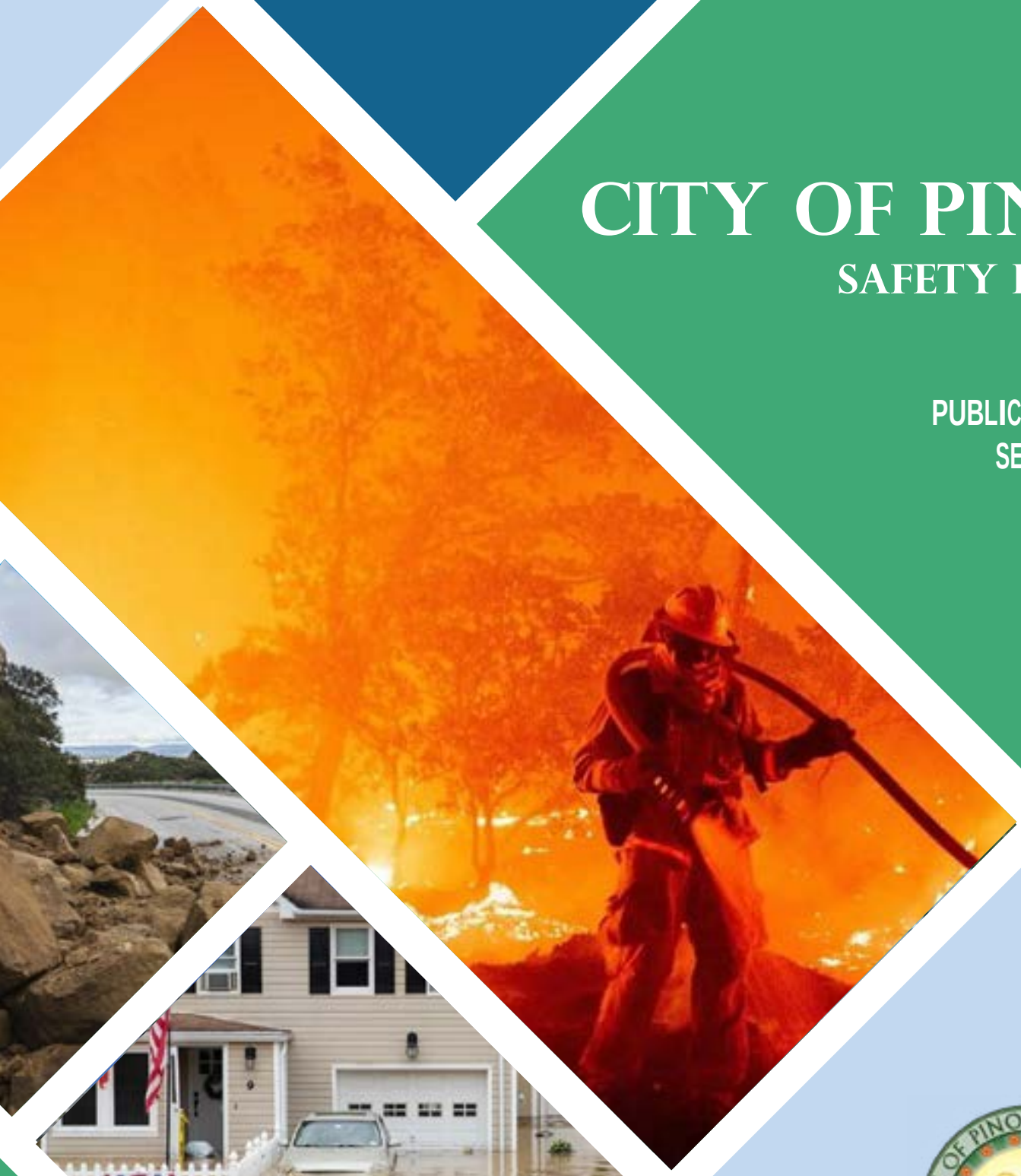
CITY OF PINOLE

SAFETY ELEMENT

PUBLIC REVIEW DRAFT
SEPTEMBER 2025



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1 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 California Government Code Section 65302, and addresses the need to protect citizens from risks associated with natural and man-made hazards. Natural hazards constitute natural phenomena and include naturally occurring events like geologic and seismic activity, wildfire, flooding, and drought. Conversely, man-made hazards are hazardous events that are caused by human activity. Man-made hazards may include hazardous materials spills, terrorism, sabotage, crime, and human-caused health crises or fires.

These hazards have the potential to cause serious impacts on the City and its residents. The Safety Element contains goals, policies, and actions to reduce the potential short- and long-term risk of death, injuries, property damage, economic damage, and social dislocation associated with hazards. The City of Pinole's response to these issues will determine its success in maintaining and attracting residents and businesses. Pinole will address safety issues comprehensively to ensure an enjoyable, safe, and healthy environment for Pinole's residents, workforce, and visitors.

1.1 Relationship to Other Documents

The Safety Element works jointly with other General Plan elements and planning documents and is implemented by several City departments through goals, policies, and implementation methods. The Safety Element relates to nearly every General Plan element but most closely relates to the Community Services and Facilities Element, Land Use and Economic Development Element, and the Sustainability Element. Additionally, the Safety Element relates to other planning documents, including the *Pinole Emergency Operations Plan* (EOP), Climate Action and Adaptation Plan (CAAP), and Contra Costa County's Multi-Jurisdictional Hazard Mitigation (MJHMP).

The Community Services and Facilities Element outlines how new development under the General Plan will affect the City's ability to provide adequate community services and facilities. This element concerns the public infrastructure and facilities that support community functions and allow for the growth of the community. The function of community services and facilities is essential to a well-developed response to hazards and safety risks.

The Land Use and Economic Development Element provides the central framework for the General Plan and serves as a compass to guide the public, planners, decision-makers, and City staff on the desired pattern of development in Pinole. Development is closely linked to safety as it provides an opportunity to design and guide the growth of the City with hazards and safety in mind.

The Sustainability Element supports land use patterns and programs that will enhance opportunities to improve both ecological conditions and the local economy and provide jobs, housing, education, recreation, and transportation opportunities. The Sustainability Element

works in conjunction with the Safety Element and links land use, environmental protection, and economic development to ensure a safe community.

The EOP provides guidance for the City of Pinole's response to extraordinary emergency situations associated with natural disasters and man-made hazard events. Taken with the Safety Element, the EOP is a critical planning document that ensures the City is adequately prepared to respond to extreme hazard events. The Safety element integrates the EOP into Safety Element.

The CAAP outlines the city's approach to address climate impacts and reduce its greenhouse gas (GHG) emissions. It serves as a comprehensive planning document to reduce City's GHG footprint and to enhance community resilience and protect physical assets from the impacts of climate change. The Safety element discusses climate change resilieance stratregies and integrates CAAP into Safety Element.

1.2 Integration of Hazard Mitigation Plan (Assembly Bill 2140)

The City of Pinole is a jurisdictional partner in Contra Costa County's Multi-Jurisdictional Hazard Mitigation Plan (MJHMP). The MJHMP identifies ways to minimize damage from natural and human-caused disasters. The plan is a resource for hazard management, state and federal program requirements, local hazard mitigation capability, and inter-jurisdictional coordination.

The County's MJHMP was revised in 2024 to include recent hazards and mitigation measures. It was crafted in accordance with the Disaster Mitigation Act of 2000 and followed the Federal Emergency Management Agency's (FEMA) 2023 Local Hazard Mitigation Plan guidance. 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- and long-term strategies, involve planning, policy changes, programs, projects, and other activities.

The MJHMP is fully integrated into the Safety Element and the City of Pinole Annex may be found at this location: https://www.contracosta.ca.gov/DocumentCenter/View/82607/City-of-Pinole-Annex-2024-HMP

2 Natural and Man-made Hazards Analysis

2.1 Existing Conditions

An analysis of existing conditions is one of the primary steps in the process of updating the City of Pinole's Safety Element. An outline of information on existing conditions in the City and surrounding areas, as well as an analysis of factors that will impact the City's physical development, will inform the goals, policies, and actions of the Safety Element. The existing conditions analysis for each identified hazard includes identifying the location and extent of hazard areas that currently exist and have historically occurred as well as identifying the capabilities of the City to mitigate or respond to each hazard. The goals, policies, and implementation plan laid out in this Safety Element are guided by the existing conditions related to each hazard and safety risk. The focus of the identified existing conditions is on mappable resources, trends, and concerns that will frame choices for the long-term physical development of the City.

2.1.1 Planning Area

The Safety Element relates to the entire City of Pinole, which is located in Contra Costa County. Contra Costa County is located in the East Bay region of the San Francisco Bay Area. The City is located in the northwestern portion of Contra Costa County, along the shoreline of San Pablo Bay. The City is bordered by the Cities of Richmond and San Pablo, as well as the unincorporated community of Tara Hills to the southwest and the unincorporated community of El Sobrante to the south. The City is bordered by San Pablo Bay to the North, the City of Hercules to the northeast, and unincorporated areas of Contra Costa County to the east. Because certain disaster events, geologic features, and potential hazards relate to each other and transcend the City's boundaries, this Safety Element takes into account hazards that occur or originate in other jurisdictions when the potential impact of those hazards might impact the City.

2.2 Geologic Hazards

Contra Costa 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. The region is defined by a series of northwest-trending mountain ranges and valleys. Much of this province is characterized by marine sedimentary and volcanic rock. The northern and southern ranges are bisected by the topographic depression containing San Francisco Bay. 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 Contra Costa County include Suisun Bay to the North, San Pablo Bay to the northwest, San Francisco Bay to the west, the Sacramento-San Joaquin River delta to the northeast, and Mt. Diablo at the center of the County.

The Coast Ranges are subparallel to the active San Andreas Fault, and Contra Costa County intersects with various faults that run parallel to the San Andres Fault. The proximity of the many faults in the area may exacerbate geologic and seismic hazards, as discussed later.

An understanding of the geology and soil composition of a site is essential for new construction and redevelopment of land as it can impact the safety of the structures. **Figure 1** and **Table 1** show the geologic makeup of Pinole. The City is characterized by bayside alluvial plains in the northern portions of the City and hills and mountains in the central and southern regions. San Pablo Bay abuts the City of Pinole to the north and is a major geologic component of the City's coastline. Pinole Creek runs from San Pablo Bay at the northern bounds of the City, following Pinole Valley Road southeast through Pinole Valley Park at the southeastern city limits. The majority of the City lies on moderately to well-consolidated Miocene marine sandstone, shale, and siltstone.

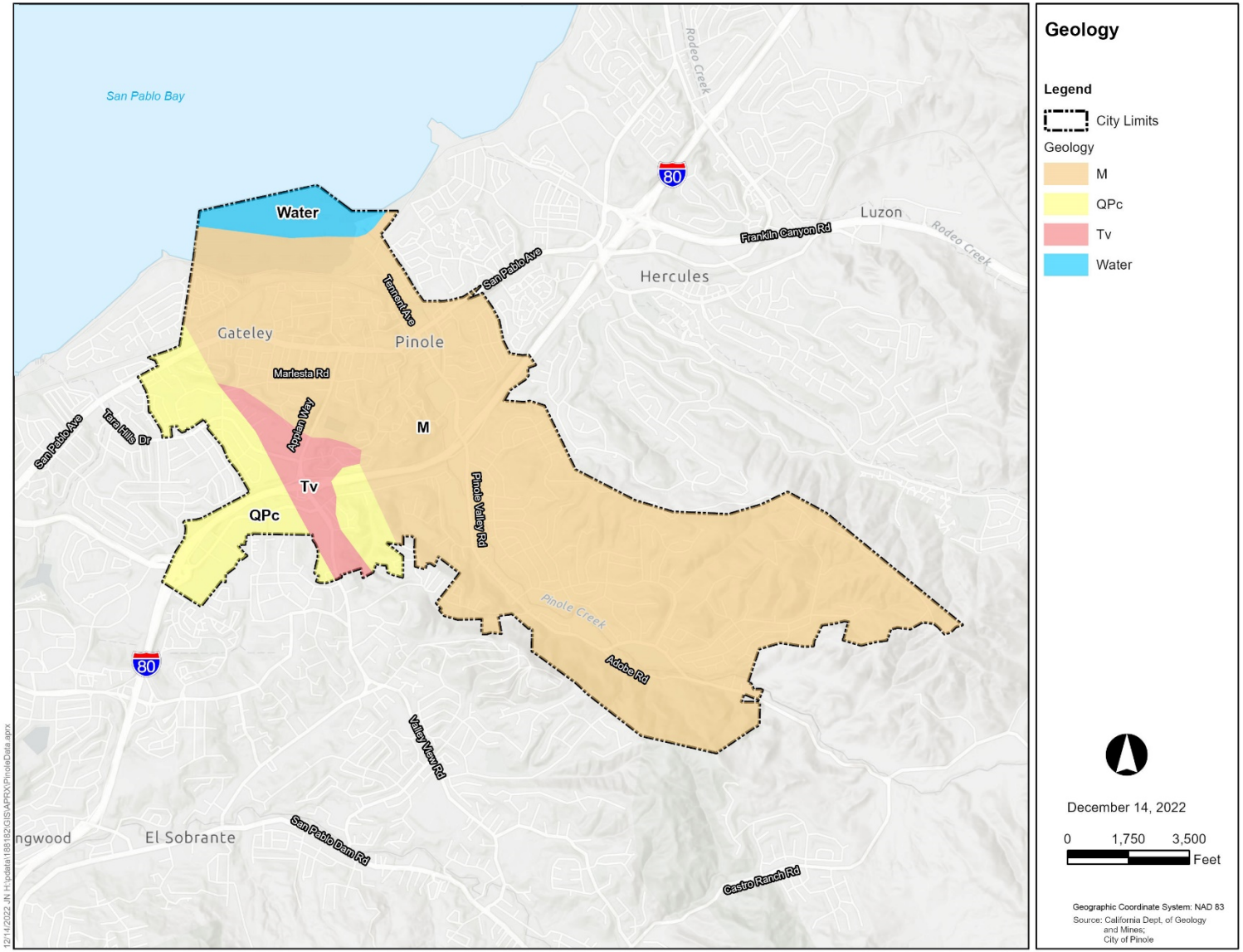
Geologic hazards include seismic hazards, land slides, subsidence, and expansive soils. Tsunamis and seiches. Seismic hazards can lead to fault rupture, ground shaking, and liquefaction. It can also be one of the causes of landslides, subsidence, tsunamis, and seiches.

Table 1: Geology

Generalized Rock Types	General Lithology	Age	Description
M	Marine sedimentary rocks	Miocene	Sandstone, shale, siltstone, conglomerate, and breccia; moderately to well consolidated.
QPc	Nonmarine (continental) sedimentary rocks	Pliocene	Sandstone, shale, and gravel deposits; are mostly loosely consolidated.
Tv	Nonmarine (continental) sedimentary rocks	Pliocene-Pleistocene	Sandstone, shale, and gravel deposits; are mostly loosely consolidated.

Source: https://maps.conservation.ca.gov/cgs/gmc/App/

Figure 1: Geology



2.2.1 Seismic Hazards

Fault Rupture

The City of Pinole is situated in the central area of the Coast Ranges Geomorphic Province, a region with characteristic northwest-trending landforms and geologic structures.

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 (MMI) 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 (MCE) or characteristic earthquake. Depending on the planned use, lifetime, or importance of a facility, 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 the 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 many faults in the vicinity could result in casualties and extensive property damage. The impacts of such a quake may also 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 Pinole is not listed within a State-designated Alquist-Priolo Earthquake Fault Zone.[1] The closest Holocene-Active faults in the region are the Hayward Fault, approximately 3 miles west of the City, the Concord Fault, approximately 15 miles east, and the San Andreas Fault, approximately 20 miles west.

[1] State of California Department of Conservations, Alquist-Priolo Earthquake Fault Zones, https://www.conservation.ca.gov/cgs/alquist-priolo, accessed March 13, 2022.

Hayward Fault. The Hayward Fault is part of the San Andreas Fault system and runs approximately 74 miles along the foot of the East Bay hills. The last major earthquake along the Hayward Fault occurred on October 21, 1868, destroying downtown Hayward, killing five people, and injuring 30. With an estimated magnitude of 6.8, it caused damage throughout the area. It is estimated that a rupture along this fault occurs every 100–220 years on average, with a high likelihood that the fault will rupture and produce a significant earthquake within the next 30 years. Considering the proximity of the Hayward Fault, the primary and secondary effects of a fault rupture would likely impact the City of Pinole.

Concord Fault. The Concord Fault is a Holocene active dextral strike-slip fault characterized by aseismic creep. The fault is approximately 11 miles long, running from Suisun Bay to the Mt. Diablo foothills. Its last earthquake occurred on October 23, 1955, with an estimated magnitude of 5.4, which resulted in roughly a million dollars in damage and one fatality. The likelihood of a rupture in the next 30 years is estimated to be about half that of the Hayward Fault and significantly less than that of the San Andreas Fault. However, a sizable earthquake along this fault would potentially result in secondary seismic impacts on the City of Pinole.

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 still considered the most devastating earthquake in the state.

There are two local faults near the City of Pinole that are not zoned under the Alquist-Priolo Earthquake Fault Zone. These include the Pinole Fault, which runs from San Pablo Bay southeast directly through the City, and the Franklin Fault, which runs from Vallejo southeast to the Cities of Lafayette and Walnut Creek. The Franklin Fault is approximately 4 miles northeast of the City of Pinole. Pinole Fault, which was formerly believed to be inactive, produced two major earthquakes during an 1800-year interval between about 800 and 2600 ago. The Pinole Fault ruptures thus appear to have an average recurrence interval of 900

years, and the latest detected event was about 800 years ago[2]. An earthquake along Pinole Fault can be particularly damaging to Pinole due to its proximity to the City.

In order to protect the City's infrastructure and buildings from the impacts of fault rupture and ground shaking, following current building codes is essential, and retrofitting buildings that were built under outdated codes can be effective. The City is managing geologic and seismic hazards through the rehabilitation and renovation of older buildings, requiring new developments to be designed to seismic standards under the building code, and using inspection as a way to ensure new structures will be safe in the event of any geologic or seismic hazards.

Ground Shaking

Ground shaking is characterized by the physical movement of the land surface during earthquakes. This shaking can cause significant damage to buildings and impact the underlying soils. Strong ground shaking as a result of earthquakes can cause soils to compact, resulting in local or regional subsidence of the ground surface. During strong ground shaking, soils become more tightly packed due to the collapse of pore spaces, resulting in a reduction in the thickness of the soil column. This type of ground failure typically occurs in loose granular, cohesionless soils and can occur in either wet or dry conditions. Unconsolidated young alluvial deposits are especially susceptible to this hazard. Damage to structures can occur as a result of subsidence.

Portions of the City that may be susceptible to seismically induced settlement are generally the floodplains and larger drainages that are underlain by late Quaternary alluvial sediments (similar to the liquefaction-susceptible areas below). The City is characterized by alluvial plains in the northern areas, which may be susceptible to ground shaking. However, the majority of the City is underlain by well-consolidated soils, which are less prone to ground shaking-induced impacts.

[2]Miller Pacific Engineering Group, *Preliminary Geotechnical Investigation, The BCRE Project at 2801 Pinole Valley Road, Pinole, CA*. https://cdn5-hosted.civiclive.com/UserFiles/Servers/Server_10946972/File/City%20Government/Planning/Current%20Projects/2801%20Pinole%20Valley/Geo%20-%20soils%20report.pdf. Accessed October 13, 2022

Figure 2: Regional Fault Locations Map

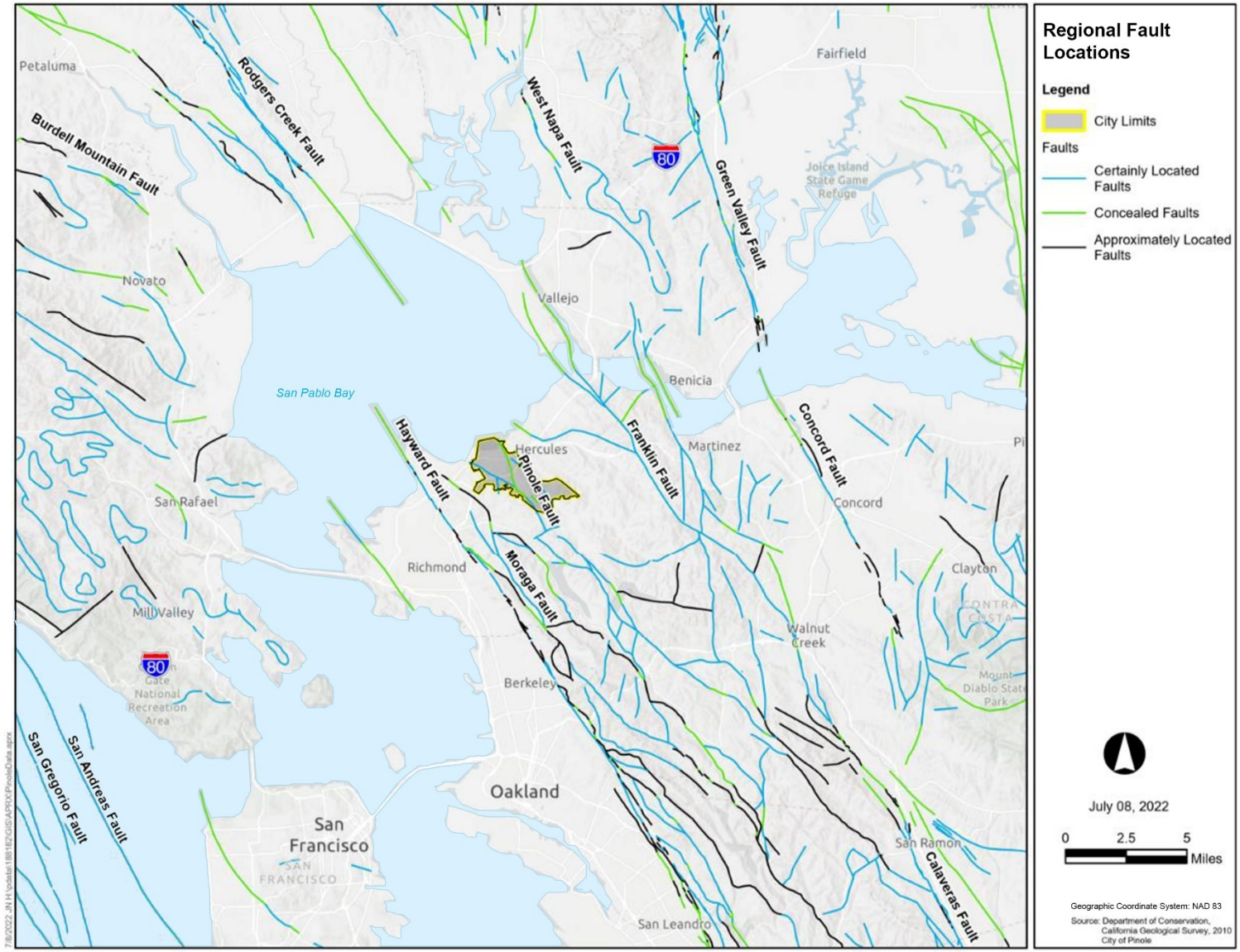


Figure 3: Local Fault Locations Map

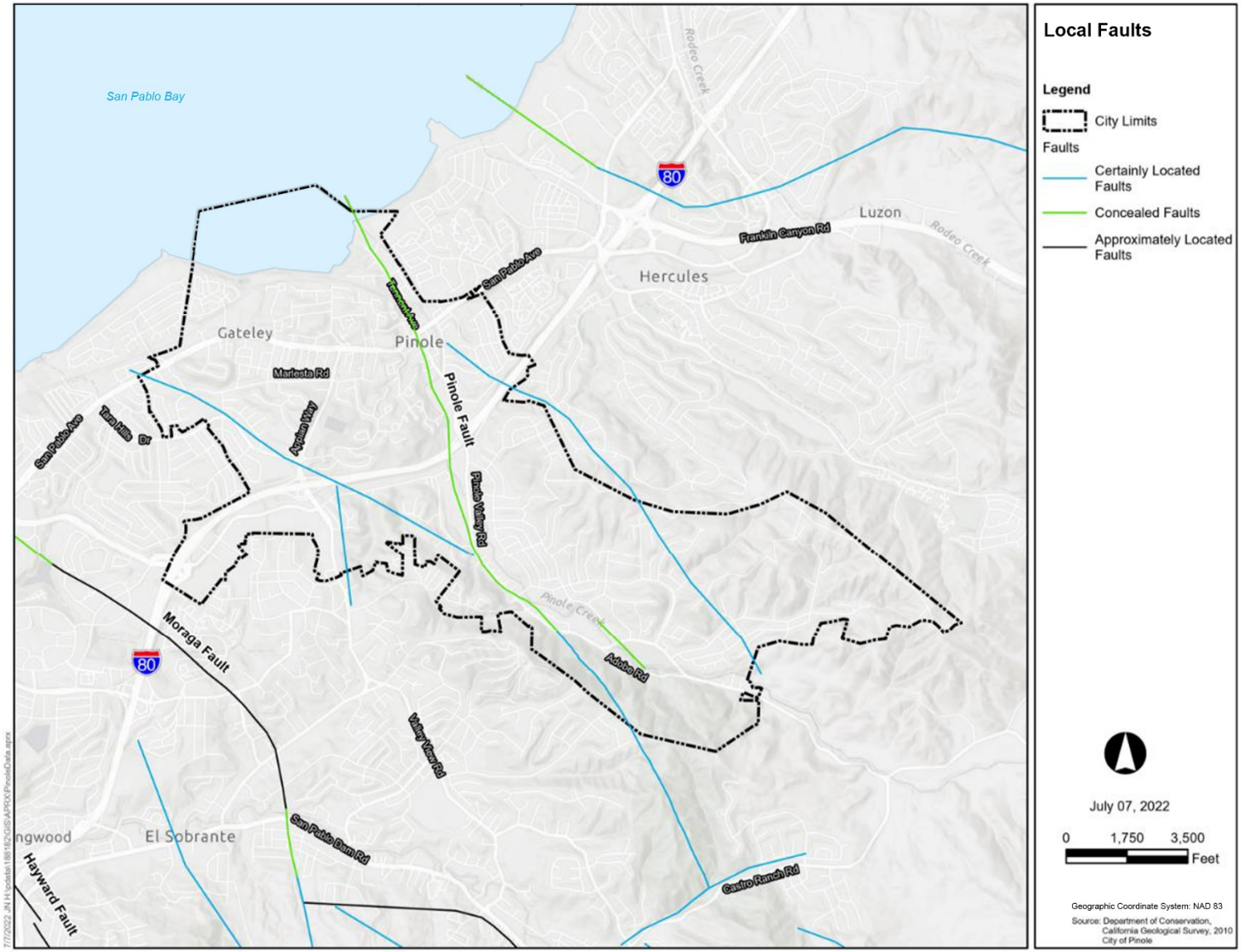


Figure 4 shows the shake potential in the City of Pinole. It shows the relative intensity of ground shaking from anticipated future earthquakes. Percentage of gravity (% g) is a method for expressing acceleration, measured relative to gravity (g). Shaking potential at 50% would be 0.50 g's, perceived as severe ground shaking with moderate to a heavy potential of damage on the Modified Mercalli Intensity scale. Based on the shake potential map (**Figure** 4) the strongest ground shaking that could occur in the City of Pinole would be 1.3 – 1.4 gs (130 % to 140 % of gravity). For comparison purposes, the peak ground acceleration in a single direction measured during the 1994 Northridge Earthquake was 1.82 g, moment magnitude 6.7 – this was the highest ever instrumentally recorded in urban North America[3].

These shake potential maps show the projected maximum capacity for ground shaking in the specific geography – based on conditions such as topography, soil types, groundwater location, etc. Areas around floodplains or shallow groundwater can experience more significant ground shaking, along with steep hillsides.

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 is caused by a sudden temporary increase in pore water pressure due to seismic densification or other displacements of submerged granular soils. Liquefaction more often occurs in earthquake-prone areas underlain by young (i.e., Holocene age) alluvium where the groundwater table is higher than 50 feet below the ground surface.

Liquefaction-prone areas within the City are generally located along the coast of San Pablo Bay in the North, where shallow groundwater and alluvial soils are located, and surrounding Pinole Creek, which runs from San Pablo Bay along Pinole Valley Road through Pinole Valley Park as shown in **Figure 5.** These areas are classified as having high and moderate liquefaction susceptibility, respectively.

3 The Northridge Earthquake of 1994: Ground motions and Geo Technical Analysis. https://web.archive.org/web/20130506100941/http://www.coe.neu.edu/Depts/CIV/faculty/myegian/library/Thenorthridge%20Earthquake%20of%201994%20Ground%20Motions%20and%20Geotechnical%20Aspects.pdf Accessed October 13, 2022.

Figure 4 Shake Potential Map

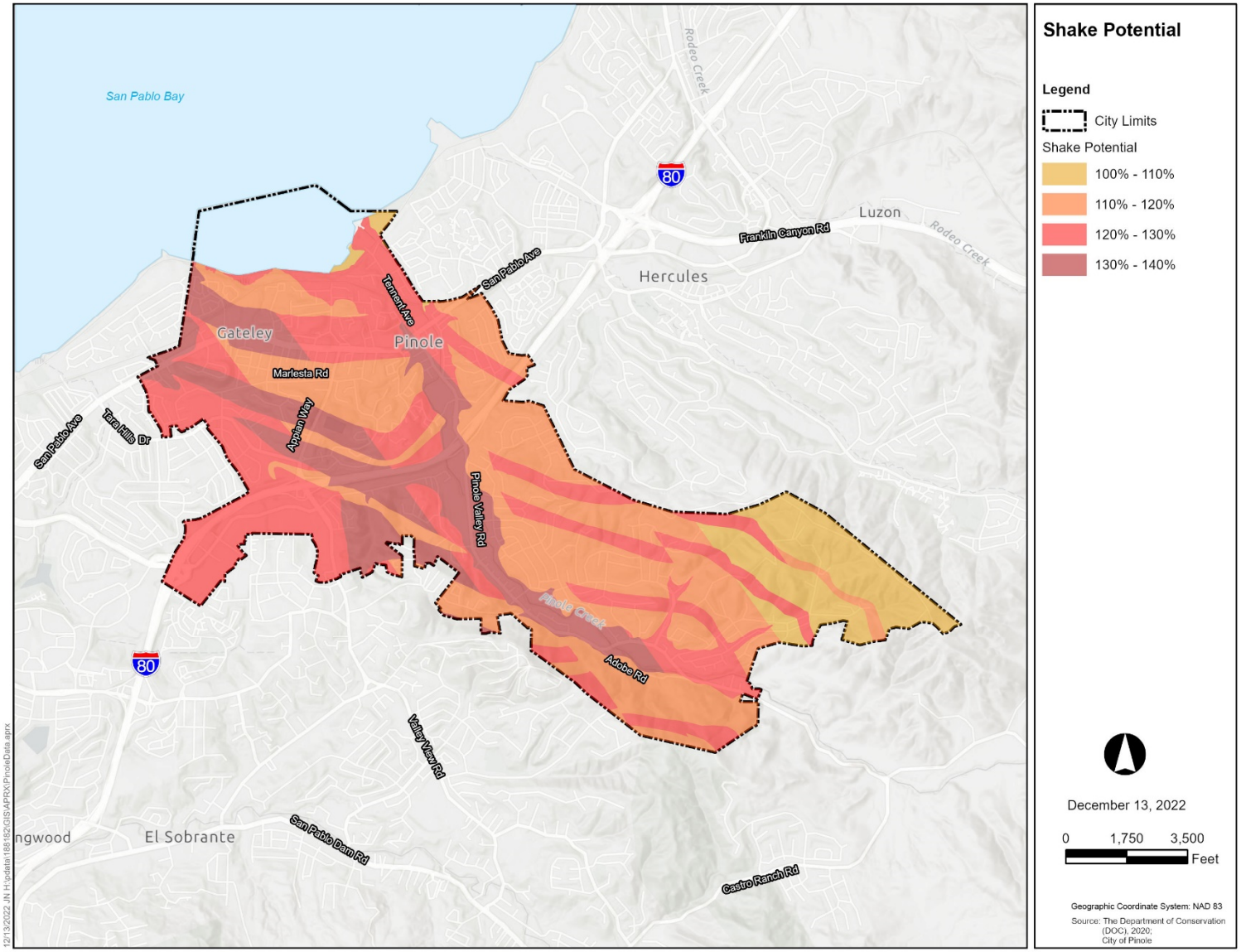
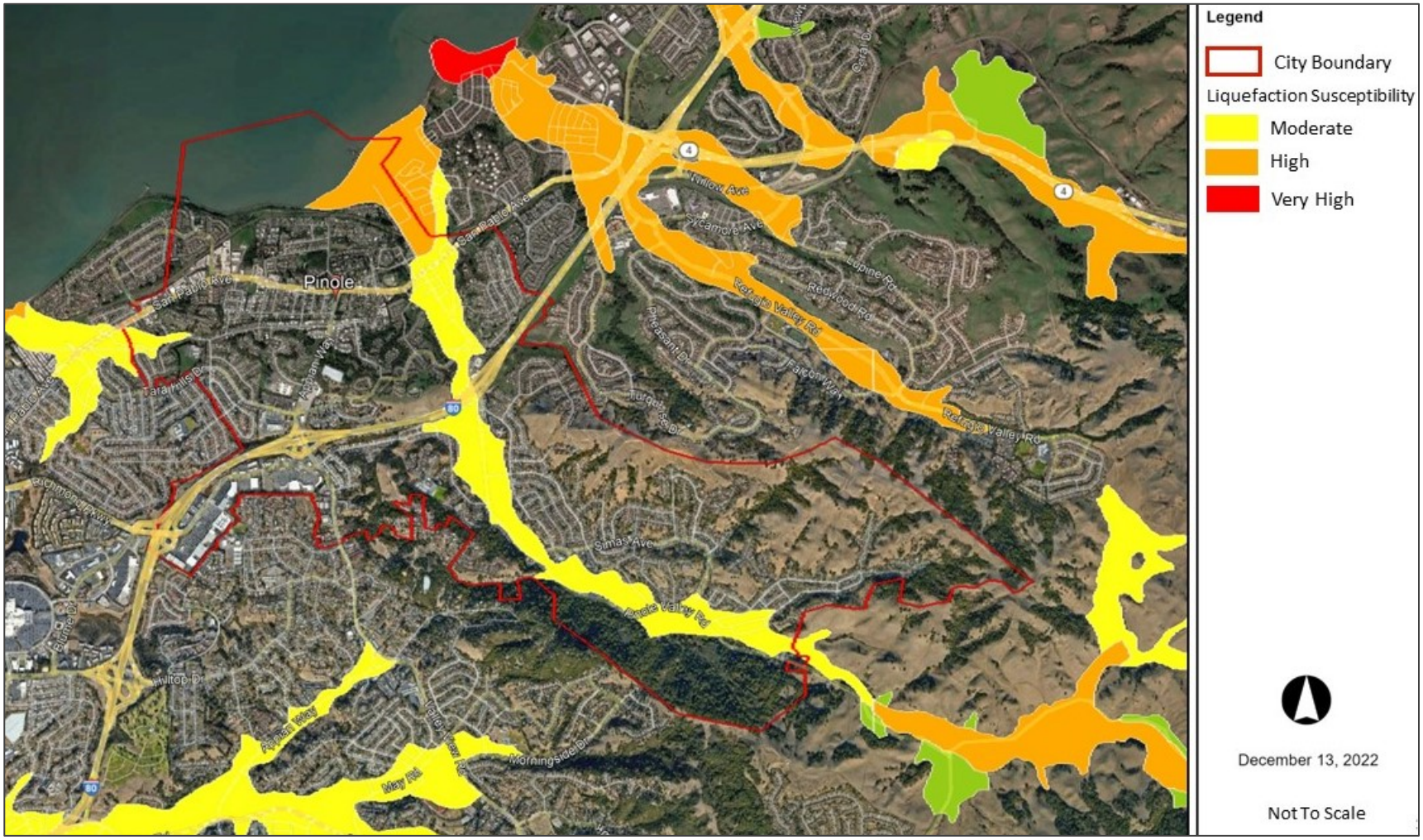


Figure 5: Liquefaction Zones



Source: United States Geological Survey; Google Earth; City of Pinole.

2.2.2 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 ground water, earthquakes, volcanic activity, disturbance by human activities, or any combination of these factors.

Figure 6 shows the relative likelihood of deep-seated landsliding based on regional estimates of rock strength and steepness of slopes. 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. This landslide susceptibility map is intended to provide infrastructure owners, emergency planners, and the public with a general overview of where landslides are more likely to occur. It is not appropriate for the evaluation of landslide potential at any specific site.

The analysis of landslide susceptibility uses a combination of rock strength and slope data to create classes of landslide susceptibility from 0 (low) to X (high). These classes express the generalization that on very low slopes, landslide susceptibility is low even in weak materials and that landslide susceptibility increases with slope and in weak rocks. The landslide susceptibility matrix is based on Rock Strength and Slope Steepness [5].

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. The areas in the southeast portions of the City with steeper slopes containing shale and siltstone would be the most vulnerable to seismically induced slope failure. Areas along Pinole Creek are also potentially vulnerable to landslides due to the slope and underlying geology of the Pinole Creek watershed. The Pinole Creek Watershed Sediment Source Assessment, developed by the San Francisco Estuary Institute and Department of Conservation, identified landslide-prone areas within the City of Pinole[6].

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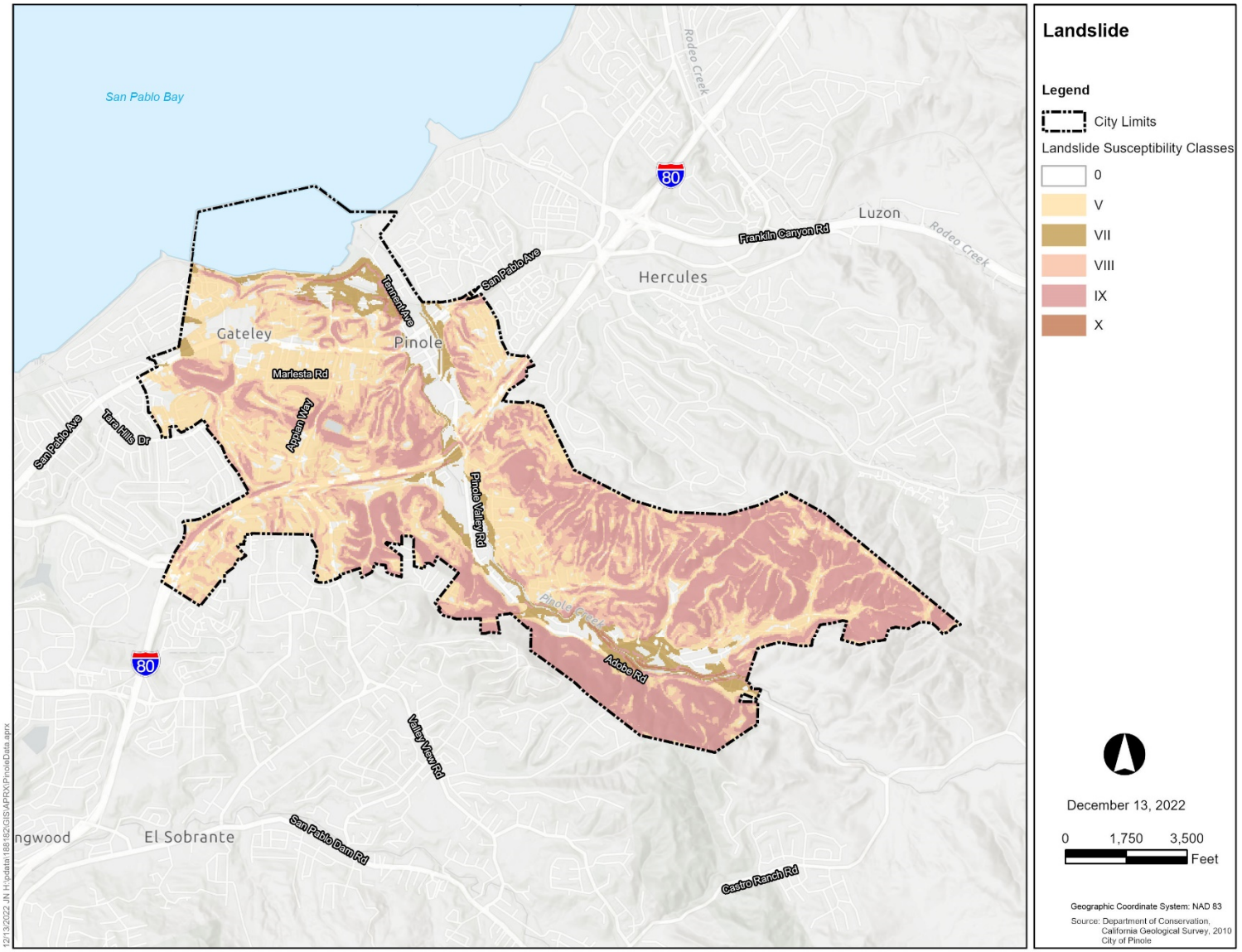
[4] What is a landslide and what causes one?. https://www.usgs.gov/faqs/what-landslide-and-what-causes-one. Accessed 12 October, .2022

[5]Layer: Landslide Susceptibility Classes (ID: 0).
https://gis.conservation.ca.gov/server/rest/services/CGS/MS58_LandslideSusceptibility_Classes/MapServer/0. Accessed 11 July, 2022.

[6] Pinole Creek Watershed Sediment Source Assessment: Pavon Creeks Sub-Basin.
https://www.sfei.org/sites/default/files/biblio_files/WS515_PavonCreek_FinalReport.pdf. October 13, 2022

Figure 6: Landslide Areas



The assessment identified active landslides, dormant landslides, and Holocene landslides, which were generally located in the southern area of the City where slopes are steeper and in areas surrounding Pinole Creek. Pinole Creek banks are vulnerable to slope failure in the event of an earthquake due to steep topography and underlying soil. Low-lying areas in the northern portions of the City are generally not prone to seismic-induced landslides. Soil engineering tests are required before building permits are issued for development in areas of high-risk slope stability issues. The soil engineering analyses outline specific design elements that are necessary to mitigate landslides and slope stability issues on the site.

2.2.3 Subsidence

Ground subsidence is the gradual settling or sinking of the ground surface with little or no horizontal movement. Most ground subsidence is anthropogenic 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 result of settling and compacting of unconsolidated sediment from the shaking of an earthquake.

The United State Geological Survey (USGS) documents areas of land subsidence throughout California, including historical and current subsidence. The USGS has not identified any regional subsidence as a result of groundwater pumping or oil extraction in the City of Pinole or surrounding communities[7].

2.2.4 Expansive Soils

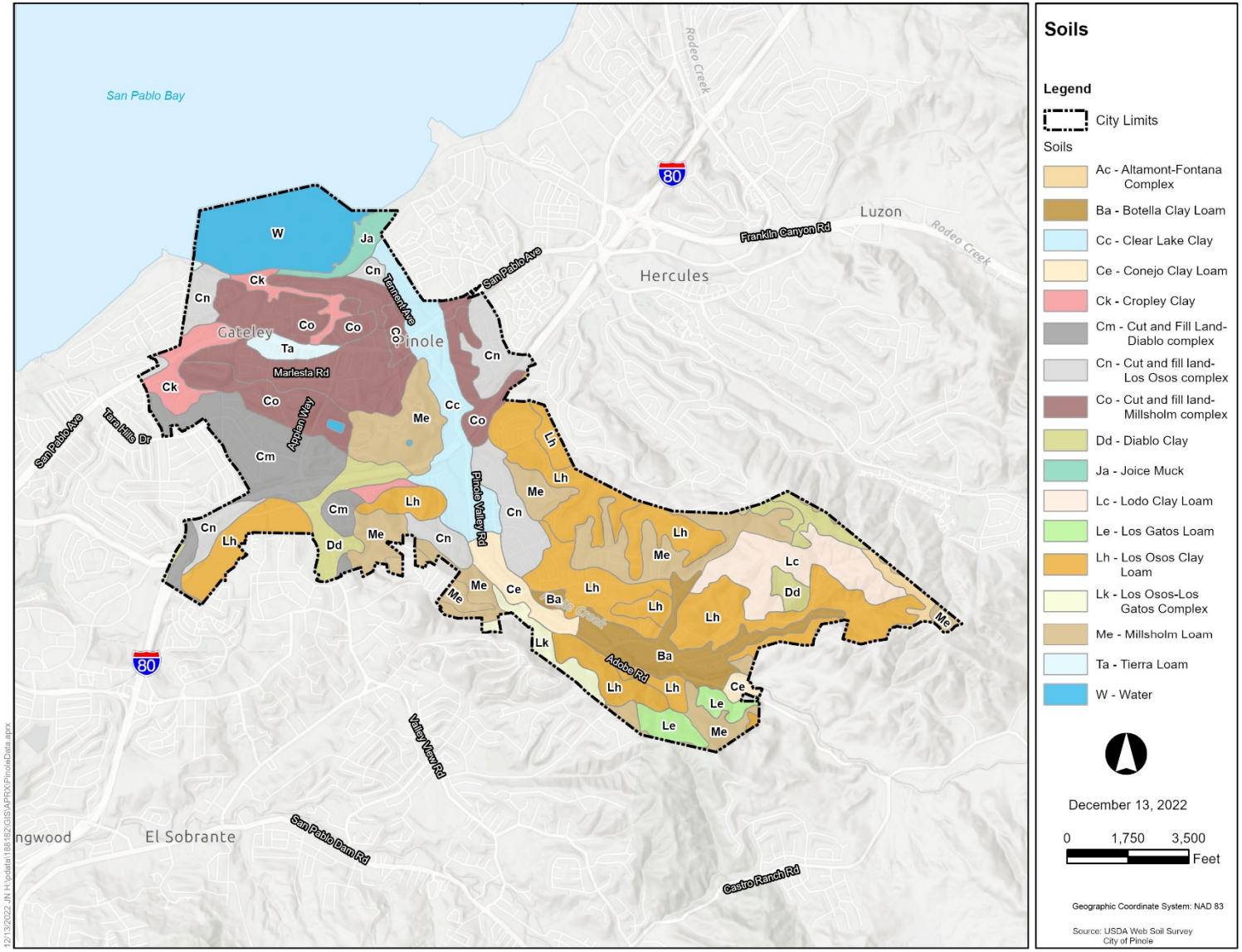
Expansive soils are those that have the ability to expand or contract, changing in volume based on their moisture content. They are typically composed of a form of expansive clay mineral that readily absorbs water and swells, leading to an increase in volume when wet and shrinkage when dry. This shrink-swell process can cause fatigue and crack for 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 the City is not generally prone to expansive soils due to the low clay content in the characteristic sandstone and shale soils in the area. The City generally has soils that contain less than 50 percent clay, with slight to moderate swelling potential. Soil classification in the City is depicted in **Figure 7**[8].

7 Areas of Land Subsidence in California. https://ca.water.usgs.gov/land_subsidence/california-subsidence-areas.html. Accessed October 13, 2022

8 Soil Classification. https://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/survey/class/. Accessed October 13. 2022

Figure 7: Soils



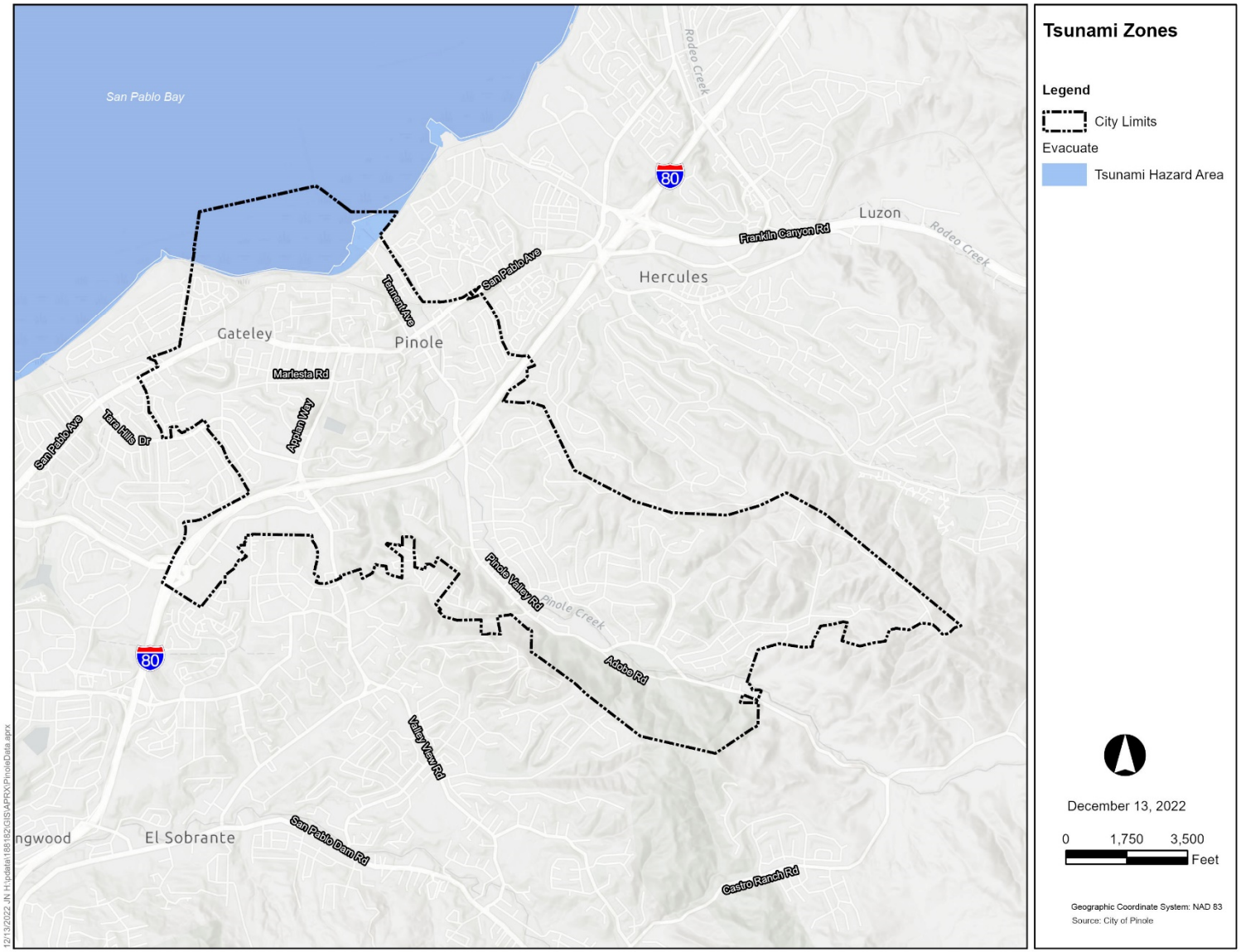
2.2.5 Tsunamis and Seiches

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 creates waves that radiate outward in all directions away from their source, sometimes crossing entire ocean basins. The nearest large body of water is San Pablo Bay, which abuts the City of Pinole to the North. The most likely tsunami scenario would be an earthquake in the Pacific Ocean creating a tsunami that moves towards the California coast. The tsunami would then enter San Francisco Bay and potentially impact San Pablo Bay. Due to the mostly enclosed nature of the San Francisco Bay and San Pablo Bay, the vulnerability of the City to tsunami impacts is low, as the force of the tsunami would be mitigated as it enters the San Francisco Bay (refer to **Figure 8)**. Tsunami simulations predict that the effects of a tsunami event would extend only as far as the Union Pacific railroad tracks along the San Pablo Bay shoreline. Tsunami impacts could affect the Union Pacific railroad and disrupt service, but in general, the coastal bluffs that the railroad runs along will act as a barrier. The potential for tsunami hazards to the City is limited to the San Pablo Bay shoreline, and the ability for tsunamis to impact inland areas of the City is minimal.

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.

Due to San Pablo Bay being a mostly enclosed body, seiches do pose a potential threat to the City of Pinole along the San Pablo Bay shoreline. However, seiches have not been historically documented in the area.

Figure 8: Tsunami Map



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. Lightning, accidents, or arson can spark wildfires.

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.

Once a fire has started, several conditions influence its behavior, including fuel topography, weather, drought, and development. Certain conditions must be present for significant interface fires to occur. The most common conditions include hot, dry, and windy weather, the inability of fire protection forces to contain or suppress the fire, the occurrence of multiple fires that overwhelm committed resources, and a large fuel load (dense vegetation).

Contra Costa County has a rich history of wildfires. The California Department of Forestry and Fire Protection logs fire incidents in the state and has identified dozens of wildfires in Contra Costa County since 2010, ranging in size from a few acres to hundreds of thousands of acres. None of the wildfire incidents identified by the California Department of Forestry and Fire Protection occurred in the City of Pinole. Small wildfires and brushfires have occurred in the City and surrounding jurisdictions. However, these tend to be contained quickly without damage to development in the City.

2.3.2 Fire Hazard Severity Zones

The California Department of Forestry and Fire Protection prepares wildfire hazard severity maps 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 FHSZ do not predict when or where a wildfire will occur, they do identify areas where wildfires may be more likely to occur or be more severe, based on factors such as fire history, existing and potential vegetation that can serve as fuel, predicted flame length, blowing embers, terrain, and typical fire weather for an area. Zones are designated in varying degrees from moderate, high, and very high. There are three types

of responsibility areas that FHSZ may fall under: Local Responsibility Area (LRA), State Responsibility Area (SRA), or Federal Responsibility Area (FRA). LRAs are incorporated 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.

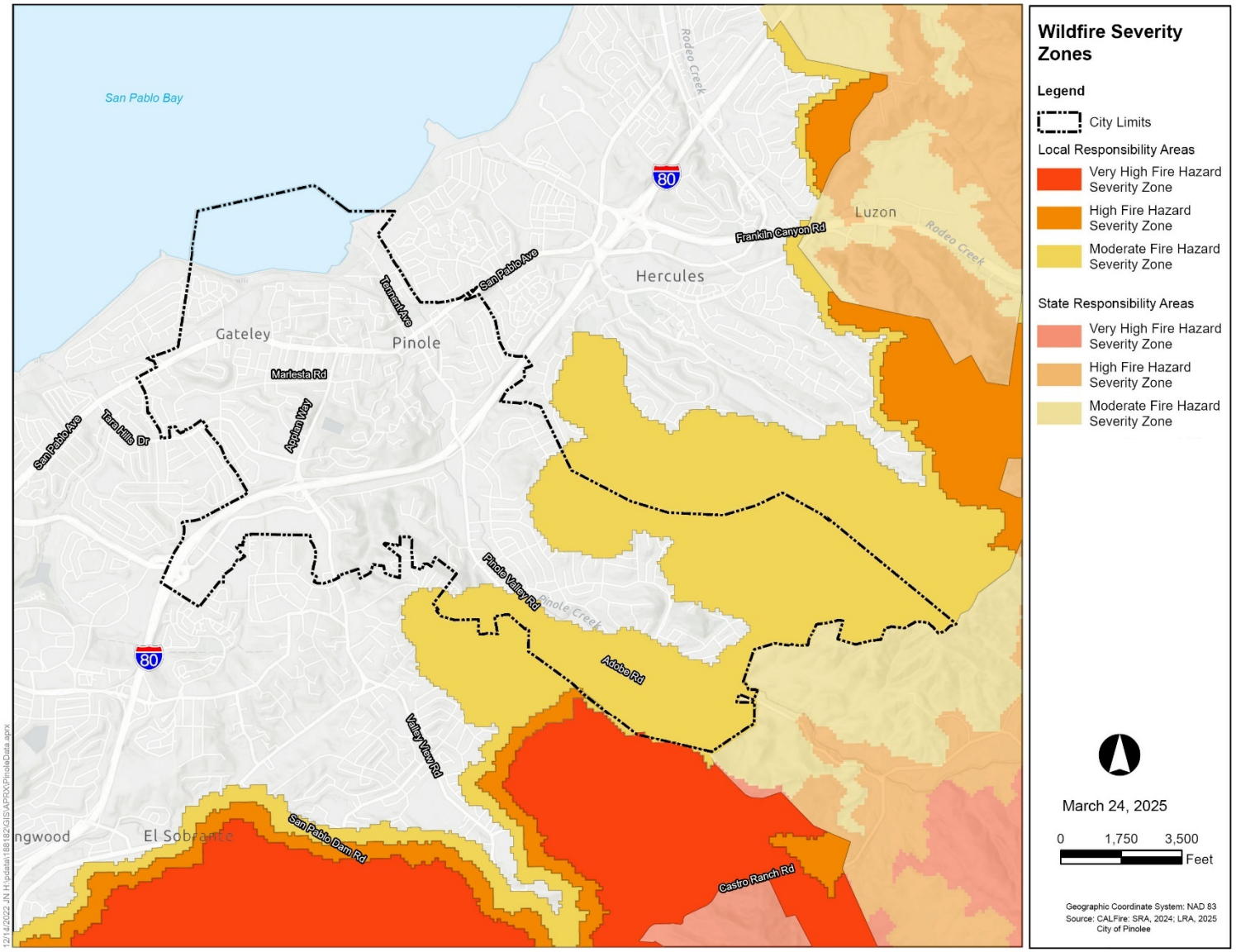
There are moderate FHSZ areas within the LRAs of the City that generally follow the southern City limits. Moderate FHSZ within the City include the southern edge of the City and through areas of Pinole Valley Road, including Pinole Valley Park. The moderate FHSZ also includes areas along the southeastern border near Doide Avenue and follows north into the open areas in the northeastern areas of the City. Areas within this moderate FHSZ are primarily undeveloped, however, there are housing developments within and adjacent to the FHSZ that could be impacted by wildfires. There are high and very high FHSZ areas within neighboring jurisdiction's LRAs that are located just south of the City. Additionally, the southeastern area of the City abuts unincorporated areas of Contra Costa County, which are classified as moderate fire hazard severity zones under state responsibility (SRAs). Wildfires in this area would potentially impact the developed neighborhoods within the wildland-urban interface (refer to **Figure 9**).

The City of Pinole has contracted with the Contra Costa County Fire Protection District (Con Fire) for fire protection services in March of 2023. The City has adopted the California Fire Code 2020 to ensure the fire-safe design of the structures and fuel modification plans. The plan submittal set is provided to the Con Fire for its approval. Con Fire uses the Zonehaven platform linked to the County Community Warning System. The City also has an annual brush clearance program in collaboration with Con Fire. The City also maintains several firebreak areas, including the trails on Fareeha Hill.

The water supply for the City is provided by East Bay Municipal Utility District (EBMUD) and includes water demands and fire flows. EBMUD maintains an *Urban Water Management Plan* that is updated every five years to support long-term resource planning and water supply sustainability. EBMUD's water distribution reservoirs have a total system-wide capacity of 748 million gallons. The reservoirs, which are typically enclosed tanks, are sized to meet the estimated water service requirements of EBMUD's customers, including projected future water demands and fire flows. EBMUD has also prepared the *Water Shortage Contingency Plan 2020*, to help address water shortages that may occur and explores scenarios designed to test assumptions and explore changes[9]. The City of Pinole cooperates and participates in the update of these plans.

[9] East Bay Municipal Utility District's Urban Water Management Plan 2020. https://www.ebmud.com/water/about-your-water/water-supply/urban-water-management-plan. Accessed October 13, 2022

Figure 9: Fire Hazard Severity Zone



2.4 Flooding

2.4.1 Major Sources of Flooding

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).

The City of Pinole is largely composed of areas that have minimal flood hazard, with some areas of greater potential flood hazard along existing waterways and water bodies. During heavy rain events and high tides, certain areas of the City may experience some flooding. The Federal Emergency Management Agency (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), which are caused by flooding and are akin to a river of liquid and flowing mud on the surfaces of normally dry land areas, as when the earth 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., can have a large impact on the amount of flooding.
- The ground's absorption capacity 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 are related to moisture absorption affecting the flow of water.
- Patterns of land use/urbanization relate to the pervious and impervious nature of the ground.

- The expected level, age, and condition of flood management infrastructure can impact flooding conditions.
- 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. Flood risk remains significantly higher until vegetation is restored—up to five years after a wildfire.[10]

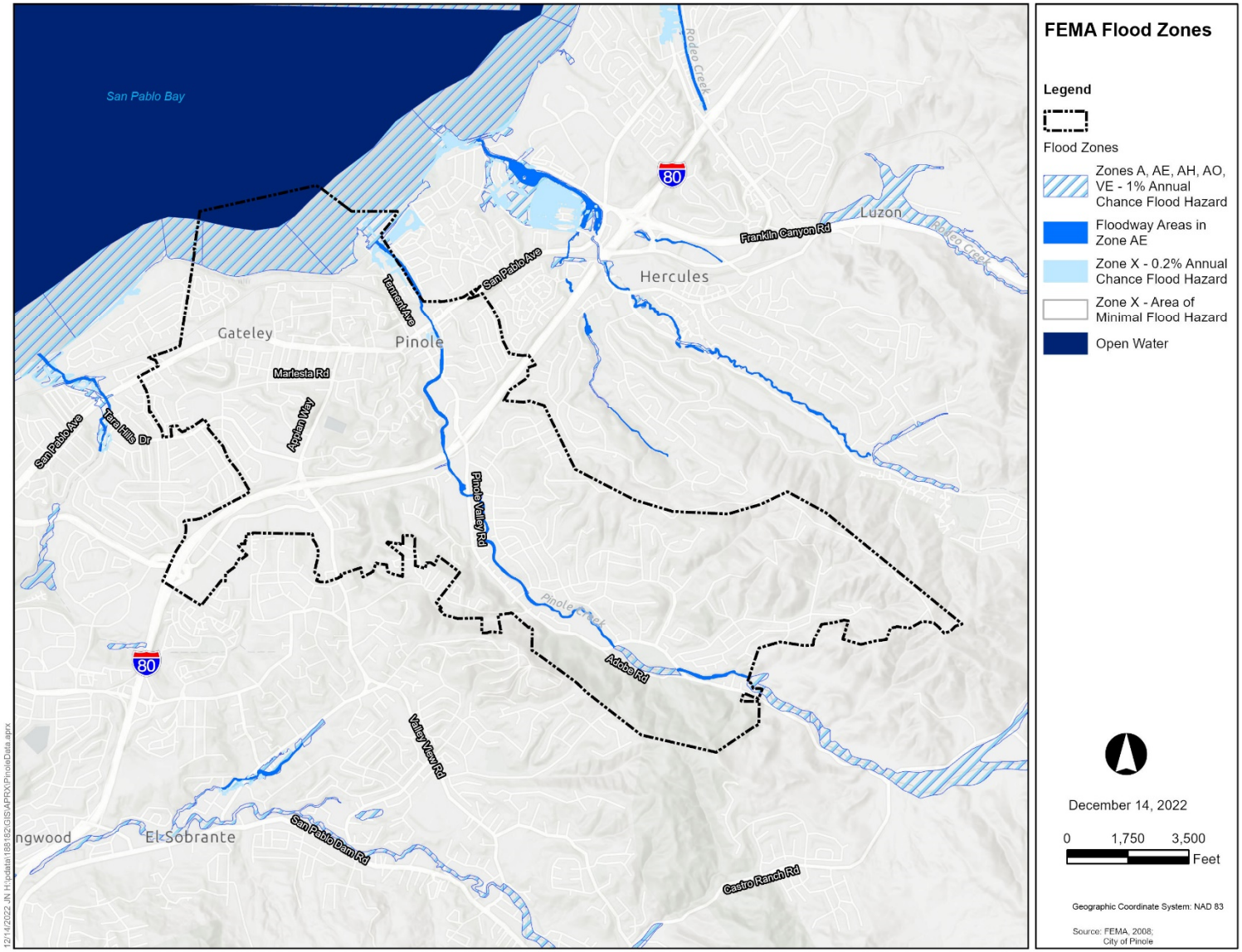
Flood hazard areas identified on the Flood Insurance Rate Map (FIRM) are identified as a Special Flood Hazard Area (SFHA). SFHA are defined as the area that will be inundated by the flood event having a 1-percent chance of being equaled or exceeded in any given year. The 1-percent annual chance flood 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 flood, are labeled Zone C or Zone X (unshaded).

The FEMA flood zones in the City are depicted in **Figure 10.** The areas identified in Pinole that are subject to flooding labeled as A, AE, AH, and AO are almost entirely located at the San Pablo Bay shoreline and along Pinole Creek- the two surface water features in the City. Coastal flooding of San Pablo Bay would potentially inundate areas along the northern coast of the City. Flood hazard zones have been mapped by FEMA that would result in the event of significant storm events. The flood hazard zone associated with San Pablo Bay would only affect the bay coastline area of the City and would not impact developments in the City. The flood zone is categorized as a FEMA 100-year flood hazard zone with a 1 percent annual chance of flooding.

Flood zone X (shaded) associated with Pinole Creek are primarily near San Pablo Bay in the northern area of the creek. The flood zone is categorized as a FEMA 500-year flood hazard zone with a 0.2 percent annual chance of flooding, which results from an extraordinary storm event. The flood zone would potentially inundate the Tennant Avenue Pinole Recreational Vehicle Storage area, Orleans Drive, and Calais Drive in the northernmost area of the City.

[10] Federal Emergency Management Agency, *Flood Risk Increases After Fires Are Out – Buy Flood Insurance Now*, https://www.fema.gov/fact-sheet/4562/flood-risk-increases-after-fires-are-out-buy-flood-insurance-now, accessed March 14, 2022.

Figure 10: FEMA Flood Zones



Flood zones along Pinole Creek also exist at the intersection of Pear Street and Fernandez Avenue to the west of the creek. This flood zone is also categorized as a FEMA 500-year flood hazard zone with a 0.2 percent annual chance of flooding. Flooding in this area is also unlikely and would not significantly impact critical infrastructure or notable areas within the City.

A collaborative vision planning process in 2003-2004 resulted in the *Pinole Creek Watershed Vision Plan*. The plan was developed with the help of the Urban Creeks Councils and the Restoration Design Group through a grant from the California State Coastal Conservancy. The plan emphasized that "flood management projects should preserve or restore natural systems to the extent possible. The proposed lower flood control channel restoration project could significantly improve creek habitat while providing flood protection. A reliable source of funding must also be identified to ensure long-term maintenance of the flood protection function and habitat restoration. Community members also observed that the maintenance of existing storm drains should be improved to prevent localized street flooding.[11]

Adapting to Rising Tides Bay Area: Short Report Summary of Regional Sea Level Rise Vulnerability and Adaptation Study, a project spearheaded by the Bay Conservation and Development Commission and Metropolitan Transportation Commission/Association of Bay Area Governments, summarizes the consequences the Bay Area may face as sea levels rise in the absence of coordinated, prioritized adaptation. The City of Pinole actively participated in this effort. The next step in the process is for the region to develop a set of shared priorities and values that will help inform the types of adaptation strategies that are most appropriate, and what actions should be taken first.

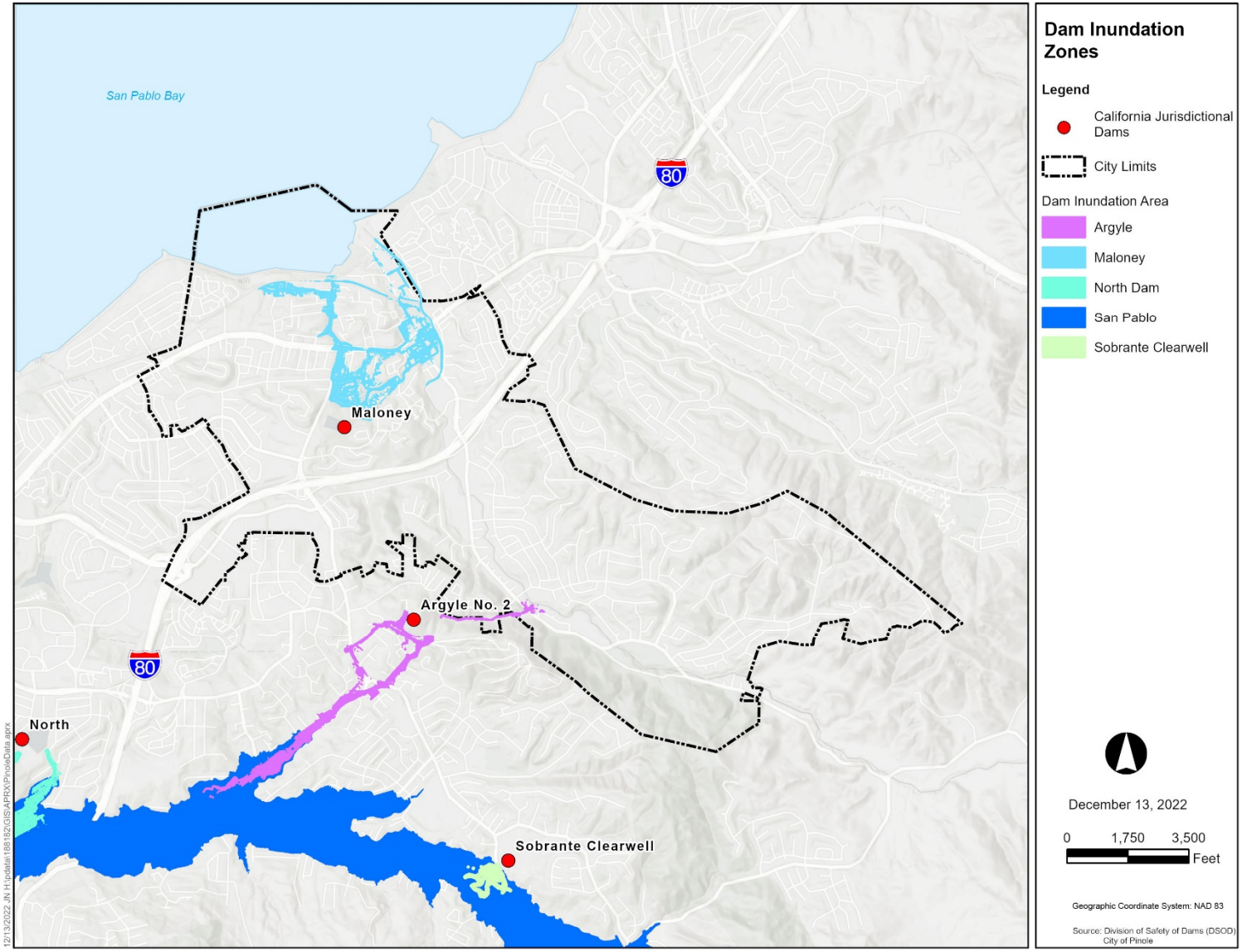
2.4.2 Dam Inundation

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.

Several regional reservoirs and dams are located throughout Contra Costa County, and Maloney Reservoir (classified as a dam by the Division of Safety of Dams) is located within the City boundaries and is an earthen embankment dam. Maloney Reservoir is a recreational, artificially impounded body of water located near the intersection of Appian Way and Mann Drive. The reservoir is owned by the East Bay Municipal Utility District. It is roughly 3 acres in area and has an elevation of 103 meters above sea level. It has a total maximum capacity of 68 Acre-Feet.

[11] Urban Creeks Council and Restoration Design Group, LLC, *Pinole Creek Watershed Vision Plan: A Local Community-Based Effort,* 2004, http://s3-us-west-2.amazonaws.com/ucldc-nuxeo-ref-media/c6f48c7b-fe69-41f2-a4fb-c5c0382f1689. Accessed October 13, 2022

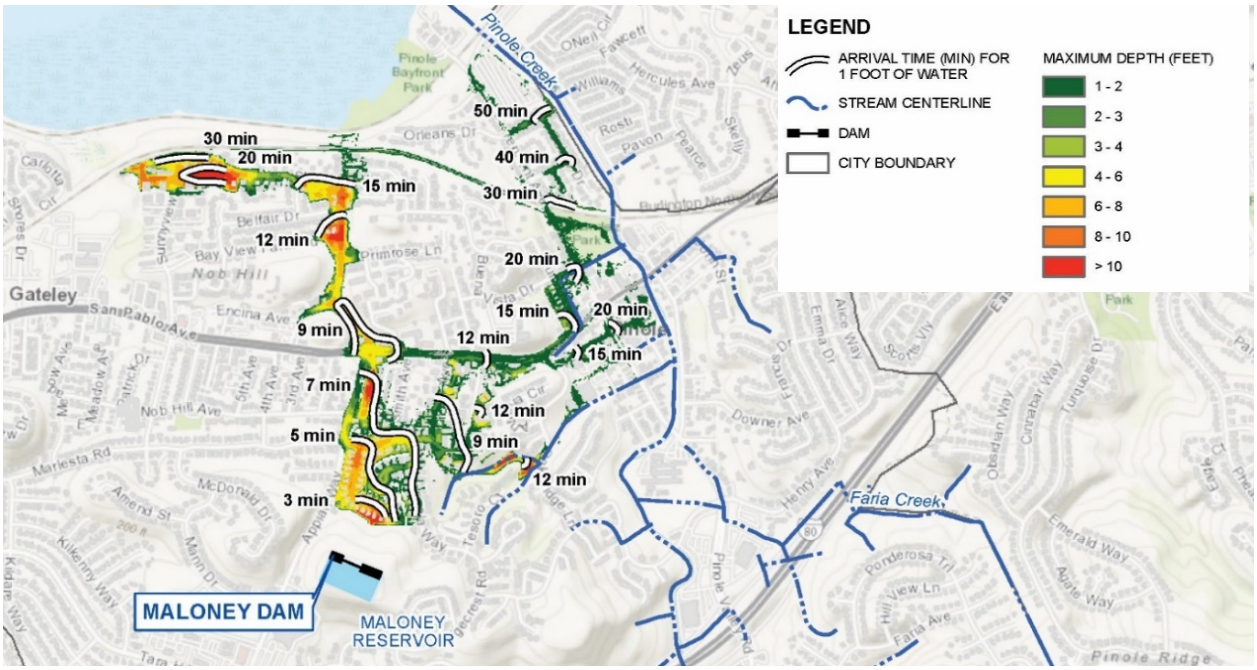
Figure 11: Reservoir Inundation



According to the Dam Safety inspection report dated March 10, 2021, the condition assessment is rated satisfactory, meaning no existing or potential dam safety deficiencies are recognized. Acceptable performance is expected under all loading conditions (static, hydrologic, seismic) in accordance with the applicable minimum state or federal regulatory criteria or tolerable risk guidelines. The hazard potential classification of Maloney dam is rated high, meaning a failure or misoperation will probably cause loss of human life[12].

Figure 11 shows the inundation area if this reservoir is breached. According to the Downstream Hazard, a sunny day, failure[13] on the North or northeast or North of the dam is classified as "Extremely High" meaning it is expected to cause considerable loss of human life or would result in an inundation area with a population of 1,000 or more[14]. **Figure 12** shows the extent and time taken for inundation in the event of such a failure.

Figure 12: Maloney Reservoir Breach



Source: Division of Safety of Dams

[12] Dam Safety Inspection: Maloney (Contra Costa County, CA) https://data.coloradoan.com/dam/california/contra-costa-county/maloney/ca00180/. Accessed October 13, 2022

[13] A sunny-day failure scenario represents a hypothetical failure of a dam or its critical appurtenant structure with the reservoir level at the time of failure at the maximum possible water surface elevation. This water-surface elevation generally corresponds to the crest of an ungated spillway or the top of a gated spillway. This scenario represents the failure during a non-storm or non-flood season (California Code Title 23 Chapter 1, Section 335.2(a)).

[14] Dam Safety Inspection: Downstream Hazard, https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/All-Programs/Division-of-Safety-of-Dams/Files/Publications/Division-of-Safety-of-Dams-Definitions-for-Downstream-Hazard-and-Condition-Assessment.pdf, Accessed November 10, 2022.

Reservoirs outside of the City include Sobrante Reservoir, San Pablo Reservoir, and Briones Reservoir. Sobrante Reservoir is an artificially impounded body of water in the unincorporated community of El Sobrante. Despite the close proximity of this reservoir to the City, a breach at this reservoir would not result in significant impacts on the City of Pinole (refer to **Figure 11**). San Pablo and Briones Reservoirs are fairly large reservoirs with dams in Contra Costa County. However, the inundation zone for both of these reservoirs would not impact the City in the event of a dam failure.

2.4.3 Drainage System

The City is located along the Pinole Creek Watershed, which drains and covers approximately 15 square miles in the northwest part of Contra Costa County. The watershed includes portions of the Cities of Pinole and Hercules as well as unincorporated areas of Contra Costa County. The creek drains the mountainous areas southeast of the City and outlets into San Pablo Bay. Pinole Creek serves as a regulatory floodway for the City and for Contra Costa County. Flooding of the creek would potentially occur in the event of a FEMA 100-year storm. However, flooding would have a minimal impact outside of the banks of the creek.

The City of Pinole participates in Contra Costa County's Clean Water Program and is compliant with the National Pollution Discharge Elimination Systems act and the Clean Water Act. In general, the City maintains all storm drain structures and piping, except those that are v-ditches that are located on private property. The local storm drain facilities were developed in coordination with the planned communities and have the capacity to handle the drainage needs of the City without contributing to flooding hazards.

2.5 Climate Change Resiliency

Climate change is a phenomenon characterized by the long-term shifts in global temperature and weather patterns, associated with the build up of greenhouse gases in the atmosphere and warming of the planet due to the greenhouse effect. Although climate change is global, its effects can be felt locally and the response also can start locally. Local policies and actions can reduce greenhouse gas emissions from local sources and incorporate resilience and adaptation strategies into planning and development.

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. Climate change also contributes to sea level rise, intensifying coastal hazards. In many areas, climate change may increase the frequency and duration of droughts and create conditions that intensify wildfire vulnerability.

2.5.1 Climate Change Snapshot

Table 2 shows the changes specific to Pinole. As shown, the Number of extreme heat days, increase in annual maximum temperatures, and decrease in annual Precipitation may be a cause of concern for the City.

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)	67.8	69.4-72.2	69.9-73.2
Extreme Heat Days (days)[B]	4	1-38	4-55
Annual Precipitation (inches)	20.7	18.4-28.1	17.4-27.9
Annual Average Area Burned (acres)[C]	Not Available	100.7-123.6	103.8-133.1

A. The Medium Emissions Scenario represents a mitigation scenario where global carbon dioxide (CO2) emissions peak by 2040 and then decline. Statewide, the temperature is projected to increase by 2-4°C for this scenario by the end of this century. The High Emissions Scenario represents a scenario where CO2 emissions continue to rise throughout the twenty-first century. Statewide, the temperature is projected to increase by 4-7°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. This area may contain locations outside the combined fire state and federal protection responsibility areas. These locations were excluded from these wildfire simulations and had no climate projections.

Source: Cal-Adapt, Local Climate Change Snapshot (cal-adapt.org), accessed August 29, 2022.

2.5.2 Sea Level Rise

As the City of Pinole includes approximately 1.5 miles of coastline along San Pablo Bay, the City is potentially vulnerable to future sea level rise. The San Pablo Bay receives waters from several rivers (including the Sacramento and San Joaquin rivers) and is tidally influenced by the Pacific Ocean through the San Francisco Bay. Sea level rise is a climate change – driven phenomenon of increasing the elevation of the ocean surface.

According to NOAA, sea level rise at the regional level can deviate significantly from the globally averaged rate.[15] Thus, effects are unique to specific coastal jurisdictions due to variations in topography and geography. Sea level rise projections and modeling referenced in **Table 3** rely on the best available science as evaluated by the California Coastal Commission's 2018 Sea Level Rise Policy Guidance and are supplemented by NOAA's 2022 Sea Level Rise Technical Report. **Figure 13** depicts the extent of inundation caused by the Sea Level Rise. While 4 – 6 feet of sea level rise on the upper end of what is projected to occur during the 21st century, it is possible that sea level rise combined with storm surges could contribute to temporary inundation in Pinole.

[15] 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, accessed January 9, 2023.

Table 3: California Coastal Commission Sea Level Rise Projections

	Low Risk Aversion	Medium-High Risk Aversion
	Upper limit of "likely range" ~17% probability SLR exceeds…	***1-in-200 chance 0.5% probability SLR exceeds…***
2050	1.1 feet	1.9 feet
2070	1.9 feet	3.5 feet
2090	2.9 feet	5.6 feet
2100	3.4 feet	6.9 feet
NOTE: The California Coastal Commission and NOAA state available climate models and experiments do not extend beyond 2100. Both agencies acknowledge increased uncertainties regarding projections past 2100 and recommend caution if projections require utilization.		
Source: California Coastal Commission, *Sea Level Rise Policy Guidance – Science Update*, adopted November 2018, accessed January 9, 2023.		

Figure 13: Sea Level Rise

Source: BCDC, *Adapting to Rising Tides Data Viewer,* https://explorer.adaptingtorisingtides.org/explorer, accessed January 9, 2023.

In addition, groundwater emergence is anticipated to accompany future sea level rise impacts. Groundwater emergence is the emergence of groundwater at the land surface, causing flooding or inundation. As sea levels rise, saltwater can intrude into groundwater aquifers that store fresh water. If the amount of saltwater intrusion is great enough, groundwater can be pushed to the surface.[16] Specific vulnerabilities to a rising water table and groundwater emergence include dry weather flooding, deterioration of underground infrastructure such as water/sewer pipelines, extended earthquake liquefaction zones, and resurfacing any underground toxic contamination. [17]

[16] MIT Technology Review, *Climate Change: How Groundwater caused by Climate Change could Devastate Coastal Communities,* https://www.technologyreview.com/2021/12/13/1041309/climate-change-rising-groundwater-flooding/, published December 13, 2021, accessed January 9, 2023.

[17] KQED, *Groundwater Beneath Your Feet Is Rising With the Sea. It Could Bring Long-Buried Toxic Contamination With It,* https://www.kqed.org/science/1971582/groundwater-beneath-your-feet-is-rising-with-the-sea-it-could-bring-long-buried-toxins-with-it, published December 15, 2020, access January 10, 2023.

2.5.3 Resilience

Resiliency 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. Because climate change is a long-term phenomenon, it is important to adequately plan for its impacts.

In order to mitigate the effects of intense storms, actions may include bolstering drainage capacities and flood control measures. With more frequent or intense storm events, it is likely that flooding would have a more significant effect on the City. Increasing the capacity of the City's drainage infrastructure would make the City more resilient to weather events linked to climate change.

Climate change resiliency would also include 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 wildfires become 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.

2.5.4 Vulnerability Assessment Summary

The purpose of the Vulnerability Assessment (VA) is to fulfill the first step as required by SB 379. The VA identifies specific natural hazards related to climate change and evaluates vulnerabilities accordingly. The assessment considers the physical threat to critical facilities within the City, as well as the physical threat to residential and non-residential structures. The vulnerability findings will have informed adaptation and resilience goals, policies, objectives, and implementation measures in the Safety Element Update in accordance with SB 379.

The City identified 35 critical facilities for incorporation in the vulnerability/risk analysis, as listed in **Table 4** and illustrated in **Figure 14**, which also provides a summary of critical facilities that intersect with hazards in the City. These critical facilities that intersect with a hazard area are indicated with a “Y” and a red-shaded cell. Critical facilities that do not fall within the hazard area are designated with an “N” and a green-shaded cell. The risks of drought, hazardous materials releases, and ground shaking are present throughout the City, and thus, all critical facilities are assumed to be vulnerable, as reflected below.

2.5.5 Sustainability Element

The Sustainability Element was adopted in 2010 with the General Plan update and addressed local climate change issues by setting goals and policies to guide Pinole's efforts to reduce greenhouse gas emissions (GHGs), encourage renewable energy sources, expand local use of green technology, and educate Pinole's residents on how they can live fully while

preserving Pinole for future generations. The Safety Element fully integrates with the goals and policies related to climate change and resiliency in the Sustainability Element.

2.5.6 Climate Action and Adaptation Plan

The City of Pinole adopted the Climate Action and Adaptation Plan (CAAP) in 2024. The primary purpose of the City ‘s CAAP is to chart a clear path to reduce greenhouse gas (GHG) emissions and become more resilient to changing climate. The City recognizes the need for comprehensive, fiscally responsible solutions while employing actionable, measurable, and time-bound metrics to gauge its success. The CAAP is founded on a thorough analysis of communitywide systems, including an updated GHG emissions inventory (2017) and social vulnerability assessment, and builds upon the City's existing sustainability efforts to establish a series of measures and actions that guide the City towards long-term GHG emissions reduction and resilience goals. The CAAP is fully integrated into Safety Element .

Figure 14: Critical Facilities Map

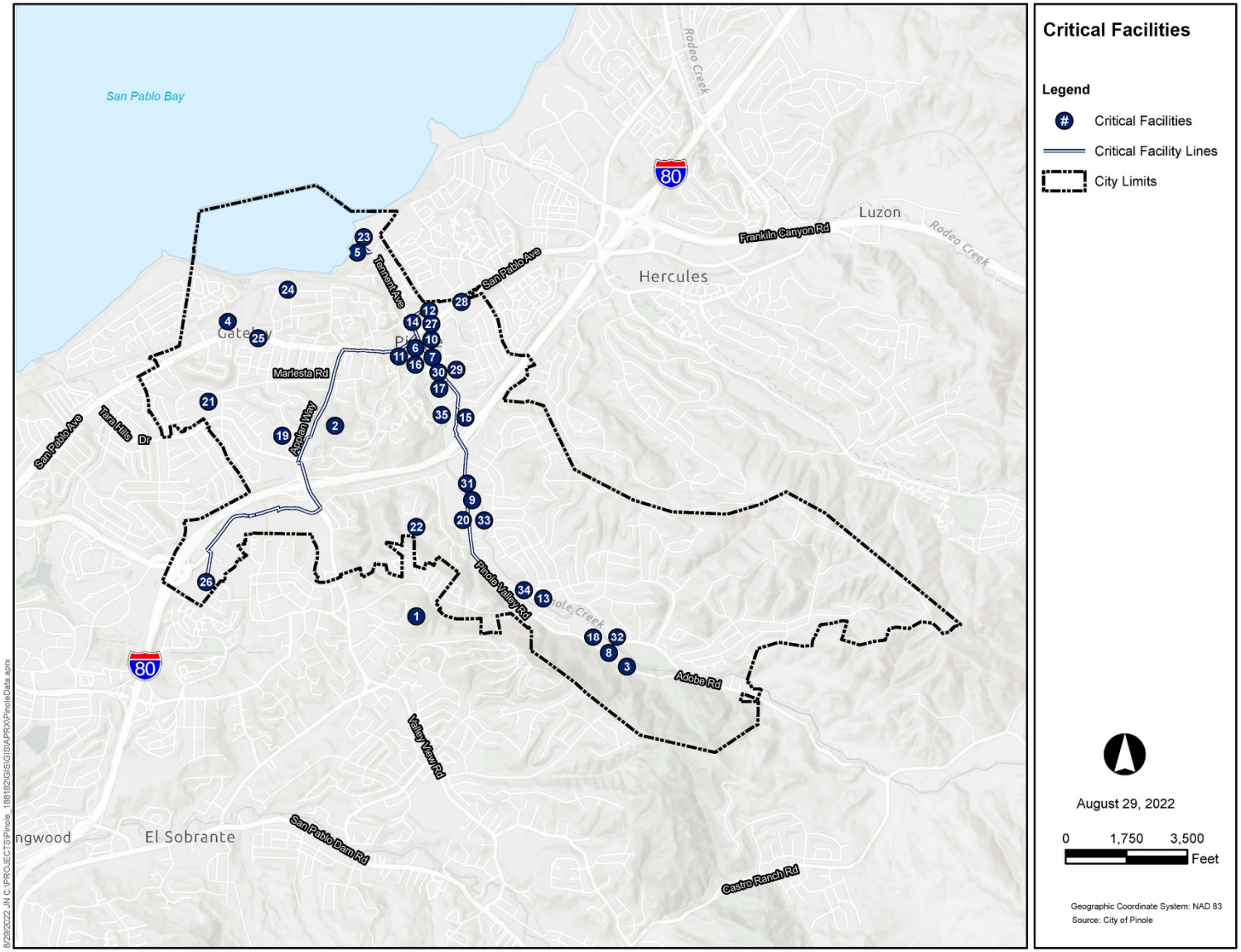


Table 4: Critical Facilities

Map ID	Facility Name	Dam Inundation	Drought	Flood	Landslide	Hazardous Materials	Seismic - Fault Rupture	Seismic- Ground Shaking	Wildfire
1	Argyle #2 Reservoir	N	Y	N	N	Y	N	Y	Y
2	Maloney Reservoir	N	Y	N	N	Y	N	Y	N
3	Caretaker's Building at Dog Park	N	Y	N	Y	Y	Y	Y	Y
4	City Corporation Yard - 1	N	Y	N	N	Y	Y	Y	N
5	City Corporation Yard – 2 (at Pinole Hercules Water Pollution Control Plant)	N	Y	N	N	Y	Y	Y	N
6	Pinole City Hall/Emergency Operations Center	Y	Y	N	N	Y	Y	Y	N
7	Pinole Fire Station 73	Y	Y	N	N	Y	Y	Y	N
8	Pinole Fire Station 74	N	Y	N	Y	Y	Y	Y	Y
9	Pinole Library	N	Y	Y	N	Y	Y	Y	N
10	Pinole Police Department	Y	Y	Y	N	Y	Y	Y	N
11	Pinole Post Office	Y	Y	N	Y	Y	Y	Y	N
12	Pinole Senior Center	N	Y	Y	N	Y	Y	Y	N
13	Pinole Tiny Tots	N	Y	Y	N	Y	Y	Y	N
14	Pinole Youth Center	Y	Y	N	N	Y	Y	Y	N
15	Kaiser Permanente Pinole (owned by Kaiser Permanente)	N	Y	N	Y	Y	Y	Y	N
16	St. Joseph School	Y	Y	N	Y	Y	Y	Y	N
17	Collins Elementary School (owned by)	N	Y	N	N	Y	Y	Y	N
18	Ellerhorst Elementary School	N	Y	N	Y	Y	Y	Y	N
19	Pinole Middle School and West County Mandarin Elementary School	N	Y	N	Y	Y	Y	Y	N
20	Pinole Valley High School	N	Y	N	N	Y	Y	Y	N

Map ID	Facility Name	Dam Inundation	Drought	Flood	Landslide	Hazardous Materials	Seismic - Fault Rupture	Seismic- Ground Shaking	Wildfire
21	Shannon Elementary School	N	Y	N	Y	Y	Y	Y	N
22	Stewart Elementary School	N	Y	N	Y	Y	Y	Y	N
23	Pinole-Hercules Water Pollution Control Plant	N	Y	N	N	Y	N	Y	N
24	San Pablo Lift Station	Y	Y	N	Y	Y	N	Y	N
25	Hazel Lift Station	N	Y	N	N	Y	Y	Y	N
26	Fiber Optic Line	Y	Y	Y	Y	Y	Y	Y	N
27	San Pablo Avenue Bridge over Pinole Creek (Caltrans Bridge #28C0061)	N	Y	Y	Y	Y	Y	Y	N
28	San Pablo Avenue Bridge over BNSF Railway Right Of Way (Caltrans Bridge #28C0062)	N	Y	N	Y	Y	Y	Y	N
29	Pinole Valley Road Bridge 1 over Pinole Creek (Caltrans Bridge #28C0076)	N	Y	N	N	Y	Y	Y	N
30	Tennent Avenue Bridge over Pinole Creek (Caltrans Bridge #28C0133)	Y	Y	Y	Y	Y	Y	Y	N
31	Pinole Valley Road over Pinole Creek 2 (Caltrans Bridge #28C0134)	N	Y	Y	N	Y	Y	Y	N
32	Pinole Valley Road over Pinole Creek 3 (Caltrans Bridge #28C0136)	N	Y	Y	Y	Y	Y	Y	N
33	Ramona Street Bridge over Pinole Creek (Caltrans Bridge #28C016)	N	Y	Y	Y	Y	Y	Y	N
34	Simas Street Bridge over Pinole Creek (Caltrans Bridge #28C0417)	N	Y	Y	Y	Y	Y	Y	N
35	Henry Avenue Bridge over Pinole Creek (Caltrans Bridge #28C0517)	N	Y	Y	Y	Y	Y	Y	N

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 multiyear 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:

- 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 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. **Figure 15** depicts the California drought monitor map, which identifies areas of drought and labels them by intensity, as shown in **Table 5.** The map also includes a table identifying the percentage of the area of California experiencing each level of drought intensity. For example, 100 percent of California was experiencing Category D1 (moderate) drought or worse for the majority of 2021. As of June 2022, the entirety of Contra Costa County is classified as Category D2 (severe).

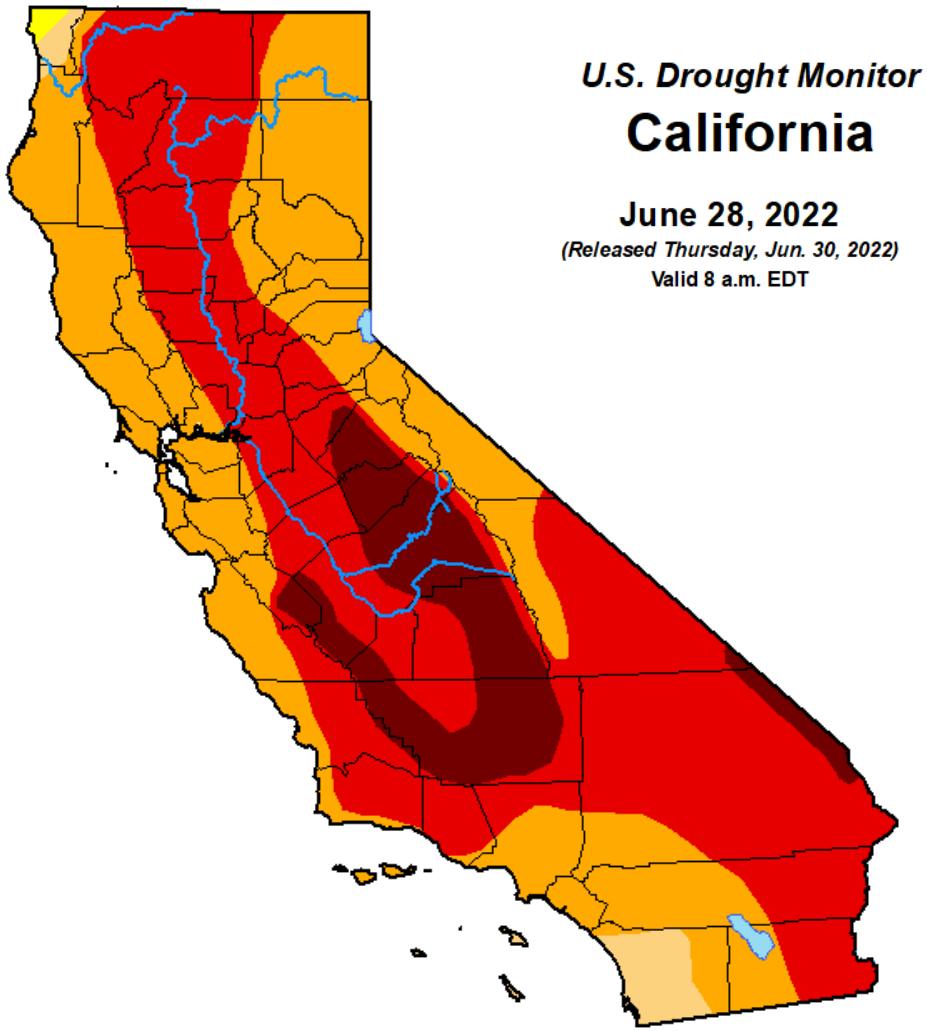
Table 5: Drought Severity Classification

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, Drought Classification, https://droughtmonitor.unl.edu/About/AbouttheData/DroughtClassification.aspx, accessed March 15, 2022.

Droughts in California are regional events. In a drought, all areas of Pinole will be affected. Based on previous occurrences and trends in California, the likelihood that Contra Costa County and the City of Pinole will continue to experience drought conditions in the future is considered high. EBMUD supplies water for the City of Pinole. Water used by EBMUD comes from the 577-square-mile protected watershed of the Mokelumne River, which collects the melting snow on the west slope of the Sierra Nevada. Snowmelt watersheds are generally more sustainable than groundwater supplies. However, watersheds that rely on Precipitation may still be susceptible to drought-related concerns.

Figure 15: Drought Monitor Map



U.S. Drought Monitor

California

June 28, 2022

(Released Thursday, Jun. 30, 2022)

Valid 8 a.m. EDT

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	0.00	100.00	99.79	97.48	59.81	11.59
Last Week *06-21-2022*	0.00	100.00	99.79	97.48	59.81	11.59
3 Months Ago *03-29-2022*	0.00	100.00	100.00	93.65	40.25	0.00
Start of Calendar Year *01-04-2022*	0.00	100.00	99.30	67.62	16.60	0.84
Start of Water Year *09-28-2021*	0.00	100.00	100.00	93.93	87.88	45.66
One Year Ago *06-29-2021*	0.00	100.00	100.00	94.73	85.44	33.32

Intensity:

- None
- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor, go to https://droughtmonitor.unl.edu/About.aspx

Author:

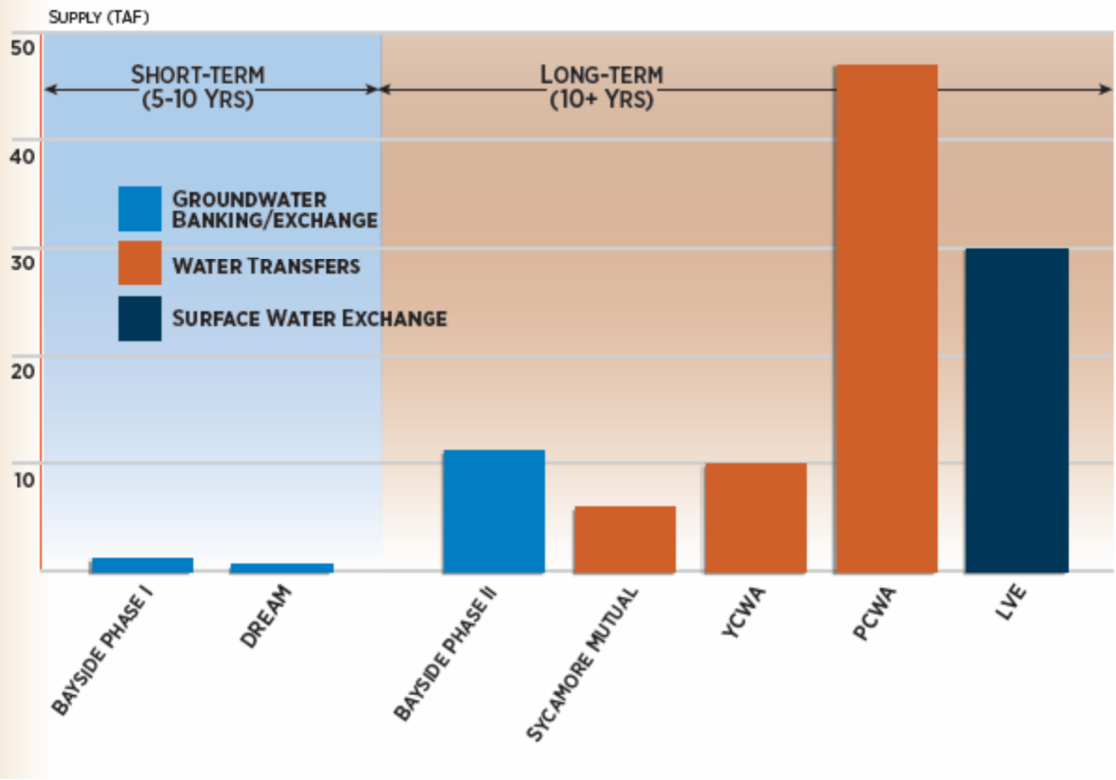
Curtis Riganti

National Drought Mitigation Center

2.6.2 Water Supply

The EBMUD water supply system collects, transmits, treats, and distributes high-quality water from its primary water source, the Mokelumne River, to its customers in the San Francisco East Bay Area. The Mokelumne Aqueducts convey the Mokelumne River supply from Pardee Reservoir, located upstream of Camanche Dam, across the Sacramento-San Joaquin River Delta (Delta) to local storage and treatment facilities in the East Bay. After treatment, water is distributed to the incorporated cities and unincorporated communities in Alameda and Contra Costa counties, including Pinole. EBMUD has developed a portfolio of water supply projects to help supplement any shortage in its water supply. These projects are expected to not only provide customers with relief from frequent and severe water rationing during multiyear droughts but will also help EBMUD respond to other adverse situations that lead to water shortages. **Figure 16** provides a summary of EBMUD's short- and long-term supplemental supply portfolio[18].

Figure 16: EBMUD's short- and long-term supplemental supply portfolio



[18] Urban Water Management Plan. https://www.ebmud.com/water/about-your-water/water-supply/urban-water-management-plan. Accessed October 13, 2022.

Ground Water Banking and Exchange

Bay Side Phase 1 and 2: The Bayside Groundwater Project is being developed in phases to provide a diverse and robust water supply using a conjunctive water management approach that sustainably manages the East Bay Plain Subbasin.

DREAM: Groundwater banking efforts are currently focused in Eastern San Joaquin County, where the Demonstration Recharge Extraction and Aquifer Management (DREAM) Pilot Project is underway.

Water Transfers

EBMUD has developed a water transfer program to secure dry-year water supplies to meet customer demands. The Freeport Regional Water Authority (FRWA) is a cooperative effort of the Sacramento County Water Agency (SCWA) and the East Bay Municipal Utility District (EBMUD) of Oakland to supply surface water from the Sacramento River to customers in central Sacramento County and the East Bay area of California. FRWA is in the final stages of the construction of a new water intake facility and pumping plant on the Sacramento River and 17 miles of underground water pipelines within Sacramento County. Upon completion, the intake facility will allow EBMUD to use up to 100 mgd of water during dry years only, estimated to be three out of every ten years, as a supplemental water source to complement existing conservation programs[19]. Currently, EBMUD has been working on agreements with senior water rights holders in the Sacramento River Watershed- This includes Placer County Water Agency, Yuba County Water Agency, and Sycamore Mutual Water Company.

Water Supply Management Program 2040

The Water Supply Management Program (WSMP) 2040 is a program-level effort that estimates EBMUD's water supply needs over a thirty-year horizon and proposes a diverse portfolio of policy initiatives and potential projects to ensure dry-year needs. The WSMP 2040 seeks to provide a diverse and robust water supply portfolio1 that ensures water reliability in an uncertain future while also protecting the environment. Through the implementation of the WSMP 2040, EBMUD is meeting future growth with aggressive conservation and recycling, while supplemental supply components allow a lower rationing level and thereby decrease direct impacts on EBMUD customers during dry years. The WSMP 2040 pushes conservation and recycling to the maximum, with a total of 50 million gallons per day (MGD) of future supply being provided from those two component categories. The WSMP 2040 Portfolio includes the following rationing, conservation, and recycled water goals:[20]

- Rationing Up to 15%

[19] Freeport Regional Water Project- Explore the Project. http://www.freeportproject.org/nodes/explore/. Accessed October 13, 2022.

[20] Water Supply Management Program 2040- Revised WSMP 2040 Final Plan. https://www.ebmud.com/water/about-your-water/water-supply/water-supply-management-program-2040. Accessed October 13, 2022.

- Conservation Level D (39 MGD)
- Recycling Level 3 (11 MGD)

The Water Supply Management Program 2040 provides 53 measures for conservation and is divided into five levels ranging from level A to E. In order to Achieve 39 MGD savings as listed above, the program level D is targeted and will include 43 out of the 53 measures. These measures are documented in **Table 6**, Conservation Measures Selected for Programs of Appendix D TM-1- Raw Water Infrastructure Reliability Review[21].

EBMUD practices various sustainability methods and develops sustainability plans to ensure it provides reliable water and wastewater services. Sustainability measures include a Climate Action Plan that analyzes impacts and mitigation measures for issues related to climate change. Also, EBMUD prepared a sustainability report in 2018 and promotes and practices water conservation measures to ensure it is able to provide water and wastewater services sustainably over a long-term time frame[22].

2.6.3 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.[23] According to the *2018 State Hazard Mitigation Plan*, from 1972 to 2016, there were fifteen drought state emergency proclamations in California.[24]

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 the Sierra Nevada snowpack was approximately 14 percent of normal. Despite multiple storms in February 2014, drought conditions persisted. By the end 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

[21] Water Supply Management Program 2040- Revised WSMP 2040 Final Appendix D. https://www.ebmud.com/water/about-your-water/water-supply/water-supply-management-program-2040. Accessed October 13, 2022.

[22] Sustainability. https://www.ebmud.com/about-us/sustainability. Accessed October 13, 2022.

[23] Federal Emergency Management Agency, Disaster Declarations, https://www.fema.gov/disaster/3023, accessed March 15, 2022.

[24] California Governor's Office of Emergency Services, *2018 California State Hazard Mitigation Plan*, September 2018, https://www.caloes.ca.gov/HazardMitigationSite/Documents/003-2018%20SHMP_FINAL_ACK-TOC.pdf, accessed March 15, 2022.

percent of normal.[25] On April 7, 2017, the governor issued an executive order ending the drought emergency in most of California, including Contra Costa County.

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	Simultaneous 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, continuing through 1989. 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–present	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*, February 2015.

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

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 a hazardous materials release can vary, depending on the type and amount of material released. Hazardous materials exposure 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.

Many businesses and residents in the City use hazardous materials and generate some amount of hazardous waste. Common hazardous waste is generated from gasoline service stations, dry cleaners, automotive mechanics, auto body repair shops, machine shops, printers, photo processors, and agriculture.

2.7.1 Hazardous Materials Incidents

Potential threats from hazardous materials exist where they are manufactured, stored, transported, or used due to the risk of spill and exposure to hazardous materials.

The magnitude and severity of the hazard would be highly dependent on the type of spill, location, and the extent to which hazardous materials enter the water system. Hazardous materials can be flammable, radioactive, infectious, corrosive, toxic/poisonous, or otherwise reactive. Heavy rains or winds could spread hazardous materials over a larger geographical area and create challenging cleanup conditions.

Hazardous materials are used in virtually every manufacturing operation by retailers, service industries, and homeowners in the City of Pinole. Operations known to handle hazardous materials in the City include gas stations, dry cleaners, medical facilities, commercial/retail businesses, and roadway and railway transportation. Most hazardous materials operations are small-scale and pose a minimal risk; however, commercial transportation of hazardous materials via roadway or railway would potentially have significant impacts on the City during an incident, given the volumes of hazardous materials being transported.

2.7.2 Transportation of Hazardous Materials

Transportation of hazardous materials/wastes is regulated by the California Code of Regulations Title 26. The US Department of Transportation (DOT) is the primary regulatory authority for the interstate transport of hazardous materials. The DOT 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.

Two rail lines traverse the City, the Burlington Northern Santa Fe (BNSF) and the Union Pacific. The Union Pacific and BNSF railroads operate freight services that pass through Pinole. The Union Pacific tracks are located along the San Pablo Bay shoreline, and the BNSF tracks are located just south of the San Pablo Bay shoreline, running east and west through the City between Del Monte Drive and Hercules Avenue. Both of these railroads are used to transport hazardous materials, which would potentially impact the City in the event of a hazardous materials incident or spill during transport. Union Pacific or BNSF would be responsible for responding to hazardous materials transportation emergencies for their respective railroads along with local, state, and federal government agencies. Each railroad company has staff to specifically respond to railroad accidents involving hazardous materials.

2.7.3 Hazardous Materials Sites

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

As identified by the SWRCB, 22 sites have been cleaned up in Pinole since 1995. In 2022, only two sites were shown to have ongoing activities related to the previous known or suspected release of hazardous materials to soil and groundwater in the City of Pinole. These sites and their statuses are identified in **Figure 17** and **Table 7**.

In addition, the EnviroStor is the Department of Toxic Substances Control's data management system for tracking our cleanup, permitting, enforcement, and investigation efforts at hazardous waste facilities and sites with known contamination or sites where there may be reasons to investigate further. Of the four sites that were identified since 1995, one

is active, and one is certified for operations and maintenance. These sites and their statuses are identified in **Table 7** and **Figure 17.** There is no action required for the other two sites.[26]

Table 7: Hazardous Materials Sites

#	Facility	Address	Status	Site Type	Status Date
State Water Resource Control Board ("GeoTracker")					
1	Former Chevron #9-45912	550 San Pablo Ave, Pinole	Open–Assessment & Interim Remedial Action	LUST Cleanup Site	3/8/2022
2	ARCO # 06228	2747 Pinole Valley Rd, Pinole	Open – Eligible for Closure	LUST Cleanup Site	4/6/2022
State Department of Toxic Substances Control					
1	Appian 80 Express Cleaners # 60001904	1577 Tara Hills Drive, Pinole	Active	Envirostor	10/14/2022
2	Mercury Dry Cleaners # 07720037	2714 Pinole Valley Road, Pinole	Certified/Operation and Maintenance	Envirostor	10/29/2022

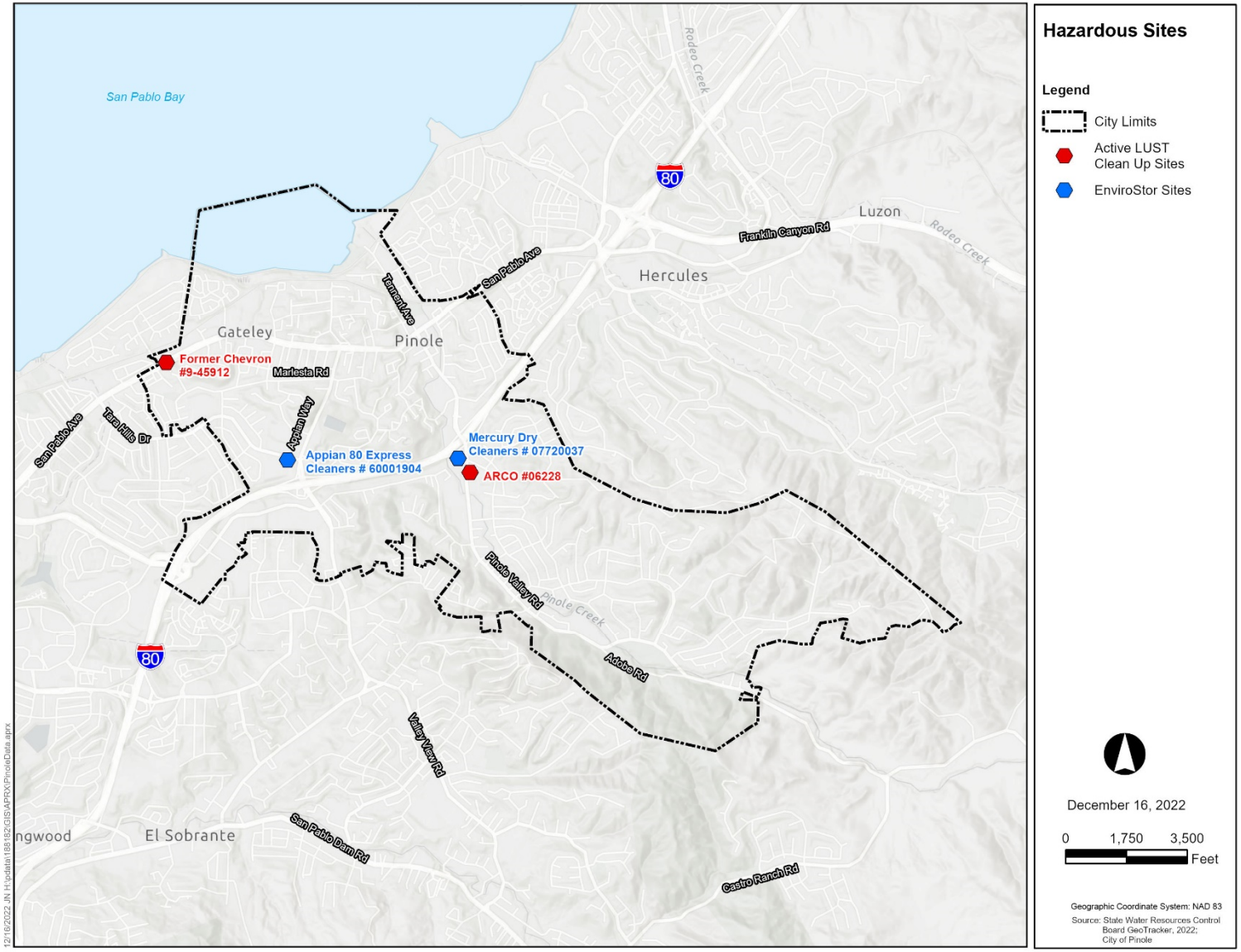
Source: State Water Resources Control Board GeoTracker, https://geotracker.waterboards.ca.gov/map/?global_id=SL0601331885, accessed March 15, 2022.

2.7.4 Hazardous Materials Area Plan

Contra Costa County maintains a Hazardous Materials Area Plan (HMAP). The document describes the overall hazardous materials emergency response organization within Contra Costa County. It establishes the lines of authority and coordination for hazardous materials incidents affecting Contra Costa County and identifies the roles and responsibilities of local, state, and federal government agencies necessary to minimize the impacts of a hazardous materials incident. The HMAP meets the requirements of the California Code of Regulations Title 19, Article 3 – Section 2640 et seq.

[26] Department of Toxic substances Control, Envirostor: Project Search Results, https://www.envirostor.dtsc.ca.gov/public/search?CMD=search&city=Pinole&zip=&county=Contra+Costa&case_number=&business_name=&FEDERAL_SUPERFUND=True&STATE_RESPONSE=True&VOLUNTARY_CLEANUP=True&SCHOOL_CLEANUP=True&CORRECTIVE_ACTION=True&tiered_permit=True&evaluation=True&operating=True&post_closure=True&non_operating=True&inspections=True&inspectionsother=True, Accessed November 11, 2022.

Figure 17: Hazardous Materials Sites



2.8 Emergency Planning/Response

Emergency planning and disaster response are key components in addressing the City's vulnerability to natural and human-caused hazards. A well-developed emergency planning strategy ensures that in the event of a significant hazard event, the City of Pinole is prepared to efficiently respond and maintain the safety and well-being of its residents, buildings, infrastructure, and critical facilities.

2.8.1 Emergency Operations Plan

Contra Costa County developed its EOP in 2015 to address the County's planned response to emergency/disaster situations associated with natural disasters, technological incidents, biological hazards, and human-caused hazards. The EOP, which was developed as a collaborative document, also outlines the responsibilities of federal, state, regional, and county-level government agencies in the event of an emergency situation.

In 2024, the City updated and adopted its local EOP. The goal of the City's EOP is to efficiently organize, coordinate, and carry out the City's response to major emergencies. The EOP is designed to be implemented and exercised prior to an emergency. The plan identifies four phases of emergency management: mitigation, preparedness, response, and recovery. The EOP identifies the responsibilities of the following departments in an emergency situation: Fire, Police, Public Works, Finance, the City Manager's Office, the Community Development Group, Administrative Services, and the Emergency Operations Center. These departments, as directed by the EOP, are responsible for developing and maintaining standard operational procedures.

The City of Pinole's emergency management organization operates under California's Standardized Emergency Management System (SEMS) and the National Incident Management System (NIMS). The City Manager will direct the emergency management organization, serving as the Emergency Operations Center (EOC) Director. The EOC Director is responsible for implementing the Comprehensive Emergency Management Plan (CEMP) through the efforts of the City's Emergency Operations Center (EOC). Every department and agency within the city will provide support to the operation of the City's EOC, with support from the Contra Costa County Fire Protection District, Contra Costa County Sheriff's Office, and the West Contra Costa Unified School District. The City's EOC is organized following the functions and principles of SEMS and NIMS.

2.8.2 Emergency Preparedness Program

The City has an emergency preparedness program, "Pinole-Ready," that was used to develop the City's municipal emergency planning and response project. Pinole-Ready is a collaborative emergency management program that includes the City's services and community. The purpose of the program is the organization and management of resources and responsibilities in the event of an emergency. This program employs an emergency management strategy focused on preparedness, response, recovery, and mitigation. This

planning project aims to make the community more prepared and resilient to emergencies and hazard events.

Pinole Currently doesn't have a community emergency response team (CERT) program, but the *City of Pinole Strategic Plan 2020 – 2025 Implementation Action Plan,* adopted in August 2020 has called out to exploring restoring the CERT program and conducting annual tabletop exercises and community drills as one of its strategies to stisfy the goal of safe and resilient Pinole.

The City relies on the Contra Costa County Community Warning System (CWS) to warn and inform residents about an emergency or disaster and the safety actions that residents should take. The CWS is a joint system between the Contra Costa County Office of the Sheriff, the Health Services Department, other government agencies, industry, news media, and the nonprofit organization Community Awareness & Emergency Response. Notification methods under the CWS include sirens, voice, text, and email alert messages, Telephone Emergency Notification System, National Oceanic and Atmospheric Administration weather radio, and national alert systems Emergency Alert Systems and Wireless Emergency Alerts.

2.8.3 Public Safety Services

Police Services

Police protection services in Pinole are provided by the Pinole Police Department, related to public safety in the City. Services include preventing and controlling activity that is threatening to life and property, aiding citizens who are in danger of physical harm, protecting constitutional rights and freedoms, facilitating traffic, and responding to and investigating crime. The Pinole Police Department shares the Public Safety Building with the Pinole Fire Department.

Fire Services

The City of Pinole has contracted with the Contra Costa County Fire Protection District (Con Fire) for fire protection services in March of 2023. Through this agreement, a previously shuttered fire station (Station 74) will be reopened to provide fire suppression, medical services, rescue, and hazardous materials response to the Pinole Valley area. Con Fire will also operate out of Station 73 to provide these services in the Downtown area. It should be noted that Fire station 74 is located in the Very High Fire Hazard Severity Zone.

In Addition, Con Fire will also provide free services and safety devices, public outreach to schools and businesses, and training courses, including safety demonstrations, earthquake preparedness workshops, and maintenance. These services promote disaster preparedness, fire prevention, and safety in the City. A fiber-optic network has been established at fire station 74 to facilitate the transition to the county fire network.

The Community Services and Facilities Element was adopted in 2010 with the General Plan update and addressed the existing conditions, needs, goals, and policies related to police and fire services. This Safety Element fully integrates with the Community Services and Facilities Element.

2.8.4 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. The designated evacuation routes in the City include freeways/highways, regional arterials, arterials, and collectors, as depicted in **Figure 18**. These are Interstate 80, San Pablo Avenue, Appian Way, Tennent Avenue, Pinole Valley Road, Tara Hills Drive, and Fitzgerald Drive. In addition, the evacuation routes map includes some of the collector streets. 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.

In addition to identifying evacuation routes, SB 99, codified in Government Code Section 65302 (g), requires communities to identify residential developments in any hazard area identified in the Safety Element that does not have at least two emergency evacuation routes. **Figure 18** identifies these residential developments.

Evacuation Routes Study Summary

Under Assembly Bill (AB) 747, the City's Safety Element needs to address evacuation planning for any emergency scenarios that would warrant an evacuation of populations within the affected areas. The Evacuation Routes Assessment report for the City of Pinole includes an analysis of the capacity, safety, and viability of evacuation routes under a range of emergency scenarios applicable to the local jurisdiction.

Figure 18: Evacuation Routes

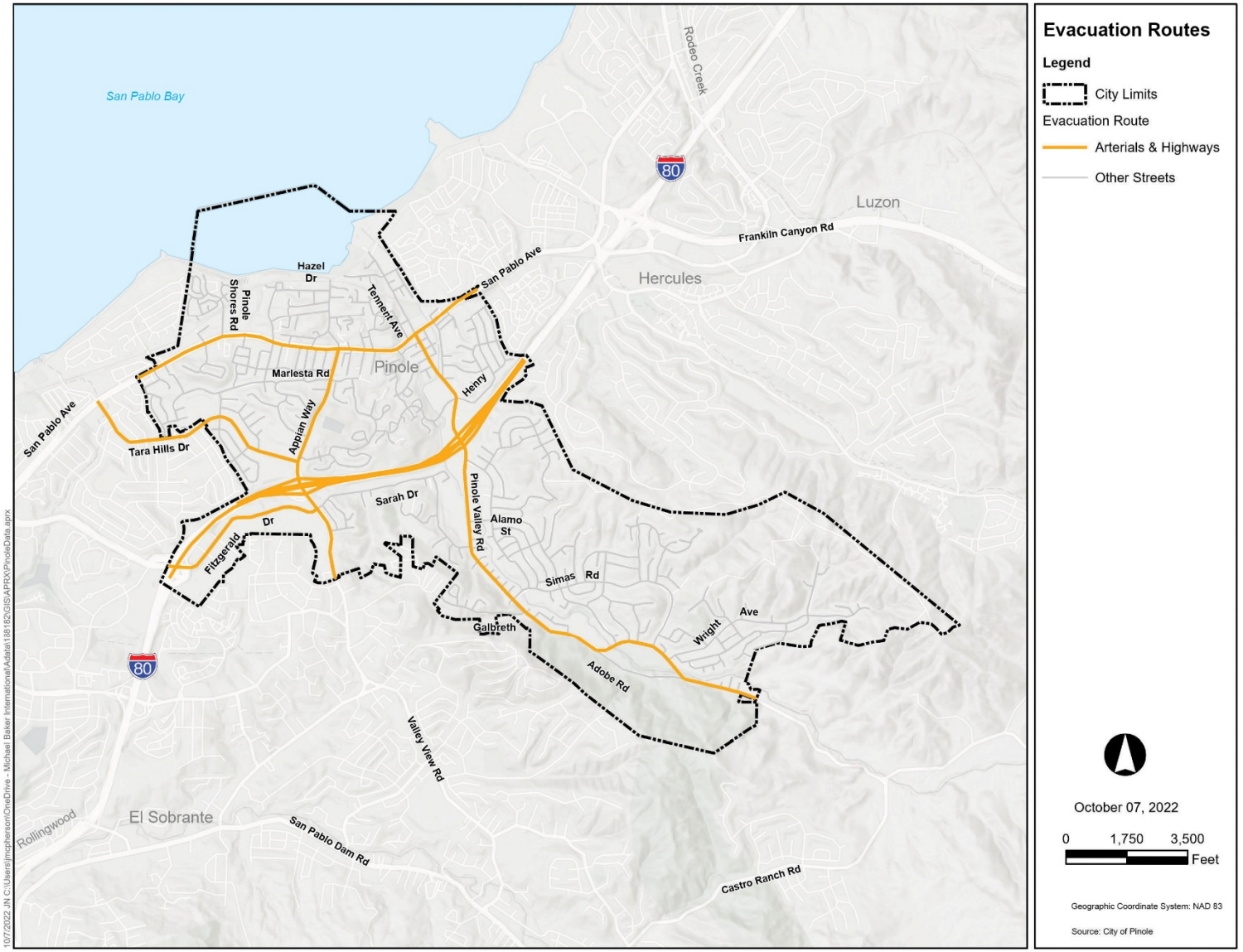
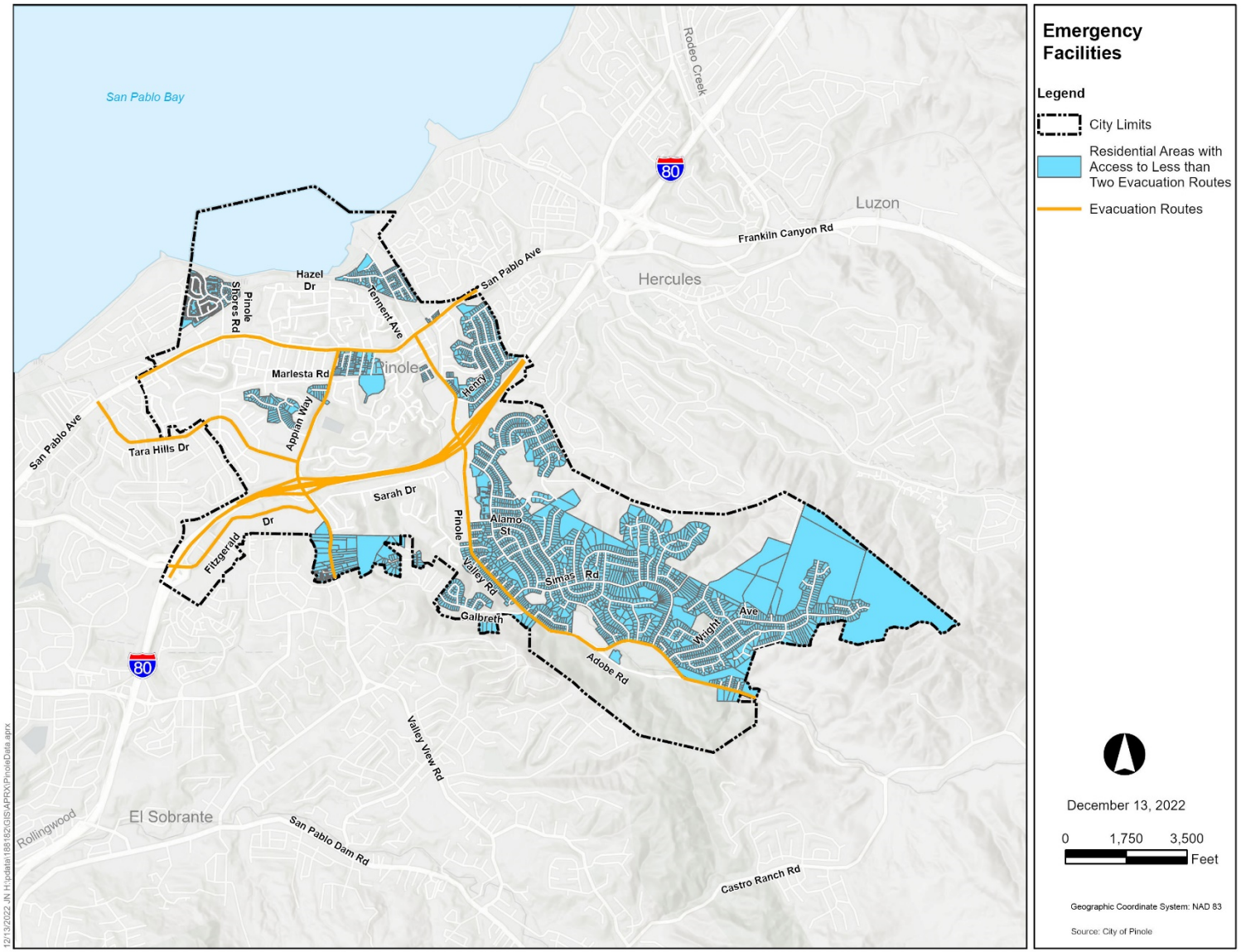


Figure 19: Neighborhood Access to Evacuation Routes



The technical definition of the capacity of a road is the maximum hourly rate at which vehicles can reasonably be expected to traverse a point during a given time period under prevailing roadway, traffic, and control (free-flow) conditions. As part of the evacuation route assessment, the most direct evacuation routing from the centroid of Zonehaven evacuation zones[27] shown in to each of the primary evacuation gateways listed below exiting the City was identified (refer to **Figure 21**).

Gateway A – San Pablo Avenue (South)

- Gateway B – San Pablo Avenue (North)
- Gateway C – I-80 (South)
- Gateway D – I-80 (North)

The evacuation time from each zone centroid to each gateway as well as to the nearest gateway is provided in the Evacuation Routes Assessment. Travel time estimates ranges for each gateway are shown in **Table 8**. During evacuation conditions, manual control at the most critical intersections should be provided by designated traffic control personnel. Thirty-five such locations are identified in the Evacuation Routes Assessment, of which 28 are within City limits.

Table 8: Travel Time Estimates Summary

Evacuation Zones	Travel Time Summary (min) Via Gateway:				Closest Gateway	
	A San Pablo Ave (South)	B San Pablo Ave (North)	C I-80 (South)	D I-80 (South)	Via Gateway	Travel Time (minutes)
E001	2.50	6.00	6.25	7.25	**A**	2.50
E002	3.25	5.25	5.75	6.50	**A**	3.25
E003	5.25	3.00	6.00	5.25	**A**	3.00
E004a	3.00	6.25	4.75	5.50	**B**	3.00
E004b	2.75	4.75	4.25	5.00	**A**	2.75
E005a	4.75	5.00	3.75	4.75	**A**	3.75
E005b	7.00	4.75	4.25	3.50	**C**	3.50
E006	7.25	4.75	4.50	3.75	**D**	3.75
E007a	3.50	6.50	3.25	4.00	**D**	3.25
E007b	5.00	8.25	2.25	3.00	**C**	2.25
E008a	7.50	7.50	3.25	3.25	**C**	3.25
E008b	8.75	9.50	4.50	5.50	**C**	4.50
E008c	12.25	10.00	7.50	5.75	**C**	5.75
E009	9.75	7.50	5.00	3.25	**D**	3.25
E010	13.25	10.75	8.50	6.75	**D**	6.75
E011	15.25	12.75	10.50	8.75	**D**	8.75
E012	12.50	10.25	7.75	6.25	**D**	6.25

[27] Emergency evacuation zones for the City of Pinole have been developed at the County level as part of Contra Costa County Zonehaven EVAC Evacuation Pre-Plan modeling program. These zones have been developed through close coordination with the Pinole Fire Department.

Figure 20: Zonehaven Evacuation Zones

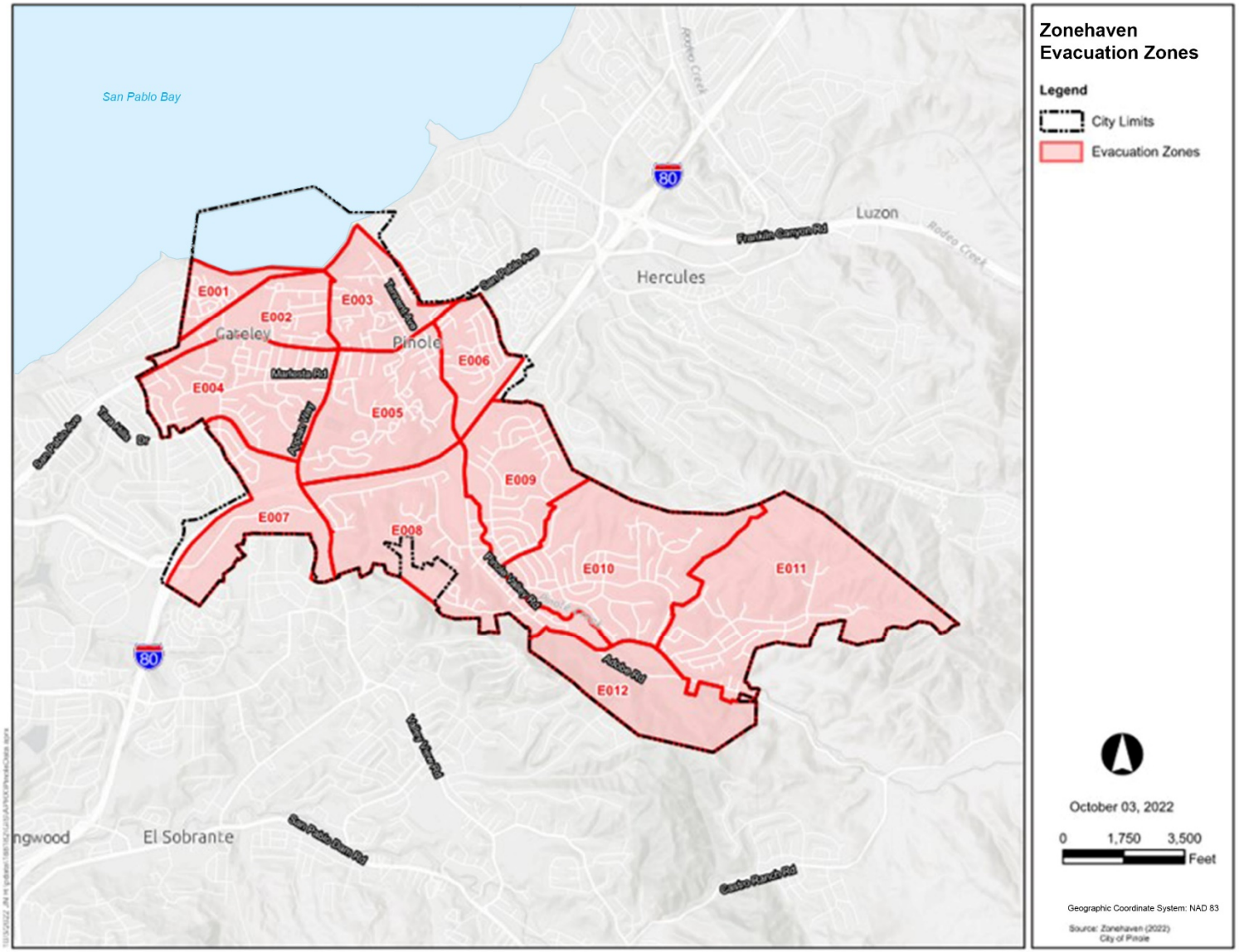
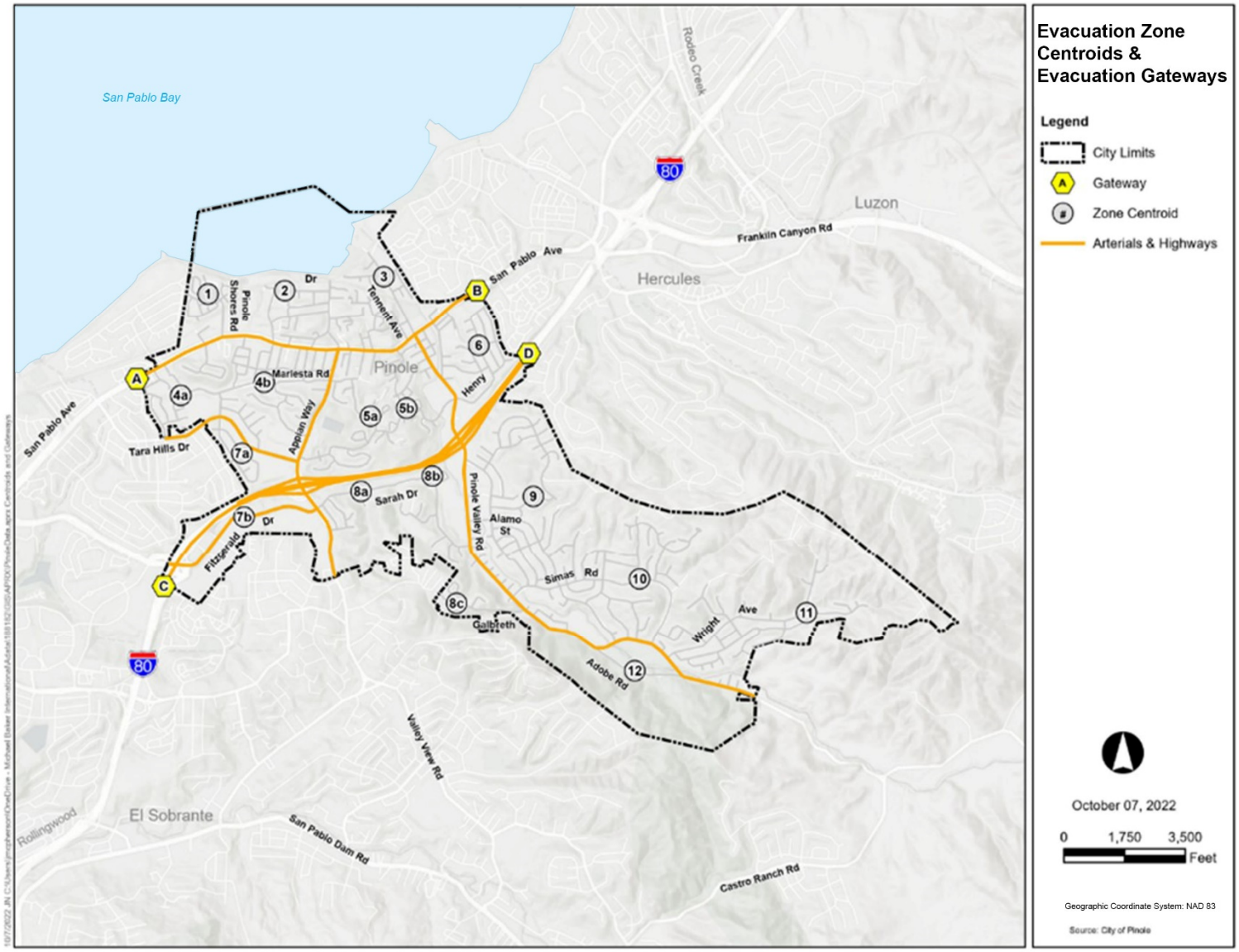


Figure 21: Evacuation Zone Centroids & Evacuation Gateways



The two emergency scenarios were identified that would require an evacuation of populations within select evacuation zones within the City. These include a potential fire hazard scenario and a potential dam inundation hazard scenario.

Scenario-1: If a fire hazard were to occur in the foothills to the east of the City, the Evacuation Zones 9, 8, 10,11, and 12 may potentially be affected. Residents in each of these zones should be directed to travel north on Pinole Valley Road towards I-80 (Gateways C & D) and away from the fire hazard. The specific wildfire concern expressed by the City Fire Department is the threat to the residential neighborhood at the top of Galbreth Road, identified as Centroid 8c in the Evacuation Route assessment. If Galbreth Road is available during an evacuation, the travel time to the closest evacuation Gateway at I-80 Northbound is just under 6 minutes. However, if this route becomes directly threatened by fire and becomes unusable, the only alternative would be for people to abandon their vehicles and walk across the City limits at the terminus of Galbreth Road to South Rancho Road/Rancho Road and then be shuttled to safety. The City is currently in the process of constructing a road extending Galbreth Road to South Rancho Road and a fire access gate to be opened by emergency responders.

Scenario-2: A potential failure at the Maloney Reservoir, which would potentially inundate residential neighborhoods and 10 critical facilities (refer to **Figure 14**), including government facilities such as City Hall, Fire Station 73, and the police department, post office, and youth center. A breach at the northeast corner of the dam and breach along the north wall will take less than 3 minutes for 1 foot of water to reach these homes. These homes would reach a maximum flood wave depth of ranging from 6 to 10 feet. Given the relatively short time between the dam breach and flooding effects that would impact or make evacuation routes unusable, it will be critical to develop advance warning methods that would identify a likely breach of the dam so a preemptive evacuation order could be given. One such example would be an earthquake event that causes damage to the dam but does not immediately cause a dam breach. Under some emergency scenarios, such as an earthquake that causes an immediate rupture of the dam, it may not be possible or practical to declare a vehicle-based evacuation.

3 Goals, Policy, and Action Items

GOAL SE 1: Minimize the potential for loss of life, injury, damage to property, economic and social dislocation, and unusual public expense due to natural hazards.

Flooding and Erosion

POLICY SE 1.1: Continue to implement the Pinole Creek Watershed Vision Plan and Pinole Creek Greenway Master Plan.

Action SE 1.1.1: Continue to seek funding and work with creek restoration stakeholders to implement the Pinole Creek Watershed Vision Plan and Pinole Creek Greenway Master Plan.

Action SE 1.1.2: Ensure Pinole Creek is complemented by local development during the review of specific development proposals by including it as a natural amenity for the development.

Action SE 1.1.3: Continue to update the Flood Hazard Reduction Ordinance periodically based on new information and research to include land use controls regulations for properties that abut Pinole Creek in order to minimize potential conflicts between flood, resource protection, and recreational goals and to adhere to pertinent local, state, and federal agency requirements.

Action SE 1.1.4: Collaborate with the Contra Costa County Flood Control District and other property owners in the Pinole Creek watershed, particularly the East Bay Municipal Utility District, to establish a diversion basin that could reduce stormwater flows during severe storm conditions.

Action SE 1.1.5: Coordinate with Contra Costa County Flood Control District on flood protection and prevention within the City, per GC 65302(g)(2)(B)(v)

POLICY SE 1.2: Require appropriate control measures to control and minimize the impact of flooding and erosion.

Action SE 1.2.1: Complete and implement the Storm Drainage Master Plan.

Action SE 1.2.2: Investigate feasible infrastructure improvements to remove the Pinole Library, Senior Center, and Tiny Tots structure from the 100-year flood zone.

Action SE 1.2.3: Coordinate with Caltrans to ensure proper maintenance and infrastructure integrity at all bridges within the City.

Action SE 1.2.4: Continue to periodically update and enforce the Erosion Control Ordinance.

Action SE 1.2.5: Require erosion prevention plans for new development such as revegetation or other acceptable measures.

Action SE 1.2.6: Periodically monitor areas surrounding Pinole Creek for erosion control.

POLICY SE 1.3: Continue to monitor studies that identify anticipated changes in sea level and create appropriate standards and improvements to minimize flood risks.

Action SE 1.3.1: Continue to coordinate with local, regional, state, and federal agencies regarding impacts and mitigation of a potential rise in sea level.

Action SE 1.3.2: Continue to update the Climate Action and Adaptation planning process on a regular basis, to govern the San Pablo Bay waterfront and any other areas that may be impacted by changes in sea level.

Action SE 1.3.3: Continue to support the actions in the Bay Conservation and Development Commission's Bay Adapt Joint Platform and cooperate in the future implementation of strategies to adapt to Bay-related impacts of climate change, in addition to other ongoing research by regional agencies.

Action SE 1.3.4: Continue to implement the Municipal Code flood protection standards for development within a Federal Emergency Management Agency (FEMA) -designated Special Flood Hazard Area and will coordinate with FEMA and other agencies in the evaluation and mitigation of future flooding hazards that may occur as a result of sea-level rise.

Action SE 1.3.5: Pursue funding for adequate protection from sea-level rise and subsidence.

POLICY SE 1.4: Establish appropriate capital improvements and management programs to maintain and upgrade drainage systems as needed to minimize local flooding.

Action SE 1.4.1: Require project applicants to investigate and report on project impacts on stormwater runoff and the wastewater treatment plant and ensure that project-specific impacts are mitigated.

Action SE 1.4.2: Explore the possibility of incorporating green infrastructure requirements such as rain gardens, bio-swales, green roofs, permeable paving, rainwater harvesting, and green parking in the City Municipal Code for new developments and major renovations.

Action SE 1.4.3: Continue implementing a Clean Water Program to reduce surface water discharge through project design (e.g., reduce water runoff by minimizing impervious surfaces and using green areas for drainage) and monitor compliance with the National Pollution Discharge Elimination System permit program and the Clean Water Act.

Action SE 1.4.4: Seek funding to upgrade facilities to reduce inflow and infiltration and treat runoff.

POLICY SE 1.5: Ensure that appropriate measures are in place to minimize the risk and impact of flooding due to dam inundation.

Action SE 1.5.1: Investigate infrastructure improvements (such as retaining walls or deployable flood barriers) at City Hall, Fire Station 73, and Police Department.

Action SE 1.5.2: Consider alternative locations for the Emergency Operations Center (EOC), equipment staging, and other required resources outside of the Maloney Dam Reservoir inundation zone.

Action SE 1.5.3: Coordinate with East Bay Municipal Utility District to maintain Maloney Reservoir in satisfactory condition. Promptly identify future deficiencies and collaborate where feasible toward infrastructure solutions or improvements.

Action SE 1.5.4: Participate in emergency preparedness exercises with dam owners and operators, where required.

Action SE 1.5.5: Explore developing advance warning methods that would identify a likely breach of the dam so a preemptive evacuation order could be given.

Seismic Activity and Geologic Instability

POLICY SE 1.6: Ensure that all geologic hazards are adequately addressed and mitigated through project development. Development proposed in areas of potential geological hazards should not be endangered by, nor contribute to, the hazardous conditions on the site or on adjoining properties.

Action SE 1.6.1: Make the Geological Hazard map readily available on the website either by providing links to reliable data sources such as the California Geological Survey or by updating the geologic hazard map with new information provided by geotechnical studies.

Action SE 1.6.2: Require future development and major renovations within the fault trace areas or other geologic hazard areas (e.g., liquefaction, land sliding, mud sliding, erosion, sedimentation, hydromodification, and settlement) to provide geotechnical studies determining the location of the fault trace relative to proposed improvements, the feasibility of the proposed design, level of risk associated with potential geologic hazards, and appropriate mitigations.

Action SE 1.6.3: Ensure that during project design and review, existing and new structures are designed to protect people and property from seismic hazards.

Action SE 1.6.4: Continue to implement and routinely update the California Building Code (CBC) to mitigate the risk of seismic activity.

Action SE 1.5.5: Review the location of proposed utilities in relation to active fault traces identified during the Design Review and require utility lines crossing active fault traces to be specifically designed to withstand the earth's expected movement or to be relocated.

Action SE 1.5.6: Monitor slope conditions in areas of concern to evaluate future risk. If slope stability appears threatened or otherwise at risk of failure, document a response plan, schedule, and funding source.

Action SE 1.5.1: Monitor slope conditions closely after wildfire incidents for potential debris flow. If debris flow conditions occur, proactively stage response materials in areas at risk of debris flows.

POLICY SE 1.7: Address safety issues related to unreinforced masonry buildings in coordination with historic preservation policies and programs.

Action SE 1.7.1: Explore funding sources to create an inventory of unreinforced masonry structures in the City that may collapse in the event of an earthquake and develop a hazard reduction program for their rehabilitation or removal.

Wildfire

POLICY SE 1.8: Incorporate fire-safe design for existing and new developments and major renovations.

Action SE 1.8.1: Continue to use the California Fire Code and California Code of Regulations and update them as necessary to mitigate the risk of wildfires.

Action SE 1.8.2: Revisit site design and maintenance standards periodically to ensure that the standards for fire protection for new development meet or exceed the statewide minimums.

Action SE 1.8.3: Require the new development proposals to submit plans showing ingress/egress, evacuation routes, emergency vehicle access, visible addressing and signage, and fuel modification/fire-retardant zones.

Action SE 1.8.4: Identify existing non-conforming development and create a plan which would include seeking grant funding to update those developments to contemporary fire-safe standards, in terms of road standards and vegetative hazard, and requiring all development to meet or exceed CCR, division 1.5, chapter 7, subchapter 2, articles 1 -5 requirements (SRA Fire Safe Regulations).

POLICY SE 1.9: Ensure that the City is well equipped to reduce the risk of wildfire and its after-effects.

Action SE 1.9.1: Evaluate ongoing fire protection and emergency medical service delivery in the community and Stations 73 and 74 to improve response time in the City.

Action SE 1.9.2: Review, or work with the contracted fire protection agency to review, the adequate availability of fire suppression equipment, including fire engines, to support planned development in the City.

Action SE 1.9.3: Review and revise development impact fees for new development projects for their contribution towards fire protection services

Action SE 1.9.4: Ensure that the contracted fire protection agency strives to provide an on-scene response to emergency incidents in the City within eight minutes and 30 seconds, 90 percent of the time.

Action SE 1.9.5: Develop a Fire Safety Operations Assessment that identifies and compares different approaches to the provision of emergency services and identifies needed facilities and an appropriate organizational structure to provide cost-effective fire and emergency medical services.

Action SE 1.9.6: Examine opportunities to create all-weather emergency vehicle access through open space in order to shorten response times and improve mutual aid between Pinole, Hercules, and El Sobrante.

Action SE 1.9.7: Explore opportunities to provide access to two or more evacuation routes for existing and future residential development with densities of more than 30 units per acre.

Action SE 1.9.8: Continue using City's Utility Users' Tax (UUT) per Measure C passed in 2018 to fund fire protection services.

Action SE 1.9.9: Continue to coordinate with Pacific Gas and Electric Company through the Rule 20 Program to underground utility lines to mitigate wildfire risk for the projects approved under the program.

Action SE 1.9.10: Construct an emergency access road extending Galbreth Road to South Rancho Road and a fire access gate to be opened by emergency responders and explore the possibility of making this a permanent public road.

POLICY SE 1.10: Coordinate and cooperate with regional agencies on wildfire preparedness programs.

Action SE 1.10.1: Continue working with the County to develop the Countywide Zonehaven Platform that connects to the community warning system.

Action SE 1.10.2: Cooperate with the East Bay Municipal Utility District to ensure that the present and future water supply needs are met adequately and to maintain the integrity of the water supply.

Action SE 1.10.3: Continue to collaborate with the Bay Area Quality Management District to monitor air quality, spread awareness of air quality issues, and notify the public if wildfire smoke appears to be causing elevated levels of particulate pollution in the region.

Action SE 1.10.4: Develop a plan to revegetate slopes on City-owned property as well as work with appropriate agencies and property owners soon after wildfires with desirable native species that support native habitat and have robust root systems to keep soil in place.

POLICY SE 1.11: Reduce the risk of wildfire spreading to the extent possible.

Action SE 1.11.1: Treat the City-owned roadways identified as evacuation routes as firebreak areas and maintain these roadways adequately.

Action SE 1.11.2: Encourage neighborhood- or area-based approaches to reducing wildfire hazards, acknowledging that one property's wildfire risk is dependent on the wildfire hazards presented by surrounding properties.

Action SE 1.11.3: Ensure that new development and major renovations are required to submit fuel modification plans for approval from the contracted fire protection agency.

Action SE 1.11.4: When feasible, require all development to be located outside of the Very High Fire Hazard Severity Zone (VHFHSZ). Should development be located in VHFHSZ's, then they must maintain certain defensible space through specific fuel modification (brush clearing) requirements as outlined in Government Code 51175 – 51189 and required to be built to the current California Building Code and Fire Code.

Action SE 1.11.5: Reduce the risk of wildfire hazards by working with homeowner associations, business park associations, and the Contra Costa County Fire Protection District to maintain fire-retardant landscaping and buffer zones in areas of high wildfire risk and impose such requirements on new development in areas of high wildfire risk.

Climate Resiliency

POLICY SE 1.12: Increase the City's resiliency to climate change impacts.

Action SE 1.12.1: Adopt a Climate Action and Adaptation Plan, routinely monitor its effectiveness, and update it on a regular basis.

Action SE 1.12.2: Continue to implement the resiliency efforts laid out in the Sustainability Element of the General Plan.

Action SE 1.12.3: Identify public buildings, specific private buildings, and/or institutions with facilities required for multiple day habitation as public shelters during periods of extreme flooding, heat waves, or power outages and provide up-to-date information to the public about such buildings through the City's website.

Action SE 1.12.4: Develop a protocol for how the City will respond to extreme heat events, e.g., extend cooling center hours, alternative schedules for outdoor workers, delivery of water, medicine, and other critical resources to vulnerable populations, and so on.

Action SE 1.12.5: Strive to reach out to the community during City-organized festivals or other regional events and on social media with climate-action-related education.

Action SE 1.12.6: Locate new essential public facilities, including hospitals and health care facilities, emergency shelters, emergency command centers, and emergency communications facilities outside of hazard areas as feasible, and implement construction methods to minimize impacts if located in at-risk areas.

Action SE 1.12.7: To the extent feasible, develop natural infrastructure that uses natural ecological systems or processes to reduce vulnerability to climate change-related hazards or other related climate change effects.

Action SE 1.12.8: Continue tracking the status of current state drought warnings and conservation requirements. Support EBMUD in public outreach efforts regarding the drought status.

Action SE 1.12.9: Support EBMUD in water portfolio diversification efforts, including recycled and desalinated water, to ensure drought-proof water supplies in the future.

Action SE 1.12.10: Complete the Recycled Water Feasibility Study, as identified in the Capital Improvement Plan, to phase the construction of future recycled water infrastructure.

Action SE 1.12.11: Identify critical facilities in need of reliable sources of sustained electrical power during natural hazards and climate change impacts.

Action SE 1.12.12: Evaluate infrastructure improvements at Pinole-Hercules Water Pollution Control Plant (Critical Facility #23) to mitigate against sea level rise and flood hazards. Identify funding sources as appropriate.

Action SE 1.12.13: Continue tracking ongoing sea level rise policy and science updates.

Action SE 1.12.14: Continue to monitor critical facilities in and around Pinole Creek, where groundwater emergence is more likely to occur.

GOAL SE 2: Minimize the potential for loss of life, injury, damage to property, economic and social dislocation, and unusual public expense due to human-made hazards.

Crime

POLICY SE 2.1: Reduce the risk of crime through site planning, surveillance, and information.

Action SE 2.1.1: Apply Crime Prevention Through Environmental Design principles when planning for public and private improvements.

Action SE 2.1.2: Involve law enforcement agencies in the Design Review process of new and rehabilitated buildings in order to increase resident and occupant safety. The review may include but not be limited to lighting and landscaping.

Action SE 2.1.3: Maintain and expand, where feasible, the network of surveillance cameras in the community to discourage and help investigate criminal activity based on Pinole Police Department advice and experience.

Action SE 2.1.4: Strive to provide an on-scene response to emergency incidents in the City within 5 minutes.

Action SE 2.1.5: Work with criminal justice agencies and community groups to support programs that offer information about community policing, reporting child and adult abuse and neglect, and other crime prevention techniques.

Action SE 2.1.6: Support efforts to strengthen and expand neighborhood watch programs and encourage businesses to participate in these efforts.

Action SE 2.1.7: Work with law enforcement agencies and community groups to promote cleanup, graffiti removal, and other neighborhood beautification efforts.

Action SE 2.1.8: Work with law enforcement to guide and educate the public on active shooter scenario public responses through employer/school staff training and public education.

Action SE 2.1.9: Conduct a neighborhood safety light survey and provide adequate street lighting in areas with concern to discourage crime while preventing unnecessary light pollution or spillover.

Health Emergencies

POLICY SE 2.2: Be prepared to provide essential services during a public health crisis.

Action SE 2.2.1: Include an operations protocol for public health crisis scenarios in the next update to the City's Emergency Operations Plan.

Action SE 2.2.2: Ensure that City employees are equipped to telecommute if needed during an emergency.

Action SE 2.2.3: Keep the essential City services, to the extent possible, operational and timely.

Action SE 2.2.4: Ensure, to the extent possible, that City employees have access to appropriate protective equipment to provide essential services.

Action SE 2.2.5: Follow the direction and guidance of appropriate public health agencies and relay the information to the community in a timely manner.

Hazardous Materials

POLICY SE 2.3: Evaluate new development on sites that may have involved hazardous materials prior to development approvals.

Action SE 2.3.1: Ensure that sites in Pinole that are contaminated with hazardous substances are cleaned through decontamination of soils, treatment, and filtration of groundwater.

Action SE 2.3.2: Use the conditional use permit and encroachment permit process to ensure pipeline safety when construction occurs. New developments should screen, protect, or underground all gas, electric, and communication lines; screen facilities (e.g., transformers) as safety and conditions require; and provide underground connections when feasible to improve public safety and the City's appearance.

POLICY SE 2.4: Ensure proper handling, storage, disposal, and cleanup of hazardous materials.

Action SE 2.4.1: Work with Contra Costa County and other regional partners to implement the County Hazardous Waste Management Plan and notify the public about locations and opportunities to properly dispose of household hazardous materials.

Action SE 2.4.2: A comprehensive investigation of hazardous materials storage tanks should be undertaken for specific sites when development is proposed. The potential hazard of any tanks or former tank sites found should then be evaluated using California Environmental Protection Agency and local regulatory guidelines, and sites shall be remediated as needed.

Action SE 2.4.3: At the time of new development, any known or discovered hazardous material should be cleaned up and any impacts mitigated as required by the governing law.

Action SE 2.4.4: Ensure that no hazardous materials are dumped in any area of the City through code enforcement.

Action SE 2.4.5: Routinely educate the public regarding proper handling, storage, and disposal of hazardous materials and advertise household hazardous waste collection days and locations on the City website, through social media, and other platforms.

Action SE 2.4.6: Evaluate contracted fire protection agency's and Police Department's capacity to respond to hazardous materials spills; identify any gaps in equipment or training.

POLICY SE 2.5: Support measures to responsibly manage hazardous waste to protect public health, safety, and the environment.

Action SE 2.5.1: Support legislative efforts to reduce the risk associated with hazardous waste.

Action SE 2.5.2: Enforce licensing and current laws regarding the transport of hazardous materials through the City and support state and federal safety legislation to strengthen requirements for hazardous materials transport.

Action SE 2.5.3: Continue to participate in Contra Costa County Hazardous Materials Area Plan regulatory requirements and emergency response coordination.

GOAL SE 3: Spread education and awareness related to emergency preparedness and programs.

POLICY SE 3.1: Create programs and practices that provide information and education to the residents of Pinole related to hazards, emergency preparedness, and other safety issues.

Action SE 3.1.1: Encourage the development and dissemination of information relating to fire hazards to educate and assist builders and homeowners in being engaged in wildfire mitigation activities.

Action SE 3.1.2: Ensure that the emergency preparedness web page (Pinole-Ready) is up to date and readily accessible on the City website to promote resident awareness and caution regarding hazards, including soil instability, earthquakes, flooding, and fire.

Action SE 3.1.3: Periodically update information on personal emergency preparedness (Pinole-Ready). At a minimum, this should include preparedness for events related to wildfire, earthquake, flooding, heat, and health emergencies.

Action SE 3.1.4: Strive to reach out to the community during City-organized festivals or other regional events and on social media to educate on personal emergency preparedness and other hazard-related information.

Action SE 3.1.5: Explore restoring the CERT program and conducting annual tabletop exercises and community drills

Action SE 3.1.6: Educate City officials at the beginning of each term on emergency procedures, protocols, line of command, and expedited processes related to disaster recovery.

Action SE 3.1.7: Spread awareness about the County Warning Systems and encourage residents to sign up to receive notifications and communication during a natural or human-made disaster.

Action SE 3.1.8: Continue to publicize disaster plans such as Emergency Operations Plan and make them available on the City website and to critical facilities.

GOAL SE 4: Ensure that government agencies, residents, and businesses are prepared for an effective response and recovery in the event of emergencies or disasters.

POLICY SE 4.1: Minimize the risk to life and property through emergency preparedness.

Action SE 4.1.1: Maintain and implement the Emergency Operations Plan, including necessary training, emergency preparedness drills, evacuation plan, and community education.

Action SE 4.1.2: Explore the possibility of developing and implementing a Local Hazard Mitigation Plan either by the City or in partnership with regional entities.

Action SE 4.1.3: Consider developing and adopting a pre-disaster ordinance for post-disaster recovery and reconstruction that includes provisions for debris clearance, damage assessment, demolitions, re-occupancy and building moratorium criteria, fee waivers, and deferrals, and expedited permitting procedures for repair and reconstruction.

Action SE 4.1.4: Continue working with Contra Costa County and other concerned agencies to adopt a regional Emergency Response Plan.

Action SE 4.1.5: On their next update, ensure that the policies and action items in other general plan elements are revised to be consistent with policies and actions in Safety Element.

POLICY SE 4.2: Permit development only in those areas and with design features that mitigate potential danger to the health, safety, and welfare of the residents.

Action SE 4.2.1: Maintain detailed hazard maps for use in the development review.

Action SE 4.2.2: Strive to locate and design emergency buildings and vital utilities, communication systems, and other public facilities so that they can remain operational during and after an emergency or disaster.

Action SE 4.2.3: Maintain structural and operational integrity of essential public facilities during flooding, per GC 65302(g)(2)(B)(iii).

Action SE 4.2.4: Require appropriate studies to assess identified hazards and ensure that impacts are adequately mitigated.

Action SE 4.2.5: Regulate new pipeline development through the conditional use permit process. Require new development to screen, protect, or underground all utilities and provide underground connections to improve public safety as well as the City's appearance.

Action SE 4.2.6: Ensure newly proposed or modified roadway designs (e.g., median modifications and speed humps) are reviewed by the contracted fire protection agency to ensure that they do not significantly impair the movement of emergency vehicles and equipment.

POLICY SE 4.3: Incorporate technological enhancements in new and substantially remodeled structures and facilities to support and improve emergency services.

Action SE 4.3.1: Consider developing a fiber-optic network plan that can provide visual access for emergency services providers and assist with crime prevention and the monitoring of critical public facilities (e.g., storm drain and flood protection facilities).

Action SE 4.3.2: Update the City's ordinance to incorporate necessary improvements into new and substantially remodeled structures to ensure that emergency service providers are able to transmit and receive radio communications within structures.