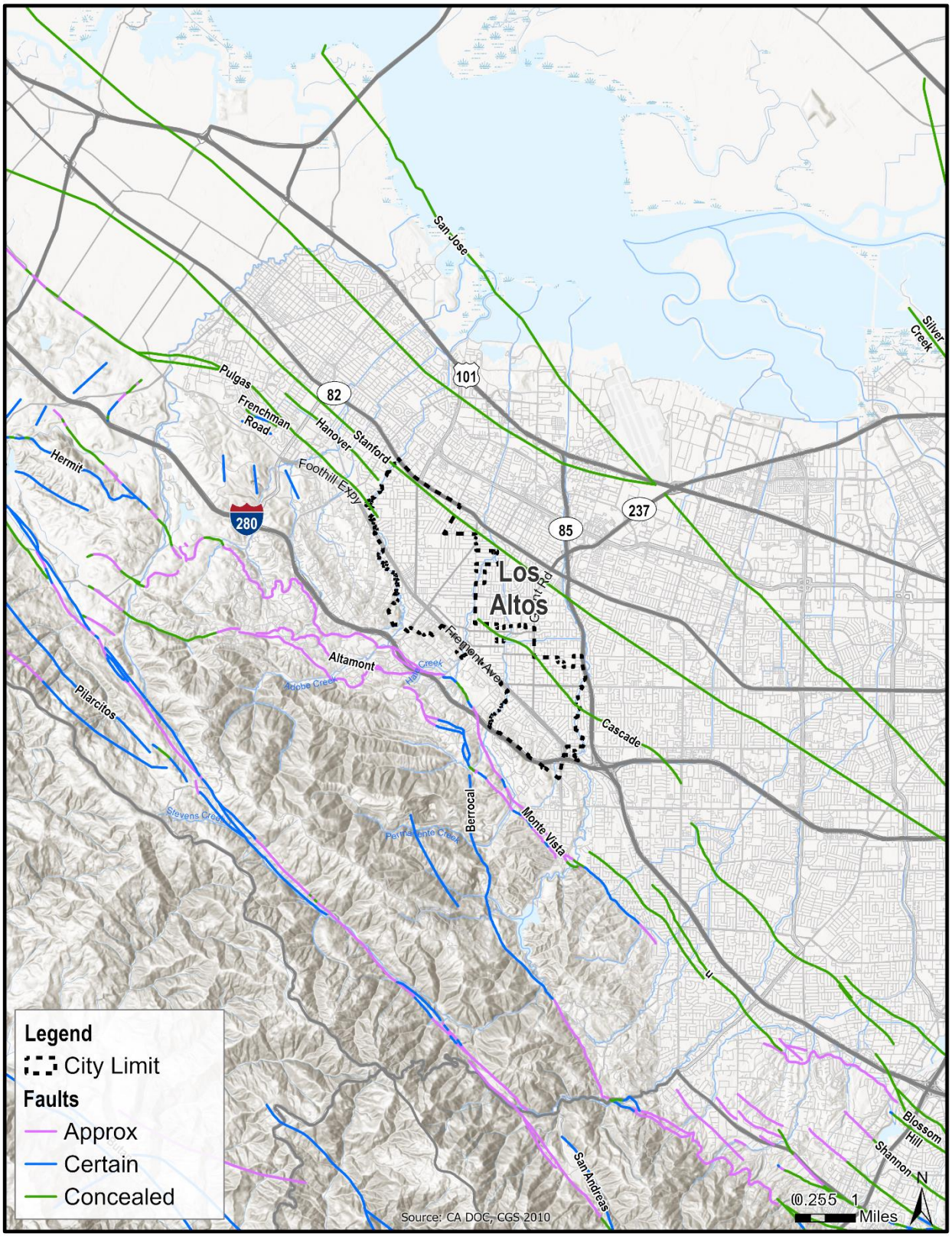
The largest earthquake likely to occur on a fault or fault segment is called the maximum credible or characteristic earthquake. A maximum probable earthquake (MPE) is the earthquake most likely to occur in a specified period of time, such as 30 to 500 years. In general, the longer the period between earthquakes on a specific fault segment (recurrence interval), the larger the earthquake. The State of California, under the guidelines of the Alquist-Priolo Earthquake Fault Zoning Act of 1972, regulates development near active faults so as to mitigate the hazard of surface fault rupture. The California Department of Conservation classifies faults according to the following criteria:

- ***Holocene-Active Fault:*** A fault that has had surface displacement within Holocene time (the last 11,700 years)
- ***Pre-Holocene Fault:*** A fault whose recency of past movement is older than 11,700 years and thus does not meet the criteria of Holocene-active fault as defined in the State Mining and Geology Board regulations

An earthquake or rupture along one of the faults in the vicinity could result in casualties and extensive property damage. The effects of such a quake may result from aftershocks and secondary effects such as fires, landslides, dam failure, liquefaction, and other threats to public health and safety. California is a seismically active area with numerous faults throughout the region. The City of Los Altos is listed within a state-designated Alquist-Priolo Earthquake Fault Zone.[2] The Alquist-Priolo Earthquake Fault Zone Act prevents the construction of human-occupied buildings on the surface trace of Holocene-Active faults. The San Andreas fault is the closest Holocene-Active fault in the region, bordering the City to the west. Several faults are located within and near the City, including the Monte Vista fault and various pre-Holocene faults.

[2] State of California Department of Conservation, *Alquist-Priolo Earthquake Fault Zones*, accessed May 17, 2024, https://www.conservation.ca.gov/cgs/alquist-priolo.

Figure 2: Regional Fault Locations



Source: California Department of Conservation; California Geological Survey; Esri; City of Los Altos.

San Andreas Fault. The San Andreas fault is a continental, right lateral transform fault that forms the tectonic boundary between the Pacific Plate and the North American Plate. The fault runs roughly 810 miles from Cape Mendocino in the north to the Salton Sea in Southern California. The largest historical earthquakes along the San Andreas fault include the 1857 Fort Tejon earthquake and the 1906 San Francisco earthquake. The 1857 Fort Tejon earthquake occurred in January 1857 with an estimated magnitude of 7.9, which resulted in two deaths and significant damage throughout the area. The length of the surface rupture is estimated at 225 miles. The 1906 San Francisco earthquake occurred on April 18, 1906, with a magnitude of 7.9. The fault slipped over a segment of 270 miles, caused significant damage, and resulted in an estimated 3,000 deaths. The earthquake also caused the 1906 San Francisco fire, which burned for three days. Between the earthquake and fire, 28,000 buildings were destroyed with a total property value loss estimated at $350 million. The 1906 earthquake is considered the most devastating earthquake in the state to date.

Monte Vista Fault. The Monte Vista fault runs approximately 29 miles from branching off of the San Andreas fault and traversing southeast through the neighboring Town of Los Altos Hills to Cupertino. The fault is thought to be Holocene-aged with fault displacement in the last 11,700 years; however, there is no historical record of fault rupture along this fault.

Pre-Holocene faults. Various Pre-Holocene faults are located in proximity to the City. The Cascade and Stanford faults are Quaternary faults that run northwest and underlie portions of the City of Los Altos. The Berrocal Fault is a late Quaternary fault to the southwest of the City. These faults are part of a complex system of pre-Holocene faults located throughout the area that roots southwestward into the San Andreas fault zone. Other nearby faults include the Hanover fault and San Jose fault. These faults are understood to be inactive faults that pose little threat to the City.[3]

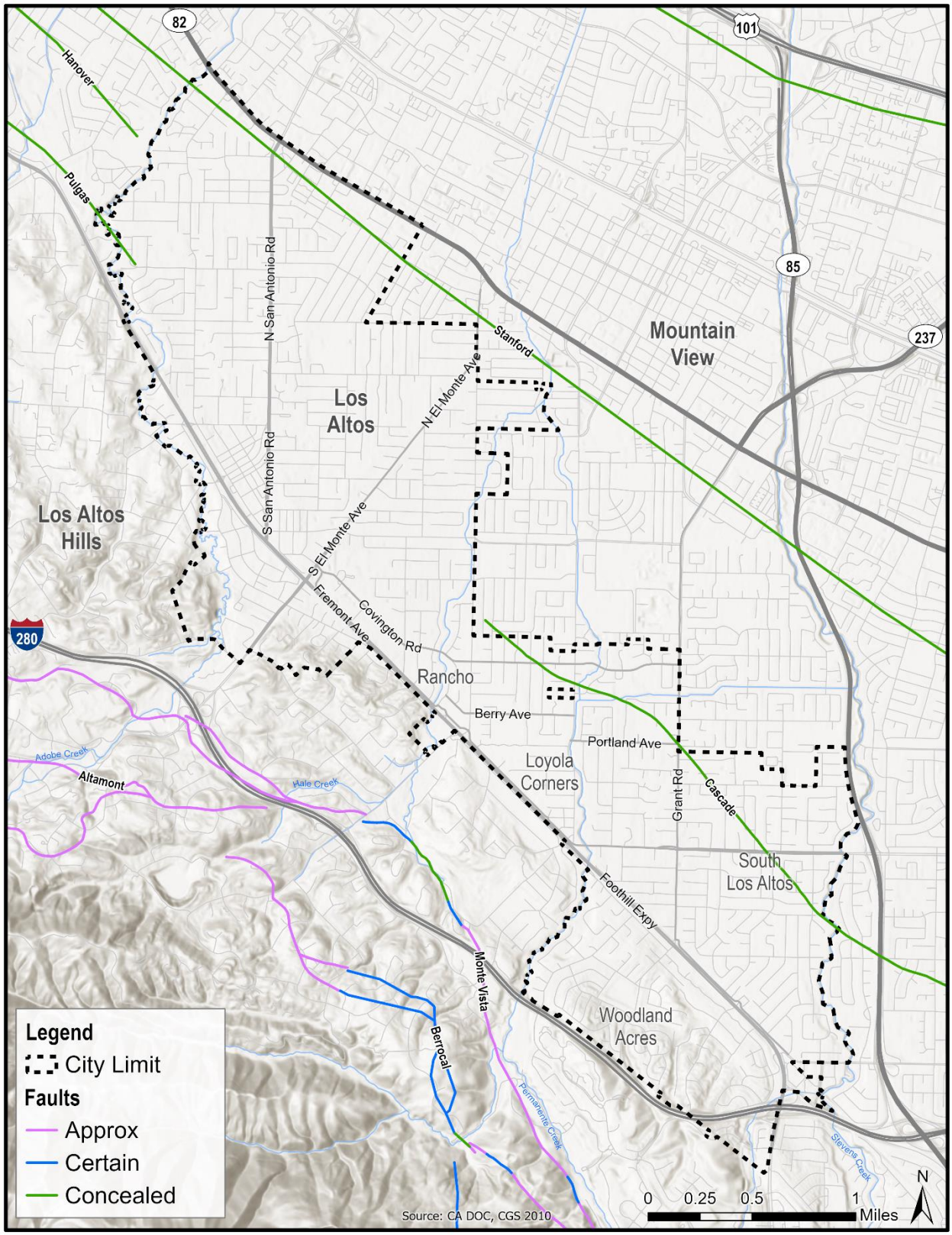
2.2.1.2. Ground Shaking

Ground shaking is characterized by the physical movement of the land surface during earthquakes. Given the City's proximity to active faults in the region, seismic ground shaking could damage buildings and cause objects to fall, creating hazards to life and property. Because Los Altos is in an earthquake-prone area of Northern California, and due to the close proximity to the San Andreas fault, seismic shaking would most likely be felt throughout the City. The effects of significant ground shaking would be most severe in areas with steep slopes, weak soils, and vulnerable structures. In a probable earthquake scenario, the majority of one- and two-story wood structures in the planning area would not sustain serious damage. Older, unreinforced masonry buildings in the downtown area that were built prior to improved building codes may be subject to severe damage or collapse in the event of an earthquake.

Figure 4 shows the shake potential in the City of Los Altos. It shows the relative intensity of ground shaking from anticipated future earthquakes. Percentage of gravity (% g) is a method for expressing acceleration, measured relative to gravity (g). Shaking potential at 50 percent would be 0.50 g, perceived as severe ground shaking with moderate to heavy potential damage on the Modified Mercalli Intensity scale.

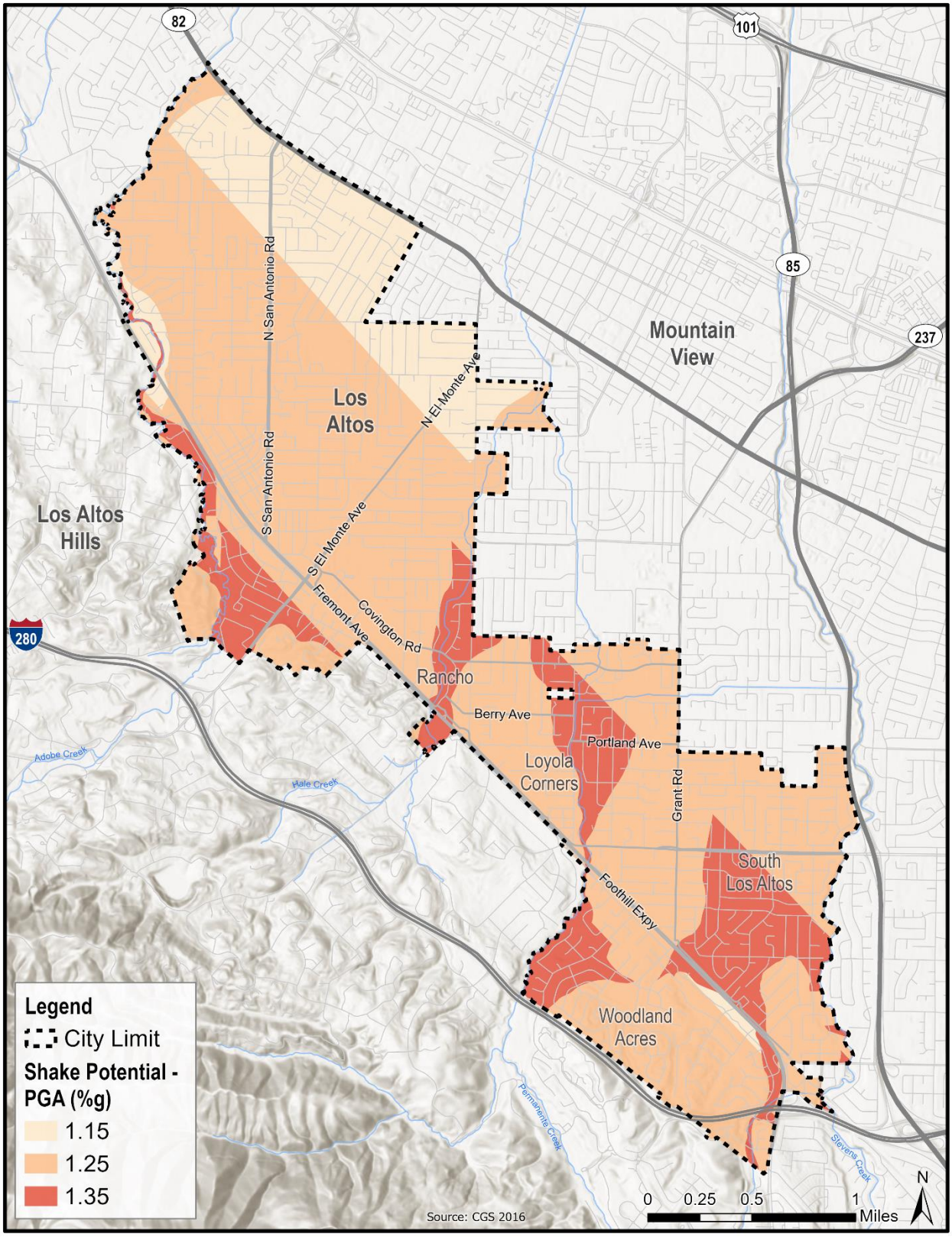
[3] USGS, *Quaternary Fault and Fold Database of the United States*, accessed October 16, 2024, https://www.usgs.gov/programs/earthquake-hazards/faults.

Figure 3: Local Fault Locations



Source: California Department of Conservation; California Geological Survey; Esri; City of Los Altos.

Figure 4: Shake Potential Map



Source: California Geological Survey; Esri; City of Los Altos.

Based on the shake potential map, the strongest ground shaking that could occur in Los Altos would be 1.15 to 1.35 g. For comparison purposes, the peak ground acceleration in a single direction measured during the 1994 Northridge earthquake was 1.82 g, moment magnitude of 6.7; this was the highest ever instrumentally recorded in urban North America. The shake potential map shows the projected maximum capacity for ground shaking in the specific geography based on conditions such as topography, soil types, and groundwater location. The entirety of the City is vulnerable to the same levels of ground shaking.

2.2.1.3. Liquefaction

Seismic ground shaking of relatively loose, granular soils that are saturated or submerged can cause the soils to liquefy and temporarily behave as dense fluid. Liquefaction occurs primarily in areas of recently deposited sands and silts with poorly consolidated sediment and in areas of high groundwater levels. Los Altos sits on the very deep alluvial soils of the Santa Clara Valley floor. These soils, consisting of silt, clay, sand, and gravel deposits, can extend to a depth of 4,000 to 5,000 feet throughout most of the City.

Figure 5 shows areas of liquefaction hazards throughout the City. Mapped liquefaction zones exist near the creeks that run through Los Altos. Namely, the areas surrounding Adobe Creek, Hale Creek, Permanente Creek, and Stevens Creek are areas of potential liquefaction. Although severe ground motion resulting from an earthquake would be apparent in Los Altos because of the depth of the loosely consolidated soils, damage generally would not be serious to the predominant one- or two-story wood frame structures that are prevalent in the City of Los Altos.

2.2.2. Subsidence

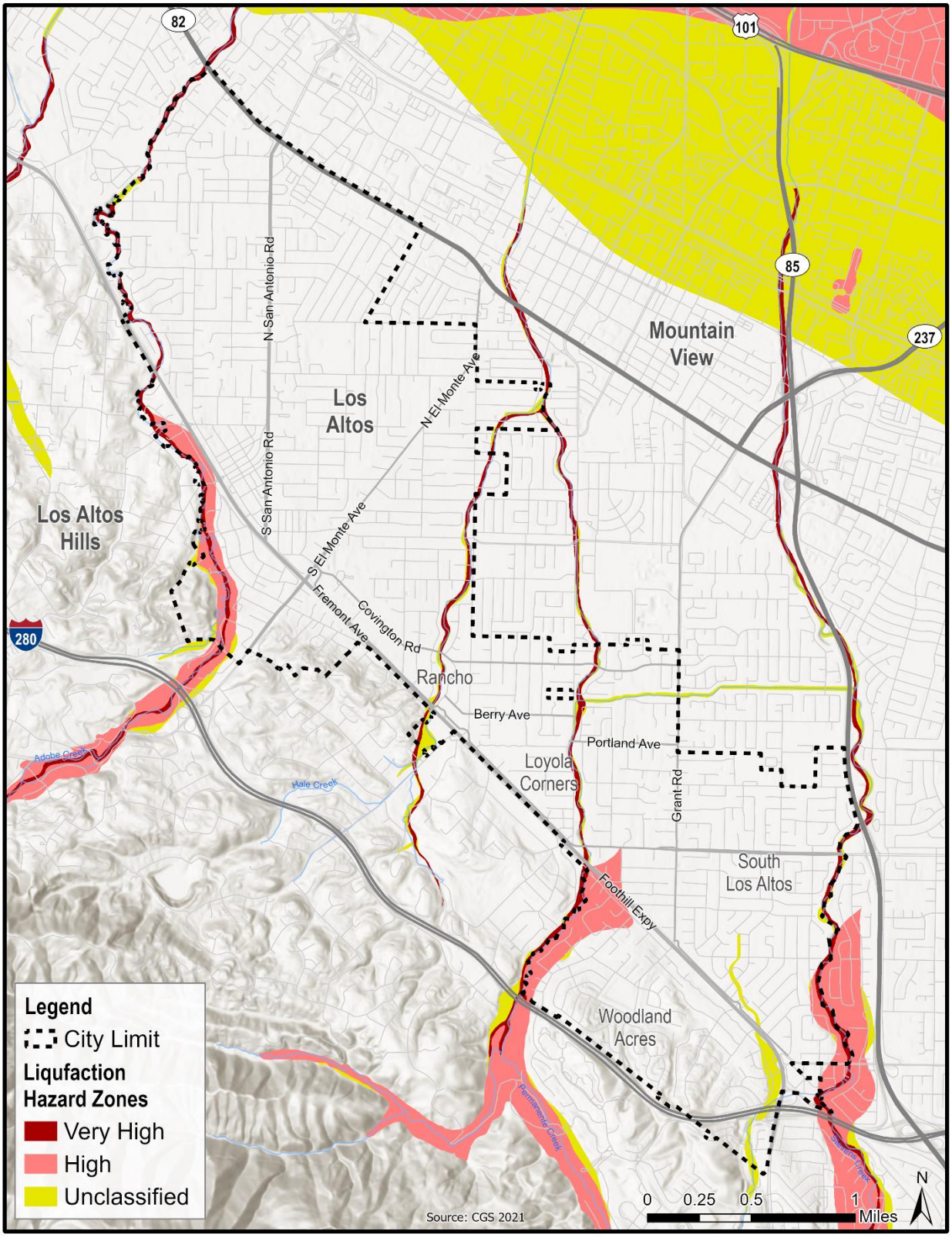
Ground subsidence is the gradual settling or sinking of the ground surface with little or no horizontal movement. Most ground subsidence is anthropogenic (created or influenced by humans) and is usually associated with the extraction of oil, gas, or groundwater from below the ground surface in valleys filled with recent alluvium. Land subsidence can also occur during an earthquake because of offset along fault lines and as a result of the settling and compacting of unconsolidated sediment from the shaking of an earthquake.

The United States Geological Survey (USGS) documents areas of land subsidence throughout California, including historical and current subsidence. The USGS has identified significant areas of regional subsidence as a result of groundwater pumping throughout Santa Clara County.

The majority of Santa Clara Valley, including the City of Los Altos, has been identified as an area of land subsidence. Generally, eastern areas of the City are identified as areas of land subsidence. **Figure 6** shows California's Groundwater Update land subsidence data which maps 0.25-foot intervals of land subsidence. The data shows that eastern areas of the City have experienced up to 0.25 feet of land subsidence.

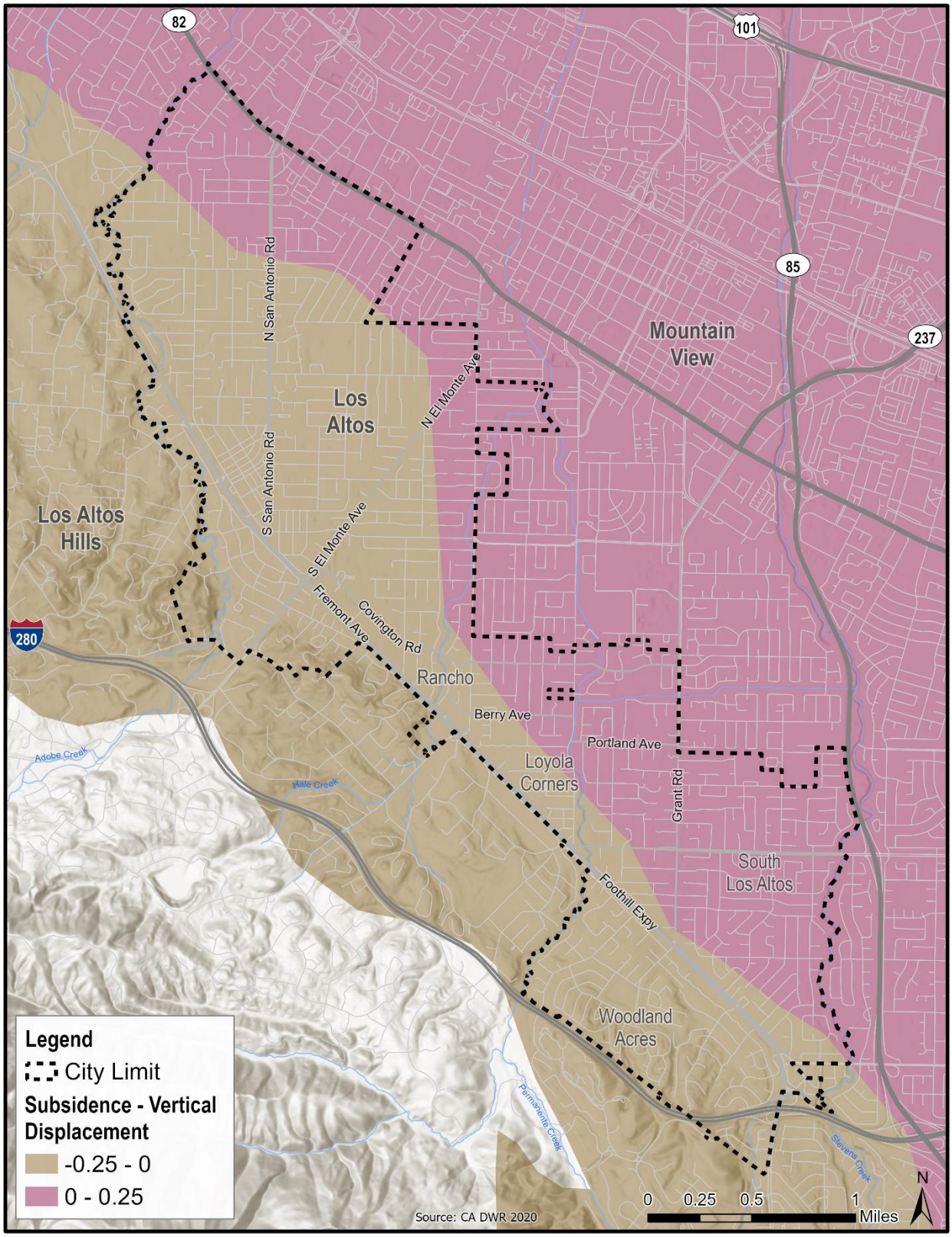
Due to the geology of the City and the potential for seismicity, land subsidence may impact significant eastern portions of Los Altos. Continued groundwater withdrawal may worsen land subsidence throughout the planning area.

Figure 5: Liquefaction Zones



Source: US Geological Survey; Esri; City of Los Altos.

Figure 6: Land Subsidence



Source: California's Groundwater Update 2020 (Bulletin 118), Land Subsidence Vertical Displacement Polygon dataset.

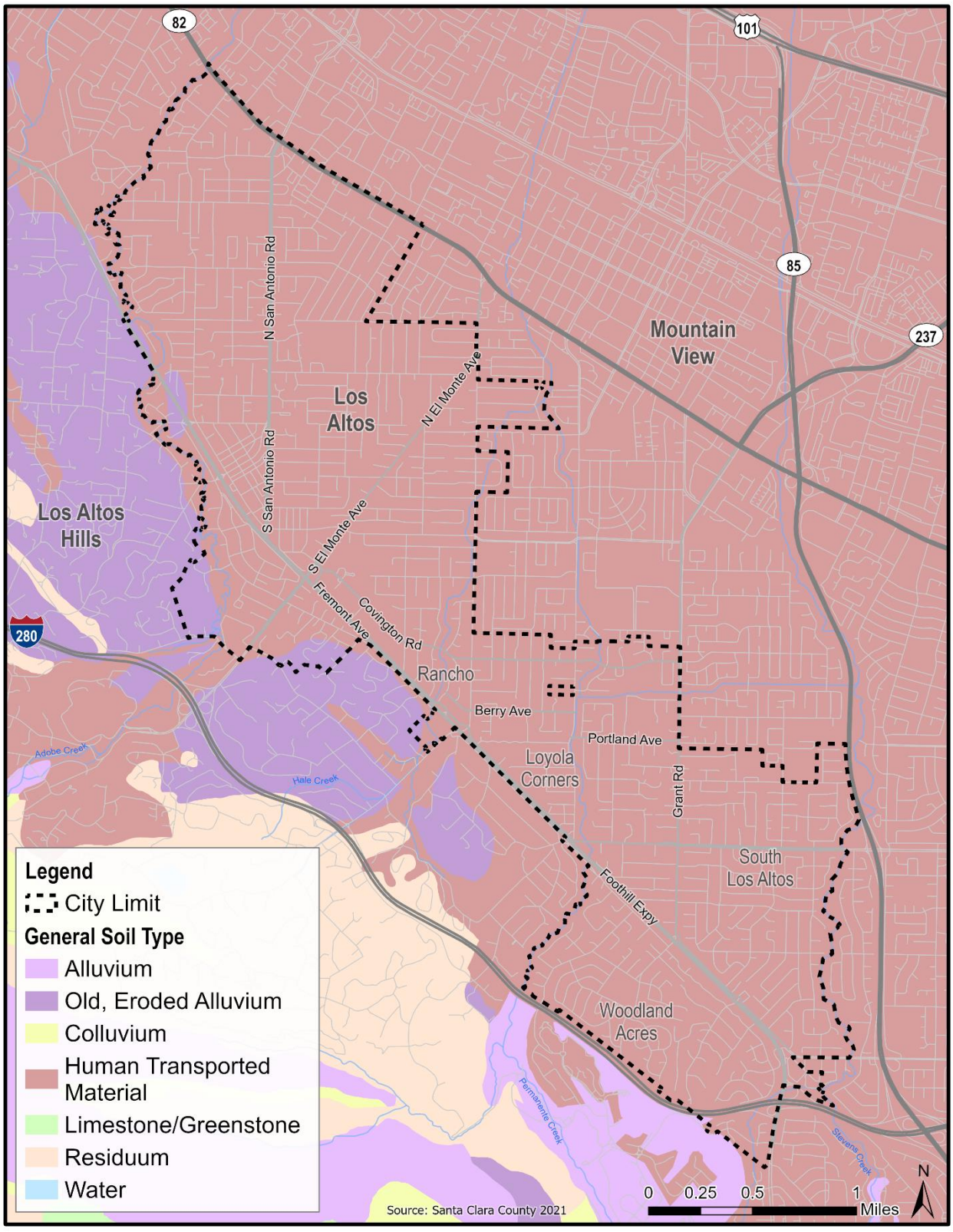
2.2.3. Expansive Soils

Expansive soils are those that have the ability to expand or contract, changing in volume based on their moisture content. They are typically composed of a form of expansive clay mineral that readily absorbs water and swells, leading to an increase in volume when wet and shrinkage when dry. This shrink-swell process can cause fatigue and cracks in infrastructure or foundations placed directly on or within expansive soils. Structural damage may result over a long period of time, making it difficult to estimate the severity of long-term impacts.

The geology of Los Altos may be susceptible to expansive soils due to groundwater. The City is within the Santa Clara Valley which is characterized by high groundwater levels and potentially soils with high clay content. **Figure 7** shows that the majority of soil throughout the City is human-transported material. There may be swelling potential within these soils. Expansive soils have not been well documented throughout the City, but the potential for expansive soils exists throughout the area where the Santa Clara Valley contains groundwater and soil conditions that are conducive.

Resilient Los Altos and Community Emergency Response Team (CERT) provide volunteer support to the City.
Photos Courtesy of Los Altos CERT and Resilient Los Altos

Figure 7: Soils



Source: Santa Clara County Planning Office GIS; Esri; City of Los Altos.

2.2.4. Landslides

A landslide is defined as the movement of a mass of rock, debris, or earth down a slope. Landslides are subdivided by the type of geologic material (bedrock, debris, or earth). Debris flows (commonly referred to as mudflows or mudslides) and rock falls are examples of common landslide types.[4] Landslides can be initiated in slopes already on the verge of movement by rainfall, snowmelt, changes in water level, stream erosion, changes in groundwater, earthquakes, volcanic activity, disturbance by human activities, or any combination of these factors. When a hillside or other slope becomes unstable, downslope movement of rock and soil occurs under the direct influence of gravity. Landslides can include events such as rock falls, topples, slides, spreads, and flows.

Landslides are often sudden, although some occur very slowly over a long period of time. Loose and fractured materials are more likely to slide than compact materials or solid rock, and steep slopes are at greater risk than gentle rises. Areas that have been recently burned by wildfires are more susceptible to sliding because the fire destroys the plant cover that helps stabilize slopes. Areas underlain by shale and siltstone are more prone to landslides when compared to other bedrock geology, which is more prone to slow-developing, slump-type failure.

Landslides are usually induced by either earthquakes or moisture. The shaking of an earthquake can decrease slope stability or, in a more severe instance, can fracture the earth's material enough to slide. Moisture-induced landslides can occur when the ground soaks up enough water that it becomes loose and unstable. This is often the result of intense or long-lasting rainfall but can also result from a pipeline burst or overwatering landscapes. In some cases, hillside erosion from rainfall can cause instability and result in landslides. If the slide is wet enough to become mud, the event is known as a mudslide or a mudflow.

Figure 8 shows the relative likelihood of deep-seated landsliding based on regional estimates of rock strength and steepness of slopes.[5] On the most basic level, weak rocks and steep slopes are most likely to generate landslides. The map uses detailed information on the location of past landslides, the location and relative strength of rock units, and the steepness of the slope to estimate susceptibility to deep-seated landsliding, shown through classes of landslide susceptibility ranging from 0 (low) to 10 (high).

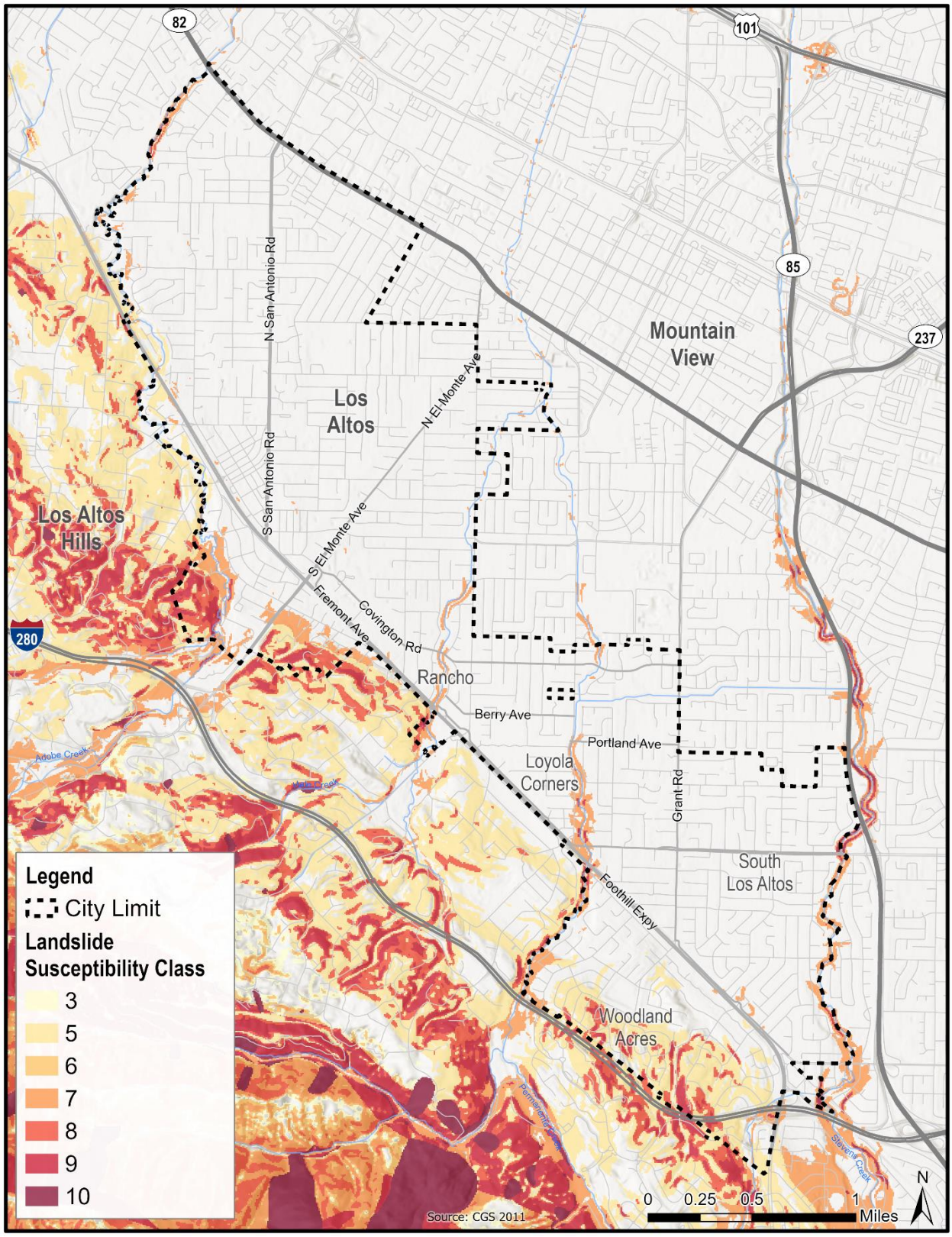
These classes generalize that on very low slopes, landslide susceptibility is low even in weak materials, but it increases with slope and in weak rocks. Landslide susceptibility is based on rock strength and slope steepness. Areas with steep or unstable slopes have the highest landslide risk in Los Altos. Landslides are also likely on hillsides where rock strata parallel surface slopes, high clay content absorbs excess water, displacement fractures a fault zone, or erosion or human activity removes a slope's base. Landslides are unlikely on slopes under 15 percent. In Los Altos, slopes of 15 percent or more are isolated to the City's southwest. While no recent landslides have occurred in the planning area, development on such slopes should be carefully reviewed to mitigate risks.

Source: Washington Geological Survey, accessed May 20, 2024, https://www.dnr.wa.gov/publications/ger_fs_landslide_processes.pdf.

[4] United States Geological Survey, "What is a landslide and what causes one?", accessed May 20, 2024, https://www.usgs.gov/faqs/what-landslide-and-what-causes-one.

[5] "Deep-seated landslide" is typically defined as a landslide that is slow moving, rooted in bedrock, and covering larger areas.

Figure 8: Landslide Areas



Source: California Department of Conservation; California Geological Survey; Esri; City of Los Altos.

2.2.5. Tsunamis and Seiches

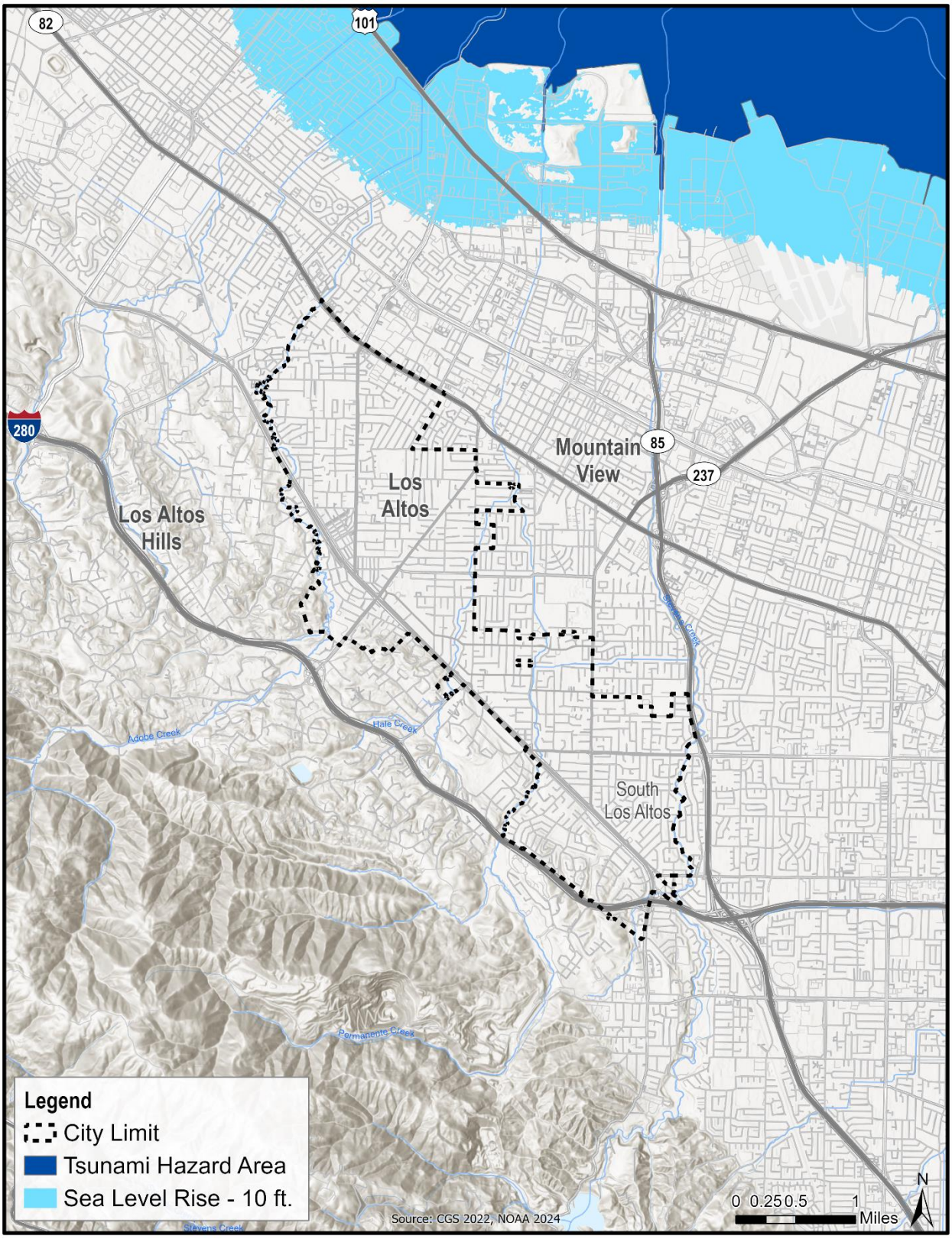
A tsunami is a wave or series of waves generated by a large and sudden upward movement of the ocean floor, usually the result of an earthquake below or near the ocean floor. This sudden displacement and force create waves that radiate outward in all directions away from their source, sometimes crossing entire ocean basins. Los Altos is located five to six miles from the San Francisco Bay with an elevation of 150 feet or more above sea level. Consequently, potential hazards associated with water waves are not likely to impact populations and facilities within the City. Furthermore, based on the Tsunami Hazard simulations by the California Department of Conservation, a tsunami event will not impact the City of Los Altos (refer to **Figure 9**).

However, regional infrastructure and facilities in nearby areas that serve the City, such as the Palo Alto Regional Water Quality Control Plant, may be impacted by tsunamis. Inundation due to tsunami could cause regional impacts that disrupt water and utility services by damaging infrastructure such as pipelines, power lines, and sewage systems. Secondary impacts to the City of Los Altos might include contamination of water supplies, loss of power, and interruptions to communication and transportation networks. These disruptions can lead to broader public health and safety issues, affecting emergency response and overall community resilience.

A seiche is defined as a standing wave oscillation in an enclosed or semi-enclosed, shallow to moderately shallow water body to the basin, such as a lake, reservoir, bay, or harbor, due to ground shaking, usually following an earthquake. Seiches continue in a pendulum fashion after the cessation of the originating force, which can be tidal action, wind action, or a seismic event. Seiches are often described by the period of the waves (how quickly the waves repeat themselves) since the period will often determine whether adjoining structures will be damaged. The period of a seiche varies depending on the dimensions of the basin. Whether the earthquake will create seiches depends upon a number of earthquake-specific parameters, including the earthquake location (a distant earthquake is more likely to generate a seiche than a local earthquake), the style of fault rupture (e.g., dip-slip or strike-slip), and the configuration (length, width, and depth) of the basin.

The nearest body of water to the City is the San Francisco Bay; however, seiches within the Bay would not impact the City. Similarly to tsunami, although populations and facilities within the City may not be directly impacted, regional infrastructure may be impacted by seiches. The Palo Alto Regional Water Quality Control Plant is of particular concern because it serves the City of Los Altos but is located within the tsunami and sea level rise hazard area in Palo Alto. Seiches that impact surrounding areas may damage infrastructure such as pipelines, power lines, and sewage systems and cause secondary impacts to the City including contamination of water supplies, loss of power, and interruptions to communication and transportation networks.

Figure 9: Tsunami and Sea Level Rise Map



Source: California Geologic Survey, National Oceanic and Atmospheric Administration; Esri; City of Los Altos.

2.3. Fire Hazards

2.3.1. Wildland Fires

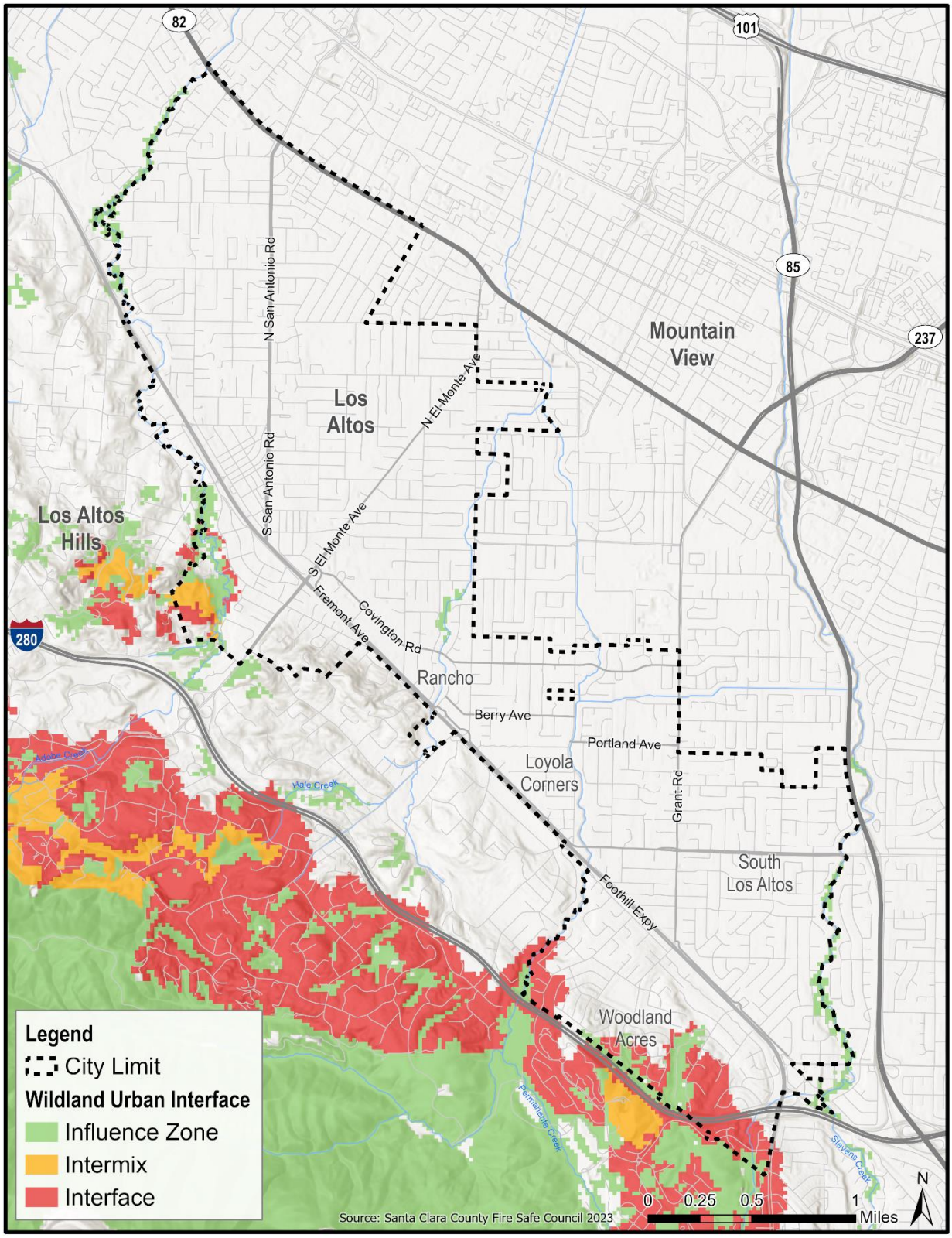
A wildfire is defined as an unplanned and unwanted wildland fire, including unauthorized human-caused fires, escaped wildland fire use events, escaped prescribed fire projects, and all other wildland fires where the object is to extinguish the fire. Wildfire is a natural part of the California ecosystem, helping to clear brush and debris, and is a necessary part of various species' life cycles. Wildfires can be sparked by lightning, accidents, or arson.

Human activity has changed the buffer zone between urbanized and undeveloped areas, known as the wildland-urban interface, where naturally fire-prone landscapes abut developed neighborhoods. The natural setting of a wildland-urban interface can make these areas highly desirable places to live, and many of these areas in California are now developed. This development has brought more people into wildfire-prone areas. The availability of fuel and increasing encroachment into the wildland-urban interface have made wildfires a common and dangerous hazard in California. Structural conditions that may affect fire control include the type and use of a structure, roof covering, surrounding landscaping, and exposure to the building.

The Santa Clara County Community Wildfire Protection Plan (CWPP) identifies wildland urban interface areas within the City of Los Altos; refer to **Figure 10**. The CWPP Wildland Urban Interface dataset identifies a wildland urban influence zone (lowest risk), wildland urban intermix, and wildland urban interface (highest risk). The majority of the City is not a designated wildland urban interface area. The City is mostly developed which has a low risk for wildfire; however, development intermingles with undeveloped, open space, and natural areas that are prone to wildfire. The wildland-urban interface within the City primarily exists where development blends into the foothills of Rancho San Antonio County Park and the Santa Cruz Mountains to the southwest. Wildland urban interface areas primarily include residential areas in Woodland Acres and areas north of South El Monte Ave and west of Foothill Expressway. Additionally, wildland-urban interface areas include riparian zones along Adobe Creek, Stevens Creek, Hale Creek and Permanente Creek which run throughout the City. Regional wildfires and large wildfires outside of the City, particularly wildfires in undeveloped areas of unincorporated Santa Clara County, may cross wildland-urban interface areas and threaten the City. Urban fire hazards in Los Altos are concentrated primarily in dense nonresidential areas with limited landscape and separation between structures.

The City will reduce the potential for dangerous fires by coordinating with the Santa Clara County Fire Department to implement fire hazard education and fire protection programs. The City will also ensure that construction is consistent with the current California Fire Code including water flow and pressure requirements for firefighting purposes, requirements for turnarounds at dead end roads, road widths, and distances between fire hydrants.

Figure 10: Wildland Urban Interface



Source: Santa Clara County CWPP GIS Data Portal; Esri; City of Los Altos.

2.3.2. Fire Hazard Severity Zones

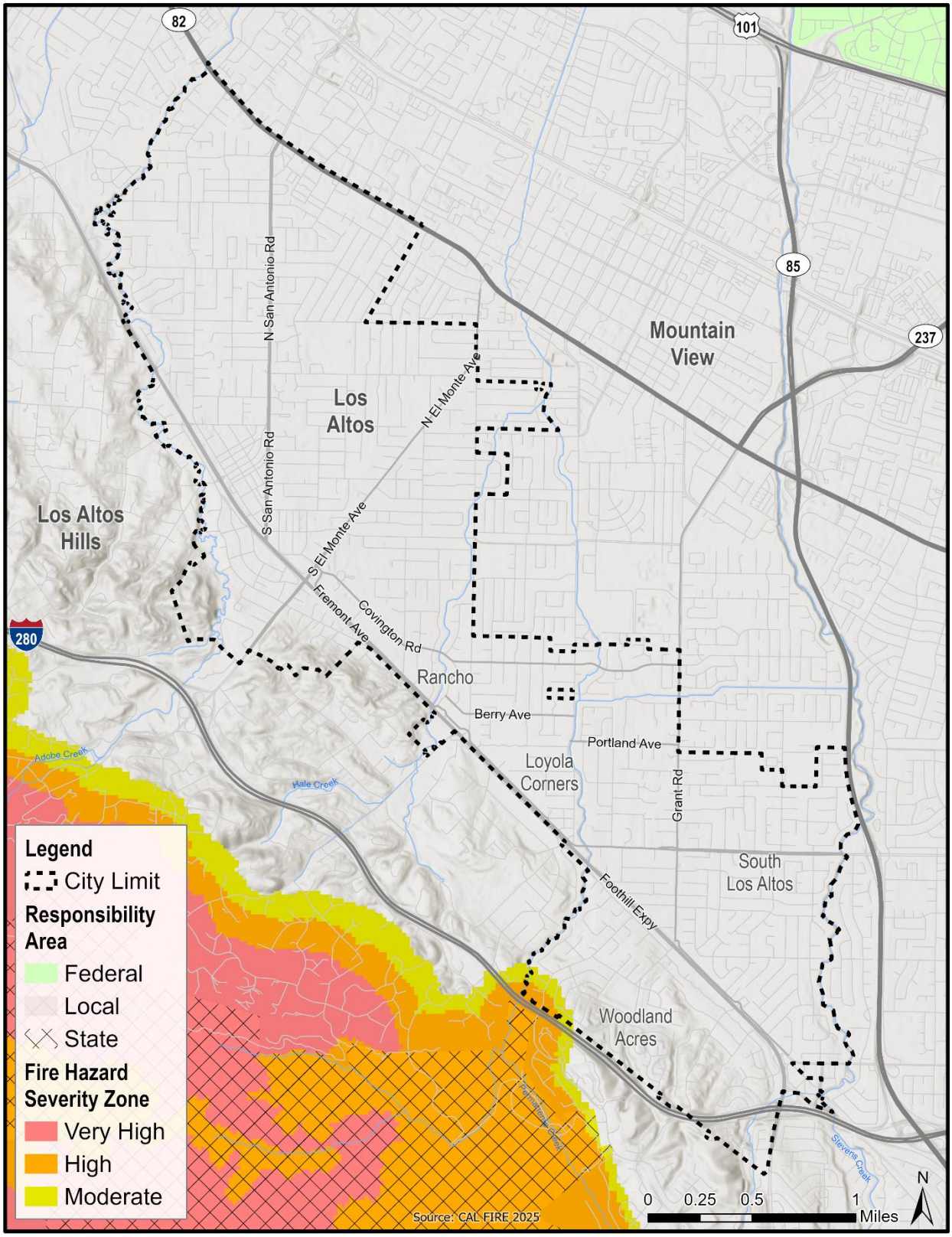
The California Department of Forestry and Fire Protection (Cal Fire) prepares wildfire hazard severity maps, including mapping areas of significant fire hazards based on fuels, terrain, weather, and other relevant factors. These zones, referred to as fire hazard severity zones (FHSZ), define the application of various mitigation strategies and influence how people construct buildings and protect property to reduce the risk associated with wildland fires. While a designation of FHSZ does not predict when or where wildfire will occur, it does identify areas where wildfire hazards could be more severe and therefore is of greater concern. Zones are designated in varying degrees, from moderate to high and very high.

An FHSZ may fall under one of three types of responsibility areas: Local Responsibility Area (LRA), State Responsibility Area (SRA), or Federal Responsibility Area (FRA). LRAs are incorporated into cities, urban regions, and agricultural lands where the local government is responsible for wildfire protection. SRAs are those for which the State of California is financially responsible for the prevention and suppression of wildfires. FRAs are land for which neither the state nor the local government has legal responsibility for providing fire protection. For LRAs, only very high fire hazard severity zones are mapped.

The entirety of Los Altos is categorized as an LRA, where the local government is responsible for wildfire protection. There are no areas identified as a very high fire hazard severity zone within the City. However, the unincorporated areas of Santa Clara County to the southwest, which include Rancho San Antonio County Park and the Santa Cruz Mountains, are identified as SRAs with areas of high and very high fire hazard severity zones **(Figure 11)**. Therefore, the southwestern area of the City, which abuts these severity zones under state responsibility, is at risk for wildfires. Additionally, wildfires do not only occur in areas identified as fire hazard severity zones, and regional wildfires have the potential to have wide impacts across jurisdictions. Wildfires in the unincorporated areas to the southwest of the City would potentially impact the developed neighborhoods within Los Altos.

"The California Department of Forestry and Fire Protection (Cal Fire) prepares wildfire hazard severity maps, including mapping areas of significant fire hazards based on fuels, terrain, weather, and other relevant factors."

Figure 11: Fire Hazard Severity Zone



Source: California Department of Forestry and Fire Protection; Esri; City of Los Altos.

2.4. Flooding

2.4.1. Major Sources of Flooding

Flood hazards fall into three categories: natural flooding, dam inundation, and mud and debris flows. Flooding occurs when a waterway (either natural or artificial drainage channel) receives more water than it is capable of conveying, causing the water level in the waterway to rise. Depending on how long these conditions last and the amount of runoff the waterway receives in proportion to its capacity, the rising water level may eventually overtop the waterway's banks or any other boundaries to the drainage area, resulting in flooding.

Floods often occur during heavy precipitation events, when the amount of rainwater exceeds the capacity of storm drains or flood control channels. Floods can also happen when infrastructure such as levees, dams, reservoirs, or culverts fail or when a section of drainage infrastructure fails, and water cannot be drained from an area quickly enough. These failures can be linked to precipitation events (e.g., when water erodes a levee, allowing water to escape and flood nearby areas) or can be a consequence of other emergency situations (e.g., a dam collapsing due to an earthquake).

FEMA maintains flood maps throughout the United States. FEMA defines flood or flooding as a general and temporary condition of partial or complete inundation of normally dry land areas from:

- The overflow of inland or tidal waters;
- The unusual and rapid accumulation or runoff of surface waters from any source; or,
- Mudslides (i.e., mudflows) caused by flooding, akin to a river of liquid and flowing mud on the surfaces of normally dry land areas, as when earth material is carried by a current of water and deposited along the path of the current.

Floods can be caused and/or exacerbated by a number of factors, including the following:

- Weather and climate patterns.
- Hydrologic features such as reservoirs, ponds, lakes, rivers, etc.
- The ground's absorption capacity, which depends on the soil's composition and the area's bedrock. Less absorbent soil conditions, in addition to a lack of proper storm infrastructure, can result in flooding.
- The type and density of vegetation, which affect the flow of water.
- Patterns of land use/urbanization relate to the pervious and impervious ground.
- The level, age, and condition of flood management infrastructure.
- Large-scale wildfires dramatically alter the terrain and ground conditions. Vegetation absorbs rainfall, reducing runoff. However, wildfires leave the ground charred, barren, and unable to absorb water properly, creating conditions ripe for flash flooding and mudflow until vegetation is restored—up to five years after a wildfire.[6]

Los Altos is subject to periodic flood hazards associated with creek overflow, dam inundation, and potential mud and debris flows during rainstorms of a few hillsides within the planning area. The Los Altos planning area

[6] Federal Emergency Management Agency, *Flood Risk Increases After Fires Are Out – Buy Flood Insurance Now*, accessed May 20, 2024, https://www.fema.gov/fact-sheet/4562/flood-risk-increases-after-fires-are-out-buy-flood-insurance-now.

contains both 100- and 500-year floodplain areas as shown in **Figure 12**.

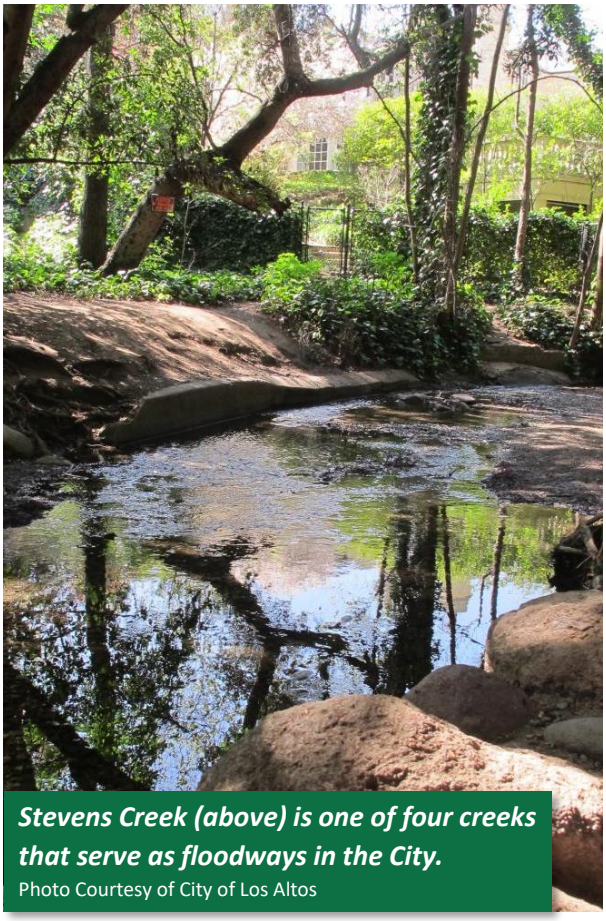
Flood hazard areas identified on the Flood Insurance Rate Map (FIRM) are identified as Special Flood Hazard Areas (SFHA). SFHAs are defined as the area that will be inundated by the flood event having a 1 percent chance of being equaled or exceeded in any given year. The 1 percent annual chance flood is also referred to as the base flood or 100-year flood. SFHAs are labeled as Zone A, Zone AO, Zone AH, Zones A1-A30, Zone AE, Zone A99, Zone AR, Zone AR/AE, Zone AR/AO, Zone AR/A1-A30, Zone AR/A, Zone V, Zone VE, and Zones V1-V30. Moderate flood hazard areas, labeled Zone B or Zone X (shaded), are also shown on the FIRM and are the areas between the limits of the base flood and the 0.2 percent annual chance (or 500-year) flood. The areas of minimal flood hazard, which are the areas outside the SFHA and higher than the elevation of the 0.2 percent annual chance of flood, are labeled Zone C or Zone X (unshaded). There are Zone A, AO, AH, and AE flood risk areas along the creeks of the City.

A Zone (A): These are areas with a 1% annual chance of flooding (also known as the 100-year flood) and a 26% chance of flooding over the life of a 30-year mortgage. These are characterized as having highest risk for flooding, but no detailed hydraulic analysis has been performed. Flood insurance is mandatory for properties with federally-backed mortgages.

AO Zone (AO): These are areas with a 1% annual chance of shallow flooding, usually in the form of sheet flow, with an average depth of 1 to 3 feet. Flood depths and velocities are determined for these areas, and they can result from ponding or local drainage issues. Flood insurance is mandatory for properties with federally-backed mortgages.

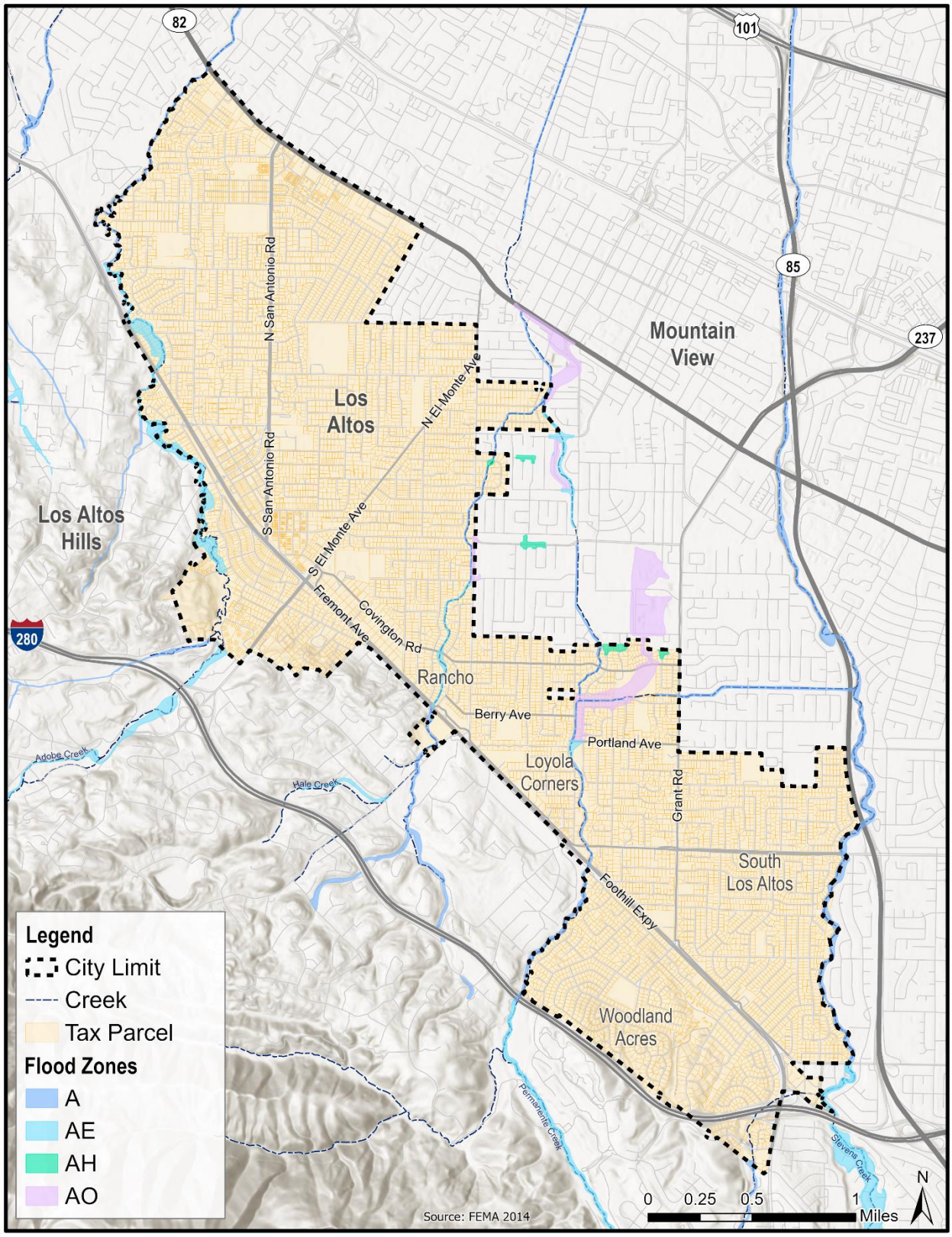
AE Zone (AE): These are areas with a 1% annual chance of flooding where Base Flood Elevations (BFEs) are determined. Detailed hydraulic analysis has been performed. The floodplain has been mapped with more precision, and BFEs are provided. Flood insurance is mandatory for properties with federally-backed mortgages.

AH Zone (AH): Areas with a 1% annual chance of shallow flooding, usually in the form of ponding, with average depths between 1 and 3 feet. Like Zone AO, this zone experiences shallow flooding, but the primary cause is ponding rather than sheet flow. Detailed hydraulic analyses have determined flood depths. BEEs are provided for these areas, indicating the expected water surface elevation during a base flood event. Flood insurance is mandatory for properties with federally-backed mortgages



Stevens Creek (above) is one of four creeks that serve as floodways in the City.
Photo Courtesy of City of Los Altos

Figure 12: FEMA Flood Zones



Source: Federal Emergency Management Agency; Esri; City of Los Altos.

2.4.2. Natural Flooding

Natural flooding occurs when major rainstorms cause stream overflows. Surface waters within Los Altos are primarily creeks that originate in the foothills and meander toward the low-lying areas in the northeast. Creeks in the area include Adobe Creek, Hale Creek, Permanente Creek, and Stevens Creek; flooding would potentially occur in these areas in the event of significant storm events. Portions of these four creeks have been channelized to increase the capacity of the creeks to reduce flooding and to permit development of the floodplain. The majority of mapped flood zones within the City are confined to these flood channels. Further channelization is not recommended for any of the creeks in Los Altos because of the conflict with preservation of natural resources.

According to the FEMA flood maps, Adobe Creek and Permanente Creek are the most flood-prone of Los Altos' creeks. The flood zones in the area are categorized as a FEMA 100-year flood hazard zone with only a 1 percent annual chance of flooding.

2.4.3. Dam Inundation

Dam failure is the uncontrolled release of impounded water from behind a dam. Flooding, earthquakes, blockages, landslides, lack of maintenance, improper operation, poor construction, vandalism, and terrorism can all cause dam infrastructure to fail. Dam failure causes downstream flooding of varying velocities that can result in loss of life and property.

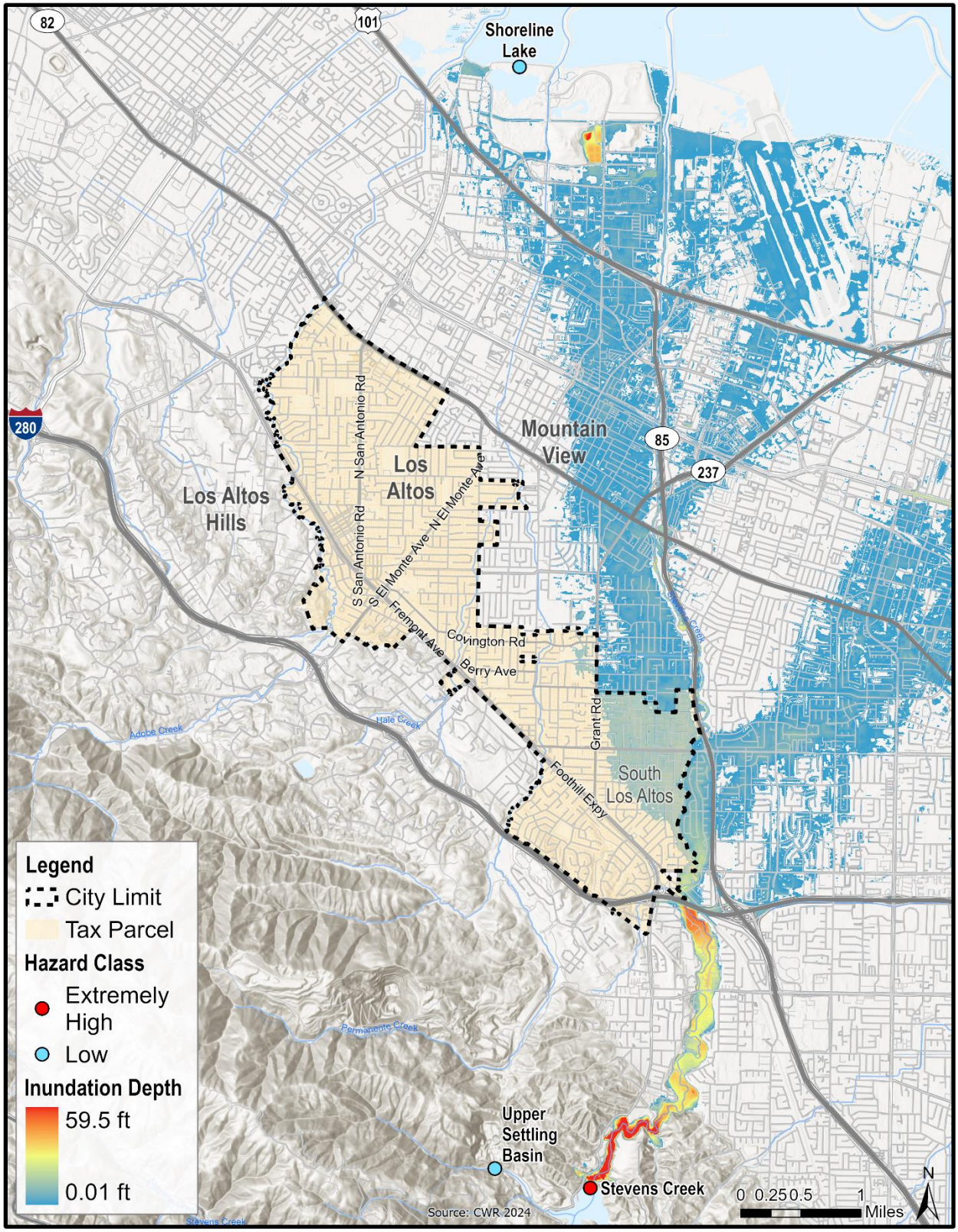
Dam inundation could occur with the failure of the Stevens Creek Dam. According to the California Department of Water Resources, Division of Safety of Dams (DSOD), the downstream hazard from Stevens Creek Dam is classified as extremely high.[7] The downstream hazard is based solely on potential downstream impacts to life and property should a dam fail when operating with a full reservoir, and is expected to cause considerable loss of human life or result in an inundation area with a population of 1,000 or more. Built in 1935, the dam is owned and operated by Santa Clara Valley Water District and is in fair condition based on the DSOD report from September 2022.

Figure 13 depicts areas subject to flood inundation in the event of failure of the Stevens Creek Dam. Dams typically fail due to overtopping by reservoir water during heavy rainfall episodes, structural damage, and earthquake-related hazards such as landsliding, ground shaking, and seiches. A dam failure event at Stevens Creek Dam would cause flooding along Stevens Creek at the southeastern border of the City. Depending on the severity of the event, portions of south Los Altos could be inundated by water released from the dam.

California Government Code Section 8589.5 requires the City to have emergency procedures in place for the evacuation and control of populated areas within the limits of inundation below dams. In addition, real estate disclosure upon sale or transfer of property in the inundation area is required under Assembly Bill 1195 Chapter 65 passed in June 1998. Los Altos participates in the National Flood Insurance Program which provides federal flood insurance and federally financed loans for property owners in flood-prone areas.

[7] California Department of Water Resources, *Dams Within Jurisdiction of the State of California Listed*, accessed June 1, 2024, https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/All-Programs/Division-of-Safety-of-Dams/Files/Publications/Dams-Within-Jurisdiction-of-the-State-of-California-Listed-Alphabetically-by-Name-September-2022.pdf.

Figure 13: Reservoir Inundation



Source: California Department of Water Resources-Division of Safety of Dams; Esri; City of Los Altos.

2.4.4. Mud and Debris Flows

Mud and debris flows are defined as a river of rock, earth, mud, and other debris, including saturated vegetation. While landslides can occur without the presence of soil (such as a rock landslide), debris flows consist of material that contains at least 50 percent sand, silt, and clay-sized particles. The high percentage of water gives the debris flow a rapid rate of movement down a slope, posing extremely dangerous conditions to people and property. Flows triggered by earthquakes or heavy rainfall can occur on gentle slopes and can move rapidly for large distances.

Mud and debris flows originate in hillside areas having deep topsoil with poor drainage. The majority of the Los Altos planning area is relatively flat terrain that is not subject to mud and debris flows. The rolling terrain in the southwest portion of the planning area contains deep soils consisting of silt, clay, sand, and gravel deposits. While there are no recent examples of mud or debris flows in the planning area, development in the southwest slopes should be carefully reviewed for mitigation of mud and debris flow risks. The City will reduce the potential for flood hazards by implementing the adopted flood hazard area regulations for designated floodways, mudflow-prone areas, and flood-related erosion prone areas.

2.4.5. Drainage System

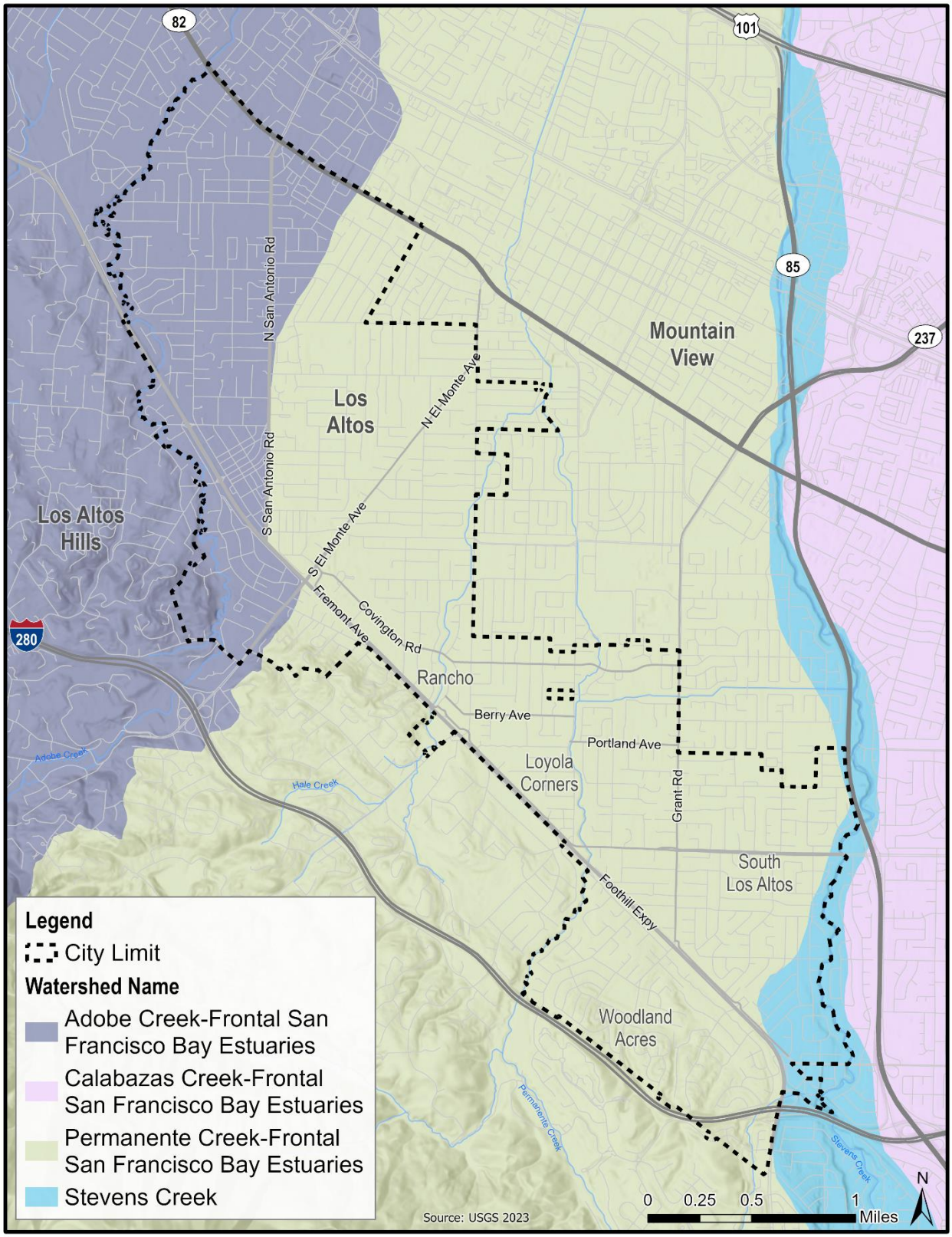
A watershed, also known as a drainage basin or catchment area, is an area of land where all the water, including rainfall and runoff, drains into a common outlet, such as a river, lake, or ocean. There are various watersheds within Los Altos that originate in the mountains and drain toward the low-lying areas of the Santa Clara Valley and San Francisco Bay in the northeast. Watersheds in the area include Adobe Creek-Frontal San Francisco Bay Estuaries, Permanente Creek-Frontal San Francisco Bay Estuaries, and Stevens Creek. These watersheds are essential for managing stormwater and maintaining water quality in the City of Los Altos. To further support flood control efforts, portions of these creeks within Los Altos have been channelized to increase capacity and reduce flooding.

Land development can have a significant impact on flooding as impervious surfaces increase the amount of overland flow and decrease the amount of water that is absorbed by the natural landscape. To preserve the natural quality of riparian zones, it is important to prevent development that increases runoff that would exceed the capacity of local creeks. To reduce pollutants in urban runoff, the City requires new development projects and substantial rehabilitation projects to incorporate best management practices pursuant to the National Pollutant Discharge Elimination System Permit and Santa Clara County Drainage Manual 2007.[8]

Additionally, the City of Los Altos served on the Santa Clara Valley Water Resources Protection Collaborative (Water Collaborative), established in 2002. In 2006, the Water Collaborative developed and adopted the *Guidelines and Standards for Land Use Near Streams: A Manual of Tools, Standards, and Procedures to Protect Streams and Streamside Resources in Santa Clara County*. The City adopted these guidelines in 2007 as Resolution No. 07-03 and implements the policies and standards for development to the extent feasible and appropriate. The City also protects watersheds and drainages through storm drain maintenance and erosion control.

[8] Santa Clara County, *Drainage Manual*, 2007, https://stgenpln.blob.core.windows.net/document/DrainageManual_Final.pdf.

Figure 14: Watersheds



Source: US Geological Survey-National Hydrography Dataset; Esri; City of Los Altos.

2.5. Climate Change and Resilience

2.5.1. Climate Change

Climate change is generally defined as the long-term shift in global or regional temperature and weather patterns. Climate change may be a natural global phenomenon to some extent, but typically the observed change in global and regional climate patterns is attributed to increased levels of carbon dioxide in the atmosphere caused by the burning of fossil fuels.

Climate change can have widespread effects on temperature and weather patterns, creating conditions that may make storms more frequent or more intense, resulting in more intense rainfall and flooding. In many areas, climate change may increase the frequency and duration of droughts and create conditions that intensify wildfire vulnerability. Climate change has the potential to exacerbate most natural and environmental hazards, except seismic hazards, which are not linked to climate patterns. Additionally, climate change is not linked to human-caused hazards such as hazardous materials release.

The Cal-Adapt tool provides local climate projections for temperature, precipitation, and wildfire snapshots for cities and counties in California.

Table 2 shows the changes specific to Los Altos. As shown, the number of extreme heat days, increase in annual maximum temperatures, and decrease in annual precipitation may be a cause of concern.

Table 2: Local Climate Change Snapshot

Climate Change Factors Impacting the City	Observed (1961-1990)	Mid-Century (2035-2064)	
		Medium Emissions [A]	High Emissions [A]
Annual Average Maximum Temperature (°F)	68.9–69.4	70.8–73.6	71.3–74.7
Extreme Heat Days (days)[B]	3–6	7–17	8–20
Annual Average Precipitation (inches)[C]	1.3–1.6	1.3–2.0	1.3–1.75
Annual Average Area Burned (acres)[D]	56.2–63.6	37.1–46.8	42.6–51.4

A. The Medium Emissions Scenario represents a mitigation scenario where global carbon dioxide (CO_2) emissions peak by 2040 and then decline. Statewide, the temperature is projected to increase by 2°C–4°C for this scenario by the end of this century. The High Emissions Scenario represents a scenario where CO_2 emissions continue to rise throughout the twenty-first century. Statewide, the temperature is projected to increase by 4°C–7°C by the end of this century.
B. Number of days in a year when the daily maximum temperature is above a threshold temperature of 103.9°F (98th percentile).
C. Summary statistics are calculated using values between 1961 and 1990 from Modeled Historical data (CanESM2, CNRM-CM5, HadGEM2-ES, MIROC5 models).
D. While Los Altos doesn't have any history of areas that were burned, the data presented here are aggregated over all Localized Constructed Analogs (LOCA) grid cells that intersect Los Altos boundary and hence can contain areas outside the jurisdictional boundary. LOCA grid cells are downscaled to a 1/16 degree latitude/longitude grid using the LOCA statistical downscaling methodology.[9]

Source: Cal-Adapt, Local Climate Change Snapshot, cal-adapt.org.

[9] Pierce, D. W., D. R. Cayan, and B. L. Thrasher, 2014, "Statistical Downscaling Using Localized Constructed Analogs (LOCA)," *Journal of Hydrometeorology*, 15, 2558-2585.

2.5.2. Extreme Heat

An extreme heat event occurs between April and October when the temperature is at or above the 98th percentile for historical daily maximum temperatures in Los Altos. An increase in extreme heat waves can increase the risk of heat stroke or dehydration. Extreme heat may strain water, power, and transportation systems, as well as have negative effects on infrastructure such as roadways and sidewalks, leading to deterioration and buckling. Additionally, the increased use of air conditioners can put strain on electrical systems and lead to GHG emissions, which affect lung function over time. According to the California Access and Functional Needs map, the closest cooling and warming centers for the residents of Los Altos are the Los Altos Library, Woodland Library and Los Altos Community Center.[10]

2.5.3. Sea Level Rise

According to the National Oceanic and Atmospheric Administration, sea level rise at the regional level can deviate significantly from the global average rate.[11] Thus, effects are unique to specific coastal jurisdictions due to variations in topography and geography. Sea level rise projections and modeling are depicted in **Figure 15** and rely on the best available science as evaluated by the California Coastal Commission's 2018 Sea Level Rise Policy Guidance and are supplemented by National Oceanic and Atmospheric Administration's 2022 Sea Level Rise Technical Report. As shown in **Figure 15**, projected sea level rise would not directly impact the City of Los Altos. However, sea level rise has the potential to impact regional infrastructure that services the City of Los Altos. For example, the Regional Water Quality Control Plant is located in the sea level rise hazard zone within the City of Palo Alto. The Regional Water Quality Control Plant treats wastewater for the City of Los Altos and would be impacted by sea level rise. Other infrastructure systems outside of the City may be impacted by sea level rise which would have secondary impacts to Los Altos. Inundation of pipelines, power lines, sewage systems and transportation infrastructure would potentially cause secondary impacts to the City of Los Altos including contamination of water supplies, loss of power, and interruptions to communication and transportation networks. Sea level rise in surrounding communities may result in public health and safety issues, affecting emergency response and overall community resilience throughout the area.

2.5.4. Resilience

Resilience in the face of climate change refers to the actions that can be taken to reduce the drivers of climate change and actions to mitigate the effects of climate change. Strategies such as reducing greenhouse gas emissions, sustainable land uses, and policy change can mitigate the drivers of climate change. However, these strategies alone will not prevent the climate impacts already set in motion by current greenhouse gas levels. Climate change impacts will play out over an extended period. Because climate change is a long-term phenomenon, it is important to adequately plan for the impacts of climate change.

Climate change is anticipated to cause more frequent and/or more severe storms. To increase resilience to climate change, communities can strengthen infrastructure to withstand extreme weather and storms. Bolstering drainage capacities and flood control

[10] AFN Web Map, accessed May 20, 2024, https://www.caloes.ca.gov/office-of-the-director/policy-administration/access-functional-needs/oafn-web-map/.

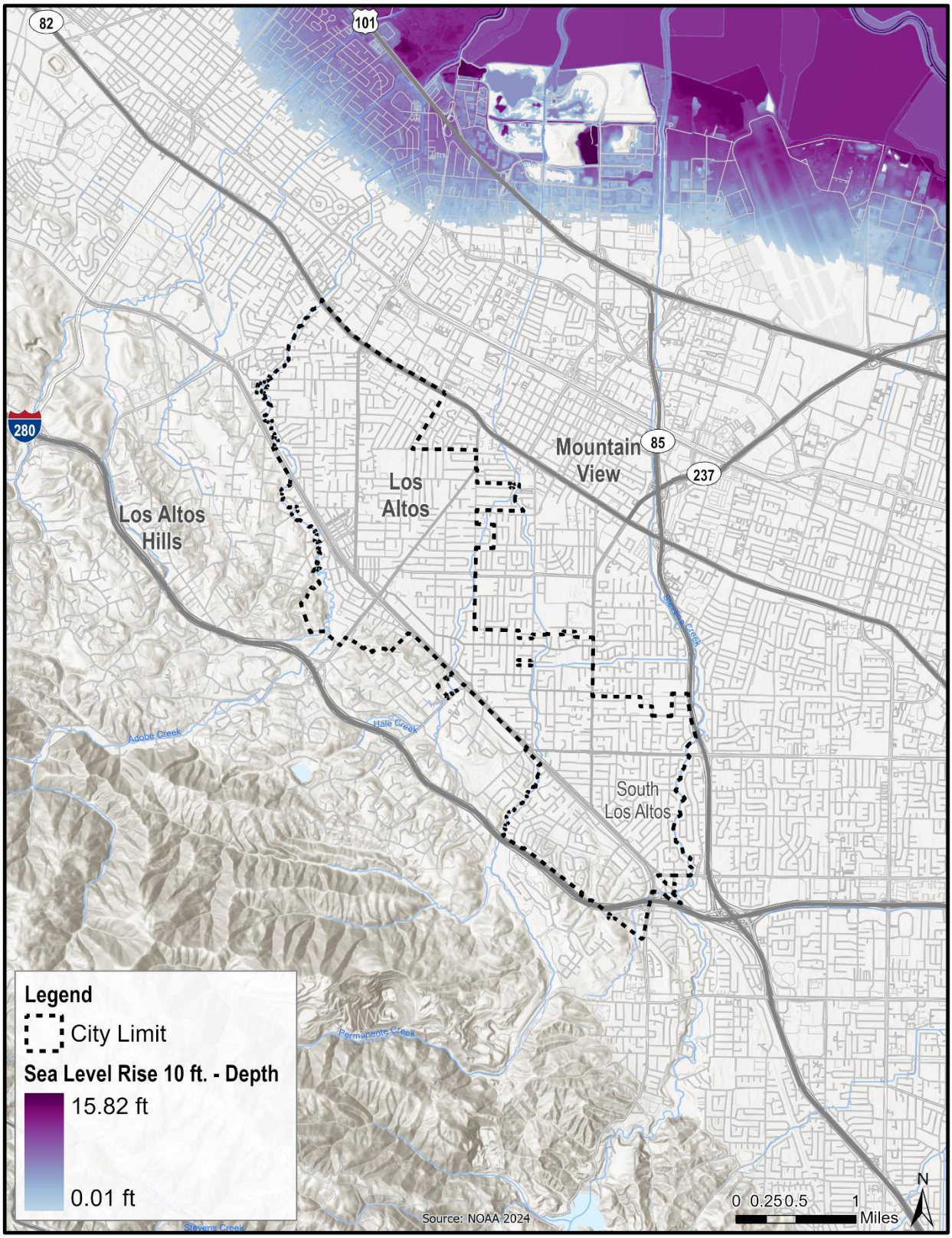
[11] National Ocean Service/National Oceanic and Atmospheric Administration, *2022 Sea Level Rise Technical Report,* https://oceanservice.noaa.gov/hazards/sealevelrise/sealevelrise-tech-report-sections.html.

measures can mitigate the effects of intense storms. Strengthening and modernizing utility infrastructure can mitigate the secondary impacts of storms such as service interruptions, contaminated water supplies, and power outages. With more frequent or intense storm events, it is likely that flooding may have a more significant effect on the City. Additionally, regional assets outside of the City such as utilities and infrastructure are at risk. Flooding or damage to regional infrastructure and facilities including the Palo Alto Regional Water Quality Control Plant, would have impacts to the City of Los Altos. The Regional Water Quality Control Plant treats wastewater for Los Altos and is located in the anticipated sea level rise zone or San Francisco Bay; flooding of this facility would disrupt service to Los Altos and may have regional impacts to water quality. Increasing the capacity of the City's drainage infrastructure would make Los Altos more resilient to weather events linked to climate change. Coordinating regional resilience projects to protect critical infrastructure and bolster stormwater management inside and outside of the City would protect the larger area surrounding Los Altos.

Climate change resiliency also includes measures to reduce vulnerability to droughts and wildfires. This may include water conservation and water supply management efforts to ensure the City is prepared in the event of a long-term drought. Diversifying the City's water supply by introducing and maintaining water sources that are less susceptible to drought or are more sustainable also accomplishes this goal. Additionally, as wildfire becomes more frequent or intense with climate change, actions to mitigate the City's vulnerability may be warranted. Although the City is not generally prone to wildfire hazards, regional wildfires may become an increasing threat with climate change.

Resilient Los Altos (RLA) is dedicated to strengthening neighborhoods in Los Altos by providing residents with knowledge, training and resources needed to prepare for, respond to and recover from emergencies.
Photo Courtesy of Resilient Los Altos

Figure 15: Sea Level Rise



Source: National Oceanic and Atmospheric Administration; Esri; City of Los Altos.

2.5.5. Vulnerability Assessment Summary

The Vulnerability Assessment for City of Los Altos is supported by two documents: the Santa Clara County Multi-Jurisdictional Hazard Mitigation Plan (MJHMP) and the Los Altos Climate Action and Adaptation Plan (CAAP). The goal of the Vulnerability Assessment is to understand how and to what extent the changing climate will impact the community—assets, people, and the economy.

According to the MJHMP, Los Altos faces several vulnerabilities related to climate hazards. These include extreme heat, drought, and wildfires, which can impact community health, air quality, water availability, and biodiversity. Additionally, storms with intense precipitation, flooding, and high winds pose a growing risk. Vulnerabilities also extend to potential flooding, property damage, and loss of life downstream of Stevens Creek Dam. The City's primary wildfire vulnerability is poor air quality due to neighboring wildfire events, which affect vulnerable populations. The City does not have a mandatory earthquake retrofit policy in place. In general, buildings with a higher collapse potential include residential and commercial buildings constructed prior to 1990 that have not had seismic retrofits. Areas near creeks are also at risk due to higher liquefaction potential. Below is the vulnerability summary from the MJHMP.

The CAAP provides a risk probability score for each of the hazards. The CAAP Task Force is a group of City staff and Environmental Commission members who guided the development of the CAAP. Task force members ranked their concerns on a scale of 1 to 3 for primary and secondary climate hazards. Primary climate hazards are phenomena that are climate variables. Temperature and precipitation define climate. Secondary climate hazards are hazards resulting from changes in primary climate hazards in relation to community sectors like the natural environment, the economy, and the public. In addition to identifying risks, the CAAP outlines climate impacts, mitigation strategies, priority actions, and implementation measures to enhance the city's resilience against climate change.

Table 3: Hazard Risk Index

Hazard	Probability	Life Impact	Property Impact	Percentage of Area Impacted	Maximum Probable Extent
Drought	Highly Likely	Limited	Limited	Extensive	Moderate
Earthquake	Likely	Critical	Critical	Significant	Major
Heavy Rain / Atmospheric River	Highly Likely	Critical	Limited	Significant	Moderate
Extreme Heat	Likely	Minor	Minor	Significant	Moderate
High Wind	Occasional	Minor	Limited	Minimal	Moderate
Climate change	Highly Likely	Minor	Critical	Significant	Major
Wildfire/smoke/air quality	Highly Likely	Critical	Limited	Minimal	Moderate
Dam and levee failure	Unlikely	Critical	Limited	Negligible	Weak
Flood	Occasional	Minor	Limited	Minimal	Moderate
Landslide/mass movement	Unlikely	Minor	Minor	Negligible	Weak

Source: Santa Clara County, Multi-Jurisdictional Hazard Mitigation Plan.

Table 4: CAAP Climate Hazards Ranking

Primary Climate Hazards	Score
Temperature increase	2.4
Precipitation changes	1.8
Sea level rise	1.3
Secondary Climate Hazards	**Score**
Drought	2.8
Extreme heat/heat waves	2.4
Wildfire	2.4
Air pollution	2.4
Flooding (riverine, areal)	2.3
Urban heat island	1.9
Flooding (coastal)	1.4
Landslide	1.3

Source: Los Altos Climate Action and Adaptation Plan.

2.6. Drought

Drought is defined as an extremely dry climatic period where the available water falls below a statistical average for a region. Drought is also defined by factors other than rainfall, including vegetation conditions, agricultural productivity, soil moisture, water levels in reservoirs, and streamflow. Droughts or water shortages are a gradual phenomenon, occurring over multi-year periods and increasing with the length of dry conditions. When precipitation is less than normal for a period of time, the flow of streams and rivers declines, water levels in lakes and reservoirs fall, and the depth to water in wells increases. If dry weather persists and water supply problems develop, the dry period can become a drought.

The term "drought" can have different meanings depending on how a water deficiency affects day-to-day activities. Drought is a complex natural hazard, which is reflected in the following four definitions commonly used to describe it[12]:

- Agricultural – Agricultural drought is defined principally in terms of naturally occurring soil moisture deficiencies relative to water demands of plant life, usually arid crops.
- Hydrological – Hydrological drought is related to the effects of precipitation shortfalls on stream flows and reservoir, lake, and groundwater levels.
- Meteorological – Meteorological drought is defined solely on the degree of dryness, expressed as a departure of actual precipitation from an expected average or normal amount based on monthly, seasonal, or annual time scales.
- Regulatory (or socioeconomic) – Regulatory drought can occur when the availability of water is reduced due to the imposition of regulatory restrictions on the diversion and export of water out of a watershed to another area.

Although the climate is a primary contributor to hydrological drought, other factors such as changes in land use (i.e., deforestation), land degradation, and the construction of dams can affect the hydrological characteristics of a region. Because regions are geographically interconnected by natural systems, the impact of meteorological drought may extend well beyond the borders of

[12] Types of Drought, Accessed June 1, 2024, https://drought.unl.edu/Education/DroughtIn-depth/TypesofDrought.aspx

the precipitation-deficient area. Changes in land use upstream may alter hydrologic characteristics such as infiltration and runoff rates, resulting in more variable streamflow and a higher incidence of hydrologic drought downstream. Land use change is one way that human actions can alter the frequency of water shortage even when no change in precipitation has been observed.

Droughts cause public health and safety impacts, as well as economic and environmental impacts. Public health and safety impacts are primarily associated with catastrophic wildfire risks and drinking water shortage risks for small water systems in rural areas and private residential wells. Examples of other impacts include costs to homeowners due to loss of residential landscaping; degradation of urban environments due to loss of landscaping; agricultural land fallowing and associated job loss; degradation of fishery habitat; and tree mortality with damage to forest ecosystems.

Drought conditions can also result in damage to older infrastructure that is located within dry soils with the potential to leak or break. Dead or dying vegetation poses a risk of falling and damaging structures and infrastructure systems.

2.6.1. Drought Severity

Drought severity depends on numerous factors, including duration, intensity, and geographic extent, as well as regional water supply demands by humans and vegetation. The severity of drought can be aggravated by other climatic factors, such as prolonged high winds and low relative humidity. The magnitude of drought is usually measured in time and the severity of the hydrologic deficit.

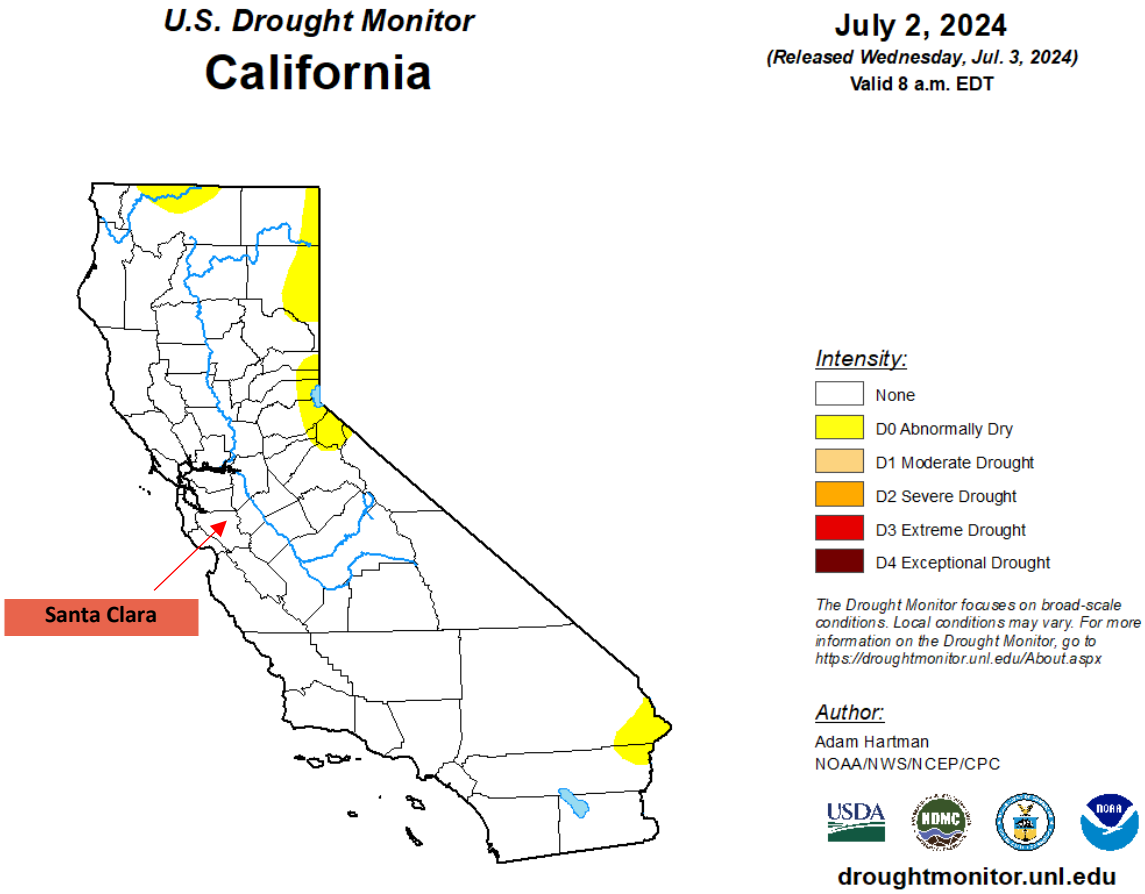
The United States Drought Monitor is a map released weekly that indicates the portions of the United States that are experiencing drought and the severity of the drought based on five classifications: abnormally dry (D0), showing areas that may be going into or are coming out of drought, and four levels of drought: moderate (D1), severe (D2), extreme (D3), and exceptional (D4) (refer to **Table 5**).

The Drought Monitor is not a forecast but looks backward, providing a weekly assessment of drought conditions based on how much precipitation did or did not fall. Because drought is a slow-moving hazard, it may take more than one good rainfall to end a drought, especially if an area has been in drought for a long time.

Table 5: Drought Severity Classification

Category	Description	Possible Impacts
D0	Abnormally Dry	Going into drought: short-term dryness slowing planting, growth of crops or pastures. Coming out of drought: some lingering water deficits; pastures or crops not fully recovered.
D1	Moderate Drought	Some damage to crops, pastures, streams, reservoirs, or wells is low. Some water shortages are developing or imminent; voluntary water-use restrictions are requested.
D2	Severe Drought	Crop or pasture losses likely; water shortages common; water restrictions imposed.
D3	Extreme Drought	Major crop/pasture losses; widespread water shortages or restrictions.
D4	Exceptional Drought	Exceptional and widespread crop/pasture losses; shortages of water in reservoirs, streams, and wells create water emergencies.

Source: US Drought Monitor.



2.6.2. California Drought History

Drought has affected virtually every county in California, and California has experienced numerous severe droughts over the past century. FEMA declared one drought emergency for California in January 1977, and other drought emergency declarations have been declared by the state.[13] According to the *2018 State Hazard Mitigation Plan*, from 1972 to 2016, there were 15 drought state emergency proclamations in California.[14]

The most severe drought on record began in 2012 and continued through 2017. On January 17, 2014, the governor of California declared a state drought emergency, and on April 1, 2015, the governor announced the first-ever mandatory 25 percent statewide water use reduction and a series of actions to help save water, increase enforcement to prevent wasteful water use, streamline the state's drought response, and invest in new technologies that would make California more drought resilient. At the time of the announcement, the volume of Sierra Nevada snowpack was approximately 14 percent of normal. Despite multiple storms in February 2014, drought conditions persisted. By the end

[13] Federal Emergency Management Agency, Disaster Declarations, accessed May 21, 2024, https://www.fema.gov/disaster/3023.

[14] California Governor's Office of Emergency Services, *2018 California State Hazard Mitigation Plan*, September 2018, https://www.caloes.ca.gov/wp-content/uploads/002-2018-SHMP_FINAL_ENTIRE-PLAN.pdf.

of May 2014, all of California was in a condition of "extreme" or "exceptional" drought. At the same time, the volume of the Sierra Nevada snowpack had decreased to less than 10 percent of normal, and water stored in Lake Oroville, the major reservoir for the State Water Project, was at 58 percent of normal.[15] On April 7, 2017, the governor issued an executive order ending the drought emergency in most of California, including Santa Clara County.

Drought conditions returned in 2021 and throughout 2022. Winter storms at the end of 2022 and into 2023 largely ended drought conditions throughout California. By the end of February 2023, the entirety of California was no longer experiencing drought according to the United States Drought Monitor.

Table *6*: Historical Droughts

Date	Area Affected	Notes
1827–1916	Statewide	Multiyear: 1827–29, 1843–44, 1856–57, 1863–64 (particularly extreme), 1887–88, 1897–1900, 1912–13.
1917–21	Statewide, except for the central Sierra Nevada and north coast	Simultaneous in affected areas, 1919–20. Most extreme in the north.
1922–26	Statewide, except for the central Sierra Nevada	Simultaneously in effect for the entire state only during 1924, which was particularly severe.
1928–37	Statewide	Simultaneously in effect for the entire state, 1929–34. Longest in the state's history.
1943–51	Statewide	Simultaneously in effect for the entire state, 1947–49. Most extreme in the south.
1959–62	Statewide	Most extreme in the Sierra Nevada and the central coast.
1976–77	Statewide, except for southwestern deserts	Driest 2 years in the state's history. Most severe in the northern two-thirds of the state.
1987–92	Statewide	Moderate. Most extreme in the northern Sierra Nevada.
2000–02	Statewide	Most severe in Southern California.
2007–09	Statewide	Twelfth driest 3-year period on record at the time. Most severe in western San Joaquin Valley.
2012–17	Statewide	Most severe California drought on record.
2021–2023	Statewide	2021 became the second driest year on record. The drought emergency expanded statewide as of October 2021.

Sources: Paulson, R. W., E. B. Chase, R. S. Roberts, and D. W. Moody, Compilers, National Water Summary 1988-89: Hydrologic Events and Floods and Droughts: US Geological Survey Water-Supply Paper; California Department of Water Resources, *California's Most Significant Droughts: Comparing Historical and Recent Conditions*.

2.6.3. Water Supply

Los Altos receives all of its water from the California Water Service Company (Cal Water), which operates local wells, but imports the majority of its domestic water. Cal Water operates 25 districts. The Los Altos Suburban District was formed in 1931 with the purchase of the Los Altos Water Company. The district's Service Area Map is shown in **Figure 16**. With water issues becoming more important throughout California, Los Altos

[15] California Department of Water Resources, *California's Most Significant Droughts: Comparing Historical and Recent Conditions*, 2015.

needs to ensure that its residents and businesses have access to adequate supplies of high-quality water now and in the future. Water conservation is critical to achieving this objective since conservation reduces the overall need for water by the community.

According to the 2020 Urban Water Management Plan (UWMP) - Los Altos Suburban District,[16] "California Water Service Company (Cal Water) currently purchases treated surface water from the Santa Clara Valley Water District (Valley Water). In addition to its local surface water supplies, Valley Water imports surface water to the region through the South Bay Aqueduct of the State Water Project (SWP) and the San Felipe Division of the federal Central Valley Project (CVP). Valley Water operates three drinking water treatment plants (WTPs) (i.e., Penitencia WTP, Rinconada WTP, and Santa Teresa WTP) that treat its combined surface water supplies. Valley Water disinfects the water using a blend of chlorine and ammonia (chloramines)." Cal Water anticipates a less than 2.5 percent increase in water demand under normal conditions for the Los Altos Suburban District from 2025 through 2035;[17] Cal Water and the Santa Clara Valley Water District have not identified any substantial concerns with water resources or meeting water demand into the future.

The Cal Water UWMP provides current and future demand projects for both potable and non-potable uses of water for the entire service area. **Table 7** provides the breakdown of water demand in Cal Water's Los Altos Suburban District. The table also includes the calculations based on conservation strategies discussed in the district's 2015 Conservation Master Plan as well as projected housing demand.

Cal Water has analyzed the effect of climate and weather variability on water demand and has found that, for plausible emission scenarios and corresponding temperature increases, climate change may, on average, increase future district demands by 2 to 3 percent compared to current climate conditions. The 2020 Urban Water Management Plan - Los Altos Suburban District concludes that "Cal Water's supply portfolio for Los Altos Suburban District is expected to be able to serve those demands in all year types through 2045." Although water supply and demand are not anticipated issues for Cal Water and the Los Altos Suburban District, there are areas where water infrastructure does not meet California Fire Code including water flow and pressure requirements for firefighting purposes. The Cal Water system has many areas of gridded four-inch water mains that are substandard and have challenges meeting fire flow requirement.

Table 7: Water Supply Demand

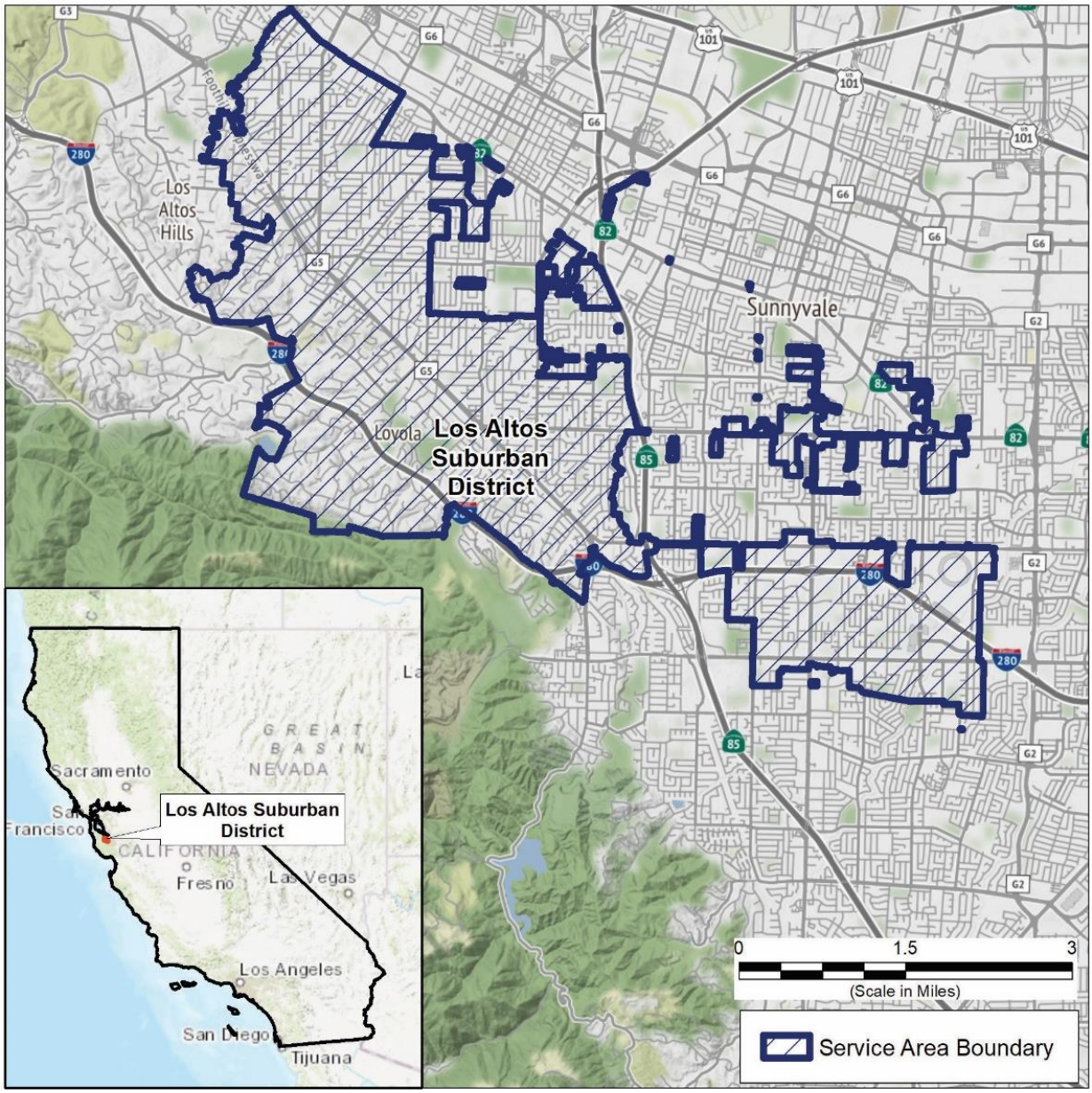
Year	2017	2018	2019	2020	2035 projected	2045 projected
Potable and Non-Potable Water (in acre feet)	11,656	12,438	11,982	13,023	13,324	14,097

Source: California Water Service, 2020 Urban Water Management Plan - Los Altos Suburban District.

[16] California Water Service, *2020 Urban Water Management Plan - Los Altos Suburban District*, 2021, https://www.calwater.com/conservation/uwmp2020/.

[17] California Water Service, *2020 Urban Water Management Plan - Los Altos Suburban District*, 2021, https://www.calwater.com/conservation/uwmp2020/.

Figure 16: California American Water Service Area Map



Source: California Water Service, 2020 Urban Water Management Plan- Los Altos Suburban District.

2.7. Hazardous Materials

A "hazardous material" is defined by California Health and Safety Code Section 25501 as "any material that, because of its quantity, concentration, or physical or chemical characteristics, poses a significant present or potential hazard to human health and safety or to the environment if released into the workplace or the environment." Improper handling of hazardous materials or waste may result in significant impacts on human health and the environment. Hazardous materials can be in the form of explosives, flammable and combustible substances, poisons, and radioactive materials. Hazardous materials accidents can occur during production, storage, transportation, use, or disposal.

The impacts of hazardous materials release can vary, depending on the type and amount of material released. Exposure to hazardous materials can include the following effects: skin/eye irritation, difficulty breathing, headaches, nausea, behavior abnormalities, cancer, genetic mutations, physiological malfunctions (i.e., reproductive impairment, kidney failure), physical deformations, or birth defects. Some demographics may be particularly susceptible to the effects of hazardous materials. These sensitive receptors typically include children and the elderly.

Many businesses and residents in Los Altos use hazardous materials and generate hazardous waste. Common hazardous waste is generated from uses such as gasoline service stations, dry cleaners, and automotive mechanics.

Improper storage and disposal of hazardous waste can result in environmental contamination of surface water and groundwater. Heavy metals such as lead, zinc, copper, nickel, mercury, and cadmium can enter the waste stream via residential sewage and urban runoff. To ensure proper disposal, Los Altos joined with Santa Clara County and the other cities in the County in developing the County Hazardous Waste Management Plan, which establishes a comprehensive and coordinated countywide approach to hazardous waste management.

Los Altos residents can safely dispose of household hazardous waste through the Santa Clara Countywide Household Hazardous Waste Program. The County and 14 cities (including Los Altos) participate in the program and share costs based on the number of households served from each jurisdiction.

2.7.1. Hazardous Materials Incidents

Potential threats from hazardous materials exist where they are manufactured, stored, transported, or used. Although localized, small-scale hazardous materials spills pose low-magnitude risks to the City, there is potential for a major hazardous materials spill to severely impact the City, its inhabitants, or environmental resources. In Los Altos, commercial businesses that use hazardous materials include dry cleaners, film processors, auto service providers, and medical clinics. Residences also generate household hazardous wastes in the form of paints, thinners, pesticides, fertilizers, etc.

Hazardous waste generators and users in the City are required to comply with regulations enforced by several federal, state, and county agencies. The regulations aim toward reducing risk associated with human exposure to hazardous materials and minimizing adverse environmental effects. Los Altos contracts with the Santa Clara County Fire Department for fire protection services. The Fire Department conducts inspections related to hazardous materials. The Hazardous Materials Compliance Division of the County Environmental Health Services Department ensures compliance and reporting in accordance with the Santa Clara County Hazardous Waste Management Plan.

Hazardous materials can be flammable, radioactive, infectious, corrosive, toxic/poisonous, or otherwise reactive. The magnitude and severity of the hazard would be dependent on the type of spill, location, and the extent to which hazardous materials enter the water system. For example, a radioactive material spill would have a further-reaching impact compared to a paint spill. Most hazardous materials operations within the City are small-scale and pose minimal risk.

2.7.2. Hazardous Materials Sites

The State Water Resources Control Board (SWRCB) maintains a data management system called GeoTracker. GeoTracker identifies sites that impact or have the potential to impact water quality in jurisdictions statewide. These sites, such as leaking underground storage tank sites, Department of Defense sites, and cleanup program sites, are required to undergo cleanups.

GeoTracker also contains records for various unregulated projects as well as permitted facilities, including irrigated lands, oil and gas production, operating permitted underground storage tanks, and land disposal sites.[18]

As identified by the SWRCB, 42 sites have been cleaned up in Los Altos since 1990. The majority of hazardous materials sites were leaking underground storage tank sites at private residences. In 2024, five sites were shown to have ongoing activities related to the previously known or suspected release of hazardous materials to soil and groundwater in Los Altos.

2.7.3. Transportation of Hazardous Materials

Commercial transportation of hazardous materials via Interstate 280 would potentially have significant impacts during an incident, given the volumes of hazardous materials being transported. Transportation of hazardous materials/wastes is regulated by the California Code of Regulations Title 26. The US Department of Transportation is the primary regulatory authority for the interstate transport of hazardous materials, and establishes regulations for safe handling procedures (i.e., packaging, marking, labeling, and routing). Criteria also exist regarding personnel qualifications and training, inspection requirements, and equipment specifications.

The California Highway Patrol (CHP) enforces regulations related to the intrastate transport of hazardous materials and hazardous wastes. The CHP and the California Department of Transportation (Caltrans) enforce federal and state regulations and respond to hazardous materials transportation emergencies.

The transportation of hazardous materials via railroad is not an issue as there are no railway lines traversing the City. However, transportation of hazardous materials via freeway may be an issue as the Foothill Expressway traverses the City.

Hazardous materials also pass through the City in route to other designations via the freeway, rail, and surface street system. The US Department of Transportation regulates the transport of hazardous materials on state highways and rail lines using established criteria for safe handling procedures. Federal safety standards are also included in the California Administrative Code and the California Health Services Department regulates the haulers of hazardous waste.

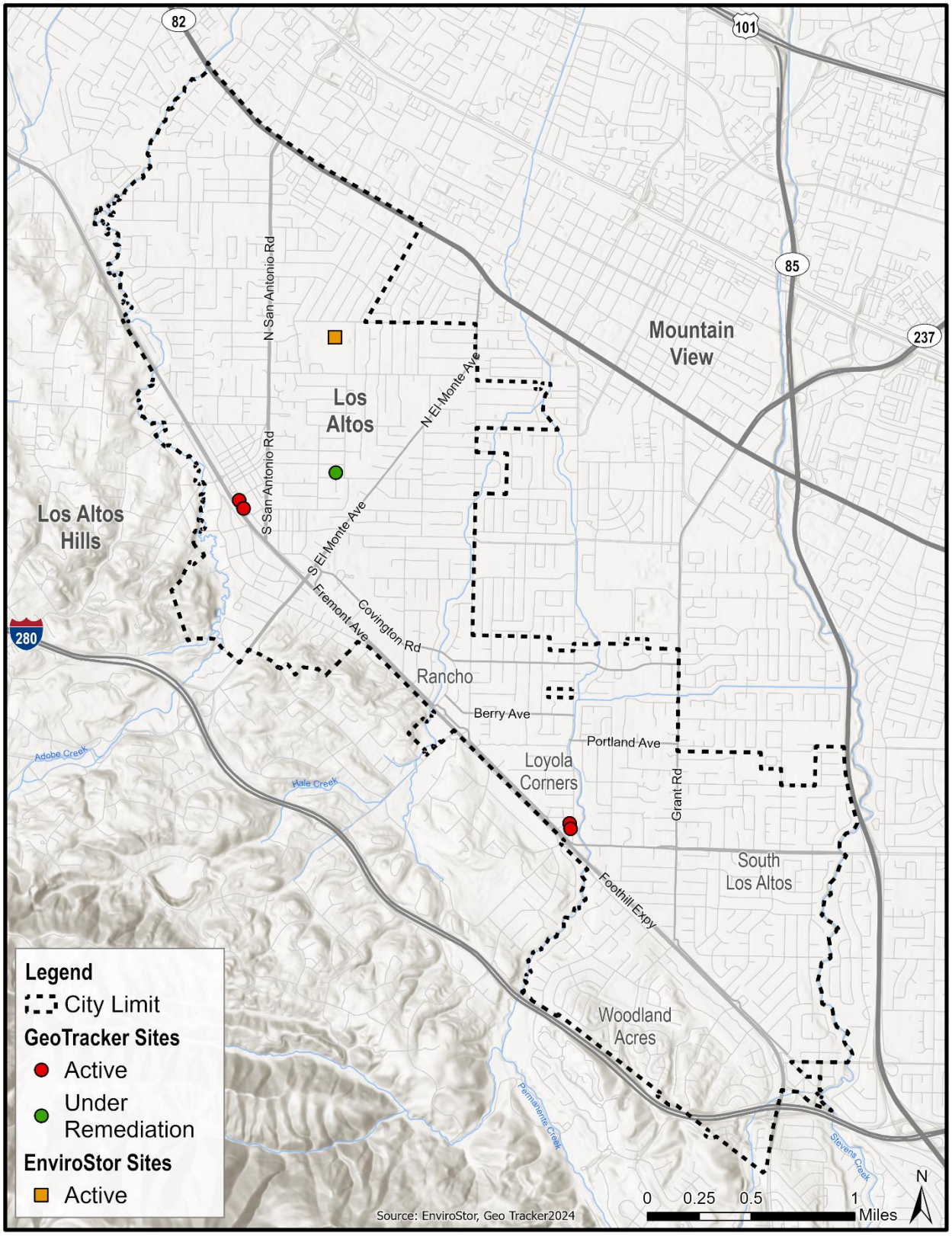
2.7.3.1. Siting and Managing Facilities

The use, storage, and handling of hazardous materials and waste within Los Altos are rigorously controlled by federal, state, and local regulations. The City uses a variety of tools to regulate facilities that use, store, and handle hazardous materials and waste in order to ensure compatibility with existing and planned surrounding land uses. The primary tools are zoning regulations, environmental review of proposed developments in accordance with CEQA, and the issuance of business licenses.

As development and redevelopment in Los Altos continue, the potential exists for facilities that use, store, and handle hazardous materials and waste to be sited in locations where such activities may be incompatible with existing and planned surrounding land uses. Through the use of appropriate tools, the City will ensure that facilities using, storing, and handling hazardous materials and waste will be appropriately sited and that the operation of such facilities will be regulated such that significant adverse effects to surrounding land uses will be avoided to the extent possible.

[18] GeoTracker, accessed June 1, 2024, https://geotracker.waterboards.ca.gov/map/?myaddress=California&from=header&cqid=5315671622.

Figure 17: Hazardous Materials Sites



Source: State Water Resources Control Board, GeoTracker; Department of Toxic Substances Control, EnviroStor; Esri; City of Los Altos.

2.7.4. Household Hazardous Waste Program

Hazardous Waste Management Plan

The City of Los Altos has a Household Hazardous Waste Program in place to manage items that pose a threat if disposed of improperly. Mission Trail Waste Systems provides residential, commercial, and industrial collection services for garbage, recycling, and organics in Los Altos. Some items, like batteries, fluorescent light bulbs, electronic waste, and mercury thermostats, are considered hazardous waste. These items cannot be disposed of in regular trash cans.

Hazardous waste generators and users in the City are required to comply with regulations enforced by several federal, state, and county agencies. The regulations are designed to reduce risk associated with human exposure to hazardous materials and minimize adverse environmental effects.

To ensure that classified hazardous substances used by commercial and residential activities are properly handled, contained, and disposed of, the Santa Clara County Fire Department coordinates with the County's Hazardous Materials Compliance Division to implement the Santa Clara County Hazardous Waste Management Plan.

2.8. Emergency Planning/Response

The Los Altos Emergency Preparedness Program includes an emergency preparedness webpage, Emergency Operations Plan (EOP), and Emergency Operations Center (EOC). In addition, Los Altos has two fire stations and one police station.

2.8.1. Emergency Preparedness Website

The City maintains an emergency preparedness webpage on the City website, which provides information regarding hazards and preparedness.[19] It identifies potential risks, facilities, and resources relied upon in the event of a catastrophe, and persons responsible for implementation. The webpage also provides personal emergency preparedness training, which includes the "26 Steps: Personal Emergency Preparedness Workbook." The webpage has information related to emergency supply kits, pet emergency preparedness, communications plan during the time of emergency, storm preparation and Resilient Los Altos. Resilient Los Altos is a community-driven initiative aimed at enhancing the City's resilience to various challenges, including natural disasters, climate change, and social disruptions.

2.8.2. Emergency Operations Plan

The EOP for the City of Los Altos outlines authorities, organizational structures, and procedures used to coordinate activities related to local and regional emergencies or disasters.[20] It establishes the emergency organization, assigns tasks, specifies policies, and provides for coordination of planning efforts using the Standardized Emergency Management System. The plan also meets the requirements established by the National Incident Management System. The objective of this plan is to incorporate and coordinate all agencies and personnel within the City into an efficient organization capable of responding to any

[19] City of Los Altos, "Emergency Preparedness," accessed June 1, 2024, https://www.losaltosca.gov/police/page/emergency-preparedness.

[20] City of Los Altos, *Emergency Operations Plan*, accessed June 1, 2024, https://www.losaltosca.gov/sites/default/files/fileattachments/public_works/project/56151/los_altos_eop_3.22.2016.pdf.

emergency. The EOP serves as the foundational element of the City's approach to emergency management. While all City resources may be called upon as needed, specific departmental responsibilities are outlined in the EOP Basic Plan and associated annexes.

The EOP calls for post-incident or post-exercise evaluation of the EOP, and/or changes in responsibilities, procedures, laws, or regulations. The City's Police Department is responsible for the review, revisions, management, and distribution of the City of Los Altos EOP. The post-disaster analysis will help the City improve safety plans and responses.

2.8.3. Emergency Operations Center

The Santa Clara County MJHMP identified that the City's Emergency Operations Center (EOC) needs to be replaced. The City proposes to incorporate a code compliant EOC into the existing Los Altos Community Center, which is located at 97 Hillview Avenue in the City of Los Altos. The proposed project would install radio equipment, antennas, and a satellite dish; replace existing HVAC system equipment with a new system equipped with more robust filters and connections to emergency power system; and construct a small enclosure to house a diesel emergency back-up generator. Following construction of the EOC, operation of the center would be limited to essential City functions during emergencies and natural disasters. Completion of the EOC is anticipated for August 2025, which includes the time to furnish and commission the generator; much of the work is anticipated to occur before that date.

The main purpose of the EOC is to provide a centralized location where emergency management coordination and decision making can be supported during a critical incident, major emergency, or disaster. The EOC will provide essential services to the public after a natural disaster; support a number of critical tasks such as monitoring activities related to emergency preparedness; and provide a location for collecting and analyzing data to help make decisions that protect the City of Los Altos.

In coordination with Santa Clara County Fire Department, the City partners with Resilient Los Altos, a program dedicated to improving the ability of groups of people to respond to and recover from adverse situations, such as natural disasters, acts of violence, economic hardship, and other challenges to the community of Los Altos and the adjacent areas. Resilient Los Altos offers classes, events, and webinars on emergency preparedness topics. Stakeholders include Los Altos Block Action Team members, the Los Altos Community Emergency Response Team (CERT) members, Los Altos Amateur Radio Emergency Service members, Los Altos School District representatives, Mountain View Los Altos High School District, faith-based community representatives, allied health representatives, and representatives from the business community.

The core Resilient Los Altos groups are the Block Action Teams, CERTs and ham radio operators. Block Action Teams are small neighborhood groups led by a volunteer leader who come together to work as a team after a disaster. CERTs are resident volunteers that have taken training about disaster preparedness and basic disaster response skills, such as fire safety, light search and rescue, team organization, and disaster medical operations. Ham radio operators are licensed individuals who can provide communications services when other services such as telephone and text are unable.

Los Altos also offers a free personal emergency preparedness class in partnership with the Santa Clara County Fire Department. The class is designed to teach residents how to be self-

sufficient in the event of an emergency until relief is available.

The City maintains an emergency preparedness page on its website, which provides information about various resources and programs. In addition to County emergency alert notification systems such as Alert SCC, the City also subscribes to Nixle for text and voice notifications.

The first line of defense against any catastrophe is to avoid threatening situations and to prepare disaster response plans that will minimize the harmful impacts. Quick action in the event of an emergency will reduce the probability of additional injuries and damage.

Government disaster preparedness planning efforts are handled primarily by the police departments and the County Office of Emergency Services. The County and each city are required to prepare disaster plans in accordance with state regulations; assign duties for emergency response; designate EOCs and emergency shelters; and establish an emergency broadcast system.

2.8.4. Law Enforcement and Fire Protection

2.8.4.1. Law Enforcement

Law enforcement services are provided by the Los Altos Police Department. The Los Altos Police Department has a total of 32 sworn officers and 14 professional support staff; divisions include Patrol, Traffic, Investigations, Code Enforcement, Crime Prevention, Canine, SWAT and the Reserves. The following crime prevention programs and services are offered through the Los Altos Police Department:

- Neighborhood Watch
- Home security inspections
- A group presentation as requested by various resident or business groups/organizations.
- CityProtect program, which enables residents and businesses to register their cameras or submit a tip.

2.8.4.2. Fire Protection

The City contracts with the Santa Clara County Fire Department for fire protection services within the City boundaries. Two fire stations serve the City of Los Altos.

- Almond Fire Station at 10 Almond Avenue: 3 Personnel, Engine 75 (3), Engine 675 (Select Call), Engine 175 (Reserve), 1929 Model A (Antique)
- Loyola Fire Station at 765 Fremont Avenue: 3 Personnel, Engine 76 (3), Engine 176 (Reserve)

Services provided by the Fire Department include fire prevention, emergency medical services, hazardous materials, and fire investigations. Additionally, the mutual aid agreement between Los Altos and the Santa Clara County Fire Department includes automatic response from the 13 other fire stations in the event of large-scale fire events. One of the key performance indicators according to Santa Clara County Fire Department's 2023-2027 Strategic Plan is that "the first suppression unit arrives at structure fires, hazardous material releases, and other urgent incidents requiring the use of PPE within 7 minutes and 50 seconds (urban) or 11 minutes and 50 seconds (rural) for 90 percent of incidents."[21]

There are no plans for the expansion of existing facilities or addition of new stations in the area. Although the Santa Clara County Fire

[21] Santa Clara County Fire Department, *2023-2027 Strategic Plan*, https://www.sccfd.org/wp-content/uploads/2023/04/2023.4.26_SCCFD_StrategicPlan2023_FINAL_WEB.pdf.

Department does not currently anticipate a need for new or expanded fire response capabilities, this may change due to future development and increased population density.

2.9. Evacuation Routes

In the event of a significant emergency, clear routes are needed to ensure that emergency responders and supplies can be transported and that community members can be evacuated. Evacuation efforts depend on the severity and type of hazard incident that is occurring. In some cases, people may have a day or two to prepare, while other situations might call for an immediate evacuation. Evacuation routes include major roadways and thoroughfares intended to transport people from areas impacted by hazardous events to areas of safety. Refer to **Figure 18** for mapped evacuation routes.

The designated evacuation routes in the City include all arterials and highways. The primary north/south evacuation routes include Arastradero Road, West Fremont Road, San Antonio Road, South El Monte Avenue, Magdalena Avenue, South Springer Road, and Grant Road. The primary east/west evacuation routes from the City include Foothill Expressway, El Camino Real, Cuesta Drive, Fremont Avenue, Interstate 280, and Highway 101. Designated evacuation routes are the most reliable roadway facilities for the following reasons:

- These roads are designed to accommodate higher volumes of traffic in line with their classifications.
- Access controls are more stringent on roads of higher classification.
- Intersection controls are designed to prioritize travel on roads of higher classification.
- Roadway maintenance policies prioritize roads of higher classification.

Evacuation route vulnerability can be expressed from several perspectives. The most direct expression of route vulnerability deals with physical features along an evacuation route that can be damaged during emergency scenarios and cause the evacuation route to be disrupted and unusable. These physical features include:

- Bridges (over rivers, creeks, and other drainage features)
- Bridges (creating grade-separated roadways)
- Low points along the route that are prone to flooding
- Route locations along steep natural slopes that are prone to landslides
- Narrow road widths constraining access and egress of civilians and first responders
- Roads having significant slopes in excess of 20 percent grade

Evacuation route vulnerability can also be expressed in terms of vulnerability to residents where development areas are isolated and/or areas that have access to only one evacuation route. These areas are a concern and require additional advanced planning to address emergency scenarios where an evacuation is needed, and the single evacuation route may be blocked or damaged and cannot be used.

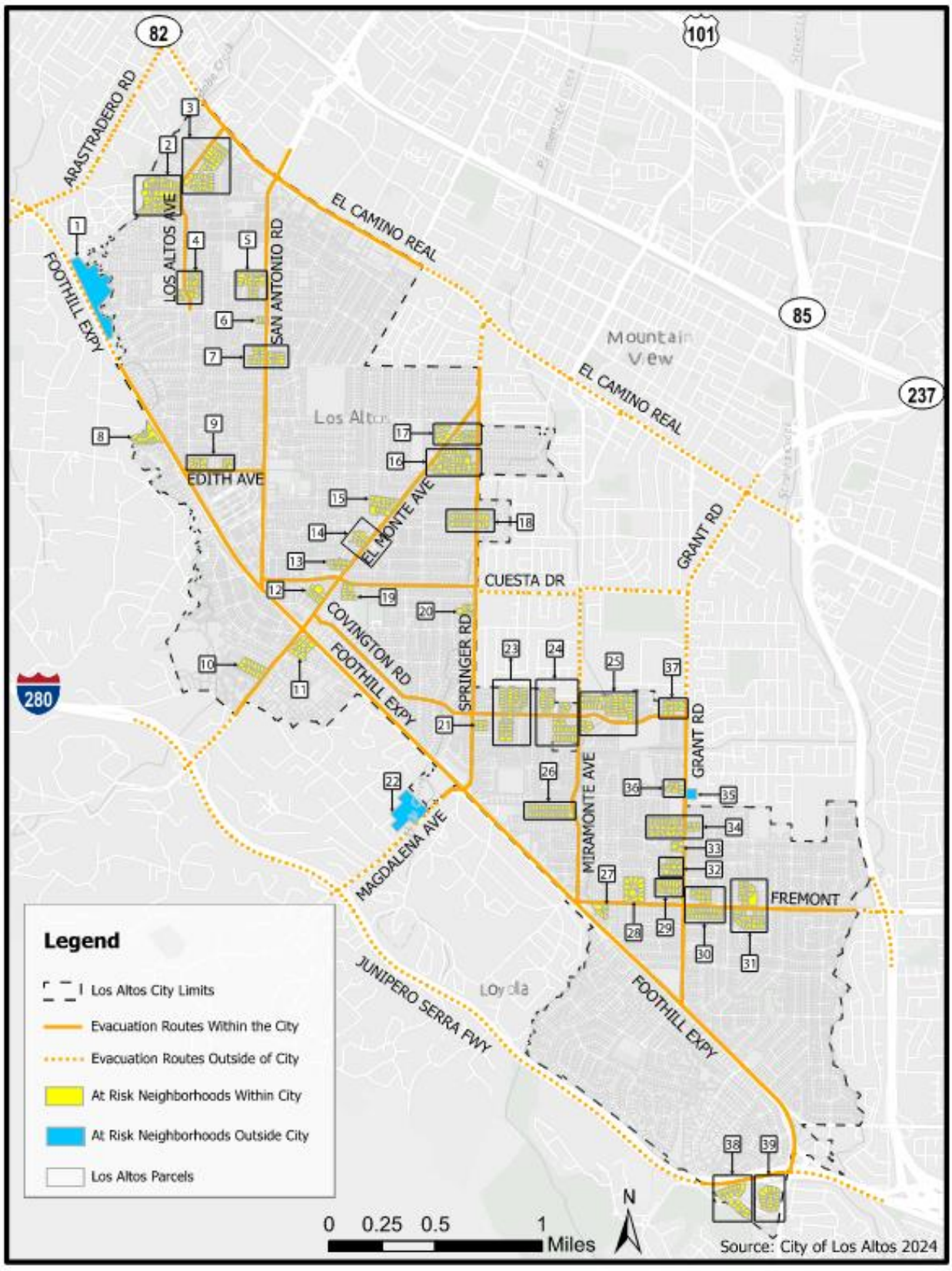
Figure 19 shows those residential development areas (neighborhoods) that have only one access point to a primary evacuation route. These neighborhoods were identified after a thorough review of various citywide maps and aerial photographs and include residential developments that may be access-constrained during an evacuation. If a neighborhood has direct access to another roadway and that roadway funnels to more than one designated evacuation route, it would not be considered vulnerable. Similarly, if a neighborhood has direct access to a designated evacuation route with only one way in and out, this would be

considered a vulnerable neighborhood. Vulnerable neighborhoods also include those with roads below the minimum width required by the Fire Code, dead-end roads that lack adequate turn arounds, or roads where distances between fire hydrants exceed Fire Code Requirements.

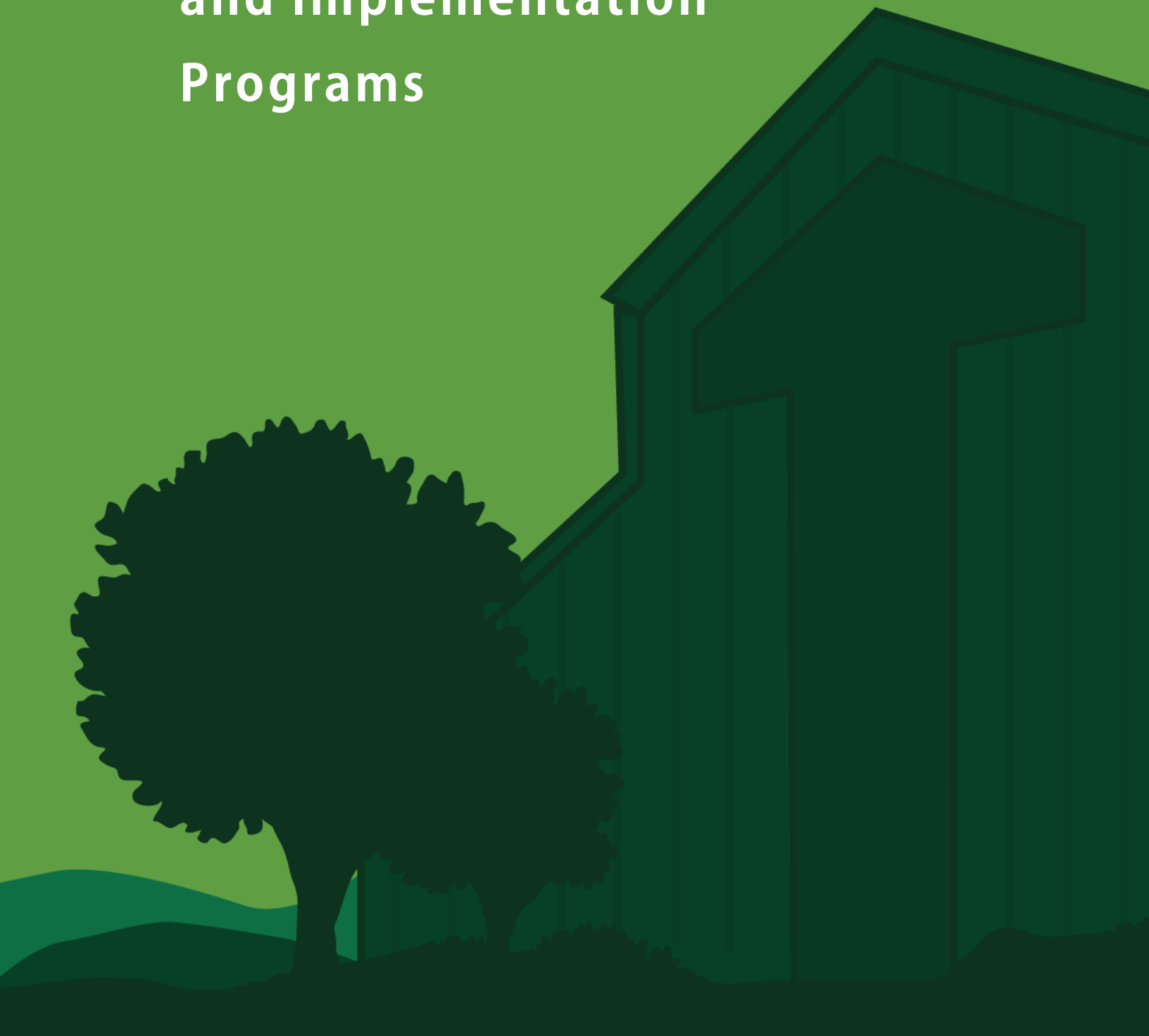
In an evacuation scenario, these neighborhoods could be exposed to an increased risk due to the lack of multiple egress opportunities; therefore, they should be given earlier evacuation consideration. Additionally, these neighborhoods should be evaluated for improvements, including road widening, smaller distances between fire hydrants, slope modifications, landscaping and other strategies to provide increased wildfire safety.

Figure 18: Evacuation Routes Map

Figure 19: Evacuation Route Vulnerable Neighborhoods



3.0 Goals, Policies, and Implementation Programs



3.0 Goals, Policies, and Implementation Programs

Goal SE-1: Reduce Geologic and Seismic Hazard Risk

Minimize risks of personal injury and property damage associated with seismic activity, landslides, and other geologic hazards.

Policies

SE-1.1: Monitor and update risk/life safety standards and regulate developments to mitigate risk to life and property related to earthquakes, liquefaction, erosion, landslides, and unstable soil conditions.

SE-1.2: Require site-specific soil analysis and geotechnical investigations for developments on sites in known or suspected hazard zones.

SE-1.3: Encourage regular assessments of the structural integrity of critical City facilities and infrastructure. Consider seismic retrofits for modifications to existing buildings and new buildings, ensuring that all construction complies with current seismic standards, when applicable.

Actions in Support of Goal SE-1

SE-1.a: *Require the submission and review of geologic and soils reports for all developments, in accordance with the Los Altos Municipal Code. The geological risk areas identified in these studies must include established standards and recommendations, which shall be incorporated into the development plans.*

SE-1.b: *Ensure strict compliance with the requirements of the California Code of Regulations (CCR), Title 24, during the plan check review process to minimize damage from earthquakes and other geologic activity.*

Goal SE-2: Reduce Flooding Hazard Risk

Reduce the potential for flooding along creeks that traverse Los Altos.

Policies

SE-2.1: Regulate land uses in flood-prone areas in accordance with the National Flood Insurance Program (NFIP) requirements. Allow development in flood-prone areas (including the 100-year and 500-year flood zones) that would avoid adverse impacts to existing properties and flood control and drainage structures or avoid adverse impacts with the appropriate mitigation.

SE-2.2: Identify and pursue local, state, and federal funding sources, including grants, to support flood prevention and mitigation efforts.

SE-2.3: Regularly maintain creeks and drainage systems to prevent flooding and property damage and proactively inspect drainage systems to remove obstructions. Coordinate with agencies to enhance infrastructure and promote sustainable stormwater management.

SE-2.4: Require all development projects requiring a building permit to

incorporate stormwater management measures that align with current National Pollutant Discharge Elimination System (NPDSE) permit requirements.

SE-2.5: Enhance public awareness and education on flood risks and mitigation measures.

Actions in Support of Goal SE-2

SE-2.a: *Continue to review projects in flood hazard areas to ensure compliance with Los Altos Municipal Code Chapter 12.60 (Flood Management Ordinance).*

SE-2.b: *Coordinate with the Valley Water District to maintain flood control channels, complete necessary repairs and secure funding to ensure resilient stormwater infrastructure.*

SE-2.c: *Prioritize the development and maintenance of a comprehensive and functional emergency evacuation plan for populated areas within identified dam inundation zones. This plan should address public concerns by including detailed procedures for evacuation and control, ensuring it is practical and effective for real-world scenarios.*

SE-2.d: *Continue to safeguard creeks and habitats by enforcing the Watercourse Protection Ordinance, which preserves water quality, biodiversity, and the natural integrity of creek ecosystems. Maintain and enhance the special setback provisions along Adobe Creek, from Shoup Park to O'Keefe Lane, to prevent development or activities that could degrade water flow, habitat, or water quality. Regularly review and update the ordinance to address emerging environmental challenges and ensure long-term protection of these vital watercourses.*

SE-2.e: *Continue erosion and sediment control measures for all construction and development projects to reduce soil erosion and minimize runoff into waterways.*

Goal SE-3: Reduce Hazardous Materials Hazard Risk

Protect the community's health, safety, welfare, natural resources, and property through regulation of use, storage, transport, and disposal of hazardous materials.

Policies

SE-3.1: Cooperate with and participate in development of the policies and future programs of the Santa Clara County Health Department and the California Legislature.

SE-3.2: Require hazardous waste generated within Los Altos to be disposed of in a safe manner, consistent with all applicable local, State, and Federal laws.

SE-3.3: Identify hazardous materials users and producers, to identify and mitigate risk of hazardous materials spills to the community.

SE-3.4: Coordinate with the Santa Clara County Fire Department (SCCFD) to ensure that businesses in Los Altos handling hazardous materials prepare and file a Hazardous Materials Management Plan (HMMP) and Hazardous Materials Inventory Statement (HMIS).

SE-3.5: Require compliance with the Santa Clara County Hazardous Waste Management Plan.

Actions in Support of Goal SE-3

SE-3.a: *Maintain coordination with the Santa Clara County Fire Department (SCCFD) and support their ongoing efforts to conduct internal training for local fire personnel in the handling, containment, and cleanup procedures necessary for responding to spills of radioactive, toxic, and hazardous substances.*

SE-3.b: *Enforce compliance with the Santa Clara County Hazardous Waste Management Plan for all relevant businesses and operations within the City.*

Goal SE-4: Reduce Climate Change Hazard Risk

Minimize the risk of hazards and climate change to Los Altos residents.

Policies

SE-4.1: Continue implementing the Climate Action and Adaptation Plan (CAAP) to reduce risks and vulnerabilities associated with climate-related hazards. Efforts shall include ongoing assessment and progress tracking to enhance resilience and adaptation while ensuring actions do not lead to disproportionately adverse effects on vulnerable populations.

SE-4.2: Ensure that emergency response plans and training programs continue to evolve and are modified to protect residents, infrastructure, and facilities during emergencies and extreme weather events.

Actions in Support of Goal SE-4

SE-4.a: *Continue to implement actions as identified in the Los Altos Climate Action and Adaptation Plan (CAAP), to reduce risk and vulnerability for climate related hazards..*

SE-4b *Identify, designate, and publicize the availability of public buildings, specific private buildings, or institutions with air conditioning as cooling shelters for residents without access to air conditioning during extreme heat days.*

SE-4c: Collaborate with the City of Palo Alto to reduce the impact of sea level rise and secure funding to ensure resilient infrastructure for the Regional Water Quality Control Plant.

Goal SE-5: Reduce Human-Caused Hazard Risk

Minimize risks of personal injury and property damage associated with human activities, such as criminal activity and air and ground transportation.

Policies

SE-5.1: Continue to explore new community policing techniques to maintain the safe neighborhood character of the community.

SE-5.2: Apply design techniques and standards to prevent criminal activity in new development and reuse/revitalization projects.

SE-5.3: Reduce the risk from air and ground transportation hazards, such as aircraft, rail, truck, and roadway systems.

Actions in Support of Goal SE-5

SE-5.a: *Support multi-jurisdictional cooperation on emergency preparedness, hazard mitigation, and response. Coordinate with Santa Clara County to improve communication, training, and exercises, pursue a joint risk reduction project, and enhance system redundancy.*

SE-5.b: *Collaborate with community-based organizations like CERT, Resilient Los Altos, and the Los Altos Amateur Radio Emergency Service to strengthen local preparedness and emergency response. Leverage volunteer capacity and promote educational opportunities from regional and national nonprofits like the American Red Cross.*

SE-5.c: *Ensure critical facilities like hospitals, fire stations, and communication centers are designed to remain functional during disasters. Regularly assess these facilities for vulnerabilities and collaborate on necessary upgrades.*

Goal SE-6: Plan for City Action During a Disaster

Plan for City and citizen actions in the event of a disaster.

Policies

SE-6.1: Maintain an updated Emergency Operations Plan (EOP) and emergency preparedness information on the City website. Emergency preparedness information should increase public awareness of natural hazards and hazards associated with human activity and of methods to avoid or mitigate the effects of these hazards. The EOP should ensure that critical facilities will function during and after a disaster.

SE-6.2: Coordinate emergency preparedness with neighboring cities, local school districts, and the Santa Clara County Operational Area (OA), and continue to identify and support opportunities for shared mitigation activities, mutual aid and other support.

SE-6.3: Support Santa Clara County as the lead agency in the County-wide Multi-Jurisdictional Hazard Mitigation Plan (MJHMP) and participate as an annex in future updates.

SE-6.4: Encourage participation in City Volunteer programs, such as Community Emergency Response Team (CERT) training, and regional/national programs, such as Red Cross. Encourage residents and community leaders to participate in disaster training programs, and as feasible, assist in neighborhood drills and safety exercises to increase participation and build community support.

SE-6.5: Promote and ensure the development, implementation, and regular updating of a comprehensive emergency evacuation plan. The plan should include detailed evacuation routes and awareness programs, with a particular focus on residential neighborhoods with limited access or egress points. The plan must be functional, regularly tested, and updated based on community feedback and evolving best practices.

SE-6.6: Continue to improve the City's notification system to ensure timely and effective notification of residents and community members in the event of an emergency. Encourage participation and registration in Santa Clara County's emergency alert,

warning, and evacuation systems, such as AlertSCC and Genasys Protect, for all Los Altos residents and workers.

Actions in Support of Goal SE-6

SE-6.a: *Continue to maintain a comprehensive* ***Emergency Operations Plan (EOP)*** *to enhance coordination among emergency service providers– including fire, medical and law enforcement-and to minimize human suffering and property damage during disasters. The Plan should do the following:*

1. Identify Resources & Coordination *– Outline available emergency response resources and establish coordinated action plans for various disaster scenarios, including earthquakes, fires, roadway accidents, flooding, hazardous materials incidents, civil disturbances, and chemical, biological, or nuclear attack.*

2. Designate Public Shelters *– Identify locations where aid, supplies, and shelter will be available to residents during emergencies.*

3. Ensure Regular Review & Alignment *– Conduct an annual review of the EOP to update roles, responsibilities, and contact information, ensuring alignment with current capabilities. Maintain consistency with the Santa Clara County Operational Area Emergency Operations Plan to facilitate seamless mutual aid coordination.*

4. Conduct Training & Exercises *– Hold annual tabletop exercises with City staff to reinforce emergency response procedures and preparedness. Additionally, participate in County-wide training opportunities as available to enhance coordination and readiness.*

SE-6.b: *Implement mitigation actions from the Santa Clara County Multi-Jurisdictional Hazard Mitigation Plan (MJHMP), City of Los Altos Annex. Use Federal Emergency Management Agency (FEMA) Hazard Mitigation Assistance (HMA) grants where appropriate and participate in MJHMP updates every five years.*

SE-6.c: *Continue to partner with community-based organizations such as Los Altos Community Emergency Response Team (CERT), Resilient Los Altos, and the Los Altos Amateur Radio Emergency Service members in emergency response efforts.*

SE-6.d: *Encourage schools, neighborhood associations, and other interested groups to teach first aid and disaster preparedness, including Community Emergency Response Team (CERT) programs, and other tools available to neighborhood and community groups to improve disaster preparedness.*

SE-6.e: *Identify areas with inadequate evacuation routes, particularly those lacking at least two emergency exits or located on streets narrower than 20 feet. Prioritize emergency outreach on neighborhoods with limited access, document them in the Emergency Operations Plan, prioritize early warnings, and improve evacuation routes as funding allows. Where feasible and as funding allows, develop and implement improvement plans to meet minimum evacuation standards.*

SE-6.f: *Continue to maintain tree trimming and maintenance for street trees and encourage maintenance on private property to prevent trees from obstructing evacuation routes.*

SE-6.g: *Continue to track and implement emerging technologies into the existing emergency notification systems to improve communications with residents during emergencies. Conduct regular tests and provide training for staff and community members to ensure effective notifications and communication during emergencies.*

Goal SE-7: Reduce Fire and Wildfire Risk

Minimize risks of personal injury and property damage associated with urban fire and wildfire hazards.

Policies

SE-7.1: Reduce wildfire risk through land use planning and wildfire prevention measures.

SE-7.2: Coordinate with Santa Clara County Fire Department and neighboring cities to provide roadside fuel reduction, defensible space, and vegetation management, particularly along evacuation routes.

SE-7.3: Provide outreach and education on topics including fire resilient landscaping, defensible space and evacuation procedures.

SE-7.4: Require undergrounding of utilities (including electric and communication utilities) on public and private property, where feasible.

SE-7.5: Prioritize the development and maintenance of a comprehensive and functional evacuation plan for areas potentially affected by wildfire hazards as part of the Emergency Operations Plan. Prioritize evacuation efforts and notice for neighborhoods that have only one evacuation point.

SE-7.6: Require new development to construct and fund all fire suppression infrastructure and equipment needed to provide adequate fire protection services.

SE-7.7: Promote fire safety through education and building design. Ensure all new development and redevelopment complies with the most current version of the California Building Code, California Fire Code, Los Altos Municipal Code, and all other legal requirements for fire safety.

SE-7.8 Ensure that adequate water supplies are available for fire suppression throughout the City and support the California Water Service efforts to remedy any deficiencies in the water delivery system to ensure adequate fire-suppression flows.

Actions in Support of Goal SE-7

SE-7.a: *Continue to participate in the Santa Clara County Weed Abatement program to identify and mandate the abatement of fire hazards due to weed or plant growth. Ensure private properties within the Urban Wildland Interface reduce wildfire risk through comprehensive vegetation management, including establishing defensible space and proper storage of flammable materials. Coordinate with the Santa Clara County Fire Department and neighboring cities to mitigate hazardous conditions on or near the City's jurisdictional boundary.*

SE-7.b: *Promote community awareness and participation in the Santa Clara County Fire Department's fire education programs.*

SE-7.c: *Require that all new utility services and relocated existing utility services are placed underground, in accordance with Los Altos Municipal Code Chapter 12.68.*

SE-7.d: *Continue to regularly track designated wildfire hazard zones such as the fire hazard severity zone (CalFIRE) and county-designated Wildland Urban Interface (WUI) zones.*

SE-7.e: *Collaborate with the California Water Service to regularly evaluate existing infrastructure and ensure adequate fire flow for fire suppression. Coordinate with the California Water Service to identify and remediate infrastructure that does not meet fire flow requirements and explore emergency water supply agreements, if necessary.*

Goal SE-8: Emergency Services

Maintain a safe community through adequate, efficient, and high-quality police, fire, and emergency services.

Policies

SE-8.1: Provide adequate funding for police personnel and equipment, to accommodate existing and future community needs to ensure a safe and secure environment for people and property.

SE-8.2: Promote and support community-based crime prevention programs as an important augmentation to the provision of professional police services. Support existing programs and encourage expanded or new programs that focus on youth crime prevention, anti-gang, and anti-graffiti programs, or other community programs that reduce crime throughout the City.

SE-8.3: Cooperate with neighboring cities, Santa Clara County, and regional agencies to address crime issues that cross jurisdictional boundaries.

Actions in Support of Goal SE-8

SE-8.a: *Allocate sufficient budgetary resources to ensure the recruitment, training, and retention of police personnel, and the procurement of necessary equipment. Identify and pursue grants and funding opportunities to support these efforts.*

SE-8.b: *Periodically evaluate Police Department response times and incident data to ensure adequate police services are provided throughout the city.*

SE-8.c: *Regularly evaluate the effectiveness of crime reduction initiatives with the Police Department and adapt policies and programs accordingly.*

SE-8.d: *As part of the development review process, continue to consult with the Santa Clara County Fire Department in order to ensure that development projects facilitate adequate fire services and fire prevention measures.*

SE-8.e: *Maintain regular communication with regional public safety providers, including County of Santa Clara Office of the Sheriff and Office of Emergency Management to discuss regional issues, share best practices, and develop joint strategies for solutions.*