

# SAFETY ELEMENT **7**



WELCOME TO  
ROLLING HILLS  
ESTATES



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# Introduction

## Introduction

The Safety Element focuses on the safety and security of Rolling Hills Estates residents and businesses. The City strives to provide a safe and enjoyable environment for citizens; properly addressing and reducing risks associated with natural and human-induced hazards will further this goal. This information serves as a guide for hazard mitigation, emergency planning, and preparedness throughout the City's jurisdiction.

## Purpose

The purpose of the Safety Element is to identify potential hazards to the City of Rolling Hills Estates' jurisdiction, including the community's citizens, structures, public facilities, and infrastructure. By identifying local and regional hazards (including both natural hazards and man-made hazards), goals and policies can address public safety concerns unique to the City.

This Safety Element satisfies the requirements of State planning law and is a mandated component of the General Plan. Government Code Section 65302(g) establishes the required components of the Safety Element, which include the following topical areas:

- Wildland and urban fires
- Seismic hazards: ground shaking, surface rupture, ground failure, tsunami, seiche, and dam failure
- Slope instability: mudslides, landslides, subsidence, liquefaction
- Flooding
- Climate resiliency

State law allows communities to select additional safety issues for consideration in the Safety Element. Thus, the City has elected to address the following non-mandatory safety issues:

- Hazardous materials location and movement
- Utility-related events: power failure/stoppages, drought/water shortages, natural gas pipes
- Crime
- Terrorism

## Relationship to Other General Plan Elements

Policies in the Safety Element address various public safety hazards and emergency preparedness. The Land Use Element is closely related to the Safety Element and contains policies that ensure both natural and human-made hazards are considered while making land use decisions. The distribution of residential and other sensitive land uses in the Land Use Map is designed to avoid areas where hazardous conditions have been identified. Safety Element policies are designed to protect existing and planned land uses identified in the Land Use Element, as well as associated persons and properties.

The Safety Element is also linked to both the Open Space and Recreation Element and Conservation Element. Many designated open space or conservation areas are also documented as earthquake fault zones, unstable soils or slope zones, floodplains, or watersheds. Open space can also be used as a buffer zone

between uses that may create or have public safety hazards, such as hazardous materials use or production. Development within designated open space and conservation areas would be inconsistent with the goals and policies in the Safety Element.

To a lesser extent, the Safety Element relates to the Noise, Circulation and Sustainability Element. Excessive noise can create nuisances that negatively affect public health. Additionally, public safety agencies may become involved in enforcing certain noise codes and regulations. The Circulation Element provides a policy framework for a safe and efficient circulation system, which is critical during the response to an emergency or in the event that an evacuation is necessary. The Sustainability Element addresses climate resiliency issues and is interrelated with Safety Element's climate resiliency policies.

## Relationship to Hazard Mitigation Plan

The Multi-jurisdictional Hazard Mitigation Plan (MJHMP) for Rolling Hills Estates was developed in conjunction with the City of Rancho Palos Verdes. The MJHMP was crafted in accordance with the Disaster Mitigation Act of 2000 (DMA 2000) and followed the Federal Emergency Management Agency's (FEMA) 2011 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, involves planning, policy changes, programs, projects, and other activities. The MJHMP is fully integrated into the Safety Element.

## Chapter Organization

This Safety Element chapter is comprised of three sections:

**Introduction** summarizes the general intent of Safety Element as well as its relationship to other General Plan Elements and the Multi-jurisdictional Hazard Mitigation Plan (MJHMP).

**Existing Conditions** summarizes the natural and human-made hazards to the City as well as critical facilities and evacuation routes.

**Goals, Policies & Implementation Measures** identifies goals and policies to address public safety hazards and emergency preparedness and response issues.





# Existing Conditions

## Existing Conditions

### Wildfires

Wildfire hazard areas exist within the Planning Area and possess a substantial hazard to life and property, especially on properties built on or adjacent to steep terrains such as canyons and hillsides. Such fires can burn large areas, cause significant damage to structures and valuable watersheds, and result in an increased risk of mudflows.

A classic wildland/urban interface exists where well-defined urban and suburban development presses up against open expanses of wildland areas. Similarly, wildfires can also occur where pockets of rural or isolated development abut wildland areas or pockets of wildland areas abut developed areas. 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 wildfires that overwhelm committed resources; and a large fuel load (dense vegetation). Once a fire starts, several conditions influence its behavior, including fuel, topography, weather, drought, and development.

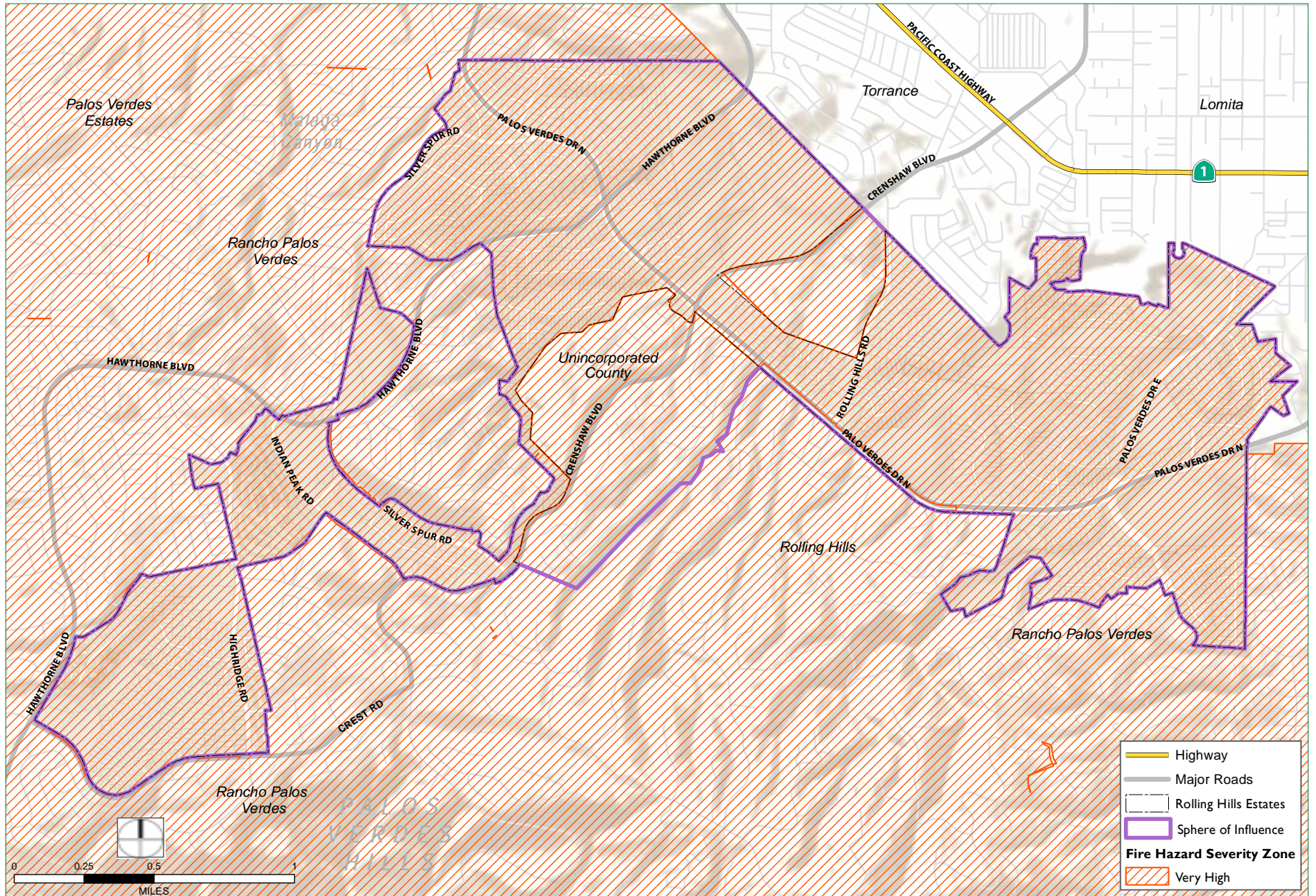
The Planning Area has not had a major wildfire incident since 1973, when a fire destroyed 12 homes and burned 925 acres. However, the Palos Verdes Peninsula as a whole has a history of fires. The most recent major brush fire in the South Bay began on August 27, 2009, at the upper ends of Narcissa and Peppertree drives, in the gated Portuguese Bend community near the Portuguese Bend Nature Preserve (now part of the Palos Verdes Nature Preserve). Due to the City's location as a wildland/urban interface with canyon topography, the prevalence of a hot, dry climate, and the

general impacts of climate change, the chances of wildfires appear more likely during the next 25 years. There has however been an increase in spot fires over the last several years on the Palos Verdes Peninsula. Typically, there are about two to three spot fires a year ranging in about one to three acres of burn area.

The entirety of the Rolling Hills Estates community falls into a Very High Fire Hazard Severity Zone as denoted by the California Department of Forestry and Fire Protection (CalFire; refer to **Figure 7-1**). The area is a Local Responsibility Area (LRA), meaning the responsibility for fire protection rests with the Los Angeles County Fire Department (LACoFD). LACoFD maintains a contract for fire protection with the City of Rolling Hills Estates along with the neighboring cities of Rancho Palos Verdes, Palos Verdes Estates, and Rolling Hills. LACoFD Station No. 106 at 27413 Indian Peak Road is within Rolling Hills Estates' City limits.

Pursuant to the State Government Code, properties located within a Very High Fire Hazard Severity Zone must maintain certain defensible space through specific fuel modification (brush clearing) requirements. These fuel modification requirements are enforced wholly by the LACoFD. Furthermore, property owners located within a Very High Fire Hazard Severity Zone must disclose that their property is situated in such a zone at the time of sale. These requirements have been in place since the original State Government Code dealing with Very High Fire Hazard Severity Zones was adopted in 1995.

Figure 7-1 Wildfire Hazard Areas



## Faults and Seismic Activity

Reasonably well-established historical records of earthquakes in California have been compiled for approximately the past 200 years. More accurate instrumental measurements have been available since 1933. As demonstrated by historical seismicity, earthquakes generated by displacement along nearby regional faults within an approximately 62-mile radius are considered capable of generating ground shaking of engineering significance at a particular site.

Surface fault rupture is the result of fault movement that breaks to the surface of the earth either suddenly during earthquakes, or slowly due to a process known as fault creep, and is the result of tectonic movement that originates deep in the Earth. Surface fault rupture is different from other types of earthquake-related ground deformation, such as that caused by soil liquefaction or earthquake-triggered landslides. The energy released during an earthquake is a direct result of fault rupture at depth, and when that rupture extends to the ground surface it manifests as displacements expressed as fractures, fissures and related tectonic deformation. The release of energy during an earthquake will also cause shaking which can trigger liquefaction and landslides.

The State of California classifies surface fault ruptures into two categories- Holocene-active fault and pre-Holocene faults. Holocene-active fault are the faults that have had surface displacement within the Holocene epoch (i.e., within the last 11,000 years). The San Andreas Fault, where the western Pacific plate meets with the eastern North American plate, is the State's largest Holocene-active fault. Seismologists have determined that the

San Andreas Fault is moving at a rate of approximately two inches per year. Holocene-active faults are also regulated by the Alquist-Priolo Earthquake Fault Zoning Act (A-P Act) that went into effect in March, 1973.

The pre-Holocene fault is defined as showing evidence of surface displacement during the Quaternary Period (i.e., during the last 2.6 million years). These terms are used by the State primarily for use in evaluating the potential for surface rupture along faults and are not intended to describe possible seismic activity associated with displacement along a fault. Additionally, these definitions are not applicable to blind thrust faults that have only limited, if any, surface exposures.

The Planning Area is traversed by two known pre-Holocene faults, the Palos Verdes Fault and the Cabrillo Fault, with the potential to cause high ground accelerations in the City. **Figure 7-1** identifies the Planning Area in proximity to the Palos Verdes Fault and Cabrillo Fault. Several other faults in the region, such as the San Andreas, San Jacinto, Whittier-Elsinore, and Newport-Inglewood Faults, also have the potential to cause high ground accelerations in the City.

Earthquakes that could affect the project area would most likely originate from the Southern San Andreas (M7.8), Newport-Inglewood (M7.2), or Palos Verdes (M7.3) Faults. These faults are close enough in proximity or expected to generate strong enough shaking that could significantly impact the project area. These are discussed in the next section and documented in **Table 7-1**.<sup>1</sup>

<sup>1</sup> City of Rancho Palos Verdes & City of Rolling Hills Estates. 2020. Multijurisdictional Hazard Mitigation Plan.

**Table 7-1 Relative Likelihood and Impact of Selected Major Fault Ruptures on the City of Rolling Hills Estates**

Fault Name	Magnitude*	Peak Ground Shaking**	Approximate Distance from City
Palos Verdes	7.4	Severe (34 to 65% g)	Within Northeast City Limits
San Andreas	7.8	Moderate (3.9 to 9.2% g)	35 miles
Newport-Inglewood	7.2	Very Strong (18 to 34% g)	9 miles

\* Maximum magnitude that each fault is predicted capable of generating.

\*\*Peak Ground Acceleration. When the ground is shaking during an earthquake, it also experiences acceleration (g)- change in speed. The peak acceleration is the largest increase in velocity recorded by a particular station during an earthquake.  
Source: City of Rancho Palos Verdes & City of Rolling Hills Estates. 2020. Multijurisdictional Hazard Mitigation Plan. Use of Hazards United States – Multi Hazard (HAZUS-MH) software program.

**San Andreas Fault Zone:** The San Andreas Fault Zone is located approximately 80 miles east of the project area. This fault zone extends from the Gulf of California northward to the Cape Mendocino area where it continues northward along the ocean floor. The total length of the San Andreas Fault Zone is approximately 750 miles. The activity of the fault has been recorded during historic events, including the 1906 (M8.0) event in San Francisco and the 1857 (M7.9) event between Cholame and San Bernardino, where at least 250 miles of surface rupture occurred. These seismic events are among the most significant earthquakes in California history. Geologic evidence suggests that the San Andreas Fault has a 50 percent chance of producing a magnitude 7.5 to 8.5 quake (comparable to the great San Francisco earthquake of 1906) within the next 30 years.

**Newport-Inglewood Fault Zone:** The Newport-Inglewood Fault Zone's closest point to the project area is approximately 10 miles from it, and its surface trace is a discontinuous 75 km in the Los Angeles Basin, but the fault zone can easily be noted there by the existence of a chain of low hills extending from Culver City to Signal Hill. South of Signal Hill, it roughly parallels the coastline until just south of Newport Bay, where it heads offshore, and becomes the Newport-Inglewood – Rose Canyon fault zone. The

most recent rupture was on March 10, 1993 (M6.4) but was not a surface rupture.

**Palos Verdes Fault Zone:** The Palos Verdes Fault Zone has two main branches, the Cabrillo Fault and the Redondo Canyon Faulty. The Cabrillo Fault runs 20 km, and the Redondo Canyon Faulty 11 km. The Palos Verdes Fault Zone is roughly 80 km. These faults are all in the immediate vicinity of the project area.

### *Seismic Design Standards*

The Planning Area is located within Seismic Zone 4, as specified in the California Building Code. Seismic design provisions for conventional residential and commercial development, specify that a building does not collapse under seismic loading; however, structural and nonstructural damage cannot be precluded. It is seismically and economically infeasible to design earthquake-resistant structures for conventional development. The key is to enforce seismic design provisions with adequate review and inspection to ensure maximum quality construction and optimum design.

## Seismic Hazards

**Ground Shaking and Surface Fault Rupture:** The primary seismic effects associated with earthquakes are ground shaking and surface fault rupture. The Alquist-Priolo Earthquake Fault Zones are areas determined by the State of California Geologist as affected by potentially and recently active traces of earthquake faults. No portion of the Planning Area is located within a currently designated Alquist-Priolo Earthquake Fault Zone, as no Special Studies Zones have been designated within the City's boundary.<sup>[2]</sup>

Ground shaking and surface fault rupture would typically be considered to have the greatest potential for damage associated with earthquakes. Ground shaking is characterized by the physical movement of the land surface during and subsequent to an earthquake. Surface fault rupture occurs when fault displacement breaks the ground surface along the historical trace of a fault. These seismic events have the potential to cause destruction and damage to buildings and property, including damaged or destroyed gas or electrical utility lines; disruption of surface drainage; blockage of surface seepage and groundwater flow; changes in groundwater flow; dislocation of street alignments; and displacement of drainage channels and drains. These events and subsequent destruction can also result in the loss of life. In addition, ground shaking and surface fault rupture can induce several types of secondary ground failures, including liquefaction and landslides.

The intensity of ground shaking during an earthquake depends largely on geologic foundation conditions of the materials comprising the upper several hundred feet of the earth's surface.

<sup>2</sup> Index to official Maps of Earthquake Fault zones in California, Southern Region, [https://www.lib.berkeley.edu/EART/UCONLY/CDMG/south/socal\\_index.pdf](https://www.lib.berkeley.edu/EART/UCONLY/CDMG/south/socal_index.pdf)

Peak ground motion parameters that might be generated within the Planning Area by a maximum credible earthquake have been estimated for active faults in regional proximity to it. Using deterministic analysis, the "maximum" earthquake resulting in the highest peak horizontal accelerations within the City would be a magnitude 7.0 event (total size of the earthquake) on the Palos Verdes Fault based on its proximity to the Planning Area (**Table 7-1**). While other faults might show a higher magnitude, their distance from the City will likely have minimal effect on the City. According to the MJHMP, the Palos Verdes Fault poses the most significant earthquake hazard to the City, as this potentially active fault traverses the northeastern border of the City.<sup>[3]</sup> The Cabrillo Fault is also a potentially active fault, mapped within the city limits near the intersection of Silver Spur Road and Crenshaw Boulevard along the south-central portion of the City.

Ground fissuring has been documented on hillside areas in the City in recent earthquakes, and surface rupture of the onshore Palos Verdes or Cabrillo Fault segments is credible.

Secondary earthquake hazards such as liquefaction, lateral spreading, slope creep, dynamic settlement, and landslides are generally associated with relatively high intensities of ground shaking. Liquefaction, lateral spreading, and dynamic settlement are associated with shallow groundwater conditions and loose, sandy soils or alluvium.

**Liquefaction:** Soil liquefaction is a phenomenon that occurs during strong ground shaking, most commonly in generally low-to medium-density, saturated, low-cohesion soils, where the soils experience a temporary loss of strength and behave essentially as

<sup>3</sup> City of Rancho Palos Verdes & City of Rolling Hills Estates. 2020. Multijurisdictional Hazard Mitigation Plan.

a fluid. In extreme cases, the soil particles can become suspended in groundwater, resulting in the soil becoming mobile and fluid-like. Most of the City is underlain by consolidated bedrock and is not susceptible to liquefaction.<sup>[4]</sup> A review of the Seismic Hazard Mapping by the State of California Department of Conservation, Division of Mines and Geology shows that the Planning Area is not located within potential liquefaction zones (see **Figure 7-2**). The areas of artificial fill throughout the City are susceptible to settlement during strong ground shaking. If perched (shallow and confined) groundwater exists within fill areas, liquefaction can occur.<sup>[5]</sup>

**Lateral Spreading:** Lateral spreading is the horizontal movement of soil masses caused by seismic waves; this movement is usually toward an open face slope or a steep slope that has been weakened by saturation. It occurs as a result of liquefaction of the subsurface soils. Throughout the Planning Area, areas of steep slopes and artificial fill have the potential for lateral spreading as a result of seismic activity.

**Slope Creep:** Slope creep can be characterized by a long-term settlement that can manifest itself in the form of both horizontal and vertical movements. These movements typically are produced as a result of weathering, erosion, prolonged wetting and drying periods, gravity forces, and other natural phenomena. Slope creep/lateral movement has been attributed to steep slopes located throughout the Planning Area.

**Subsidence:** Subsidence refers to broad-scale changes in the elevation, i.e., downward settling, of the land. Common causes of land subsidence are pumping water, oil, and gas from underground

reservoirs; dissolution of limestone aquifers (sinkholes); the collapse of underground mines; drainage of organic soils; and initial wetting of dry soils (hydrocompaction). Subsidence is also caused by heavy loads generated by large earthmoving equipment.

Areas within the City associated with groundwater or petroleum withdrawal, peat oxidation, or hydrocompaction may be susceptible to subsidence.

**Landslides and Slope Instability:** As indicated in **Figure 7-3**, the majority of the City is underlain by shale and siltstone units of the Monterey Formation (Altamira Shale; the Valmonte Diatomite and Malaga Mudstone are confined to the north of Palos Verdes Drive). These units are conducive to land sliding and slope instability characteristic of the Palos Verdes Peninsula.

The downslope movement of loose rock or soil is a potential effect of strong ground shaking. Earthquake-induced landslides are common in areas where steep slopes expose out-of-slope bedding or where the bedrock is intensely jointed or fractured. Slope instability can also occur when slope faces become unstable because of the saturation of slope materials from rainfall or seepage or undercutting of cliffs and banks by natural or human activities. The San Pedro Formation, an unconsolidated marine sedimentary deposit along the northern flank of the City, is particularly susceptible to storm-induced landslides and erosion along slopes.<sup>[6]</sup>

The natural orientation of major slopes in the Planning Area is along northeast-southwest trending canyons. Out-of-slope road cuts may pose a rockfall or landslide threat as a result of strong

4 City of Rancho Palos Verdes & City of Rolling Hills Estates. 2020. Multijurisdictional Hazard Mitigation Plan.

5 City of Rolling Hills Estates. 1992. General Plan.

6 City of Rolling Hills Estates. 1992. General Plan.

Figure 7-2 Earthquake Fault, Landslide and Liquefaction Zones

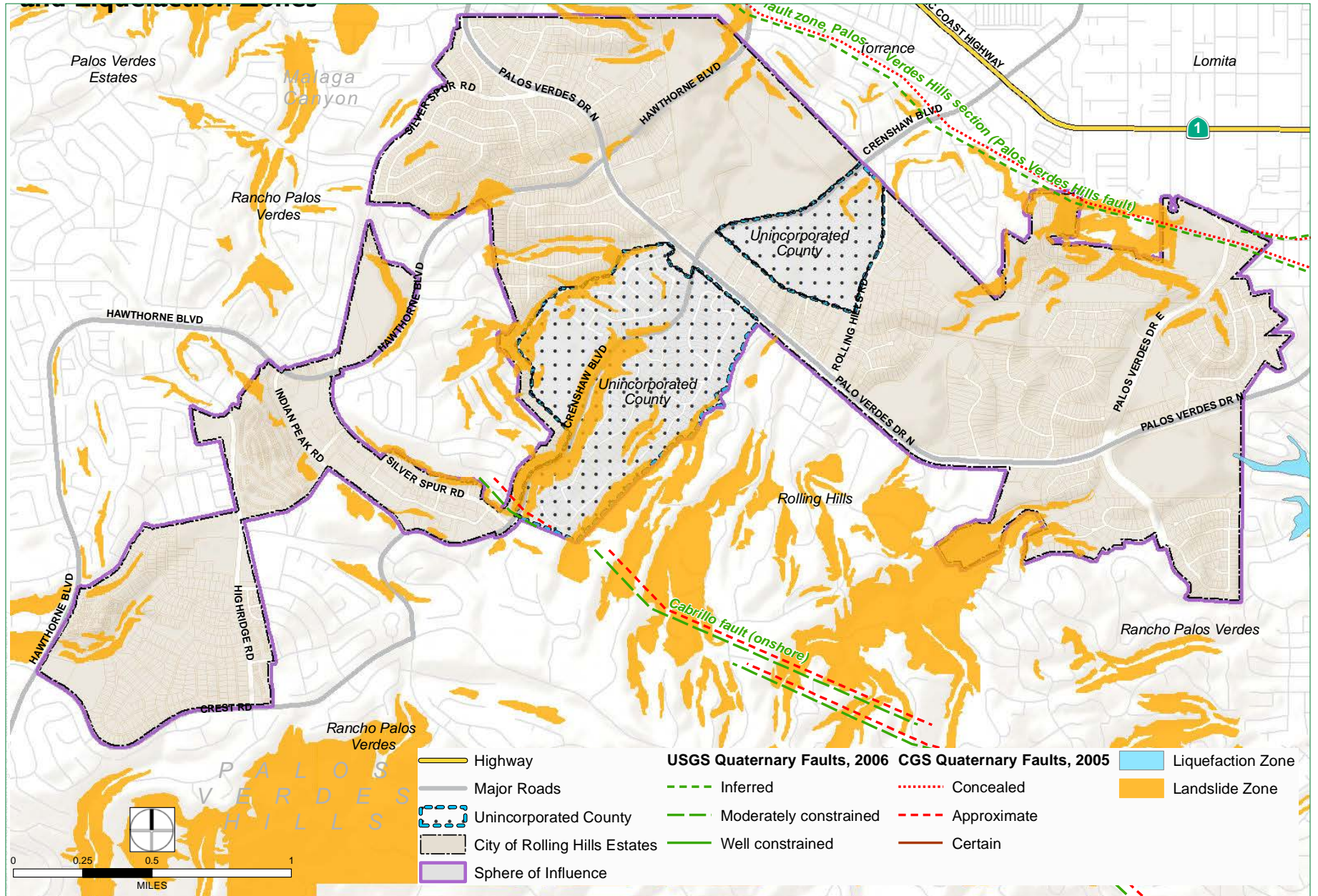
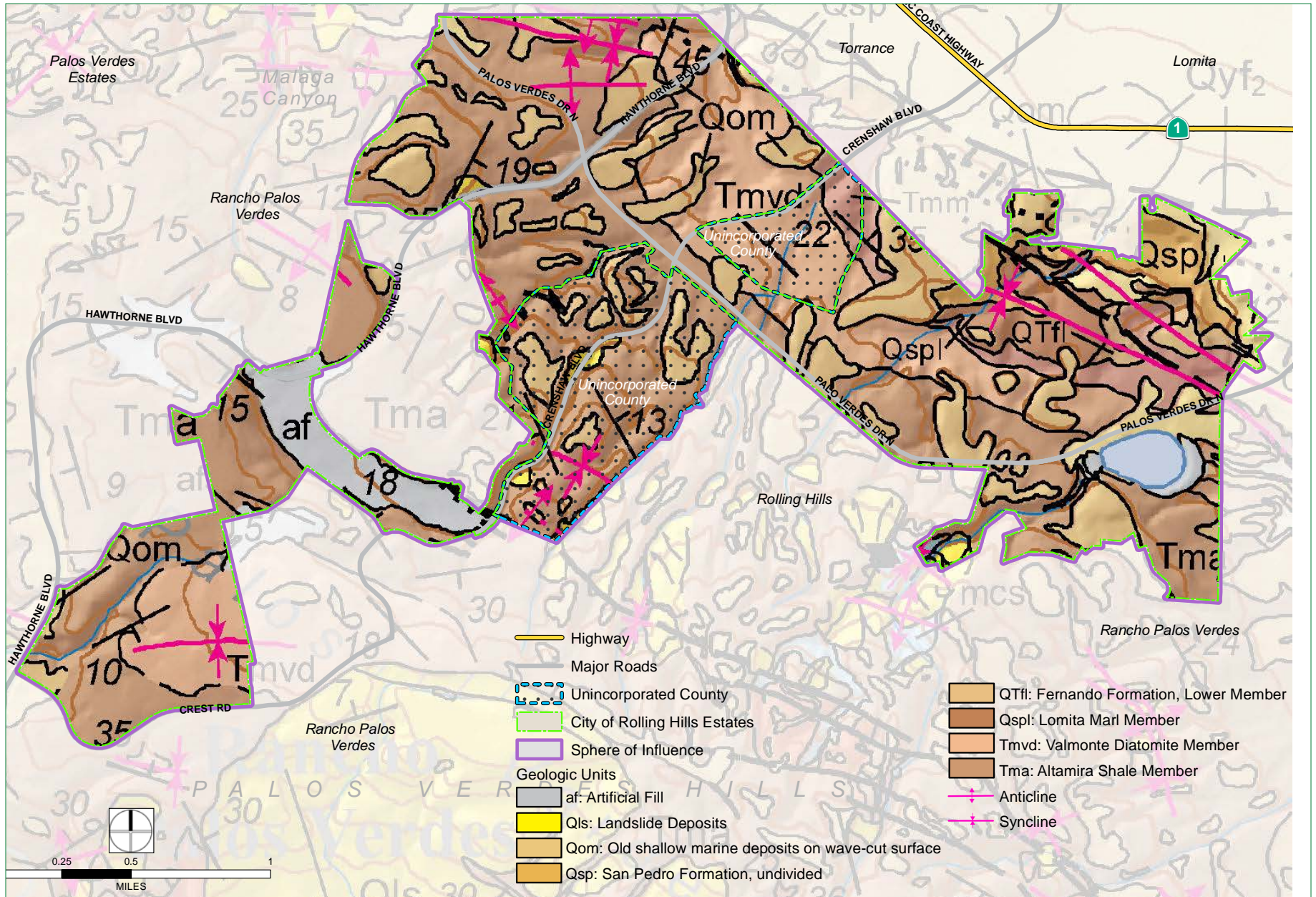




Figure 7-3 Geology



seismic shaking, including Crenshaw Boulevard along Agua Negra Canyon, Palos Verdes Drive between George F. Canyon to the east and Silver Spur Road to the west, and some sections of Hawthorne Boulevard. Extensive bedrock folding in the Peninsula can also result in localized out-of-slope cuts in other areas.

The Silver Spur Landslide Complex has been modeled, and a “potentially active” slip surface underlies a large portion of the residential area northeast of the Peninsula Center. The postulated location of this landslide is from Palos Verdes Drive North to Crenshaw Boulevard.<sup>[7]</sup> A review of the seismic hazard mapping prepared by the State of California Department of Conservation, Division of Mines and Geology, indicates that portions of the City are located in designated earthquake-induced landslide areas (see **Figure 7-2**). For example, the areas behind Little Silver Spur Road from Beechgate Drive to Crossfield Drive are within earthquake-induced landslide areas (Silver Spur Landslide Complex). There is also an area between Deep Valley Drive and Crenshaw Boulevard that is within an earthquake-induced landslide area. Areas on the south side of Indian Peak Road are located within earthquake-induced landslide areas as well. Additionally, an active landslide exists between Indian Peak Road and Deep Valley Road. This landslide owes its origin to the saturation of a massive fill by shallow groundwater infiltration. Therefore, multiple areas throughout the Planning Area are considered prone to seismically induced landslides (see **Figure 7-2**).

<sup>7</sup> City of Rolling Hills Estates. 1992. General Plan.

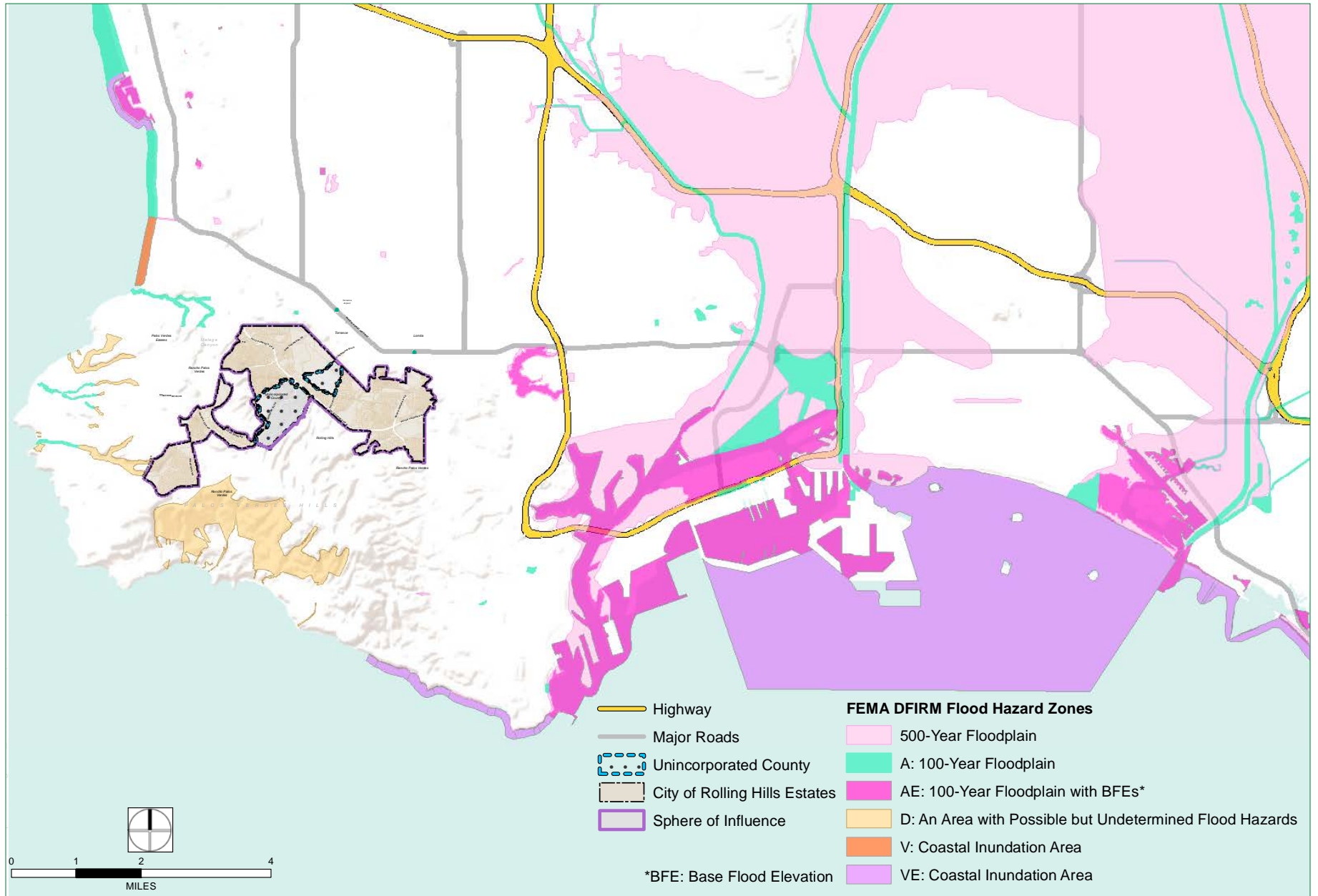
## Flooding

FEMA maps Flood-prone areas as part of the National Flood Insurance Program (NFIP). The NFIP requires identifying flood-prone areas and the purchase of insurance for buildings in special flood hazard areas. According to the FEMA Flood Insurance Rate Maps (FIRM), there are no special flood hazard areas in the Planning Area.

Although not mapped by FEMA, the canyons areas are shown in **Figure 7-4**. FEMA Flood Zones are natural flood hazard areas and are generally designated as open space. Storm-induced flood issues in the Planning Area include flash floods in the canyon areas, saturated mudflows of the hillsides, and shallow flooding in streets and residences associated with poor storm drainage. Due to the small size of the canyon watersheds in the City, most flash floods in the canyons are short-lived.<sup>[8]</sup>

<sup>8</sup> City of Rolling Hills Estates. 1992. General Plan.

Figure 7-4 FEMA Flood Zones



## Inundation Areas

### *Reservoir Inundation Areas*

Reservoirs throughout Southern California are designed to store domestic water and to protect property from floodwaters. However, seismic activity can compromise dam/reservoir structures and result in catastrophic flooding. As shown in **Figure 7-5**, Palos Verdes Reservoir is located in the eastern portion of the City, at the southeast corner of the East Palos Verdes Drive and North Palos Verdes Drive intersection.

The Metropolitan Water District of Southern California (MWD) owns and maintains the Palos Verdes Reservoir. The Los Angeles Department of Water and Power (DWP) controls the main inlet and outlet pipeline feeders from the reservoir. The reservoir supplies water to the California Water Service distribution network in the Peninsula.<sup>[9]</sup> The approximately 1,100 acre-foot reservoir was constructed in 1939 out of steel-reinforced concrete with earth-fill reinforcement banked around the perimeter and lined and covered with an impervious rubber liner. A ravine leads from the west spill gate to an underground flood control channel following the natural terrain to the east through Green Hills Memorial Park.<sup>[10]</sup>

The MWD Safety of Dams Section maintains continuous surveillance of the reservoir, including live-in personnel at the facility. The MWD also monitors piezometers in the embankment, which are connected to an automated alarm system to warn of increases in seepage, a critical precursor that can undermine the foundation and threaten the stability of the dam. The California Division of Safety of Dams reviews MWD reports detailing repairs,

maintenance, and monitoring operations at the reservoir and inspects the facility biannually. The reservoir is monitored by strong motion instrumentation and is anticipated to withstand a maximum credible earthquake on the Palos Verdes Fault. In the event of dam failure, the facility's emergency plans include cooperation with the DWP for emergency dewatering of the reservoir.<sup>[11]</sup>

MWD has rehabilitated the Palos Verdes Reservoir as part of MWD's Infrastructure Reliability Program to ensure the water distribution system provides a reliable water supply to customers in the Peninsula. Rehabilitation included removal of the existing concrete lining; regrading the clay sub-liner; modification of the existing spillway structure, inlet/outlet tower, and secondary inlet and outlet structures; installation of a new sub-drain system, asphalt concrete lining, geomembrane liner, and geomembrane floating cover; installation of a new valve and flow meter upstream of the reservoir; and addition of precast concrete instrumentation and water quality structure. Project construction began in January 2016 and was completed in the second quarter of 2019.<sup>[12]</sup>

As shown in **Figure 7-5**, approximately 12 acres of the Planning Area is within the inundation area of Palos Verdes Reservoir. Dam failure is not currently a severe safety threat to the City because only open space and a parking lot are in the inundation path of the reservoir. No residential developments or main thoroughfares in the City are within the potential inundation area of the Palos Verdes Reservoir.

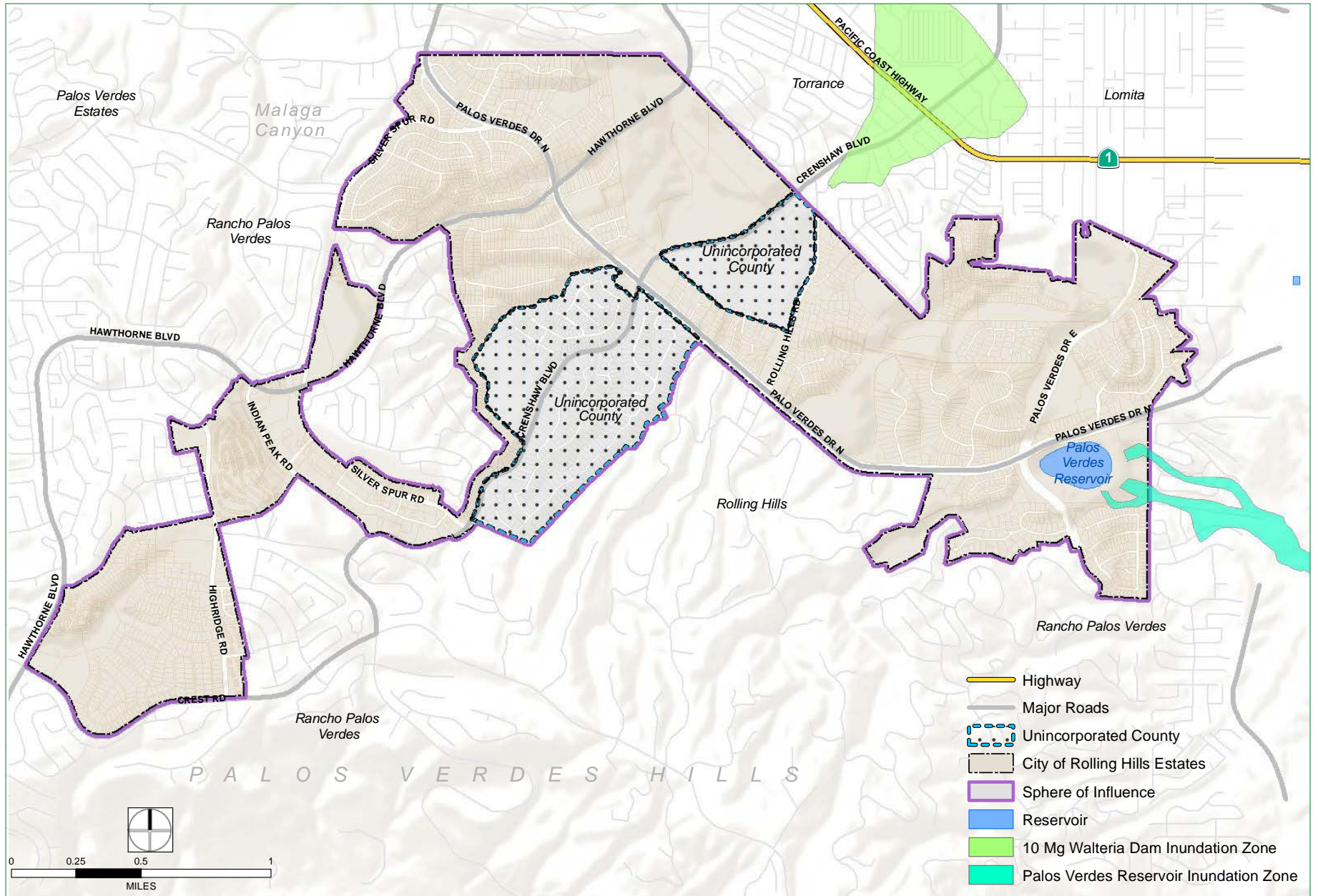
<sup>9</sup> City of Rolling Hills Estates. 1992. General Plan.

<sup>10</sup> City of Rancho Palos Verdes & City of Rolling Hills Estates. 2013. Multijurisdictional Hazard Mitigation Plan

<sup>11</sup> City of Rolling Hills Estates. 1992. General Plan.

<sup>12</sup> The Metropolitan Water District of Southern California. Capital Investment Plan Appendix FY 2021/22

Figure 7-5 Reservoir Inundation Areas



### *Tsunami Inundation*

Tsunamis are ocean waves generally caused by the tectonic displacement of the seafloor associated with shallow earthquakes, seafloor landslides, rock falls, and exploding volcanic islands. The Pacific Ocean is 1.25 miles from the project site, and according to the Tsunami Inundation Maps for Los Angeles County, the Planning Area does not fall within a tsunami inundation zone.<sup>[13]</sup>

## Soil Types, Erosion and Collapse Potential

### *Expansive Soils*

The Palos Verdes Peninsula is an uplifted tectonic fault block of seafloor sediments and volcanics that uncomfortably overlie older metamorphic rocks. It is estimated that the Palos Verdes Peninsula was submerged by the Pacific Ocean and uplifted three times during the Miocene epoch (8–15 million years ago) through movement along faults. During periods of inundation, erosion from mountains of the surrounding Los Angeles Basin deposited fine-grained sediments, which, in places, consist primarily of diatoms or volcanic ash.<sup>[14]</sup> Lava flows erupted upon or within the ocean sediments during the early phases of deposition. These sediments and volcanics are considered part of the Monterey Formation.

The Monterey Formation is a well-studied rock unit that is found along the west coast of North America. It is famous for its rich petroleum reserves that were formed from the abundant organic matter, primarily microscopic diatoms, contained within the

<sup>13</sup> California Emergency Management Agency, California Geological Survey, and University of Southern California. 2009. Tsunami Inundation Map for Emergency Planning, Orange County. March 15, 2009.

<sup>14</sup> City of Rancho Palos Verdes & City of Rolling Hills Estates. 2013. Multijurisdictional Hazard Mitigation Plan

sediments. In general, the Monterey Formation is composed primarily of deep marine deposits of diatomite, diatomaceous siltstone, mudstone, dolostone, and chert. Color varies from yellow to tans and grays to greens. It is usually thinly to moderately bedded. As stated previously, the Monterey Formation has been divided into three units within the Palos Verdes Peninsula: the Altamira Shale, the Valmonte Diatomite, and the Malaga Mudstone.<sup>[15]</sup> These deposits lend themselves in varying degrees to expansive soils and/or susceptibility to erosion.

Expansive soils generally have a significant amount of clay particles that can give up water (shrink) or take on water (swell). The change in volume exerts stress on buildings and other loads placed on these soils. The extent of shrink/swell is influenced by the amount and kind of clay in the soil. The occurrence of these soils is often associated with geologic units having marginal stability.

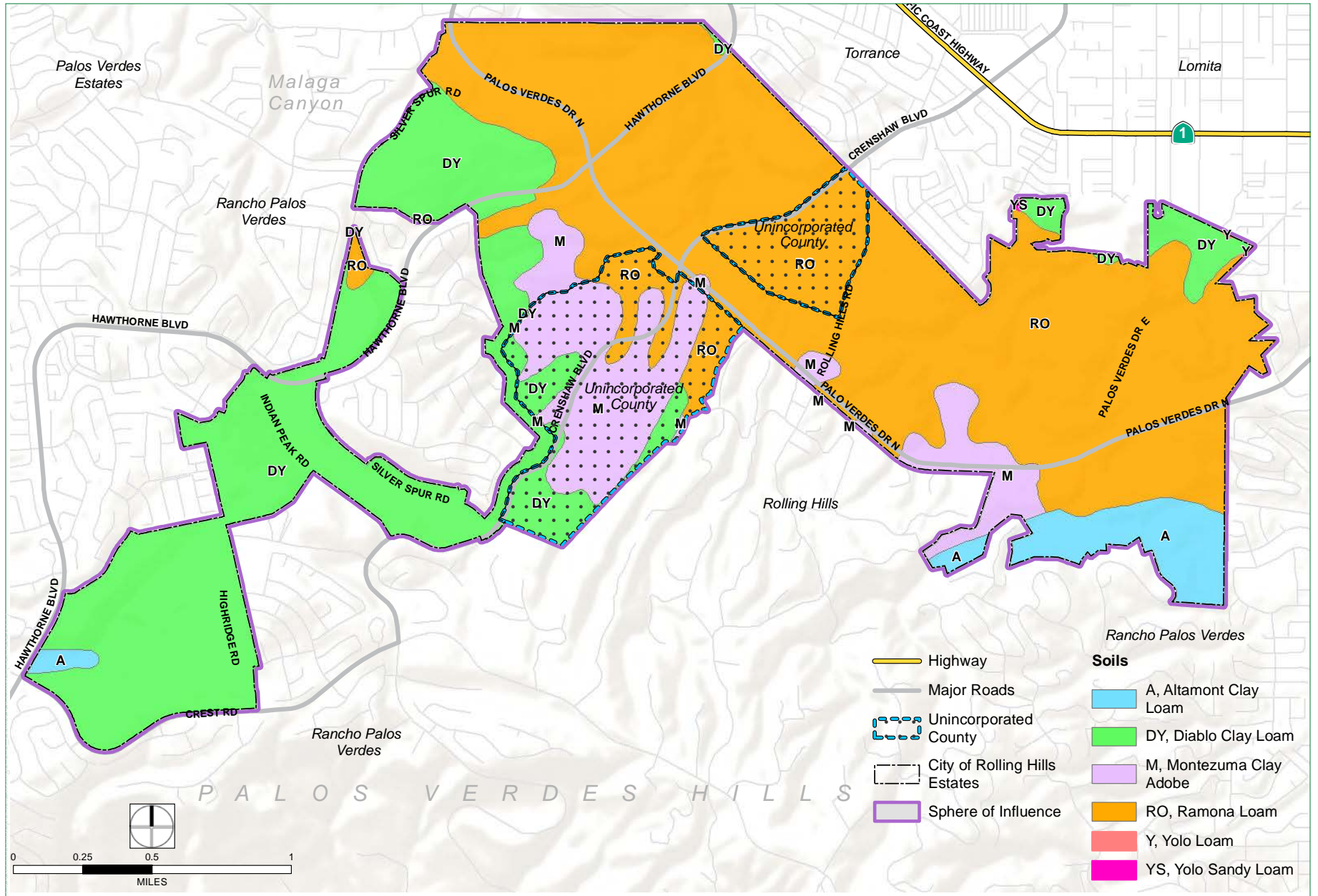
As detailed in **Figure 7-6**, Soils, the Planning Area is composed of Altamont Clay Loam (122 acres), Diablo Clay Loam (824 acres), Montezuma Clay Adobe (309 acres), Ramona Loam (1,487 acres), Yolo Loam (0.5 acres), and Yolo Sandy Loam (0.5 acres). Altamont Clay Loam, Diablo Clay Loam, and Montezuma Clay Adobe are expansive clayey soils with a high shrink/swell potential.

### *Erosion*

Throughout the Planning Area, areas of the open face or steep slopes and artificial fill have the potential for soil erosion as a result of storm-induced saturation. In particular, the San Pedro Formation, an unconsolidated marine sedimentary deposit along the northern

<sup>15</sup> City of Rancho Palos Verdes & City of Rolling Hills Estates. 2013. Multijurisdictional Hazard Mitigation Plan

Figure 7-6 Soils



flank of the City, is particularly susceptible to storm-induced landslides and erosion along slopes.<sup>[16]</sup>

### *Collapse Potential*

Hydroconsolidation, or soil collapse, typically occurs in recently deposited Holocene (less than 11,000 years before present time) soils that were deposited in an arid or semi-arid environment. Soils prone to collapse are commonly associated with man-made fill, wind-laid sands, and silts, and alluvial fan and mudflow sediments deposited during flash floods. Sudden substantial settlement may occur when saturated, and collapsible soils lose their cohesion. An increase in surface water infiltration (such as from irrigation) or a rise in the groundwater table, combined with the weight of a building or structure, may initiate settlement, causing foundations and walls to crack.

Although the majority of the City is located on a consolidated rock formation where there are no groundwater resources,<sup>[17]</sup> approximately 160 acres of the northwestern portion of the City is within the West Coast Subbasin of the Coastal Plan of Los Angeles Groundwater Basin. Groundwater levels within the northwestern portion of the City are between approximately 20 to 30 feet below sea level.<sup>[18]</sup> Additionally, it is possible that soil within localized areas could become saturated from long-term landscape irrigation, changes in site drainage, stormwater basins, off-site septic system use, or a pipe leak. Areas of the City composed of artificial fill, such as the Chandler Quarry Site, and Holocene-age alluvial sediments, have the potential for soil collapse.

<sup>16</sup> City of Rolling Hills Estates. 1992. General Plan

<sup>17</sup> State of California, Department of Water Resources. 1961. Bulletin 104: Planned Utilization of the Ground Water Basins of the Coastal Plain of Los Angeles County, June 1961.

<sup>18</sup> City of Rolling Hills Estates. 1992. General Plan

## Hazardous Materials

Hazardous materials come in the form of flammable, combustible substances, poisons, explosives, and radioactive materials. Concerns related to the release of hazardous materials include short- and long-term effects that exposure to a hazardous substance may have on a community.

Any releases or leaks of chemical compounds at or below ground level can lead to contaminated soils and/or groundwater. Depending on the amount of the chemical compound that has been released, contamination can migrate beyond the property boundary of the original release site. If previously contaminated areas are disturbed through grading or excavation operations, those areas could expose the public to health hazards from physical contact with contaminated materials or hazardous vapors. Improper handling or storage of contaminated soils and/or groundwater can further expose the public to these hazards or potentially spread contamination through surface water runoff or airborne dust. In addition, contaminated groundwater can spread down the gradient, potentially contaminating subsurface areas of surrounding properties.

The Los Angeles County Fire Department (LACoFD) is responsible for responding to hazardous material release incidents in the City of Rolling Hills Estates. The LACoFD has three hazardous material squads, with the closest one in the City of Torrance, approximately 3.1 miles north of the City. The LAFCoD's Health Hazard Response Team will also respond to ensure the appropriate cleanup, investigation, and removal of hazardous material spills or releases.



Figure 7-7 Hazardous Material Locations

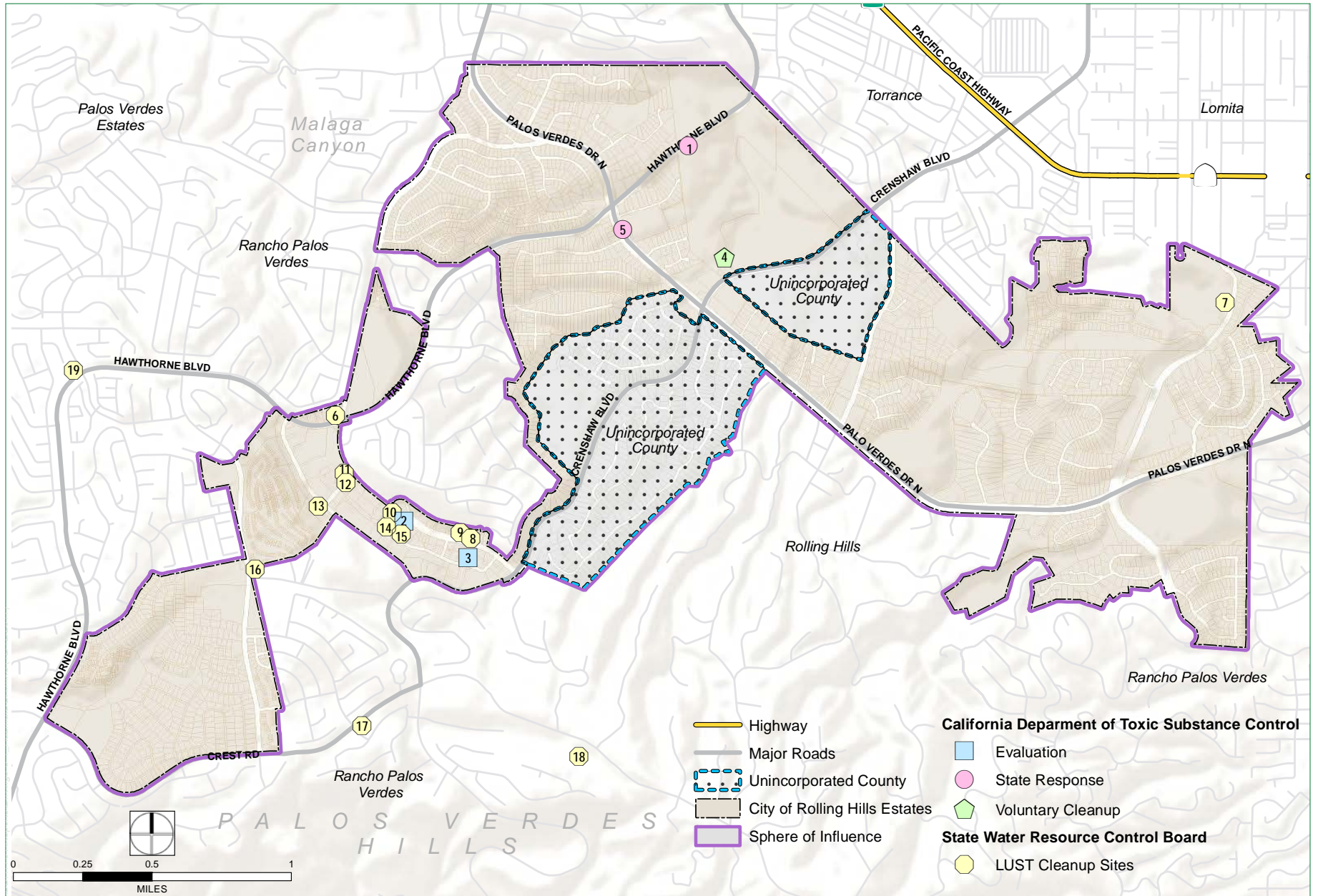
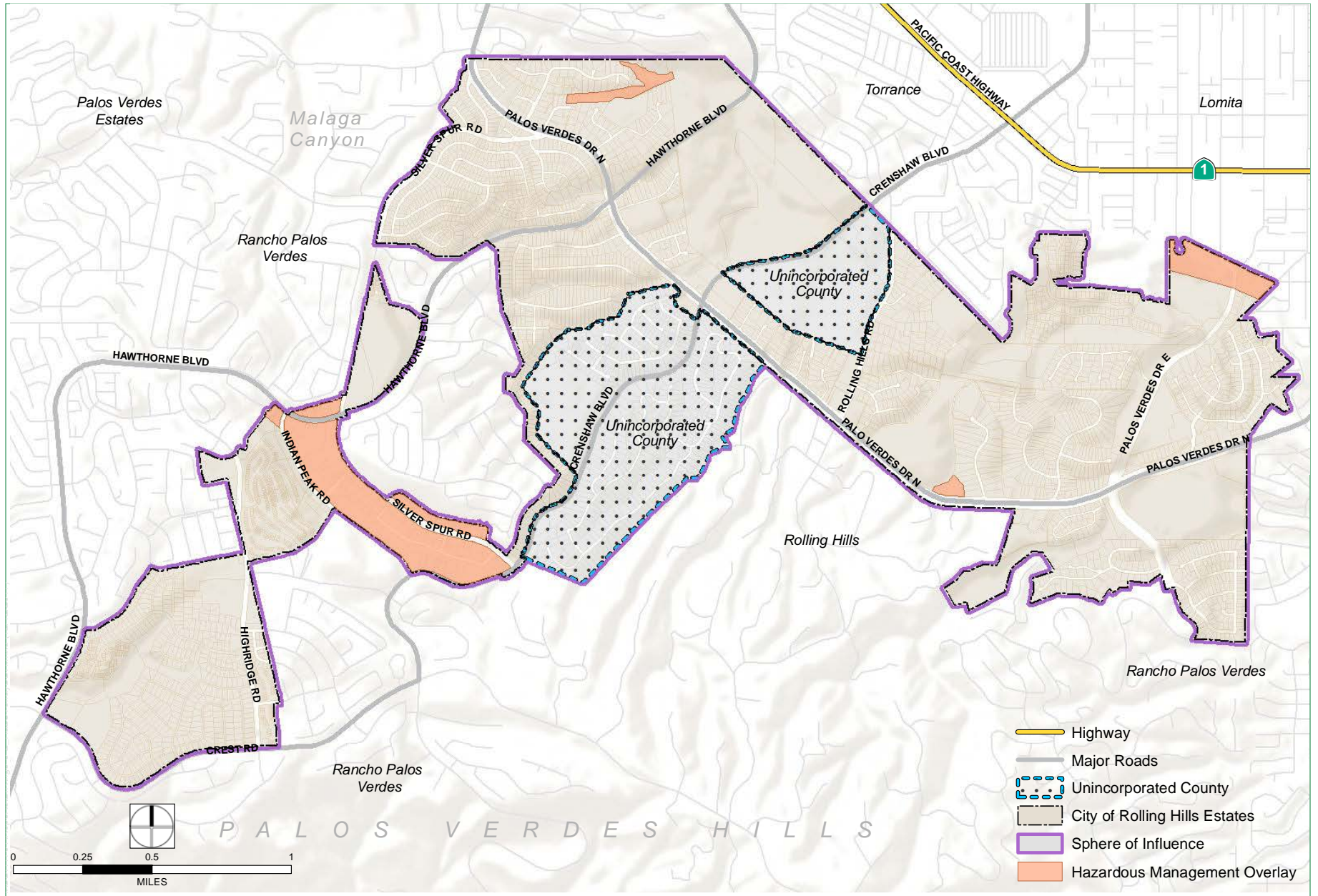


Figure 7-8 Hazardous Management Areas



The Department of Toxic Substances Control (DTSC) maintains a data management system called EnviroStor. EnviroStor is used for tracking cleanup, permitting, enforcement, and investigation efforts at hazardous waste facilities and sites with known contamination or sites where there may be a reason to investigate further.

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 (USTs), and land disposal sites.<sup>[19]</sup>

As identified by the SWRCB and the DTSC,<sup>[20]</sup> historical and ongoing activities that have resulted in the known or suspected release of hazardous materials to soil and groundwater in the City of Rolling Hills Estates are identified in **Table 7-2** and **Figure 7-7**, Hazardous Material Locations.

Most businesses in the City that handle hazardous and/or acutely hazardous substances in quantities above the reportable limits are located in the commercial area along Silver Spur Road, Deep Valley Drive, and Indian Peak Road. These businesses are located within approximately 2 miles of LACoFD Station No. 106 at 27413 Indian Peak Road in the City of Rolling Hills Estates. As depicted in **Table 7-2**, hazardous sites include gas stations, landfills,

cleaners, a fire station, an equestrian center, a sand and gravel excavation site, and an auto care facility.

As shown in **Figure 7-8**, Hazardous Management Area, there are four Hazardous Management Areas within the City. However, only one of the four areas is identified as being related to hazardous materials. This area is south of Silver Spur Road, north of Indian Peak Road, west of Crenshaw Boulevard, and at the city boundary just west of Hawthorne Boulevard, between the commercial uses and single-family residential units. This Hazardous Management Area is located within a commercial area and is considered to handle and/or store hazardous materials. As shown in **Figure 7-8**, 11 out of the 19 (58 percent) hazardous sites are identified within this larger Hazardous Management Area.

## Climate Change

Climate change can lead to changes in temperature, precipitation, and storm patterns, which pose threats of increase in sea level rise, wildfires, extreme heat days, flooding, etc. The City's Multi-jurisdictional Hazard Mitigation Plan (2020) documents these threats and provides a vulnerability assessment of these threats. Facilities that provide critical and essential services following a major emergency are of particular concern because these locations house staff and equipment necessary to provide important public safety, emergency response, and/or disaster recovery functions. Considering the seven critical facilities identified in Figure 7-10, the climate-related threat that the structures are most vulnerable to is wildfire. These structures are also vulnerable to earthquakes. The secondary impacts of earthquakes could be magnified by climate change. Soils saturated by repetitive storms could fail prematurely during seismic activity due to the increased saturation.

<sup>19</sup> State Water Resources Control Board. 2015. GeoTracker. <http://geotracker.waterboards.ca.gov/>.

<sup>20</sup> California Department of Toxic Substances Control. 2007. EnviroStor. <https://www.envirostor.dtsc.ca.gov/public/>, Accessed September 2017.

Table 7-2 Hazardous Material Sites

#	Facility	Address	Status	Site Type	Status Documentation
California Department of Toxic Substances Control ("EnviroStor")					
1.	Palos Verdes Landfill	25706 Hawthorne Boulevard	Certified/Operation & Maintenance	State Response	4-13-1999
2.	Courtesy Cleaners	627 Silver Spur Road	Refer: 1248 Local Agency	Evaluation	5-3-2004
3.	Gallerie Cleaners	865 Silver Spur Road	Refer: 1248 Local Agency	Evaluation	8-11-2004
4.	Peter Weber Equestrian Center	25401 Crenshaw Boulevard	No Further Action	Voluntary Cleanup	11-16-2015
5.	Hawthorne Canyon Landfill	Moccasin Lane	No Further Action	State Response	3-4-1997
State Water Resource Control Board ("GeoTracker")					
6.	Arco #3005	27301 South Hawthorne Boulevard	Open - Remediation	LUST Cleanup Site	9-29-2008
7.	Chandlers Sand and Gravel	26311 South Palos Verdes Drive	Completed - Closed	LUST Cleanup Site	6-22-2005
8.	Arco #6087	828 Silver Spur Road	Completed - Closed	LUST Cleanup Site	7-5-2017
9.	Arco #6087	828 Silver Spur Road	Completed - Closed	LUST Cleanup Site	10-25-1996
10.	Glendale Federal Property	601 Silver Spur Road	Completed - Closed	LUST Cleanup Site	4-12-1999
11.	Unocal #4822	27449 Silver Spur Road	Completed - Closed	LUST Cleanup Site	5-28-1997
12.	Tosco 76 Station #4822	27449 Silver Spur Road	Completed - Closed	LUST Cleanup Site	2-10-2009
13.	Los Angeles County Fire Station #106	27413 Indian Peak Road	Completed - Closed	LUST Cleanup Site	12-10-2010
14.	Palos Verdes Auto Care	627 Deep Valley	Completed - Closed	LUST Cleanup Site	10-2-2007
15.	Peninsula Car Care Center	627 Deep Valley Road	Completed - Closed	LUST Cleanup Site	11-4-1997
16.	Unocal #5848	28732 Highridge Road	Completed - Closed	LUST Cleanup Site	7-22-1993
17.	Unocal #5894	5656 Crest Road	Completed - Closed	LUST Cleanup Site	3-16-2012
18.	Palos Verdes School District	38 Crest Road	Completed - Closed	LUST Cleanup Site	9-24-1996
19.	Mobil #11-MRS	28103 South Hawthorne Boulevard	Completed - Closed	LUST Cleanup Site	4-28-2008

\*Sites 1 and 5 are former landfills and are currently closed.

Sources: <http://geotracker.waterboards.ca.gov/> Accessed September 2017.

<http://geotracker.waterboards.ca.gov/map/?CMD=runreport&myaddress=Rolling+Hills+Estates> Accessed September 2017.

**Table 7-3 Local Climate Change Snapshots**

Climate Change Factors	Observed (1961-1990)	Mid-Century (2035-2064)	
		Medium Emissions*	High Emissions*
<b>City Level</b>			
Annual Average Maximum Temperature (°F)	70.8	71.3 - 75.0	71.9 - 75.4
Extreme Heat Days (days)	4	3 to 7	3 to 10
Annual Precipitation (inches)	12.8	10.0 - 16.7	9.7 - 17.2
Maximum Length of Dry Spell (days)	154	134 - 176	136 - 177
<b>County Level</b>			
Annual Average Area Burned (acres)	Not available	54.1 - 61.1	51.2 - 59.4

The Medium Emissions Scenario represents a mitigation scenario where global CO2 emissions peak by 2040 and then decline. Statewide, temperature is projected to increase 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 21st century. Statewide, temperature is projected to 4-7 °C by the end of this century.  
Source: <https://cal-adapt.org/tools/local-climate-change-snapshot/>

The Cal-Adapt tool provides local climate change snapshots for cities and counties in California. **Table 7-3** provides the changes specific to Rolling Hills Estates.

## Public Safety Services

### Fire Services

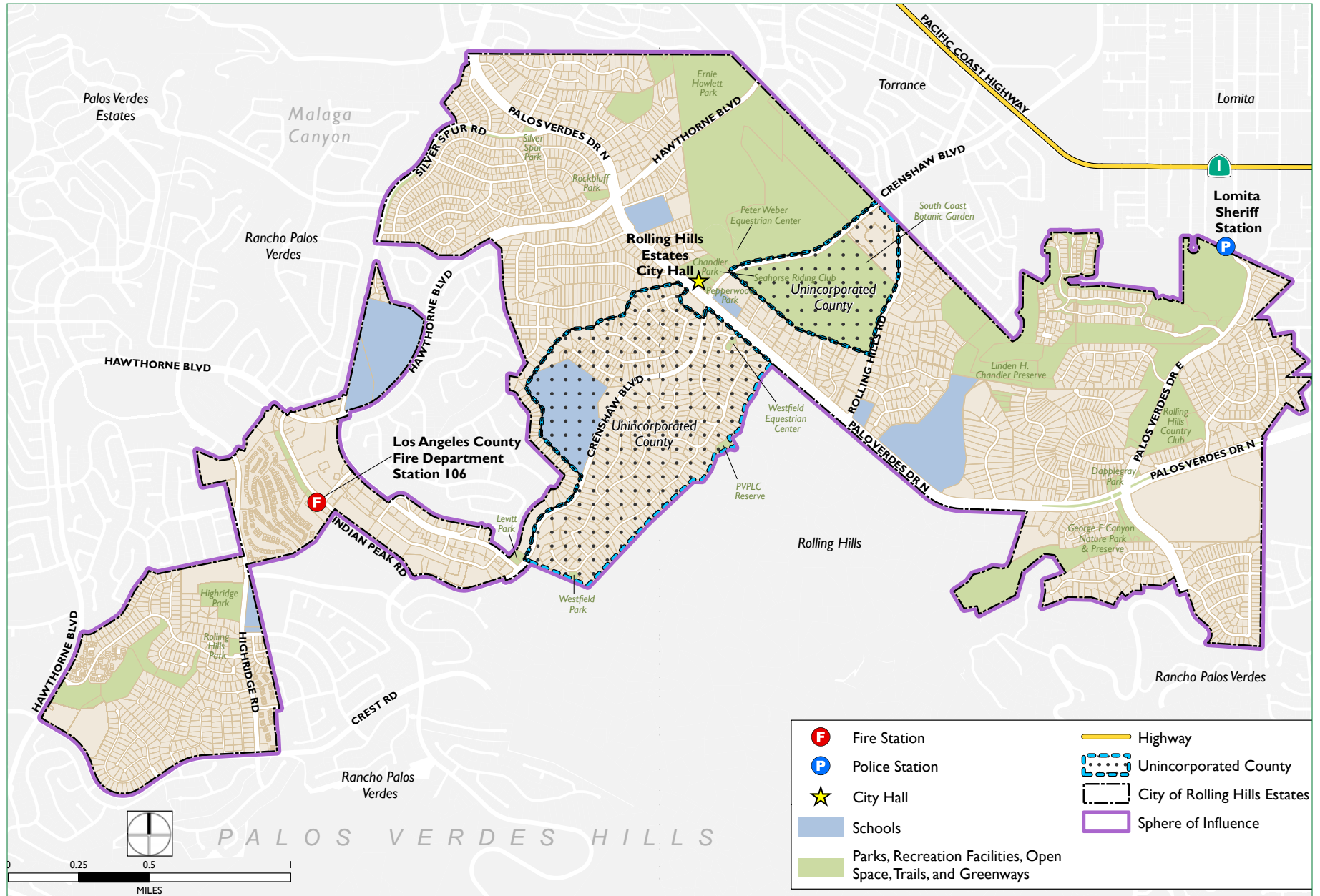
The Los Angeles County Fire Department (LACoFD) provides fire protection and emergency medical services as well as urban search and rescue and air operations. It services about 2,300 square miles, including 58 cities and unincorporated communities and about 4 million residents. There are 4,770 personnel in the LACoFD. The Planning Area is part of Division 1 of the LACoFD, and there is one fire station in the Planning Area, located at 27413 Indian Peak Road. This fire station is shown in **Figure 7-9**, Public Safety Facilities.

### Police Services

The Los Angeles County Sheriff’s Department (LASD) contracts police services in the Planning Area. Rolling Hills Estates and its sphere of influence are served by the Lomita Station. As shown in **Figure 7-9**, the Lomita Station is located just north of Rolling Hills Country Club at 26123 S. Narbonne Avenue in Lomita. The Lomita Station serves all of Rolling Hills Estates, Rolling Hills, and Rancho Palos Verdes, and portions of Lomita and unincorporated Los Angeles County. According to the LASD, as of 2017, the Lomita Station has 82 sworn officers and 23 civilian staff members. The total staffing for the Lomita Station is shown in **Table 7-4**.

As of 2017, the Lomita Station of the LASD is meeting its service ratio and response time standards. Service ratio standards are set in collaboration with the Rolling Hills Estates City Manager and the Unit Commander of the Lomita Station in the Service Level Authorization (575) form. For the fiscal year 2016-2017, the agreed-upon ratio was one deputy per 1,024 residents. According to the LASD, the Lomita Station is meeting this standard with 98 percent compliance.

Figure 7-9 Public Safety Facilities



**Table 7-4 Los Angeles County Sheriff’s Department (Lomita Station) Staffing, 2017**

Divisions		Number of Employees/Volunteers
	Traffic	7
	Street Crime	48
	Detective Unit	14
	Communications (Dispatch)	9
	Records	10
	Volunteers in Public Safety	40
	Community Service Officers	1
	Other <sup>1</sup>	0
Officers <sup>2</sup>		Number of Employees/Volunteers
	Traffic Officers	4
	School Resource Officers	3
	Investigations Officers	12
	Reserve Officers	10
	Other <sup>3</sup>	21

1. Other units, including SWAT, canine, aero, narcotics, homicide, arson, forgery fraud, special victims, major crimes bureau, emergency services detail, human trafficking, scientific services, Internal Affairs Bureau, and Internal Criminal Investigations Bureau are centralized within the Los Angeles Sheriff’s Department and used upon request.  
 2. The numbers in this table do not add up to the total number of officers stationed at the Lomita Station (82) due to limited data availability and possible overlapping duties.  
 3. Includes 5 jailers, 11 sergeants, 4 lieutenants, and 1 captain.

As shown in **Table 7-5**, as of 2017, the Lomita Station exceeds LASD-wide response time standards as well as standards set by the LASD Lomita Station. Though emergent call response time is slower in Rolling Hills Estates than the rest of the Lomita Station service area, on average, response to incidents in Rolling Hills Estates is faster compared to responses throughout the full-service area of the Lomita Station. However, according to the LASD, traffic along major corridors, including Palos Verdes Drive North, on occasion contributes to slow response times. As of 2017, the LASD does not see a need for a new facility or expanded services.

### Critical Facilities

The MJHMP identifies critical facilities for Rolling Hills Estates. These are based on FEMA guidance that separates critical facilities into the following five categories based on their loss potential:

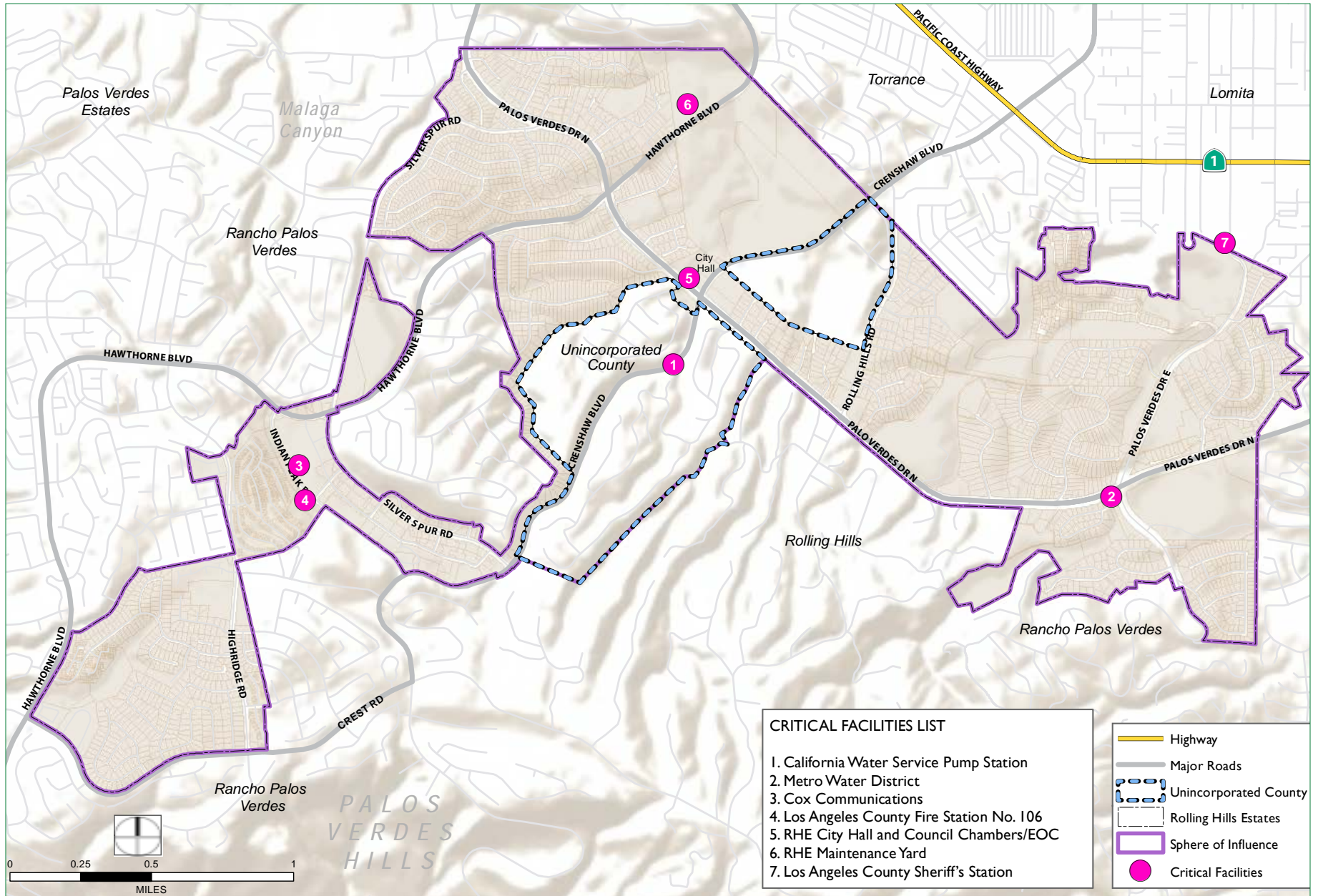
- **Essential Facilities** are essential to the health and welfare of the whole population and are especially important following hazard events. Essential facilities include hospitals and other medical facilities, police and fire stations, emergency operations centers and evacuation shelters, and schools.

**Table 7-5 Response Time Standards (Minutes), Fiscal Year 2016-2017**

Type	Standard Response Times		Lomita Station Average Response Times	
	LASD	LASD Lomita Station	Full-Service Area	Rolling Hills Estates Only
<b>Emergent</b>	10	7	4.5	4.7
<b>Priority</b>	20	20	7.7	7.7
<b>Routine</b>	60	60	22.5	20.9
<b>Average</b>			<b>19.3</b>	<b>18.2</b>

Source: Los Angeles County Sheriff’s Department, 2017

Figure 7-10 Critical Facilities





- **Transportation Systems** include airways (airports, heliports); highways (bridges, tunnels, roadbeds, overpasses, transfer centers); railways (trackage, tunnels, bridges, rail yards, depots); and waterways (canals, locks, seaports, ferries, harbors, drydocks, piers).
- **Lifeline Utility Systems** are those such as potable water, wastewater, oil, natural gas, electric power, and communication systems.
- **High Potential Loss Facilities** are facilities that would have a high loss associated with them, such as nuclear power plants, dams, and military installations.
- **Hazardous Material Facilities** include facilities housing industrial/hazardous materials, such as corrosives, explosives, flammable materials, radioactive materials, and toxins.

There are 6 critical facility locations in Rolling Hills Estates and one outside the Planning Area. These facilities are shown in **Figure 7-10**, Critical Facilities.

## Disaster and 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 and animals can be evacuated. Rolling Hills Estates has the added challenge of evacuating horses. The County of Los Angeles designates official disaster and evacuation routes. The designated routes in or near the planning area include Pacific Coast Highway (Highway 1), Hawthorne Boulevard, Crenshaw Boulevard, Western Avenue (Highway 213), Palos Verdes Drive West, and Interstate Highway

110. In addition to the County identified disaster and evacuation routes, other city routes are also identified in **Figure 7-11**. These connect to the County identified routes as well as public safety facilities, shown in **Figure 7-9**. The routes of escape from disaster-stricken areas will depend on the scale, scope, and direction of the disaster. The City will continue to evaluate the viability of each of these routes to serve as evacuation corridors.

In addition to identifying evacuation routes, Government Code 65302 (g) requires the communities to identify residential developments in any hazard area identified in the safety element that do not have at least two emergency evacuation routes. **Figure 7-12** identifies these neighborhoods.

Figure 7-11 Disaster and Evacuation Routes

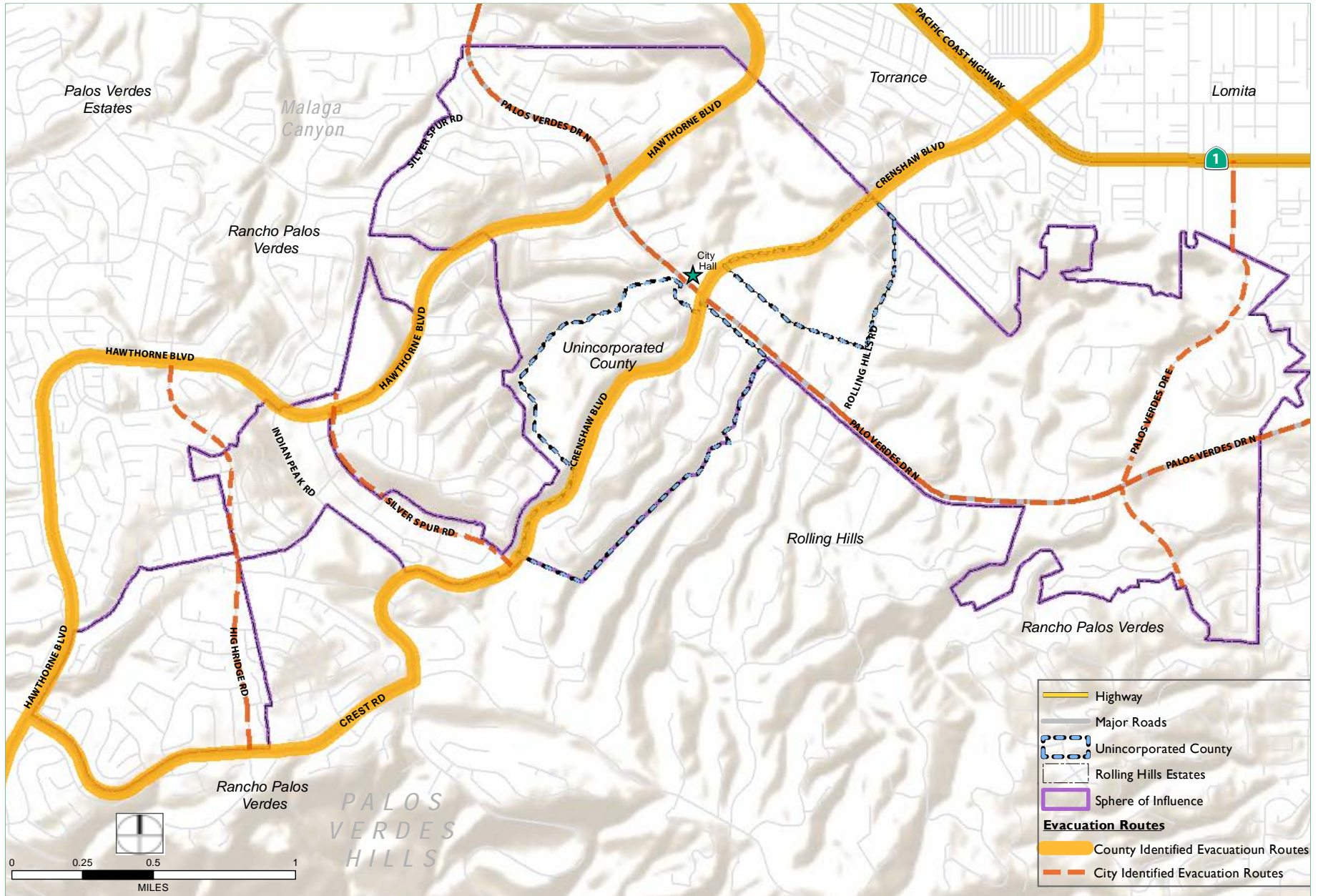
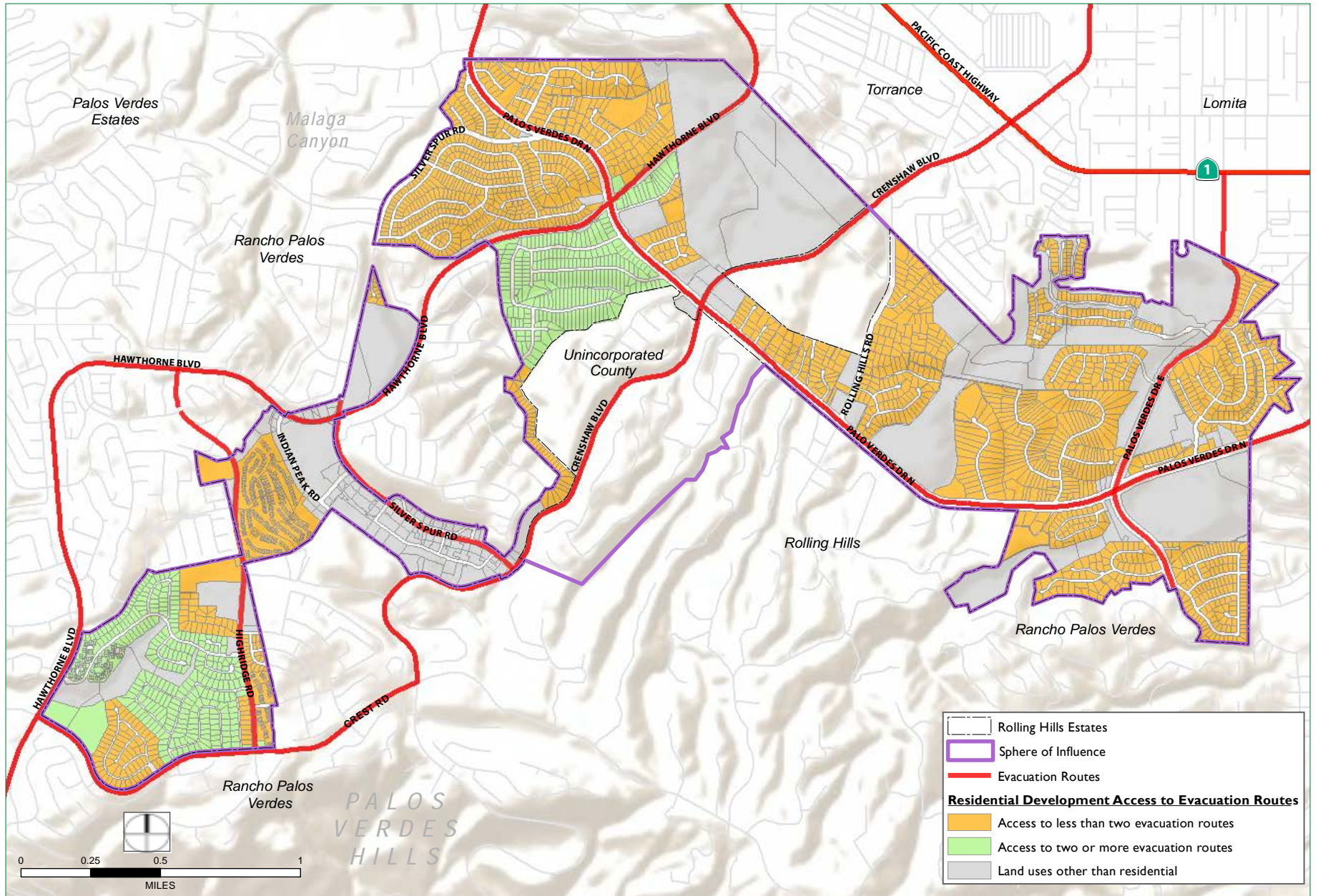


Figure 7-12 Access to Evacuation Routes





# Goals, Policies, & Implementation Measures

# Goals, Policies, & Implementation Measures

This section introduces the draft goals, policies, and implementation measures proposed for the Safety Element of the General Plan Update for Rolling Hills Estates. Goals, policies, and implementation measures are defined as:

- **Goals:** Topical statements of broad direction and philosophy
- **Policies:** Reinforcing statements of the overarching goals of the General Plan
- **Implementation Measures (IM):** Action-oriented statements to help Rolling Hills Estates actualize their goals and policies

## Natural Hazards



<b>Goal 7.1</b>	Protect lives and prevent damage to property and the environment from natural hazards.
<b>Policy 7.1.1</b>	<b>Geologic and Seismic Activities: Support earthquake strengthening and provision of alternative or backup services, such as water, sewer, electricity, and natural gas pipeline connections, especially in areas of high seismic or geologic high hazard or where weak segments are identified by existing or future studies.</b>
IM 7.1.1.1	The City will require future development within the potentially active fault trace areas to provide geotechnical studies indicating the location of the fault trace relative to proposed improvements and identify appropriate mitigation.
IM 7.1.1.2	The City will review the location of proposed utilities in relation to the active fault traces during the design review process and will require the utility lines crossing active fault traces to be specifically designed to withstand the earth's expected movement in these locations or to be relocated.
IM 7.1.1.3	The City will evaluate the seismic risk to existing city-owned infrastructure and, where appropriate, examine the feasibility of mitigating the risk over time.

<b>Policy 7.1.2</b>	<b>Geologic and Seismic Activities: Require fault investigations along traces of the Palos Verdes and Cabrillo Faults to comply with guidelines implemented by the Alquist-Priolo Special Studies Zone Act.</b>
IM 7.1.2.1	The City will explore funding sources to create an inventory of hazardous or substandard structures in the City that may collapse in the event of an earthquake and prepare a program for their removal or work with the property owners to rehabilitate the structures.
IM 7.1.2.2	The City will require propriety owners to submit geological studies for the development or major renovations of the properties along those faults that are shown to be active or from fault traces where the risk cannot be determined. The buildings for human occupancy on such properties will be set back a minimum of 50 feet from the identified fault trace.
IM 7.1.2.3	The City will continue to use the California Building Code (CBC) and update it as necessary to ensure seismic safety.
<b>Policy 7.1.3</b>	<b>Geologic and Seismic Activities: Encourage slope mitigation on potentially unstable hillside areas, especially slopes with recurring failures or where City property/public right-of-way is threatened.</b>
IM 7.1.3.1	The City will continue to enforce hillside grading standards to minimize the hazards of erosion and slope failure.

IM 7.1.3.2	The City will require that new construction and significant alterations to properties located within potential landslide areas be evaluated for site stability, including the potential impact to other properties, during project design and review.
<b>Policy 7.1.4</b>	<b>Wildfire: Encourage property owners to incorporate fire-safe and erosion-safe design during new development or renovations.</b>
IM 7.1.4.1	The City will publish and/or offer to property owners a brochure outlining groundcover that reduces the risk of wildfire to encourage residents. The brochure will also discuss native, drought-tolerant slope cover maintenance and will identify appropriate irrigation methods to maintain plant cover and reduce the potential for erosion. It will be distributed via the City's quarterly newsletter and be available on the website.
IM 7.1.4.2	The City will revisit the site design and maintenance standards periodically to incorporate new and emerging technologies.
IM 7.1.4.3	The City will continue to implement Los Angeles County standards for fire protection for new development until Los Angeles County meets or exceeds the statewide minimums, or else the City will develop such standards to meets or exceeds the statewide minimums.
IM 7.1.4.4	The City will require all new development to incorporate fire-safe design by requiring property owners to submit plans showing ingress/egress, evacuation routes, emergency vehicle access, visible home addressing and signage, and fuel modification/fire-retardant zones.

IM 7.1.4.5	The City will require erosion prevention plans for new development on hillside areas by revegetation or other acceptable measures.
<b>Policy 7.1.5</b>	<b>Wildfire: Reduce the risk of wildfire hazards by working with homeowner associations, business park associations, and the Los Angeles County Fire Department to maintain fire-retardant landscaping and buffer zones in areas of high wildfire risk.</b>
IM 7.1.5.1	The City will work with the Los Angeles County Fire Department to review current standards for wildfire prevention. The City will work with the Fire Department in improving standards and/or regulations where required.
IM 7.1.5.2	The City will 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.
IM 7.1.5.3	The City will treat the city-owned roadways identified as evacuation routes as firebreak areas and maintain these roadways adequately.
<b>Policy 7.1.6</b>	<b>Wildfire: Reduce the risk of wildfire hazards after-effects such as adverse air quality, erosion, and landslide.</b>
IM 7.1.6.1	The City will plan to re-vegetate slopes on City-owned property soon after wildfires with desirable native species that support native habitat and have robust root systems to keep soil in place.
IM 7.1.6.2	The City will work with appropriate agencies and property owners to replant fire-affected areas soon after wildfires.

IM 7.1.6.3	Develop a protocol to alert residents when wildfire smoke endangers air quality and encourage residents, visitors, and stakeholders to sign up for the City's emergency notification system.
<b>Policy 7.1.7</b>	<b>Wildfire: Reduce the risk of wildfire hazards by cooperating with contracted agencies that provide infrastructure for fire suppression.</b>
IM 7.1.7.1	The City will work with Los Angeles County Fire Department during every contract renewal period to review adequate availability of fire suppression equipment including fire engines to support planned development in the City.
IM 7.1.7.2	The City will cooperate with Los Angeles County Fire Department to make sure that the fire hydrants for existing and new development are installed per code and adequately maintained.
IM 7.1.7.3	The City will cooperate with Cal Water to make sure that the present and future water supply needs are met adequately.
IM 7.1.7.4	The City will cooperate with Cal Water for infrastructure upgrades needed to maintain the integrity of water supply.
<b>Policy 7.1.8</b>	<b>Flooding: Maintain drainage systems to minimize local flooding and debris flows.</b>
IM 7.1.8.1	The City will cooperate with the Los Angeles County Public Works Department in maintaining storm drains in the City.
IM 7.1.8.2	The City will update the website with educational material on the maintenance of drainage systems that are the homeowner's responsibility.



IM 7.1.8.3	The City will explore the possibility of incorporating green infrastructure requirements such as rain gardens, bio-swales, permeable pavings, green parking, and so on, in its municipal code for new developments and major renovations.
<b>Policy 7.1.9</b>	<b>Flooding: Maintain and make the most recent flood hazard information available to the residents.</b>
IM 7.1.9.1	The City will work with local, State, and federal agencies to update, monitor, and maintain the most current flood hazard and floodplain information and make it available on the City's website.
IM 7.1.9.2	The City will make the most recent Multi-jurisdictional Hazard Mitigation Plan available on the City website.
IM 7.1.9.3	The City will direct residents to the flood-related information via a quarterly newsletter.

## Climate Change



<b>Goal 7.2</b>	<b>Increase the City's resiliency to climate change impacts.</b>
<b>Policy 7.2.1</b>	<b>Update the City's Climate Action Plan on a regular basis.</b>
IM 7.2.1.1	Upon the next update of the Climate Action Plan (CAP), the City will merge the CAP with the SBCCOG Climate Adaptation Strategies for Rolling Hills Estates to create one document.

<b>Policy 7.2.2</b>	<b>Continue to support the resiliency efforts to hazards that could be exacerbated by climate change.</b>
IM 7.2.2.1	The City will implement policies and strategies outlined in the Conservation Element, the Open Space and Recreation Element, and the Sustainability Element that relate to resiliency. These include strategies such as: <ul style="list-style-type: none"> <li>Establishing an Urban Forestry Program to maintain a resilient and healthy tree canopy in the City.</li> <li>Encouraging private developments to use cool surfaces by offering incentives such as reduced minimum parking requirements for projects that use cool pavement.</li> </ul>
<b>Policy 7.2.3</b>	<b>Designate weather control shelters and develop strategies to protect residents from extreme heat, cold, or power outages.</b>
IM 7.2.3.1	The City will identify public buildings, specific private buildings, and/or institutions with air conditioning as public cooling shelters during periods of extreme heat or power outage. This list of buildings will be available on the City's website.
IM 7.2.3.2	The City will collaborate with Southern California Edison on educating the public about power shut-off notifications and updates.

IM 7.2.3.3	Partner with health care providers and non-profit organizations to ensure that vulnerable populations that are homebound during extreme heat are delivered water, medicine, and other critical resources. Local non-profits, such as the Palos Verdes Peninsula Village and Palos Verdes Peninsula Seniors, maybe potential partners in these efforts.
IM 7.2.3.4	Develop a protocol for how the City will respond to extreme heat events. For example, on extreme heat days, the City might alert residents, open more cooling centers or expand cooling center hours, modify bus routes to provide service to cooling centers, give City outdoor workers time off or alternate duties, etc.
IM 7.2.3.5	Include extreme heat days as a part of the Emergency Operations Plan upon its next update.

IM 7.3.2.1	The City will ensure that the Los Angeles County Fire Department conducts regular inspections of major hazardous materials users in the City. The Emergency Services Coordinator will monitor the results.
IM 7.3.2.2	The City will work with the contracted law enforcement agency to ensure that no hazardous materials are dumped in any area of the City.
IM 7.3.2.3	The City will meet with the Los Angeles County Sanitation Districts to review the Districts' reclamation and redevelopment plans for the Palos Verdes landfill. The City will cooperate with the District to ensure future development plans are consistent with those outlined in the General Plan.
IM 7.3.2.4	The City will continue to partner with Los Angeles County Household Hazardous Waste Collection Program (or an equivalent program) to safely dispose of toxic substances, household hazardous waste, electronic waste, and other hazardous materials.
IM 7.3.2.5	The City will advertise household hazardous waste collection days and locations on the website and in the quarterly newsletter.

## Hazardous Materials



**Goal 7.3** Protect lives and prevent damage to property and the environment from exposure to hazardous materials.

**Policy 7.3.1** Restrict the travel of vehicles carrying hazardous material through the City.

IM 7.3.1.1 The City will work with the contracted law enforcement agency and the California Highway Patrol to enforce licensing and current laws regarding the transport of hazardous materials through the City.

**Policy 7.3.2** Monitor and limit the production and disposal of hazardous materials in the City.

## Partnership



**Goal 7.4** Maintain the safety of the community and promote partnerships between residents and law enforcement.

<b>Policy 7.4.1</b>	<b>Work with the contracted law enforcement agency in crime prevention and law enforcement efforts to make sure there are adequate resources to meet the needs of the community.</b>
IM 7.4.1.1	The City will conduct an annual review of its contract with the law enforcement agency to ensure current service standards are maintained. Alternatives will be considered if service levels are considered inadequate.
<b>Policy 7.4.2</b>	<b>Collaborate with neighboring jurisdictions, Los Angeles County, California State, and U.S. federal agencies in crime prevention and law enforcement.</b>
IM 7.4.2.1	The City will cooperate with all law enforcement agencies in combating crime.
IM 7.4.2.2	The City will monitor crime statistics for the Peninsula and the City and meet with law enforcement agency on a regular basis to discuss programs, ordinances, and other measures that will be effective in combating crime.
IM 7.4.2.3	The City will work with contracted law enforcement agency to educate the public on active shooter scenario public responses through employer training and public education.
<b>Policy 7.4.3</b>	<b>Promote after school programs, citizen volunteer programs, and neighborhood watch programs to help maintain a safe environment.</b>

IM 7.4.3.1	The City will work with schools to provide them guidance to establish after school programs that focus on safety and active shooter scenario public responses.
IM 7.4.3.2	The City will work with neighborhoods to provide guidance on crafting a volunteer program based on the national neighborhood watch program. The step-by-step guide for creating a neighborhood watch group will be available on the City website.
<b>Policy 7.4.4</b>	<b>Encourage Crime Prevention Through Environmental Design (CPTED) principles for new development projects, major renovations, and public projects.</b>
IM 7.4.4.1	The City will work with neighborhood associations to explore opportunities to provide adequate street lighting to discourage crime while preventing unnecessary light pollution or spillover.
IM 7.4.4.2	The City will update the zoning ordinance to include applicable CPTED principles and review new development and major renovations to comply with these principles. These may include: <ul style="list-style-type: none"> <li>• Indicating transitions from the public environment to semi-private and private areas and distinguishing between public and private areas.</li> <li>• Maximizing the visibility of people, parking areas, vehicles, and site activities through strategic placement of windows, doors, walkways, parking lots, and vehicular routes.</li> </ul>

## Emergency Preparedness



**Goal 7.5** Minimize the risk to life and property through emergency preparedness and public awareness.

**Policy 7.5.1** Monitor and maintain adequate levels of emergency services in the City.

IM 7.5.1.1 The City will work with appropriate agencies to ensure that the designated critical facilities identified in the Local Hazardous Mitigation Plan as emergency centers to serve the entire City are adequately maintained.

IM 7.5.1.2 The City will cooperate with the Los Angeles County Office of Emergency Management and utilize County disaster reporting software to monitor and convey conditions and operational standards as a result of incidents, emergencies, or disasters.

IM 7.5.1.3 The City will work with the Los Angeles County Fire Department to ensure that fire protection services are maintained at adequate levels. City staff will monitor the City's fire protection rating and cooperate with the Fire Department in the correction of deficiencies.

IM 7.5.1.4 The City will work with the contracted law enforcement agency to ensure that law enforcement services are maintained at adequate levels.

IM 7.5.1.5 The City will coordinate with first responders to implement and maintain medical assistance procedures in the event of a disaster.

IM 7.5.1.6 The City will coordinate with citizen groups and organizations on the Peninsula to identify a viable body to provide emergency assistance in the event of a disaster or health crisis.

**Policy 7.5.2** Maintain, update, and support local and regional emergency preparedness, operations, mitigation, and rebuilding planning efforts.

IM 7.5.2.1 The City will continue to work with the Los Angeles County Disaster Management Area G group to improve upon inter-jurisdictional cooperation and communication and to implement the Area G Strategic Plan.

IM 7.5.2.2 The City will coordinate with Peninsula cities to develop a Multi-jurisdictional Wildfire Protection Strategy/Plan.

IM 7.5.2.3 The City will prepare and regularly update its Emergency Operations Plan, which includes mitigation, preparedness, response, and recovery planning.

IM 7.5.2.4 The City will maintain and update its Multi-jurisdictional Hazard Mitigation Plan per the Federal Emergency Management Agency's Guidelines and in conjunction with the General Plan Safety Element to ensure consistency and relevancy of hazards and issues within the City.

IM 7.5.2.5 The City will create an expedited process for permit approval following a major disaster to bolster reconstruction efforts.

**Policy 7.5.3** Maintain an adequate stock of emergency preparedness equipment and supplies.

IM 7.5.3.1	A City staff person will periodically complete an inventory of supplies and personnel as described in the Emergency Preparedness Plan and, where necessary, acquire supplemental disaster communication equipment and other equipment, tools, and supplies that could be used in the event of a major disaster.
IM 7.5.3.2	A City staff person will be assigned the task of compiling a list of supplies and maintaining an adequate stockpile of an emergency supply for all its employees for a three-day period.
<b>Policy 7.5.4</b>	<b>The City will develop and maintain an evacuation plan in the event of a disaster and include it in the Emergency Operations Plan.</b>
IM 7.5.4.1	The City will identify rights-of-way that do not provide adequate clearance for emergency vehicles; for areas not accessible, a contingency plan will be developed to reach and evacuate people in need of treatment.
IM 7.5.4.2	The City will work with Los Angeles County and neighboring jurisdictions to catalog roadways that can serve as evacuation routes from the Palos Verdes Peninsula in case of emergencies.
IM 7.5.4.3	The City will create and maintain a large animal evacuation plan as a part of the evacuation strategy.

## Essential Services



<b>Goal 7.6</b>	<b>Minimize the risk to life and provide essential services during a public health crisis.</b>
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<b>Policy 7.6.1</b>	<b>Make public health crises an integral part of the City's preparedness and response planning.</b>
IM 7.6.1.1	The City will include an operations protocol for public health crisis scenarios in the City's Emergency Operations Plan.
IM 7.6.1.2	The City will analyze its response after each declared emergency to inform future preparedness and future responses.
IM 7.6.1.3	The City will ensure that future preparedness/response planning efforts are informed by applicable scientific research and modeling by responsible agencies and organizations.
IM 7.6.1.4	In the event of federal, State, or local health emergency declarations, the City will follow the direction and guidance of appropriate public health and infrastructure agencies.
<b>Policy 7.6.2</b>	<b>To the extent possible, enable City employees to provide essential services to the community.</b>
IM 7.6.2.1	The City will keep the essential City services operational and timely to the extent possible in the event of public health crisis scenarios.
IM 7.6.2.2	The City will update the database of its employees' contact information annually so that employees are reachable during public health emergencies.
IM 7.6.2.3	The City will, to the extent available, ensure that City employees have access to appropriate protective equipment to provide essential services in the event of a public health emergency.

IM 7.6.2.4 The City will consider the usability in telecommuting conditions and physical distancing scenarios when investing in the City's workplace infrastructure.

## Awareness



**Goal 7.7** Minimize the risk to life and property by increasing awareness of being prepared for timely response to hazards.

**Policy 7.7.1** Educate the community to create a personal preparedness plan.

IM 7.7.1.1 The City will prepare a brochure for private businesses that outlines recommendations for stockpiling supplies for employees and includes preparedness for extreme heat days. The City will make the brochure available on the website.

IM 7.7.1.2 The City will periodically update the personal emergency preparedness brochure.

IM 7.7.1.3 The City will reach out to the community during City-organized festivals to educate on personal emergency preparedness.

IM 7.7.1.4 Encourage residents, visitors, and stakeholders to sign up for the City's emergency notification system via social media messaging, City-organized festivals, newsletters, and website.

IM 7.7.1.5 The City will continue to seek volunteers and partner with the Community Emergency Response Team (CERT) program, Los Angeles County Disaster Communication Service, and Equine Response Team to educate the volunteers about disaster preparedness for hazards.

**Policy 7.7.2** Educate City officials periodically on the process and protocols to be followed in times of disaster.

IM 7.7.2.1 The Emergency Services Coordinator will conduct quarterly meetings with City officials and staff to ensure they are familiar with procedures outlined in the Emergency Preparedness Plan, Emergency Operations Plan, and Area G Strategic Plan.

IM 7.7.2.2 City staff will conduct a meeting within three months after each term to ensure that the City Council and Planning Commission are familiar with the expedited process for permit approval following a major disaster.

IM 7.7.2.3 The City will establish a line of command to ensure that the decision-making process will function satisfactorily in the event of a major disaster.

**Policy 7.7.3** Increase public awareness of the City's emergency response plans.

IM 7.7.3.1 The City will prepare a brochure outlining procedures to follow in the event of a major disaster. The brochure will be made available on the website, and the link will be distributed to the community via newsletter, social media, and e-blast.

IM 7.7.3.2 The City will reach out to the community during City-organized festivals to educate on City emergency response plans.

IM 7.7.3.3 The City will send brochures outlining emergency procedures to all critical facilities. The City will cooperate with the Los Angeles County Fire Department during the inspection of these facilities.