City of Ventura Safety Element

December 2024

RPC 2 (b) (ii)

Policy Framework
Ventura General Plan Update

Table of Contents

RPC 2 (b) (ii)

Figures

RPC 2 (b) (ii)

Introduction

The City of Ventura is committed to protecting the community from the impacts of natural and human-induced hazards and building resilience to projected climate change risks. In some cases, the City can work to prevent hazards, but for the most part, the Safety Element includes measures to address hazards that may be inevitable, even with the best preventative measures in place. This Safety Element describes these hazards and establishes goals and policies to protect people, property, and the natural environment.

This Element addresses the following topics:

1. Natural Hazards
    a. Faulting and Seismic Hazards
    b. Soil Hazards
    c. Landslides and Debris Flow
    d. Flood Hazards
    e. Dam Failure
    f. Tsunamis
    g. Sea Level Rise
    h. Wildfires
    i. Urban Fires
2. Human-Induced Hazards
    a. Hazardous Materials
    b. Terrorism
    c. Disease
3. Emergency Evacuation
4. Key Considerations
5. Climate Adaptation and Resiliency Goals and Mitigation Measures

Statutory Requirements

State law requires that the General Plan includes an element that addresses hazards such as fires, floods, droughts, earthquakes, landslides, climate change, and other human-induced hazards (Government Code 65302(g)). This chapter meets the legal requirements for a Safety Element and includes policies intended to reduce the potential short and long-term risk of personal injury and damage to the City's infrastructure. The Safety Element is internally consistent with other topics, as required by State law, including: 1) Land Use, 2) Circulation, 3) Housing, 4) Conservation, 5) Open Space, 6) Noise, 7) Air Quality, and 8) Environmental Justice. The City of Ventura has also conducted an Emergency Evacuation Assessment in accordance with AB 747, included as Appendix B.

RPC 2 (b) (ii)

Context

This section provides an overview of natural hazards, including faulting and seismic hazards, landslides and debris flows, soil hazards, flood hazards, dam failure, tsunamis, sea level rise, and wildfires and urban fires. Human-induced hazards include hazardous materials, terrorism, and disease. Further climate change hazards and community resilience to these hazards, will be discussed in the Climate Change and Sustainability Element.

In addition to this Safety Element, Ventura County and the City have adopted the most current 2022 Multi-Jurisdictional Hazard Mitigation Plan (MJHMP) that addresses existing and potential natural and human-made hazards in Ventura County. Additionally, this Safety Element builds off the City's 2021 Emergency Operations Plan, which addresses the City's planned response to extraordinary emergency incidents associated with natural disasters, cyberattacks, and national security emergencies.

Natural Hazards

The City of Ventura is located in western Ventura County along the coast of the Pacific Ocean, encompassing an area of 32 square miles between Santa Barbara and Oxnard. The city is bordered by two rivers, the Ventura River to the north and the Santa Clara River to the south. The Santa Clara River bisects the Oxnard Coastal Plain. The Transverse Range and the steep Ventura Foothills frame the city, rising 1,200 feet above the city. Situated in the river valley between the Ventura and Santa Clara Rivers, the developed portions of the City feature unique characteristics that introduce a variety of natural hazards. This section of the Safety Element describes the associated natural risks in the city.

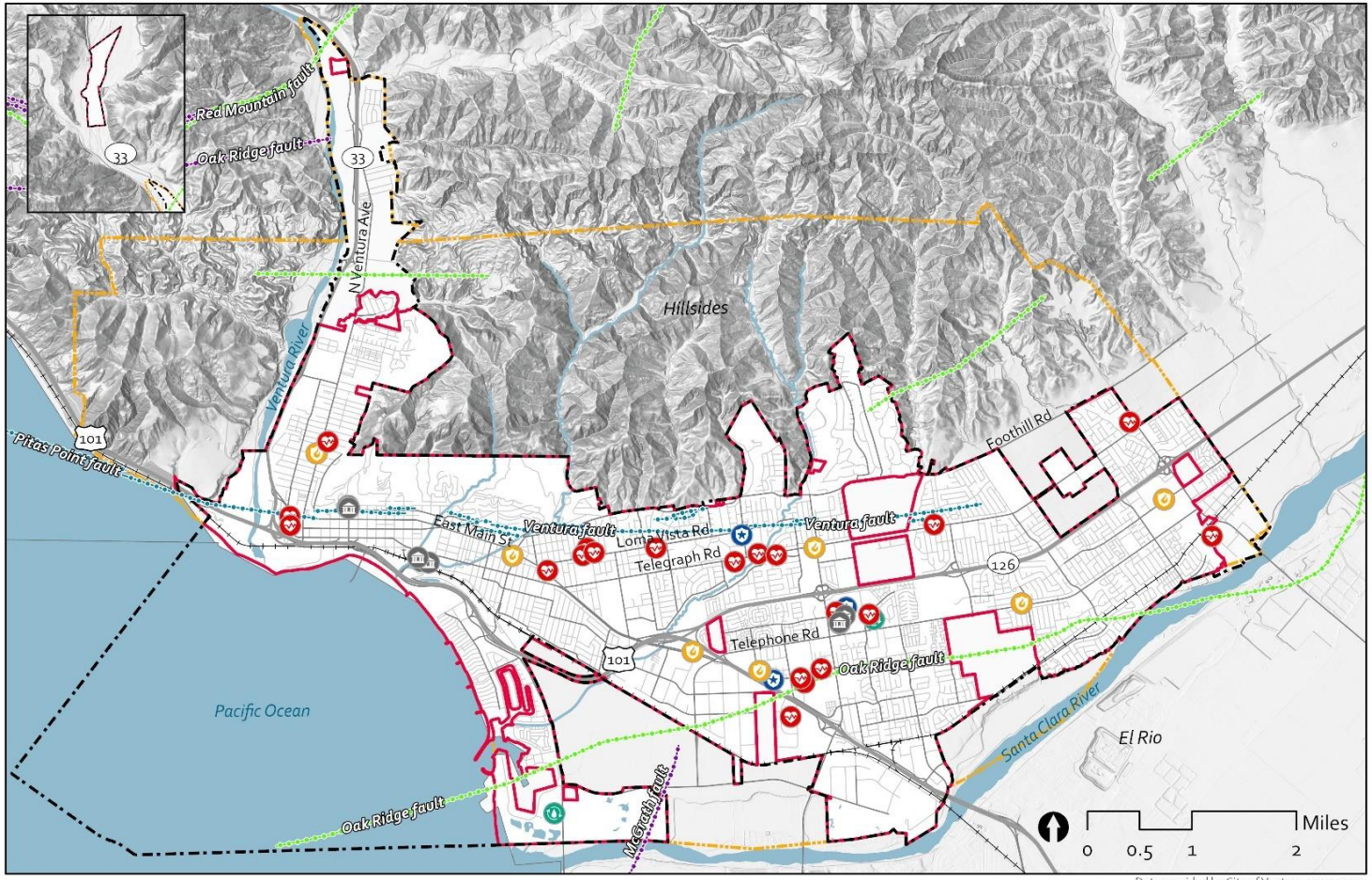
Faulting and Seismic Hazards

The city is in a seismically active region at risk from hazards associated with earthquakes, including fault rupture and seismic shaking. Major faults in the city include the Ventura (a State-designated Alquist-Priolo Earthquake Fault Zone), Oak Ridge, McGrath, and Red Mountain faults.

The Ventura Fault, also known as the Ventura-Pitas Point Fault, is a seismically active fault located beneath the coast of Ventura and Santa Barbara and capable of producing earthquakes of magnitude 8 or higher on the Modified Mercalli (MM) Intensity Scale. This scale assigns a value to a specific site after an earthquake, which refers to the actual effects experienced at the site of the earthquake. This and other faults in Ventura and Los Angeles Counties can produce large earthquakes that could impact the entire region, including the city, as depicted in Figure 1. Earthquake damage depends on a variety of factors including fault properties, proximity to the fault, ground and soil characteristics, among others. However, it is likely that a major earthquake in the area would cause significant ground shaking in the city and has the potential to cause property damage and tsunamis, which is discussed below.

RPC 2 (b) (ii)

Figure 1. Fault Lines



City of Ventura Fault Lines

- Ventura City Limits
- Sphere of influence
- 2005 Planning Boundary
- Railroad
- Roadway

Critical Infrastructure & Services

- Government Building
- Police/Sheriff Station
- Wastewater Treatment
- Fire Station/Services
- Medical Hospitals/Services

Quaternary Faults

Based on time of most recent surface deformation

- Latest Quaternary (<15,000 years)
- Late Quaternary (<130,000 years)
- Undifferentiated Quaternary(<1.6 million years)

Data provided by City of Ventura, 2019, 2020.
Additional data provided by USGS, 2020.

Soil Hazards

Soil hazards are risks or hazards associated with specific soil or rock properties, such as liquefaction, expansive soils, and collapsible soils that can lead to settlement risks. Liquefaction occurs when soil below the water table temporarily loses strength during an earthquake and changes to a near-liquid state. Depending on specific soil conditions such as density, uniformity of grain size, and saturation of soil materials, a certain intensity of seismic shaking is required to trigger liquefaction. Liquefaction is typically associated with medium to fine-grained sands in a loose to medium-dense condition. Liquefaction can cause large movements of the ground and the resettling of soils after a liquefaction event can damage buildings and buried utilities. As the soil liquefies, buildings and other objects may tilt or sink.

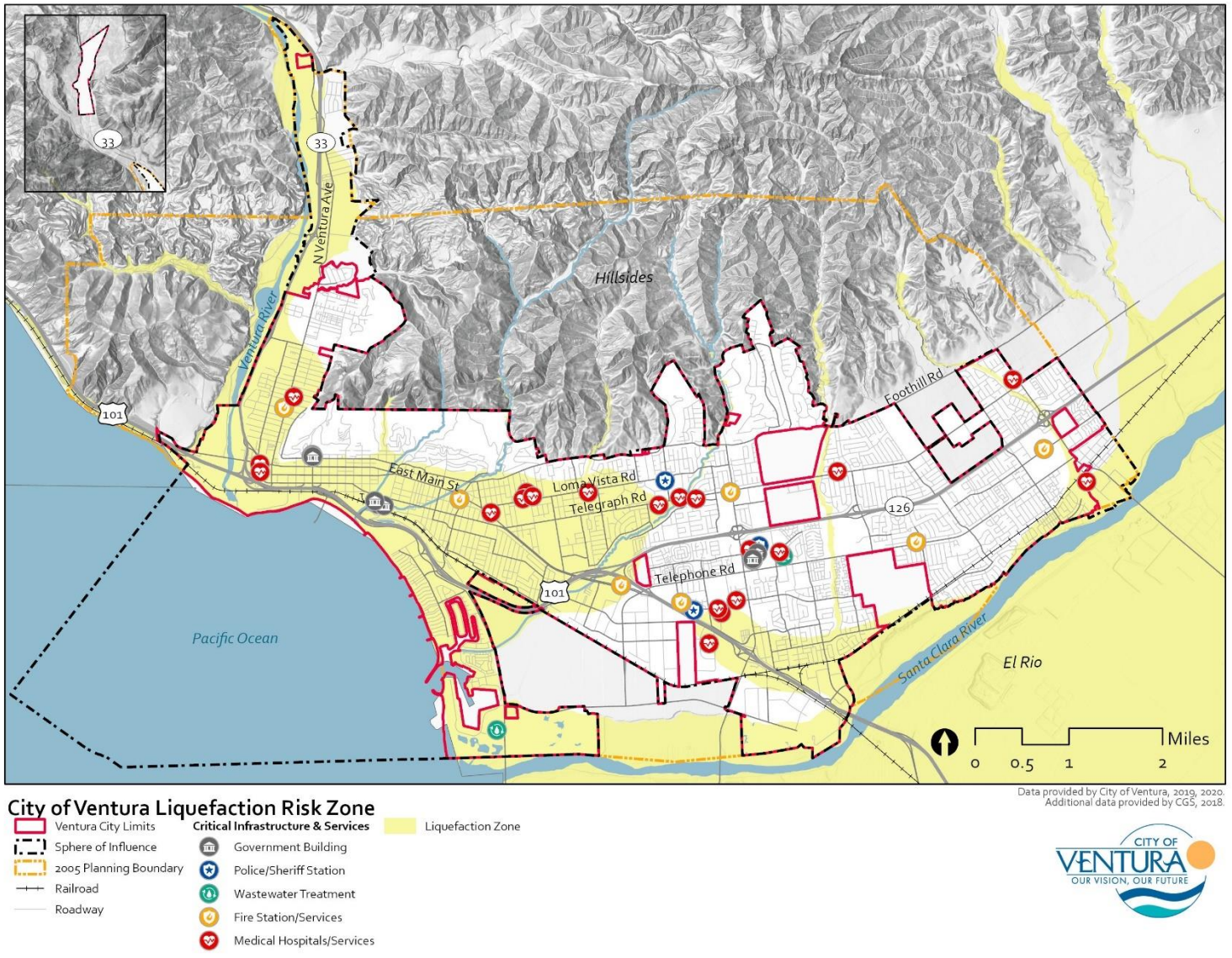
Large portions of the city located near the coast and along waterways are denoted as "Liquefaction Zones." Liquefaction during an earthquake is most likely to occur in areas where the water table lies within 50 feet of the surface. High liquefaction risk zones are shown in Figure 2.

Expansive soils generally have a high clay content and shrink when dry and swell when wet. Expansive soils can cause considerable damage to building foundations, roads, and other structures. The presence of expansive soils is typically determined by soil testing on the project site level. Potentially expansive soils can be found throughout the city but are most prevalent along the banks of the Santa Clara and Ventura Rivers.

Soil settlement hazards, such as subsidence, occur in areas with alluvial deposits, when there is vertical movement of the ground, caused by added stress or pressure from above. Large-scale settlement problems have generally not been an issue in the city since geological hazard studies are required prior to construction and compliance with California Building Code guidelines is required for all new development. Areas of poorly consolidated sediments are engineered to support the weight of a structure that is to be built on the site. In areas where soil is added to a project site, otherwise known as "fill," the fill must be compacted to adequately support the proposed development.

RPC 2 (b) (ii)

Figure 2. Liquefaction Risk Zones



Landslides and Debris Flows

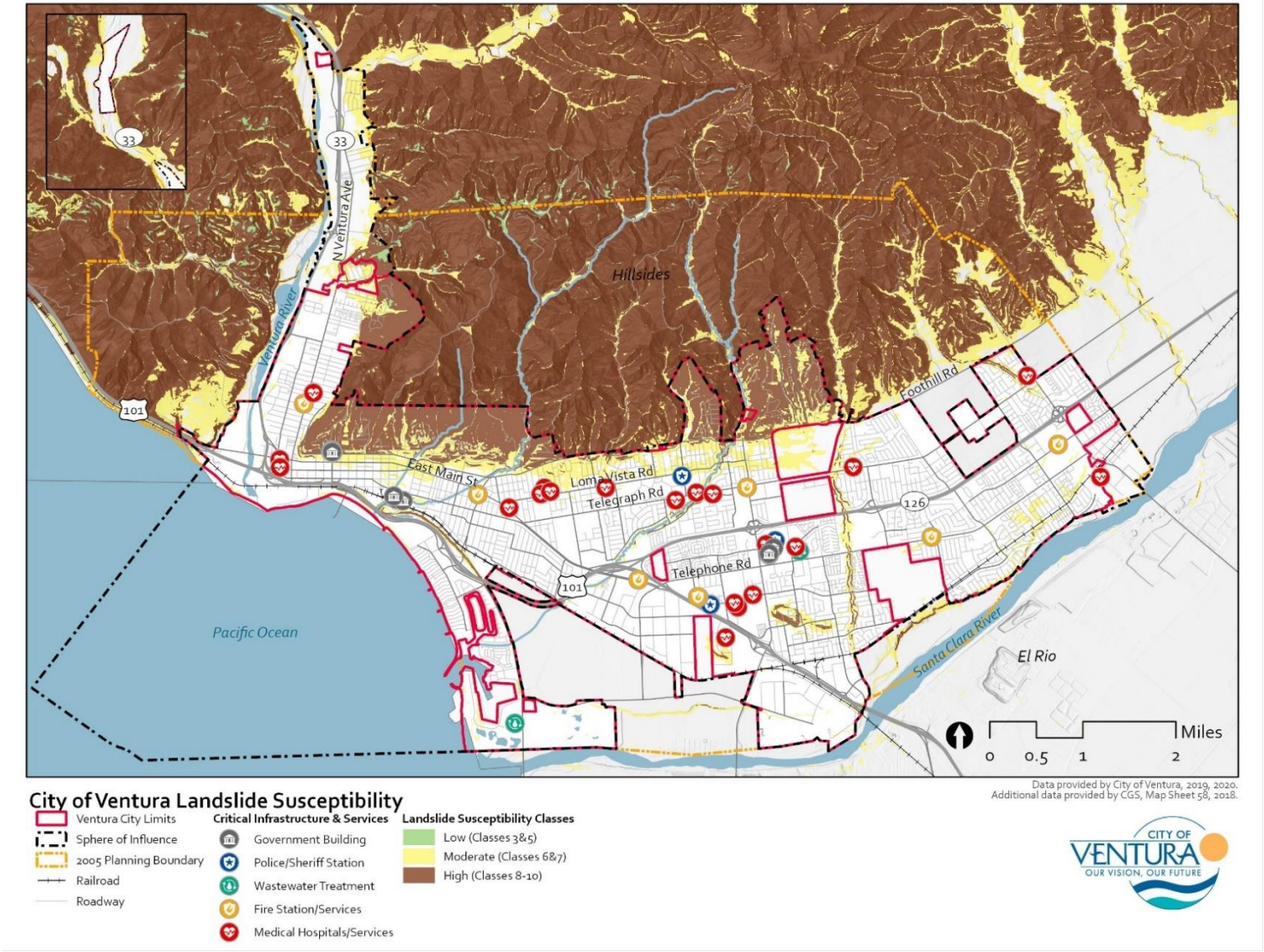
"Landslide" is a general term for the dislodging and fall of a mass of soil or rocks along a sloped surface. Many landslides have resulted from indiscriminate modification of sloping ground or the creation of slopes from cut and fill in geologically unstable areas. Some previous landslides could have been prevented through recognition of potentially unstable soils and/or incorporation of design standards prior to grading and construction.

Landslides, debris flows, rockfalls, and mudslides are gravity-driven flows of earth materials due to slope instability on failing hillsides resulting from a range of human and natural causes. Any of these hazards could occur in the northern portions of the city, where there are steep hillsides and mountainous terrain. Unless engineered properly, development in hillside areas tends to increase the potential for slope failures. Slope modification by grading changes the infiltration of surface water into the ground and undercutting of slopes can create unstable hill slopes, resulting in landslides or debris flows. Areas at high risk of landslides in the city are shown in Figure 3. These high-risk areas are generally located around the northern perimeter of the city in open space areas with steeper slopes. The residential areas north of Foothill Road and near Ventura Avenue and SR-33 are also in these high-risk areas.

The impacts of climate change are projected to increase the severity and frequency of debris flow events, such as those experienced historically in the city and surrounding communities within Ventura County. Because the city is located in a relatively flat expanse of land, the landslide risk for the immediate city is low. However, landslides have occurred just outside city borders, especially along SR-33, where heavy rains have caused debris flows and road closures as recently as February 2024. The landslide impacts to transportation routes into and out of the city could impact evacuation protocols, result in city infrastructure damage, and stress emergency services. In surrounding areas within Ventura County, there has been a history of landslides resulting in millions of dollars of infrastructure and property damage and fatalities. In 1995 and 2005, the town of La Conchita, located within Ventura County, experienced massive landslides that caused extensive home damages and killed ten people. As climate change exacerbates the frequency and severity of wildfires and extreme precipitation events, damaging debris flows like those experienced along SR-33 and in La Conchita are likely to become more common in and near the City of Ventura.

RPC 2 (b) (ii)

Figure 3. Landslide Susceptibility



Flood Hazards

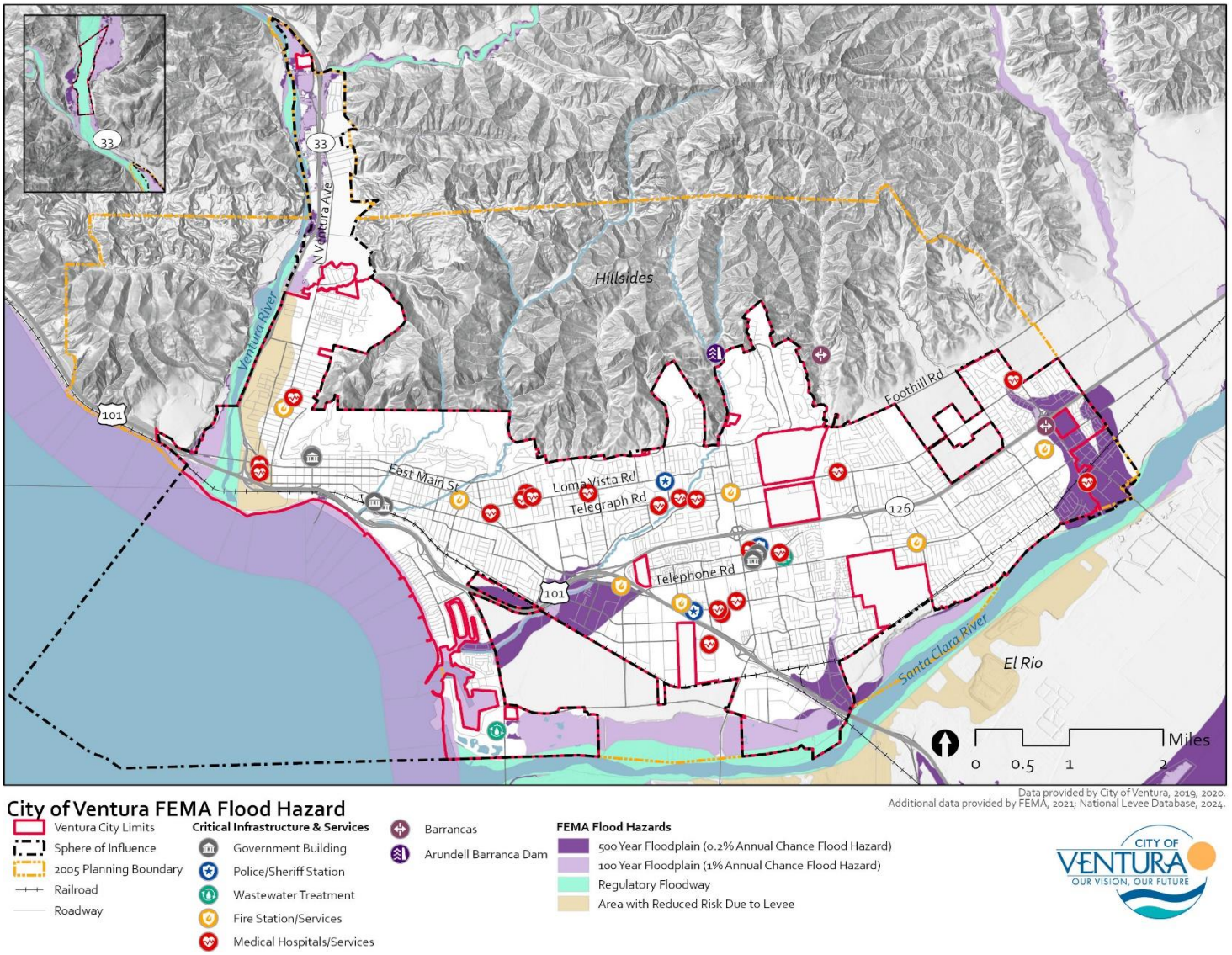
Ventura is part of the Ventura River and Santa Clara River Watersheds. Heavy rainfall in these watersheds can result in runoff that inundates the stormwater conveyance system, resulting in flooding. The City is subject to periodic inundation from flooding, which can result in destruction of property, loss of life, and creation of health and safety hazards. Heavy rains, waves, and tides during winter storms periodically cause flooding events in the city. Federal Emergency Management Agency (FEMA) 100-year flood risk zones are depicted in Figure 4. The 100-year floodplain identifies areas that have a 1% annual probability (1 in 100) of flooding. The 500-year floodplain identifies areas that have a 0.2% annual probability (1 in 500) of flooding. The 100-year flood hazard area for the Ventura River is confined to an area west of the levee and near the river mouth. The 100-year flood hazard area for the Santa Clara River would affect an area of the city just north of the river, in the vicinity of the Olivas Park and Buenaventura golf courses. Other areas of the city within the 100-year flood zone include areas adjacent to the Arundell Barranca south of Main Street, the Harmon Barranca south of Telegraph Road, and the beach area along Pierpont Lanes. The 500-year flood hazard areas in the city include the eastern portions of the city along the Santa Clara River, areas along the Arundell Barranca off US-101, and areas around Harmon Barranca.

Climate change is expected to exacerbate flooding hazards by increasing the frequency of extreme precipitation events and contributing to sea level rise. Although annual precipitation levels in the city are projected to stay similar to current levels through the end of the century, extreme precipitation events, such as those experienced in January & December 2023, and February 2024, are projected to be more common. These events are commonly known as atmospheric river events, in which large amounts of precipitation fall in a short period of time, often contributing significantly to the year's rainfall total in a few short days. According to California's Fourth Climate Change Assessment for the Central Coast Region, extreme atmospheric river events and severe flooding is expected to increase under projected climate change, as warmer ocean surface temperatures cause higher rates of evaporation, leading to heavier precipitation when this band of evaporated water vapor reaches land via wind transport.[1] The maximum 1-day precipitation levels in the city are projected to increase by nearly 0.3 inches by the end of the century, contributing to increased flooding and inundation during heavy precipitation events.[2] These events can overload city floodplains and create extreme flooding events, potentially causing millions of dollars in damages and threatening lives. The City must mitigate the impacts from flood hazards as climate change exacerbates the severity and frequency of extreme precipitation events. The City currently maintains and complies with the 2020 Urban Water Management Plan, the Multi-Jurisdictional Hazard Mitigation Plan (MJHMP), and the Emergency Operations Plan (EOP) to prepare for and recover from flooding events. The Goals and Policies section builds off the regulations included in these plans.

[1] California's Fourth Climate Change Assessment. 2018. https://www.energy.ca.gov/sites/default/files/2019-11/Reg_Report-SUM-CCCA4-2018-006_CentralCoast_ADA.pdf (accessed October 2024)
2 Cal-Adapt. Local Climate Snapshot for San Buenaventura (Ventura). 2024. https://cal-adapt.org/tools/local-climate-change-snapshot (accessed October 2024)

RPC 2 (b) (ii)

Figure 4. 100- and 500-Year Floodplain



Dam Failure

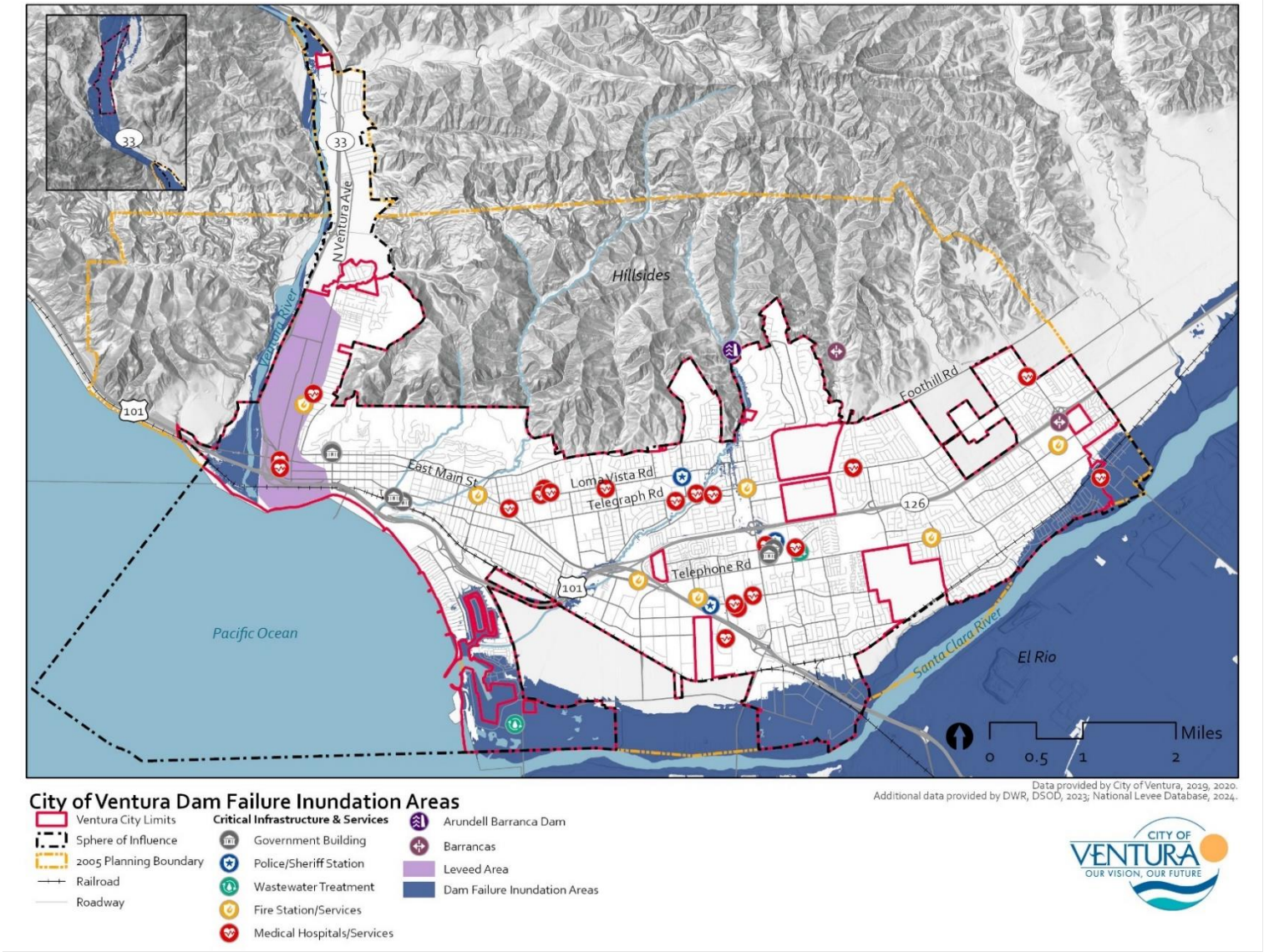
The City of Ventura could be affected by dam failure from three Ventura County dams and four in nearby Los Angeles County: Arundell Dam, Bouquet Canyon Reservoir, Casitas Dam, Castaic Reservoir, Matilija Dam, Pyramid Reservoir, and Santa Felicia Dam. The Casitas Dam and Matilija Dam pose the largest risks in the Ventura River Watershed and could create similar damages to the city as did the St. Francis Dam collapse of 1928. The Casitas Dam is maintained by the United States Bureau of Reclamation in partnership with the Casitas Municipal Water District. In April of 2024, Casitas Municipal Water District notified the Ventura County Watershed Protection District that the water level of Lake Casitas was within two feet of the spillway crest elevation of 567' above mean sea level. In these instances, Ventura County is responsible for determining if actions are necessary to prepare for potential flows in Coyote Creek via the spillway. Also recently, efforts by the Matilija Dam Ecosystem Restoration Project were awarded with funding to further planning and design for the removal of this dam, which would mitigate risk of inundation. The Ventura Levee System along the Ventura River has historically been damaged during extreme flooding events and high flow rates. The levee was built in 1948 by the U.S. Army Corps of Engineers to protect the city from peak discharges of 150,000 cubic feet per second (cfs). Since its original construction, the levee has undergone several rounds of modifications and upgrades due to severe damage from flooding and upstream construction. As precipitation increases in frequency and severity due to increased atmospheric river events, it is likely that that the levee and other stormwater conveyance systems throughout the city will need to receive consistent upgrades to protect the city from damages from flooding.

Along the Santa Clara River, failure of the Castaic Reservoir, located within Los Angeles County could result in extensive damages throughout much of the southern portion of the city. Pyramid Reservoir, or Bouquet Canyon Reservoir, also located in Los Angeles County could result in extensive damage throughout much of the southern portion of the city, bordering Oxnard. Dam inundation zones in the city are depicted Figure 5.

As the impacts of climate change increase the frequency and severity of extreme precipitation events, the risk of dam inundation is likely to increase. Intense precipitation events can overload dam capacity for storage and result in strained dam infrastructure, which could result in partial or complete dam failure and subsequent inundation. As such, it is especially important that the City of Ventura and associated county partners continue to provide regular maintenance and inspections to these at-risk dams.

RPC 2 (b) (ii)

Figure 5. Dam Inundation Zones



Tsunamis

Tsunamis are large ocean waves that occur as a result of earthquakes, underwater landslides, or submarine volcanic explosions and have the potential to cause severe flooding of low-lying coastal areas in the city. Although tsunamis are rare, the city's proximity to fault lines as well as its location along the coast could result in exposure to tsunami impacts. Tsunami events are categorized as local or distant, depending on the location of their source and where the wave impacts occur. In the state of California, 80 tsunami events have occurred according to state records. The city has experienced nine total distant tsunami events as far back as 1812 and as recently as 2011, in which a major earthquake in Japan caused a run-up of the flood inundation line in Ventura Harbor, resulting in a federal disaster declaration. In 2010, a major earthquake in Chile resulted in a 3-foot run-up in Ventura, resulting in damage to 21 docks in Ventura Harbor. Based on the city's proximity to the Pacific Ocean, exposure to fault lines, and past occurrences, it is likely that tsunamis will continue to pose a risk to strike the city coastline, resulting in damage to property, inundation of low-lying areas, and potentially the loss of life.

In coordination with the California Emergency Management Agency and the California Geological Survey, the County of Ventura maintains a Tsunami Inundation Map for Emergency Planning, which describes the risks to structures, population, and property damage projections. In the County, over 7,000 structures and 28,000 residents are located in tsunami inundation areas, which could result in over four billion dollars of replacement costs, if a tsunami were to occur. Within the city, low-lying areas along the Ventura River, Santa Clara River, Ventura Harbor, and west of US-101 and Harbor Boulevard are especially at risk to inundation from tsunami. These inundation areas are shown in Figure 6. Evacuation protocols for tsunami or storm wave events are shown in Figure 7 and depict movement from the coastal neighborhoods west of Harbor Boulevard eastward towards the evacuation destination point. Congestion eastward is likely to occur along South Seaward Avenue, Pierpont Boulevard, East Harbor Boulevard and US-101, as evacuees converge towards the evacuation point. More information regarding evacuation due to tsunami inundation can be found in the City's Emergency Evacuation Analysis, found in Appendix B.

RPC 2 (b) (ii)

Figure 6. Tsunami Inundation Zones

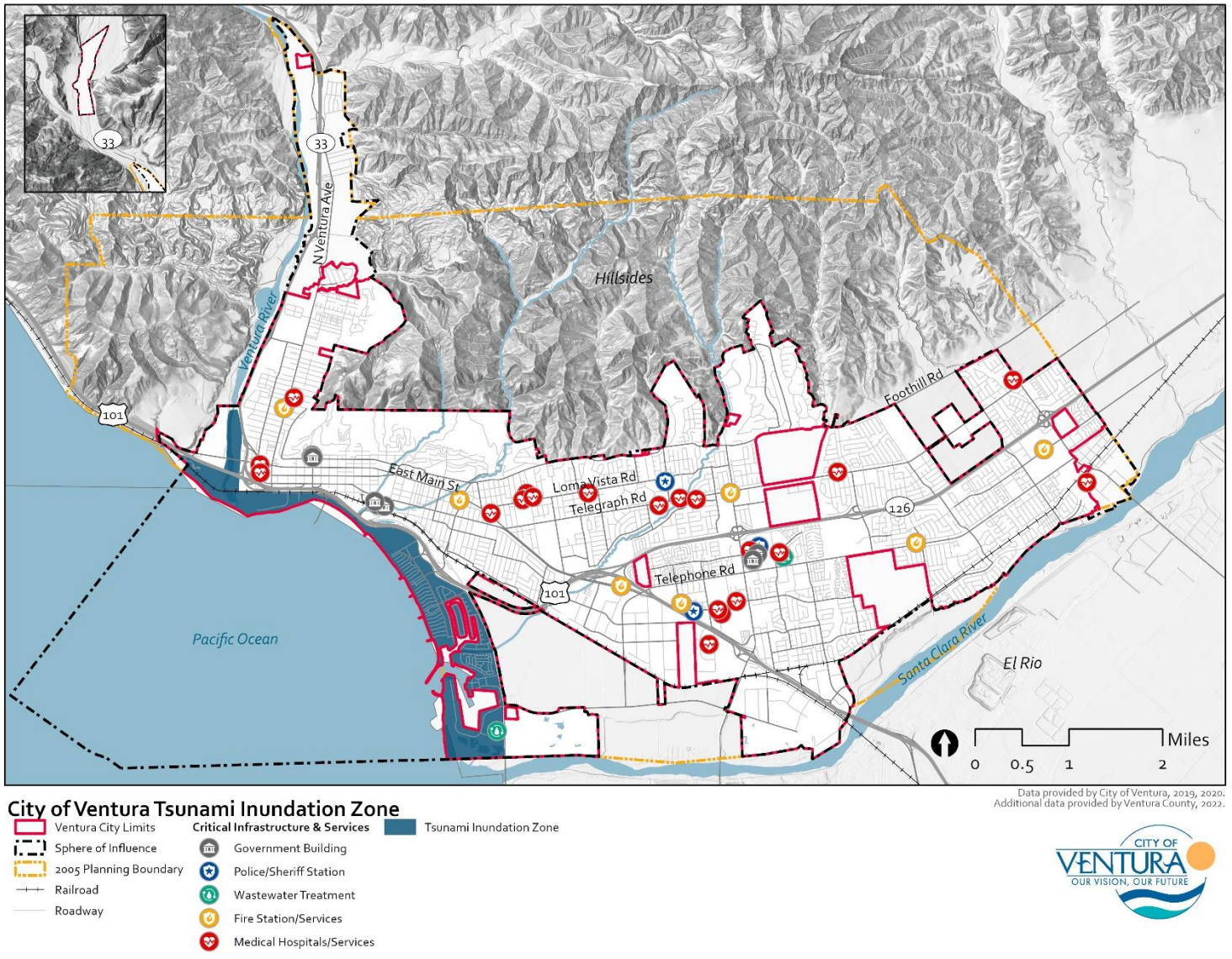
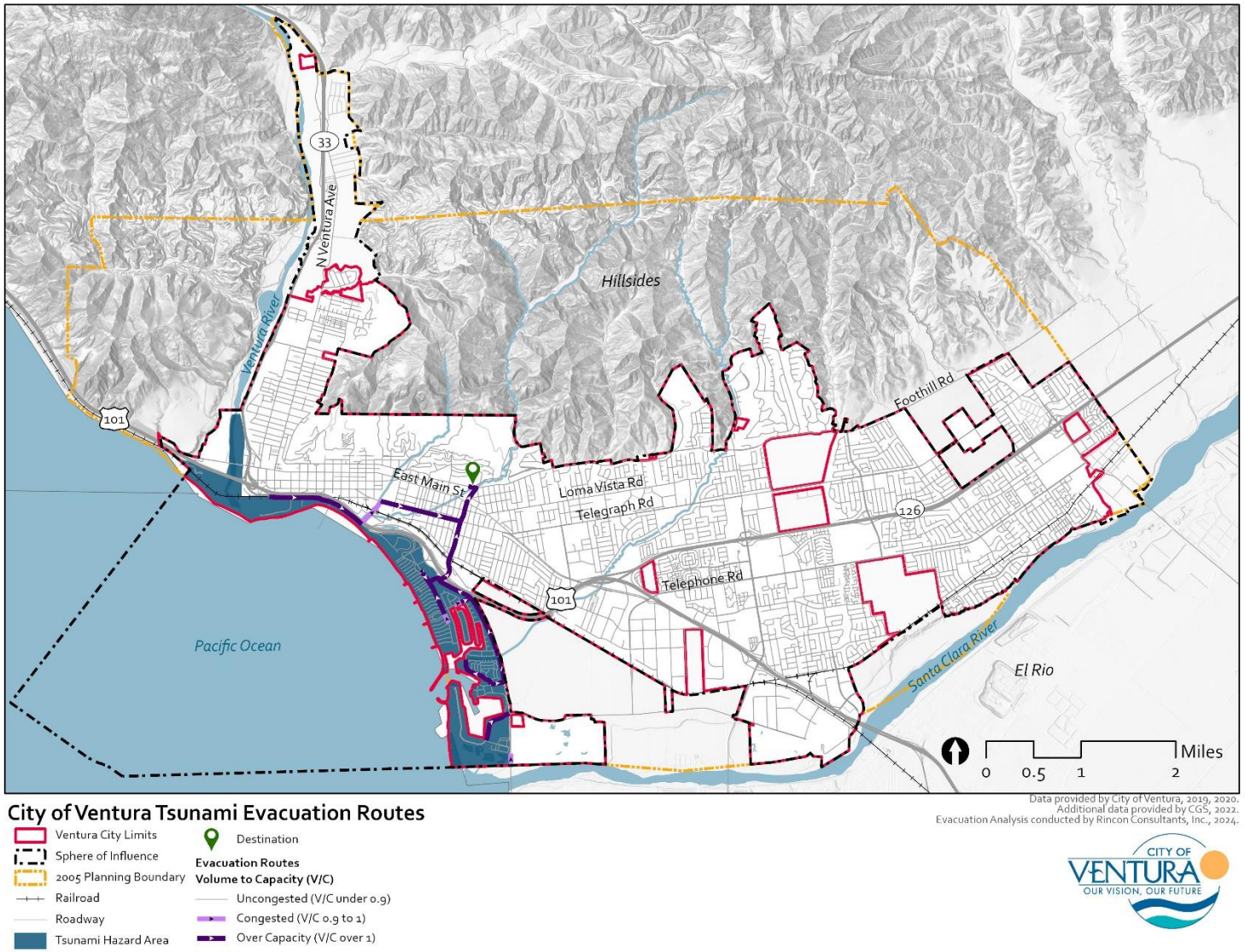


Figure 7. Tsunami Evacuation Routes



Sea Level Rise

Sea levels in California are expected to rise in the coming decades as a result of global greenhouse gas emissions. Due to Ventura's proximity to the Pacific Ocean, it is anticipated that the city will be especially impacted by rising sea levels, which will exacerbate the impacts of storm events. The Nature Conservancy Coastal Resilience Model for the Ventura Region projects that by 2030, sea level is expected to rise 2.3 to 8.0 inches from low to high modeling scenarios. By 2060, sea level is expected to rise 7.4 inches to 25.3 inches and by 2100, it is expected to rise 17.1 inches to 58.1 inches. These projections for the Ventura coast are included in Figure 8 and will result in significant impacts, causing damage via coastal erosion, fluvial flooding, storm flooding, storm wave impacts, and rising tides.

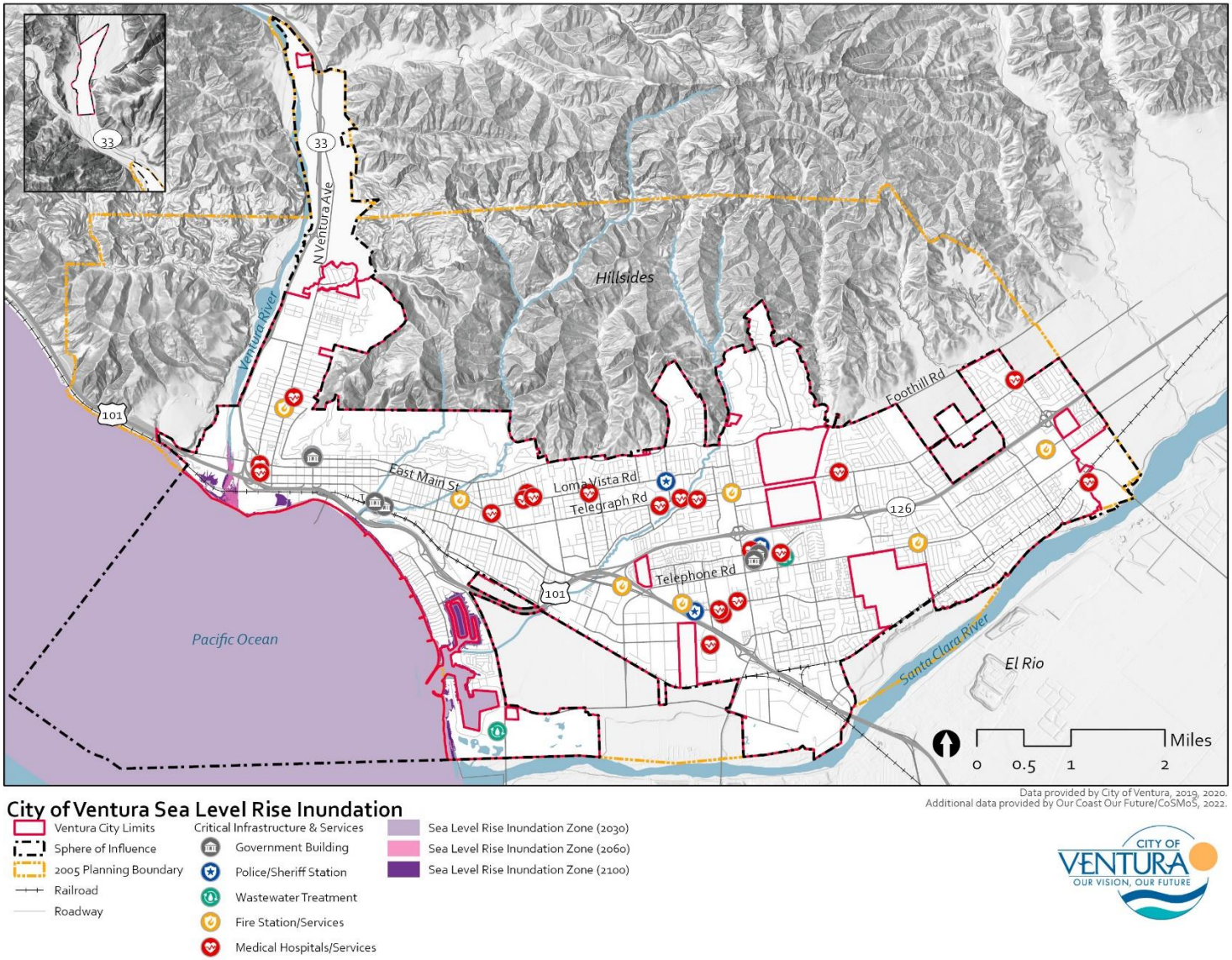
Coastal erosion from sea level rise is projected to surpass the beach line and enter residential communities along Ventura's coast by 2030. By 2060 and 2100, impacts will reach north of Sanjon Road and Shoreline Drive and surrounding commerce areas. Exacerbated fluvial flooding is expected along both the Ventura and Santa Clara Rivers due to rising sea levels, which will inundate extended floodplains from Olivas Park Drive to West Gonzales Road and extend between South Victoria Avenue and West 5th Street. Similarly storm flooding and storm wave impacts will worsen as a result of rising sea levels. Low-lying coastal areas of the city are especially vulnerable to frequent flooding from storms and may experience significant erosion and damage if storms occur during high tides and large waves. In 2015, waves of up to 15 feet resulted in the evacuation of the Ventura Pier, and in 2023 a rogue storm wave crashed over the sea wall near California Street and injured eight people. 2030 projections of storm flooding show impacts to nearly all residences and commercial areas south of East Harbor Boulevard and by the end of the century, could surpass the US-101 at SR-33. Flooding impacts could inundate roads, residences, wastewater treatment facility, medical facilities, and commercial buildings. Similarly, rising tides are projected to permanently inundate parts of the city that are not currently exposed to tides, resulting in the need to either protect or move infrastructure and development. By the end of the century, rising tides are expected to inundate Seaside Wilderness Park and residential and commercial structures near Marina Park in Ventura Keys. Inundation area maps for coastal flooding, storm flooding, storm wave impacts, and rising tides are included in the Climate Change Vulnerability Assessment (CCVA) in Appendix A.

Sea level rise is projected to be one of the most impactful climate hazards to the city and will require redevelopment, movement of infrastructure, building retrofitting, significant damages to private and public property, and potential loss of life. The Ventura Sea Level Rise Assessment, part of the Ventura County Resilient Coastal Adaptation Project[3], found that losses to residential land made up 95% of all land use vulnerabilities, primarily concentrated in oceanfront neighborhoods comprised of single-family residences. Additionally, significant damages to transportation routes and critical infrastructure are expected, especially to US-101. The City's wastewater treatment plant, located on the bank of the Santa Clara River, is also expected to be impacted significantly by sea level rise. These impacts could result in significant damages, and it is imperative that the City of Ventura prioritize mitigation actions to ensure that residents and infrastructure are adequately protected and prepared for sea level rise.

[3] County of Ventura. n.d.-b Ventura County Resilient Coastal Adaptation Project. https://vcrma.org/en/vc-resilient-coastal-adaptation-project#:~:text=The%20VC%20Resilient%20Coastal%20Adaptation%20Project%20%28VC%20Resilient%29,when%20sea%20level%20rise%20impacts%20are%20more%20severe

RPC 2 (b) (ii)

Figure 8. Sea Level Rise Through 2030 and 2100



Wildfires

Wildfire risk is determined by a combination of factors, including precipitation, winds, temperature, landscape, and vegetation conditions. The city is vulnerable to wildfire, as shown by the devastating effects of the Thomas Fire in 2017. The Thomas Fire began on December 4, 2017, due to power lines coming into contact during high winds on private lands near Santa Paula. Due to extreme dry conditions and high winds, the fire quickly spread, consuming 281,893 acres, or 440 square miles, and destroying 686 structures within the city during its 40-day burn timeline. Nearly 9,000 emergency personnel worked to control the Thomas Fire and two people died during the fire, including one firefighter and one civilian. Wildfires in or near the city have been documented as far back as 1929. Figure 11 shows local fire history from 1929 to 2023 via CAL FIRE's Fire and Resource Assessment Program (FRAP) and the City of Ventura fire history data. During this period, there were 44 fires 100 acres or larger that threatened the city. Since 2005 there have been 14 Federal Disaster Declarations for wildfire events in Ventura County, including the destructive 2017 Thomas Fire.

About 2,498 acres of the city are designated as Very High Fire Hazard Severity Zones (VHFHSZ) located in the northern portions of the city near the Wildland Urban Interface (WUI) against the foothills. 955 acres as High Fire Hazard Severity Zones (HFHSZ), located adjacent to the foothills of the northern portion of the city and along the Ventura River; and 1,059 acres as Moderate Fire Hazard Severity Zones (MFHSZ) by the California Department of Forestry and Fire Protection (CAL FIRE), located primarily along the Santa Clara River. This can be partially attributed to the abundance of open space and vegetated hills in and adjacent to the city. The VHFHSZ encompasses much of the area within one mile of the WUI. The WUI is the zone of transition between unoccupied land and human development where structures meet or intermingle with undeveloped wildland or vegetative fuels. Numerous residential areas are in and adjacent to the high severity zones and could be exposed to wildfires and related damage. These areas include residential developments near the Poinsettia, Arroyo Verde, Catalina, Downtown and Avenue communities. Figure 9 details the WUI Zones in the city. The Ventura City Fire Department, in cooperation with CAL FIRE, has identified neighborhoods in the WUI where new fuel breaks are recommended, including the neighborhoods off Foothill Road near Lake Canyon, North Ventura Avenue, East Santa Clara Street, and Crooked Palm Road. Additionally, Brown Barranca, Harmon Barranca, Arundell Barranca, Barlow Barranca, Hall Canyon, Sexton Canyon, and the Santa Clara and Ventura River watersheds are areas the Fire Department has identified as zones that require regular fuel reduction projects to establish new fuel breaks within the city.

Wildfire hazard areas within the city limits are designated Local Fire Responsibility Areas, meaning their management is the primary responsibility of the Ventura City Fire Department. The unincorporated areas surrounding the city are designated State Responsibility Areas and include VHFHSZ, HFHSZ, and MFHSZs. The management of these areas is the primary responsibility of CAL FIRE and the Ventura County Fire Protection District. Figure 10 shows VHFHSZs in the city, as adopted by the City of Ventura Fire Department, which encompass a majority of the northern portion of the city and portions of the coastal zone and along highly vegetated portions of the Santa Clara River. Only the more densely developed core of the city is not within the VHFHSZ. Figure 10 also shows where the City's critical facilities and infrastructure are located in regard to the Fire Hazard Severity Zones. There are several critical facilities within proximity to the VHFHSZ, including medical facilities, government buildings, fire stations, and the police station. Several roads and residential areas are also located within the city's fire zone.

RPC 2 (b) (ii)

Figure 9. WUI Hazard Zones

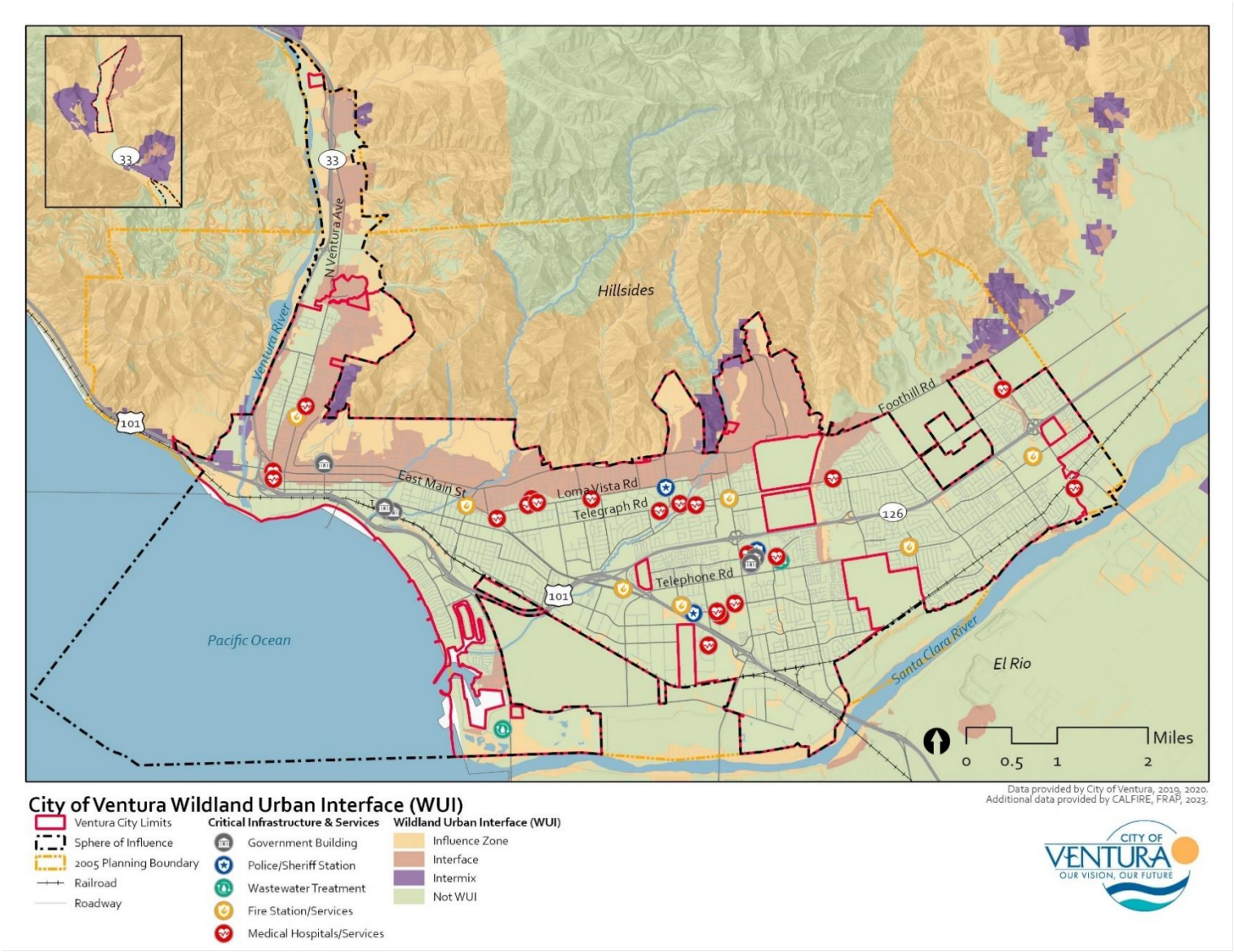


Figure 10. Wildfire Hazard Severity Zones

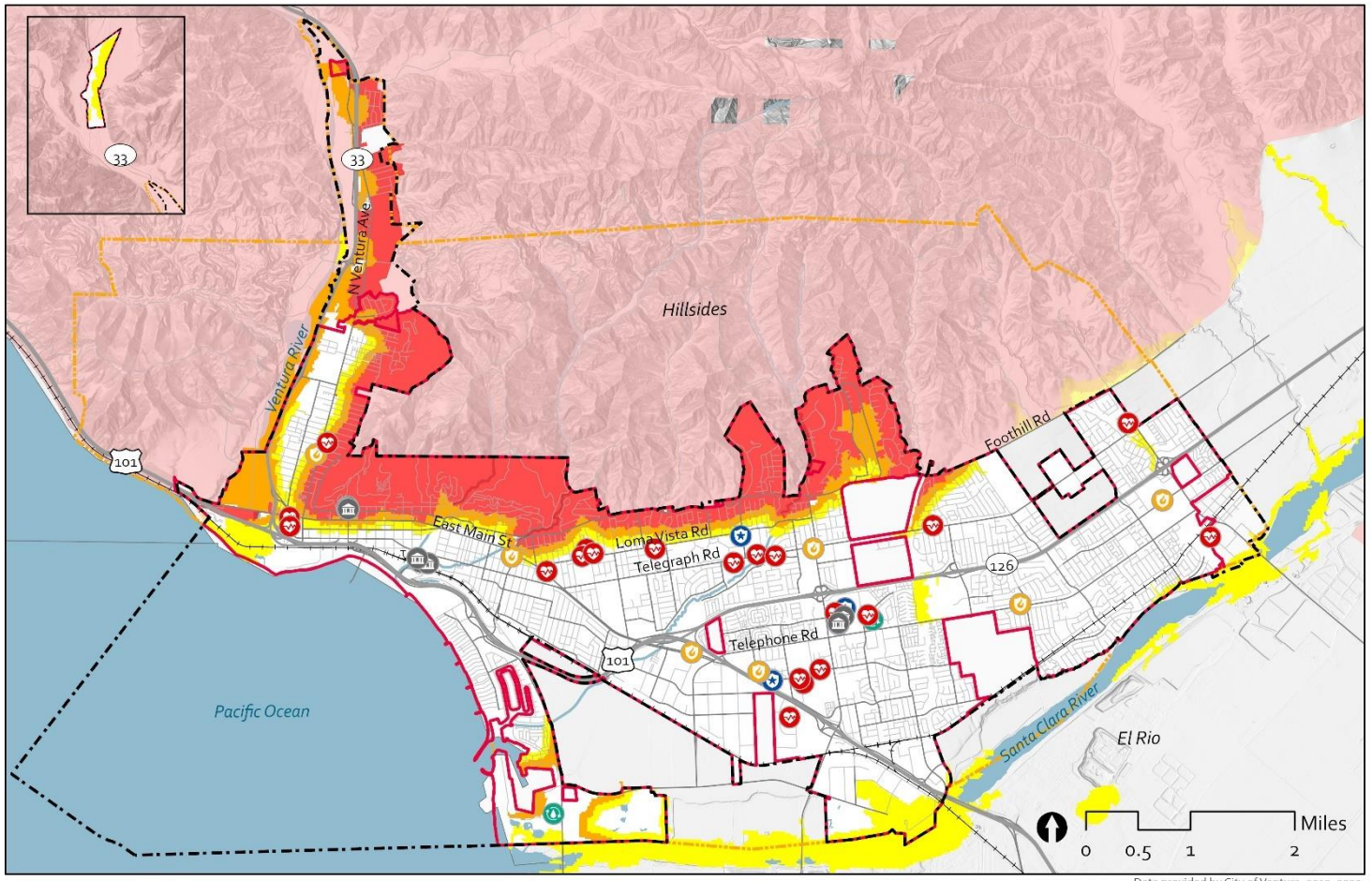
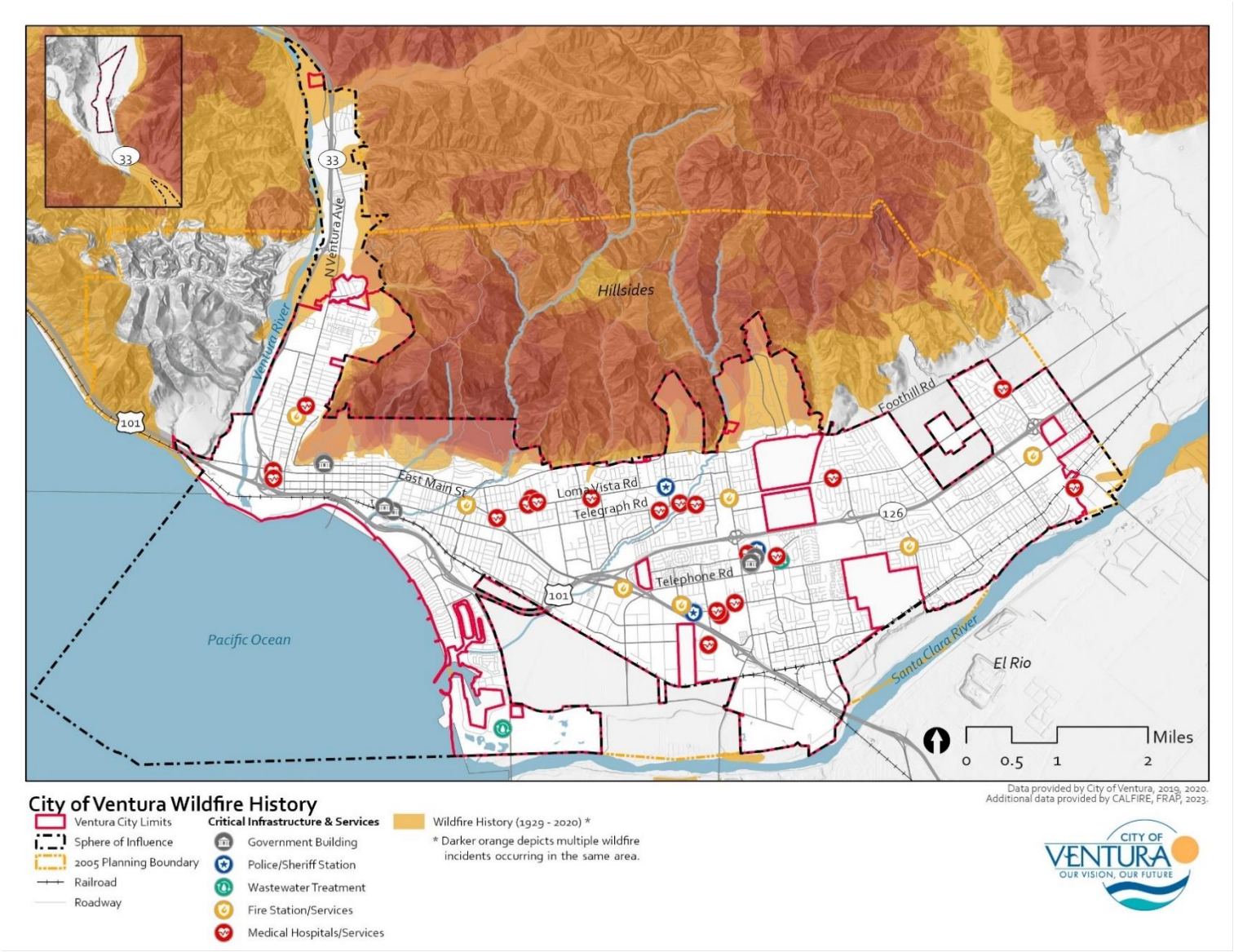


Figure 11. Wildfire History



Climate change is expected to exacerbate wildfire risk by creating hotter and drier landscapes, which are more susceptible to burning. In 2020 alone, California experienced six of the 20 largest fires in modern history and as of 2021, over three million acres of land have burned. These massive and destructive fires are now commonly referred to as "megafires" (fires over 100,000 acres) and "gigafires" (fires over 1 million acres). These fires occurred during extreme fire weather conditions and record-breaking heat waves across California. The observed frequency of autumn days with extreme fire weather, which are associated with extreme autumn wildfires, has more than doubled in California since the early 1980s. Due to an increase in factors that contribute to wildfires (variability in precipitation, hotter and drier landscapes) and because of the city's proximity to VHFHSZs, the community is expected to see an increase in wildfire hazards largely due to climate change. Mitigating the effects of wildfire hazards is a high priority for the City of Ventura and the City will do this by coordinating with planning partners, such as the City of Ventura Fire Department, the County of Ventura Fire Department, and CAL FIRE. Additionally, the City will maintain compliance with wildfire planning documents and legislation such as the Office of Planning and Research's (OPR) Fire Hazard Planning General Plan Technical Advice Series, California Fire Code, and the City's Municipal Code.

Wildfire Prevention Planning

There are several city and county-wide plans that guide wildfire policies and programs in Ventura. The 2022-2027 City of Ventura Fire Department Strategic Plan and the 2023 Ventura County Fire Protection District (VCFPD) Unit Strategic Fire Plan describes Ventura County's fire history, firefighting capabilities, and collaboration throughout different agencies, non-government organizations, and private entities. It also provides a reporting mechanism that tracks the implementation of projects that work to meet VCFPD's goals and objectives.

The Ventura Regional Fire Safe Council recently completed the 2023 Ventura County Community Wildfire Protection Plan (CWPP), which provides regional context and the county-wide priority actions regarding community engagement and education, structural hardening, defensible space, fuels reduction, evacuation, and emergency response. Structural hardening is used to describe the use of fire-resistant materials in building construction or retrofitting to protect buildings from flame intrusion and embers from a fire. Defensible space refers to the buffer between a structure and the surrounding vegetated area and acts as a barrier to slow or halt the progress of fire that would otherwise engulf a property.

The most recent MJHMP, the 2022 Ventura County Multi-Jurisdictional Hazard Mitigation Plan (MJHMP), which covers the City of Ventura's planning area, was developed in accordance with the Disaster Mitigation Act of 2000 (DMA 2000) and follows FEMA's 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 includes both short and long-term strategies, involves planning, policy changes, programs, projects, and other activities.

The City of Ventura also maintains the Hillside Management Program, complies with Chapter 7A of the California Building Code, and maintains Landscape Plans in compliance with the California Fire Code. The Hillside Management Program details land use requirements for development on slopes, including grading and site design, drainage systems, geological hazards, landscaping, and street design. These design criteria are especially important for maintaining compliance with fire safety regulations on hillsides, as much of the steep hillside development in the city occurs within the WUI

RPC 2 (b) (ii)

in the northerly zones along Foothill Road. Because these areas are commonly located in the VHFHSZ, they are also required to comply with Chapter 7A of the California Building Code, which maintains strict regulations for new development in the WUI and site design and construction requirements to minimize fire risks, as well as defensible space maintenance.

Urban Fires

Urban fires occur in cities or towns with the potential to rapidly spread to adjoining structures. These fires damage and destroy homes, schools, commercial buildings, and vehicles. Although fires can start from numerous causes, major fires are often the result of other hazards such as storms, drought, transportation accidents, hazardous material spills, criminal activity (arson), accidental ignitions, electric infrastructure, or terrorism. The potential secondary effects of an urban fire include utilities' failure and hazardous material spills. Although any developed area of the city can be subject to an urban fire, the city has no areas of unusually high urban fire risk.

Human-Induced Hazards

The City of Ventura has a population of about 109,925 residents, and is bisected by several major transportation routes, including US-101, SR-126, and SR-33. These characteristics introduce a variety of human-induced hazards throughout the city. This section of the Safety Element describes the associated human-induced risks in the city.

Hazardous Materials

A wide variety of products, chemical and purified chemical compounds, and elements considered hazardous, or toxic are used in households, commercial businesses, and industrial operations and processes. These include home and pool related chlorine products, chemical fertilizers, herbicides and pesticides, stored fuels and waste oil, chemical solvents and lubricants, and a variety of medical materials. The improper use and/or management of hazardous materials can pose a threat to the community and the environment. The level of exposure from these types of sources is considered low due to the types of business and industries present in the city. Nevertheless, the threat of a major hazardous material incident in the city exists from commercial vehicles and rail, fixed facilities, petroleum pipelines, clandestine dumping, and leaking underground storage tanks (LUST). Currently, there are 18 different hazardous materials sites in the city, including LUST sites, contaminated groundwater sites under the jurisdiction of the State Water Resources Control Board (SWRCB) Site Cleanup Program, and hazardous waste sites under the Department of Toxic Substances Control (DTSC) Site Cleanup Program. These sites do not pose immediate harm to the city's infrastructure, environment, or people, as they must follow strict regulations to ensure they are adequately maintained.

In accordance with the region-wide Hazardous Materials Response Plan, the Ventura City Fire Department maintains a hazardous materials (HAZMAT) response team specially trained and equipped to respond to all hazardous materials calls within the city. The Ventura City Fire Department is a Participating Agency in the County's Certified Unified Program Agency (CUPA) program and provides regulatory oversight over 5 of the 6 CUPA Programs, including: Hazardous Materials Business Plan (HMBP), Underground Storage Tanks (UST), Aboveground Storage Tanks (APSA), California Accidental Release Program (Cal ARP), and California Fire Code. Additional fire protection equipment and staffing specifically trained for hazardous materials incidents is available

RPC 2 (b) (ii)

from the City of Oxnard, the Ventura County Fire Department, and the U.S. Naval Base Ventura County.

Terrorism

Although there has never been a terrorist attack in the city and the probability of such an attack is low, the City of Ventura actively participates in the County's Terrorism Early Warning Group, Terrorism Working Group, and the Joint Regional Information Center. Potential terrorist targets in the city include highways and freeways, bridges and overpasses, telecommunications facilities, government offices, shopping malls, schools, churches and religious centers, research facilities, electrical facilities, water and wastewater facilities, dams, and facilities that store, manufacture, or transport hazardous materials.

Public safety services that work to protect Ventura from terrorism, such as police, fire, and emergency management and response are discussed in the Public Services Element and the City Emergency Operations Plan.

Disease

Infectious disease emergencies are circumstances caused by biological agents, including organisms such as bacteria, viruses, or toxins with the potential for significant illnesses or death in the population.

As evidenced by the COVID-19 pandemic, unforeseen infectious diseases can be disastrous for communities, especially vulnerable groups such as older adults and those with compromised immune systems. The COVID-19 pandemic also led to significant cultural and economic losses, particularly affecting small businesses, Ventura's sense of community, and local supply chains. Community events and cultural institutions were halted or closed, diminishing Ventura's cultural vibrancy and sense of togetherness, while many small businesses faced closure and significant economic losses because of reduced consumer activity and supply chain interruptions. Despite this, the City worked diligently during the pandemic to minimize risks to community members and address local economic effects of the pandemic. Between 2020 and 2021, the City created numerous public relief funds for residents and businesses. Additionally, the City disseminated information regularly, including where to buy groceries (at the onset of the pandemic), testing information, business support, homeowner support and more. Through collaborations with Ventura County Public Health (VCPH) and in compliance with the California Division of Occupational Safety and Health (Cal/OSHA), the City has worked to prevent and minimize effects and spread of disease, while responding to emergency incidents and assisting in recovery. The effects of infectious disease emergencies and pandemics can result in long-term cultural and economic disruptions to community life, small businesses, and local safety. In order to protect Ventura from these long-term effects, it is vital that Ventura maintains public relief funds and disseminates public health-related information in multiple languages via platforms such as City websites, texts, emails, and public alert systems.

RPC 2 (b) (ii)

Emergency Evacuation

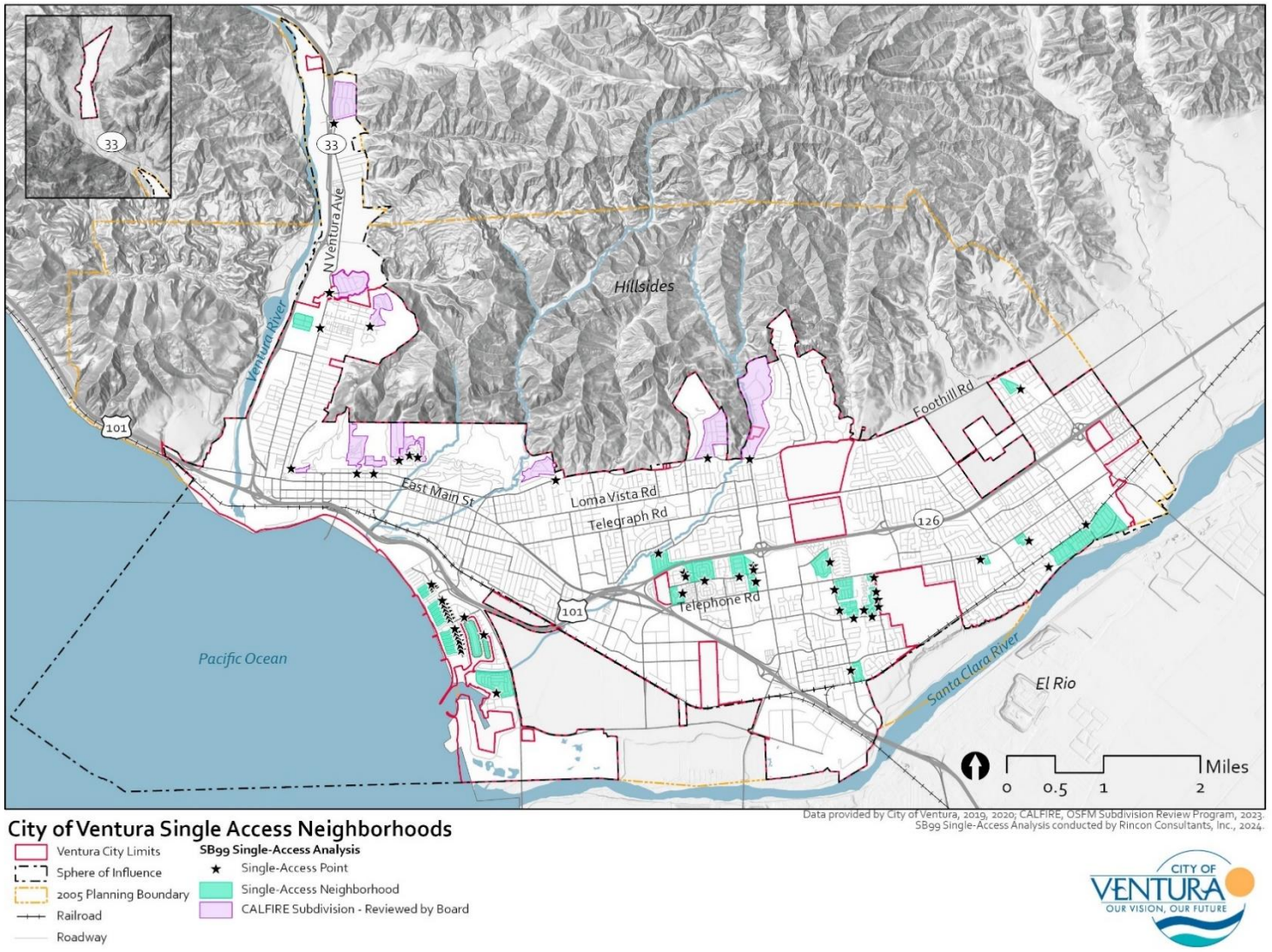
As part of the General Plan update process, the City of Ventura completed an emergency evacuation analysis pursuant to Senate Bill 99 (Section 65302) and Assembly Bill 747 (Section 65302). Senate Bill 99 requires cities to identify any residential developments in any hazard area that does not have at least two evacuation routes. Assembly Bill 747 requires scenario modeling to identify evacuation routes and their capacity, safety, and viability under a range of emergency scenarios. The City of Ventura has conducted an Emergency Evacuation Analysis under three emergency hazard scenarios, including wildfire in the City's northern hillsides, coastal flooding due to tsunami or storm wave impacts, and riverine flooding along the Santa Clara and Ventura Rivers. This analysis can be found in Appendix B.

Figure 12 shows the neighborhoods and subdivisions throughout the city that have a single entry or exit point (as identified by CAL FIRE and/or the City). According to the analysis, there are 12 CAL FIRE subdivisions and 44 other neighborhoods that have only one evacuation route (also known as single access). This large number of single-access streets could cause extensive issues for emergency services to reach residents, especially vulnerable populations, in the city should an emergency event occur. The analysis allows the City to identify areas at higher risk of human welfare impacts and supports new evacuation strategies that improve the transportation system in future evacuation events.

These strategies include implementing traffic management strategies, improving communication among entities involved in the management of response, improving communication between the City and the public, and prioritizing vulnerable populations such as individuals with high outdoor exposure, under-resourced individuals, individuals facing systemic discrimination, and individuals with chronic health conditions or health related sensitivities, as identified in the City of Ventura Climate Change Vulnerability Assessment (see Appendix A).

RPC 2 (b) (ii)

Figure 12. Neighborhoods/Subdivisions with One Entry/Exit



Key Considerations

Faulting and Seismic Hazards

- The City of Ventura is located in Seismic Zone 4, which is the zone of greatest risk from earthquakes, and is likely to experience violent ground shaking due to nearby seismic activity.
- There are several active faults located in the city, including: Ventura Fault (a State-designated Alquist-Priolo Earthquake Fault Zone), Oak Ridge Fault, McGrath Fault, Red Mountain Fault.
- Ground shaking and earthquakes from these faults could lead to liquefaction, soil expansion, and landslides, as well as tsunamis and flooding.
- To adequately prepare for and protect the city from faulting and seismic hazards, a suite of mitigation strategies must be incorporated, such as:
    - requiring geologic and seismic investigations prior to development,
    - incorporating earthquake resistant building design into new development,
    - retrofitting existing buildings,
    - increasing resilience of critical facilities and utilities.

Landslides and Debris Flows

- The City of Ventura is surrounded by steep slopes and mountainous terrain, especially in the north and northeast portions of the city.
- These areas are the most likely to experience landslides and debris flows, including rock falls and mudslides, which can cause damage to people, buildings, and infrastructure.
- Due to the increased likelihood of extreme precipitation events from climate change effects, landslides and debris flow hazards will become increasingly common if proper mitigation measures are not followed.
- Potential mitigation strategies for landslides and debris flow include:
    - ensuring new development maintains adequate setbacks from potential debris flow areas,
    - redirecting runoff from unstable areas,
    - reconstructing roads to meet soil hazard standards,
    - performing geologic site evaluations prior to development planning,
    - and discouraging development in high landslide risk areas.

Flood Hazards and Dam Failure

- The city is located between two major watersheds, the Ventura River and Santa Clara River Watersheds, and is at risk from flooding due to its relative location to these watersheds.

RPC 2 (b) (ii)

- The city has experienced historical flooding, which caused extensive damage in 1969, 1978, 1998, and as recently as 2023.
- Areas along Arundell Barranca, Brown Barranca, Harmon Barranca, and VR-1 Levee could experience flooding if these conveyance systems become overwhelmed due to more frequent and severe precipitation events.
- The Casitas Dam, Matilija Dam, and the VR-1 Levee situated along the Ventura River, present the most significant dam failure risks.
- Without proper maintenance, these dams could pose substantial threats to the city due to the vast water volume held by the Casitas Dam and the substantial accumulation of debris behind the Matilija Dam.
- The Castaic Reservoir, Pyramid Reservoir, and Bouquet Canyon Reservoir, located along the Santa Clara River pose risks to the southern portion of the city.
- It is vital the City incorporates flood mitigation strategies such as:
    - regulating new development in FEMA flood hazard zones,
    - prohibiting critical facilities in flood hazard zones,
    - maintaining drainage infrastructure in the city,
    - performing floodplain improvements.

Tsunamis and Sea Level Rise

- The City of Ventura is at risk of inundation from tsunami's due to proximity to Pacific Ocean and has experienced impacts in the past, most recently in 2011.
- Low-lying areas along the Ventura River, Santa Clara River, Ventura Harbor, and west of US-101 and Harbor Boulevard are especially at risk to inundation from tsunami.
- Sea level rise impacts include coastal erosion, fluvial flooding, storm flooding, storm wave impacts, and rising tides.
- Sea level rise is projected to be one of the most impactful climate hazards to the City of Ventura and will require redevelopment, movement of infrastructure, building retrofitting, significant damages to private and public property, and potential loss of life.
- Significant damage to US-101, the City's wastewater treatment plant, and low-lying residential and commercial areas are expected by the end of the century.

Wildfires and Urban Fires

- Much of the northern and northeastern portions of the city are designated as Very High Fire Hazard Severity Zones (VHFHSZ) by CAL FIRE and much of the city is located in the WUI zone, where risks to infrastructure, buildings, residential areas, and residents are high.
- Recently, the 2017 Thomas Fire destroyed 686 structures in the city, resulted in the evacuation of much of the City, caused over 171 million dollars in agriculture losses throughout the County, and required millions of dollars in suppression and rebuilding costs.
- The impacts of climate change are projected to exacerbate wildfire hazards throughout the city, requiring the need for updated mitigation strategies, evacuation protocols, and response operations.

RPC 2 (b) (ii)

- The City of Ventura participates in the statewide mutual aid system, which allows for the progressive mobilization of resources to and from emergency response agencies, local governments, operational areas, regions, and states.
- The city has implemented updated mitigation strategies via input from partners like the City of Ventura Fire Department, the Ventura Police Department Office of Emergency Services, the County of Ventura Fire Department, the Ventura County Sheriff's Emergency Services, the Ventura Regional Fire Safe Council, and the Ventura Resource Conservation District.

Terrorism

- The City of Ventura has never experienced a terrorist attack and although the probability of such an attack is low, understanding the consequences of such an attack is necessary.
- Terrorist attacks can threaten critical assets and residents in the City, such as government buildings, hazardous materials generators and storage facilities, transportation networks, schools, churches, water facilities, and residential and commercial areas.
- To prevent and prepare for a potential attack, the City relies on the Emergency Operations Plan and coordinates with the County's Terrorism Warning Group, Terrorism Working Group, and the Joint Regional Information Center.

Disease

- Infectious disease emergencies and pandemics can pose extreme risks for at-risk communities, such as older adults and those with compromised immune systems.
- During the COVID-19 pandemic, the City faced unprecedented impacts related to disease and worked to minimize the impacts on public health and local businesses. Emergency plans such as the Economic Development COVID-19 Gap Plan were developed to assist the local economy, and regular education and public outreach was conducted to ensure residents were up to date on the latest information related to the disease.
- Further disease emergencies could result in similar impacts as those experienced during the COVID-19 pandemic and it is necessary to maintain adequate preparatory and mitigation measures to ensure that these impacts are not severe.
- The Ventura County Health Care Agency maintains an Emergency Preparedness – Pandemics site to provide residents with an up-to-date outbreak response plan.
- Additionally, the County's Emergency Operations Plan provides guidance for managing disease outbreaks and pandemics throughout the county.
- Coordinating with regional, state, and federal agencies as well as providing updated educational materials to the public are necessary first steps to ensure that disease emergencies do not severely impact at risk communities in Ventura.

Emergency Evacuation

- There are 12 CAL FIRE subdivisions and 44 other neighborhoods in Ventura that are single access, which could cause extensive issues for emergency services and evacuations.
- Single access roads prevent emergency services from gaining rapid access to these areas and could cause high traffic and bottleneck effects during an evacuation scenario.

RPC 2 (b) (ii)

- The City must identify areas where the highest risks occur and improve transportation, road networks, and evacuation management/emergency response in these areas.
- Strategies such as widening roads to accommodate for emergency vehicles, connecting single access roads, implementing traffic management strategies, and improving coordination between emergency services are vital for the City to manage emergency evacuation scenarios.

RPC 2 (b) (ii)

Goals and Policies

Faulting and Seismic Hazards

Goal SE-1: Minimize the risk of loss of life, injury, damage to property, and economic and social dislocation resulting from fault rupture and seismically induced ground shaking.

1.1 **Geologic and engineering investigations.** Require site-specific geologic and engineering investigations for proposed new developments. Implement mitigation prior to development of any site in an Alquist-Priolo earthquake fault zone or within 100 feet of an identified active or potentially active fault.

1.2 **Active fault setback distances.** Provide appropriate setbacks, as determined by engineering geologic investigation, where necessary for any proposed development located on or near an active or potentially active fault.

1.3 **Notice of geologic hazards.** Continue requiring all developers of projects within known fault hazard areas to follow City guidelines by recording a Notice of Geologic Hazards with the County Recorder describing the hazards on the parcel and the level of prior geologic investigation conducted.

1.4 **Faulting/seismic hazards for new development**. Require hazard mitigation, project redesign, and site-specific evaluation to avoid seismic hazards, such as the delineation of building envelopes, increasing building setback and foundation requirements, and increasing structural safety standards as deemed necessary, to minimize faulting/ seismic hazards for new development and redevelopment.

1.5 **Seismic retrofitting.** Continue to investigate options for seismic retrofitting of older buildings that do not meet current seismic standards and provide residents with resources to retrofit older potentially vulnerable residential structures through the City's Seismic Retrofit Program and other grant programs such as the FEMA Earthquake Brace & Build program.

1.6 **Critical and lifeline facilities.** To the extent feasible, require new critical facilities such as hospitals, police stations, fire stations, emergency services facilities, and utility facilities to be located outside fault hazard zones and require incorporation of construction principles that ensure such projects resist damage and facilitate evacuation on short notice.

RPC 2 (b) (ii)

Soil Hazards

Goal SE-2: Minimize loss, injury, damage, and economic and social dislocations resulting from soil hazards such as soil landslides, debris flow, soil expansion, and settlement.

2.1 **Setbacks from debris flow.** Require all new and future development to provide setbacks that mitigate risk from potentially unstable areas, including potential debris flow channels, whenever identified through required engineering and geologic studies.

2.2 **Drainage plans.** Require drainage plans to be designed to direct runoff away from unstable areas for all new development.

2.3 **Surface runoff in unstable areas.** Discourage surface water runoff where in areas known to be unstable.

2.4 **Road reconstruction.** Require road reconstruction to implement recommended mitigation measures determined appropriate by engineering and geologic study where washouts or landslides have occurred on public or private roads.

2.5 **Notice of geologic hazards.** Continue requiring developers of projects in areas of known slope instability or debris flow hazard to record a Notice of Geologic Hazards with the County Recorder, which describes the potential hazards on the parcel and the level of prior geologic investigation conducted.

2.6 **Geologic and engineering investigations.** Require project proponents to perform geotechnical evaluations and, as necessary, implement appropriate mitigation prior to development of any site with slopes greater than ten percent or that otherwise have the potential for landsliding and along bluffs, dunes, beaches, or other coastal features.

2.7 **Geologic and soil evaluations.** Require project proponents to perform geotechnical evaluations and implement mitigation prior to development of any site in areas mapped as having moderate or high risk of liquefaction, subsidence, or soil expansion.

Flood Hazards and Dam Failure

Goal SE-3: Minimize loss of life, injury, property damage, and economic and social dislocations resulting from inundation by dam failure or floods.

3.1 **New development in flood zones.** Require new development in flood zones and dam inundation areas to minimize flood potential by incorporating filling, grading, dredging, and other strategies that may decrease flood damage. Ensure that development siting and design features will not increase flood inundation potential offsite.

3.2 **New essential facilities in flood zones.** Prohibit the siting and construction of new essential public facilities, including hospitals and health care facilities, emergency shelters, fire stations, emergency command centers, and emergency communications facilities, in flood hazard zones, when feasible. If an essential facility must be located in a flood hazard zone, incorporate methods consistent with the Flood Plain Ordinance to protect structures from 100-

RPC 2 (b) (ii)

year flood hazards, such as raising the finished floor elevation outside the floodplain and incorporating stricter design standards.

3.3 **Critical and lifeline facilities.** Maintain the structural and operational integrity of critical facilities during and after flood events to continue providing critical services.

3.4 **Notice of flood hazards.** Continue requiring the developers of projects within an area of known flood hazard areas to record a Notice of Geologic and Hydrologic Hazards with the County Recorder describing the hazards on the subject parcels and the extent of prior hydrologic or geologic investigation conducted.

3.5 **Floodplain improvements.** Partner with the Ventura County Watershed Protection District to complete drainage improvements to enable parcels to be removed from the 100-year floodplain whenever feasible. Coordinate flood control planning with the Ventura County Public Works Department and Federal Emergency Management Agency.

3.6 **Flood control.** Protect and maintain natural hydrological and ecological functions by implementing flood control improvements that use natural materials when possible. If the use of natural materials is not feasible, select the most environmentally preferred option and limit concrete channelization to the extent possible. As feasible, conduct regular inspections of local watersheds and historical flood areas to identify and remove potential blockages that could exacerbate flood conditions.

Tsunamis and Sea Level Rise

Goal SE-4: **Minimize loss of life, injury, property damage, and economic and social dislocations as a result of tsunamis and sea level rise.**

4.1 **Expand Coastal Open Space.** Improve and expand coastal open space to address sea level rise by identifying replacement opportunities for recreational areas and accessways that will be lost due to inundation or damage associated with tsunamis and sea level rise. Continue to relocate or reinforce coastal recreation areas, in alignment with the Surfers Point Managed Retreat Project.

4.2 **Sea Level Rise Retreat Strategy.** In collaboration with Ventura County and state agencies, develop a sea level rise retreat strategy with coastal restoration projects and public access that would enhance coastal ecosystems and increase coastal recreation opportunities.

4.3 **Public Education.** Identify subsidy programs for educating vulnerable populations regarding tsunami and sea level rise impacts and provide these materials in resident-represented languages.

4.4 **Grant Funding Opportunities.** Research external funding opportunities, including grants to support coastal resilience and coastal restoration through agencies, such as the California Coastal Conservancy, California Coastal Commission, California Ocean Protection Council, NOAA, and the California Division of Boating and Waterways.

4.5 **Agriculture Protection Strategies.** In partnership with Ventura County and state agencies, establish sea level rise strategies as part of an agricultural protection program to identify, acquire, incentivize, and manage areas appropriate for new/renewed agricultural use and/or for the protection of current or future agricultural lands.

RPC 2 (b) (ii)

4.6 **Replace Agriculture Land.** Identify and designate inland areas suitable for agricultural production to replace agricultural production areas that could be lost to sea level rise.

4.7 **Transportation Route Protection.** In coordination with Caltrans and local public works/transportation agencies, consider phased and trigger-based adaptation measures when planning for the adaptation of transportation infrastructure to sea level rise impacts over time. Design phases to address expected amounts of sea level rise and associated impacts to coastal resources, and to minimize impacts on access and mobility as well as on environmental, recreational, and public access resources over the planning horizon. Phased measures may include hard shoreline protective devices for limited periods of time, elevation, and/or relocation, if otherwise consistent with relevant Local Coastal Program and, if applicable, Coastal Act policies.

4.8 **Wastewater Treatment Plant.** Collaborate with the Ventura Water Quality Control Boards to increase the facility's resilience to sea level rise and stronger storms. Conduct feasibility studies from technical experts, retrofitting, relocating, or eliminating outfalls deemed "at risk."

4.9 **Septic System Vulnerability.** Identify, redesign, or eliminate septic systems in hazardous areas that can be potentially impacted by sea level rise or tsunami inundation.

4.10 **Access to Critical Facilities.** Provide alternate routes and ensure redundancy of critical transportation routes, as possible, to allow for continued access and movement to and along the coast in instances in which sections of roadways may become temporarily impassible because of coastal flooding hazards.

4.11 **Evacuation Protocols.** Provide education and training to the public, especially those located in tsunami inundation zones, about evacuation protocols during a tsunami evacuation event and promote enrollment into the VC-Alert system for residents.

4.12 **Tsunami Operational Response Guide.** Regularly review the County's Tsunami Operational Response Guide and maintain City agency compliance with this guide to protect residents in the event of a tsunami event.

4.13 **Upgrade Utility Systems.** Identify and upgrade public and private utility systems that are vulnerable to inundation from tsunamis and sea level rise including electric, gas, oil, sewer, and communication systems, to ensure the operation and timely restoration of essential systems.

Wildfires and Urban Fires

Goal SE-5: **Minimize loss of life, injury, and property damage as a result of wildfires and urban fires.**

5.1 **Risk mitigation for developments**. Maintain stringent initial site design and on-going maintenance standards incorporating adequate mitigation measures into individual developments to achieve an acceptable level of risk, considering the added risks associated with increased wildland fire hazards due to climate change. Prioritize new housing outside the WUI. These standards shall be consistent with applicable requirements in the California Building Standards Code, Ventura Municipal Code, Ventura City Fire Department Standards and Guidelines, and CAL FIRE Fire Safe Regulations.

RPC 2 (b) (ii)

5.2 **Fire ignition sources.** Reduce potential fire ignition sources via utility undergrounding projects and projects described in the Ventura County Community Wildfire Protection Plan. Partner with Southern California Edison to promote and support vegetation removal around high voltage lines on private property.

5.3 **Retrofit strategies for existing structures.** Develop and implement a comprehensive retrofit strategy for existing structures in the municipal code, such as enforcing replacement of old roofing materials with fire resistant materials, especially in the VHFHSZ. Regularly update the municipal code to ensure alignment with the most up-to-date Ventura City Fire Department structure guidelines.

5.4 **Maintain critical facilities located within FHSZs.** Coordinate with the City and County Fire Departments to identify and maintain critical facilities located within Fire Hazard Severity Zones, including fire stations, water facilities off Ventura Avenue, emergency shelters, water tanks, healthcare facilities, and multiple care facilities.

5.5 **New critical facilities.** Whenever feasible, locate new critical facilities and new essential public facilities outside fire hazard zones, such as healthcare facilities, emergency shelters, fire stations, emergency command centers, and emergency communications facilities.

5.6 **Educate residents on fire reduction strategies.** Educate residents on fire hazard reduction strategies to employ on their properties, focusing on the most vulnerable populations such as older adults, individuals with disabilities, non-English speaking residents, and individuals with chronic health conditions.

5.7 **Maintain operable fire equipment.** Coordinate with the County and City Fire Departments to ensure that funding is available to maintain all fire equipment in an operable state to adequately respond to a major disaster.

5.8 **New development design requirements.** Require new development to meet or exceed fire safe design hardening requirements, safe access for emergency vehicles, visible street signs, and water supplies, as noted in the most current version of the California Building Standards Code, Ventura Municipal Code, Ventura City Fire Department Standards and Guidelines, and Board of Forestry and Fire Protection Fire Safe Regulations.

5.9 **Evacuation route evaluation.** Review and update as necessary the Emergency Evacuation Assessment with every update to the Multi-Jurisdictional Hazard Mitigation Plan to evaluate evacuation route capacity, safety, and viability under a range of emergency scenarios, in accordance with AB 747.

5.10 **Updated development standards.** Update the City's development standards to be in compliance with the City of Ventura Fire Prevention Division Fire Hazard Reduction Program Guidelines and review and consider incorporating, where feasible, the Ventura County Fire Department (VCFD) Fire Prevention Guidelines and Standards.

5.11 **Conduct Existing Development Study.** Identify existing development that does not conform to contemporary fire safety standards and, as feasible, assist in the retrofit and/or upgrade of such development to meet or exceed City of Ventura Fire Prevention Division Fire Hazard Reduction Program Guidelines.

RPC 2 (b) (ii)

5.12 **New development plans.** Require fire protection plans for all new developments and discourage new residential development within VHFHSZs, where feasible. Ensure fire protection plans include risk analysis, fire response capabilities, fire safety requirements, mitigation measures and design requirements, and wildfire education maintenance and limitations. Limit development in and adjacent to steeply sloped terrain in order to decrease exposure to rapid fire spread and increase accessibility for emergency crews.

5.13 **Defensible space precautionary measures.** Require all properties in the FHSZs to implement precautionary measures to create defensible space in compliance with regulations set forth in Senate Bill 63, Assembly Bill 3074, and VFD defensible space standards and guidelines. Require public and private properties in the city to maintain fuel breaks around structures by removing brush and flammable vegetation located within 100 feet of the property, maintain a five-foot ember resistant zone around structures located in FHSZs, continuing annual brush inspections, maintaining any tree adjacent to or overhanging any building free of dead or dying wood, and maintaining rooves free of leaves, needles, or other dead vegetation growth, as described in the Ventura County Multi-Jurisdictional Hazard Mitigation Plan.

5.14 **Evaluate wildfire suppression capacity.** Regularly evaluate the City's fire suppression capacity and future water supply availability, as part of the next Ventura County Multi-Jurisdictional Hazard Mitigation Plan.

5.15 **Adequate water availability.** Coordinate with Ventura Water and the Ventura River Water District and other water districts as appropriate to support the provision of adequate water throughout the city and provision of adequate water storage to meet future peak fire demands during times of peak domestic demand. Explore the feasibility of providing on-site water supply and storage to augment ordinary supplies that may be lost during a wildfire.

5.16 **Emergency roadways.** Maintain emergency roadways and improve them as necessary and appropriate to ensure ongoing availability of emergency services and capacity to accommodate community.

5.17 **Additional access points.** Construct additional points of ingress and egress in single access neighborhoods and CAL FIRE subdivisions whenever feasible, especially those located in the WUI in the northern portion of the city and modify evacuation routes to minimize or avoid increasing evacuation times or emergency access response times in these neighborhoods.

5.18 **Community fuel breaks.** Establish and maintain community fuel breaks and fuel modification/reduction zones, including public and private road clearance in neighborhoods in the WUI, the City's barrancas, and the Santa Clara and Ventura River watersheds.

5.19 **Street signage.** Require that all homes have visible street addresses and signage and impose parking limitations to ensure that access roads are not blocked by parked vehicles.

5.20 **Post-fire development**. Ensure that, after a large fire, re-development of damaged property complies with the requirements of construction in the Very High Fire Hazard Severity Zones and includes adequate provisions for emergency access, vegetation management, and firefighting, in compliance with current fire codes. After a large fire, promptly evaluate whether existing VHFHSZ designations are adequate.

5.21 **Update evacuation protocols.** Review and update evacuation protocols regularly to consider current community emergency evacuation needs in response to wildfires.

RPC 2 (b) (ii)

5.22 **Educational workshops.** Partner with Firewise Foundation, CAL FIRE, Ventura Resource Conservation District, Ventura County Wildfire Collaborative, and Ventura Regional Fire Safe Council to host educational workshops for property owners on defensible space, home hardening, and vegetation management based on the most up-to-date science and State guidelines to reduce wildfire risk. Target education of most up-to-date evacuation routes to at-risk populations including older adults and individuals with chronic health conditions.

5.23 **Firewise communities.** Support the development of Firewise communities in the City of Ventura via the National Fire Protection Association's (NFPA) program to enhance community wildfire resilience throughout the city.

5.24 **New development water supply.** Require all new developments to have adequate water supply to meet fire suppression needs and comply with applicable fire flow requirements.

5.25 **Adequate fire protection.** Ensure that adequate equipment, staffing, training, and resources are provided to the Ventura City Fire Department to meet current and future projected service demands and fire protection needs. Review new developments to ensure that adequate fire protection provisions are in place, including fire flow and emergency vehicle access.

5.26 **Inter-agency response.** Coordinate with CAL FIRE and Ventura County to incorporate best practices around wildfire risk reduction and vegetation management into maintenance and planning of parks and open spaces.

5.27 **Mutual aid.** Regularly review and update Mutual Aid agreements between the City and Ventura County to reflect new developments, population trends in the city, station staffing/equipment, and fire behavior shifts due to climate change. Ensure protections and response for all areas are adequately covered by the appropriate updates.

5.28 **Inclusions in municipal code.** Require that all VHFHSZs are identified in the City's municipal code along with defensible space requirements to mitigate fire hazards in these zones, in compliance with mitigation requirements listed in the state regulations.

5.29 **WUI Zones in Municipal Code**. Ensure that WUI zones are identified in the City's municipal code and requirements for fire hazard mitigation and follow the Ventura City Fire Department Fire Prevention Standards & Guidelines.

5.30 **Update Community Wildfire Prevention Plan (CWPP)**. Continuously update the City's CWPP to ensure that wildfire mitigation measures and actions are up to date and in compliance with local, state, and federal laws. Provide a City representative to the Ventura Regional Fire Safe Council so City projects are incorporated into the Ventura Regional Fire Safe Council plans and within the County's CWPP.

5.31 **Pursue Grant Funding**. Regularly pursue grant funding to fund the implementation of the General Plan Safety Element and the City's CWPP to ensure that measures and actions are successfully followed.

5.32 **Prevent high ignition encampments.** Regulate or otherwise prevent the location of homeless encampments within the Ventura River and Santa Clara River watershed to limit risk of activation of wildfire in high risk areas.

RPC 2 (b) (ii)

Emergency Evacuation

Goal SE-6: Ensure effective and efficient evacuation and disaster response for the entire community during emergencies.

6.1 **Single access neighborhoods.** As feasible, eliminate and minimize evacuation challenges with single access residential neighborhoods and develop secondary access.

6.2 **Single access neighborhood emergency access.** If secondary access cannot be established in single access neighborhoods, ensure that roadways and access points are in compliance with state standards for width and length to accommodate emergency access ingress and egress. Consider requiring new development adjacent to existing single access neighborhoods to connect to the single access neighborhoods and provide an additional access point.

6.3 **Improve response times.** Monitor for and work to resolve extended response time problems, as necessary, by increasing firefighting and support staff police resources, reviewing and conditioning annexations and development applications, and requiring funding of new services from fees, assessments, or taxes as new subdivisions are developed.

6.4 **Public education.** Continue to educate the public about the City's Emergency Operations Plan and Evacuation Plan for disaster events.

6.5 **Update Emergency Operations Plan.** Regularly update the Emergency Operations Plan to include an assessment of current emergency service and projected emergency service needs as described in the Fire and Police Department Strategic Plans, and goals or standards for emergency services training for City staff and volunteers.

6.6 **Continue to evaluate existing evacuation modeling and protocols.** Identify alternative plans for evacuation depending upon the location and dynamics of the emergency and conduct traffic modeling to quantify travel times under various likely scenarios. Consider the adequacy of emergency access under a range of emergency scenarios, including proximity to existing fire services and the capacity of existing services.

Hazardous Materials

Goal SE-7: Protect the community and environment from the effects of hazardous materials released into the air, land, or water.

7.1 **Risks from hazardous materials.** Continue to regulate the locations of businesses that utilize hazardous materials to prevent excessive hazard materials exposure to people or the environment in accordance with state and federal laws.

7.2 **Cleanup of sites.** Continue to coordinate with the Ventura County Environmental Health Department, CUPA, and the Regional Water Quality Control Board to cleanup sites that have been contaminated by hazardous materials releases, especially those that have contaminated groundwater, to prevent further spread of contaminated groundwater.

7.3 **Funding.** Work with property owners to identify state and federal funding sources for cleanup of contaminated sites in Ventura.

RPC 2 (b) (ii)

7.4 **Commercial project requirements.** Continue requiring proponents of projects on sites with the potential for soil and/or groundwater contamination to perform soil and groundwater contamination assessments in accordance with American Society for Testing and Materials standards, and if contamination exceeds regulatory action levels, require the proponent to undertake remediation procedures prior to grading and development under the supervision of the County Environmental Health Division, CUPA, County Department of Toxic Substances Control, or Regional Water Quality Control Board (depending upon the nature of any identified contamination).

7.5 **Household hazardous waste disposal.** Continue holding Household Hazardous Waste (HHW) Events each month to provide a convenient public drop off and expand the HHW home collection program throughout the city.

7.6 **Household hazardous waste education.** Support public education about the importance of complying with the City's HHW Events, reducing or eliminating the use of hazardous materials, and use of non-toxic alternatives.

7.7 **Agency coordination for hazardous materials transportation.** Continue to follow guidelines set in the Hazard Mitigation Plan and Emergency Operations Plan regarding regional plans for transportation corridors for hazardous materials.

7.8 **Hazardous materials transparency.** As appropriate, work with county, state, and federal regulators to ensure that users, producers, and transporters of hazardous materials and waste comply with applicable requirements pertaining to hazardous material handling.

Terrorism

Goal SE-8: **Protect life and property from the potential effects of terrorism.**

8.1 **Terrorism vulnerability.** As part of the new and existing development review process, conduct vulnerability assessments of terrorist-sensitive facilities and, where practical, incorporate methods to protect these facilities against terrorist acts. Terrorist-sensitive facilities include places that are at-risk for terrorism, including, but not limited to, government offices, schools, and religious facilities.

8.2 **Special events.** Ensure that providers of major special events in City-owned facilities and public spaces, such as the County Fair, implement appropriate security plans to address potential terrorism concerns.

8.3 **Cross-jurisdictional information sharing.** Ensure that terrorist-related information is shared with Federal, State, and local law enforcement agencies and the Ventura County Joint Regional Intelligence Center (JRIC) via the Terrorism Liaison Officer to identify and minimize terrorism risk. Continue to actively participate in the County's Terrorism Early Warning Group and Terrorism Working Group to maintain up-to-date information sharing standards.

RPC 2 (b) (ii)

Disease

Goal SE-9: Limit loss of life and economic disruption due to pandemics.

9.1 **Disease Spread.** During a pandemic or similar infectious disease event, coordinate with the Ventura County Department of Public Health to implement measures that minimize the spread of disease including, but not limited to: providing testing and contact tracing resources and promoting public safety protocols, maintaining up-to-date health services on the City's website, connecting residents with up-to-date County infectious disease information, and partnering with local non-governmental organizations and community groups to provide economic support services.

9.2 **Expert Guidance.** During an infectious disease transmission event, implement the guidance of the City's Emergency Operations Plan, County, State, and federal health officials to protect human health.

9.3 **Website Resources.** Maintain up-to-date public health service information on the City's website for all emergencies.

9.4 **Public Information Campaign.** Ensure that all public health information including personal safety equipment, public safety best practices, and health advice is published in multiple languages via multiple avenues, such as website posts, text message, phone calls, emails, and public alert systems.

RPC 2 (b) (ii)

Implementation Actions

Timeframe: Short-term, Mid-term, Long-term, Ongoing
Types of Actions: Partnership, program, study, plan, physical improvements, etc.

Implementation Actions	Associated Goals	Timeframe	Type of Action	Responsibility
Seismic Standards: Regularly update existing and future standards of the City of Ventura Municipal Code to meet seismic safety standards established by the California Building Code and Alquist-Priolo Earthquake Faulting Zone in order to protect residents of Ventura.	SE-1	Ongoing	Plan	Community Development
Fire Hazard Pre-Plans: Continue to develop evacuation strategies and other preemptive fire hazard mitigation strategies to protect Ventura residents, workers, and visitors.	SE-5, SE-6	Ongoing	Plan	Public Works, Community Development, City of Ventura Fire Department, Ventura County Fire Department, City of Ventura Police Department
Defensible Space Compliance: Regularly maintain defensible space around structures in compliance with Senate Bill 63 and Assembly Bill 3074 and enforce these standards on private properties	SE-5	Ongoing	Program	Public Works, Community Development, City of Ventura Fire Department, Ventura County Fire Department
Update Community Wildfire Protection Plan: Regularly update the City's CWPP to ensure that residents, resources, and infrastructure are adequately prepared for wildfire hazards and that maintenance standards comply with updated state and federal fire safe regulations.	SE-5	Ongoing	Plan, Program	Public Works, Community Development, City of Ventura Fire Department, Ventura County Fire Department, Ventura Regional Fire Safe Council
Grant Funding: Apply for state and federal grant funding to implement priority policies, measures, and actions from the CWPP and Safety Element such as fuel break maintenance, defensible space maintenance, etc.	SE-5	Ongoing	Plan, Program	Community Development, City of Ventura Fire Department, Ventura County Fire Department, Ventura Regional Fire Safe Council

RPC 2 (b) (ii)

Implementation Actions	Associated Goals	Timeframe	Type of Action	Responsibility
Wildland-Urban Interface Fire Standards: Require that developments located in the HFHSZ and VHFHSZ incorporate and enforce Ventura Fire Department Fire Hazard Reduction Program guidelines and standards for construction, including building retrofitting and fuel modification projects.	SE-5	Ongoing	Plan, Program	Public Works, Community Development, City of Ventura Fire Department
Fire Risk Reduction Community List: Apply for the CAL FIRE Fire Risk Reduction Community List and perform zoning updates and requirements necessary to achieve priority community standing.	SE-5	Ongoing	Plan, Program	Public Works, Community Development, City of Ventura Fire Department
Hazard and Emergency Safety Information: Provide hazard and emergency safety information to the public, including evacuation routes and fire protection resources via the City's website and social media platforms.	SE-6	Ongoing	Program	Public Works, Office of Emergency Services
Roadway Assessment: Assess existing roadways along evacuation routes and emergency access routes to determine the adequacy of existing infrastructure.	SE-5, SE-6, SE-7	Ongoing	Program	Public Works, City of Ventura Fire Department, Ventura County Fire Department
Critical Facilities Relocation Plan: Periodically review critical facilities to identify necessary updates and improvements or new or changed hazards and, as necessary, develop a plan for relocation.	SE-1, SE-2, SE-3, SE-5, SE-6	Ongoing	Program	Public Works, Community Development
Municipal Code Updates: Update the City's Municipal Code to incorporate City of Ventura Fire Prevention Division Fire Hazard Reduction Program Guidelines and Ventura County Fire Department Fire Prevention Standards and Guidelines 416, 418, 420, 421, and 423 to include requirements for retrofitting structures, altering landscapes, and maintaining defensible space in the VHFHSZs.	SE-5	Ongoing	Program, Plan	Public Works, Community Development

RPC 2 (b) (ii)

Implementation Actions	Associated Goals	Timeframe	Type of Action	Responsibility
Update Flood Hazard Data: Regularly review flood hazard maps and other relevant floodplain data and revise local maps and information as new data becomes available.	SE-3	Ongoing	Program	Community Development, Public Works
Review City's Emergency Operations Plan: Regularly perform a comprehensive review of the City's Emergency Operations Plan to determine the need for an update.	SE-6, SE-7, SE-8, SE-9	Ongoing	Plan	Office of Emergency Services
Publish Safety Information: Publish mapped evacuation routes, crime statistics, and other pertinent safety information on the City's website and social media.	SE-3, SE-4, SE-5, SE-6, SE-7, SE-8, SE-9	Ongoing	Program	Communications, Office of Emergency Services
Training and Education Program: Annually implement an education and training program regarding how to increase public safety in response to natural hazards and crime.	SE-1 to SE-9	Ongoing	Program	Office of Emergency Services, Communications, Public Works
Community Engagement: Support VRFSC on conducting public outreach to enroll in VRFSC's defensible space, home hardening, and vegetation management programs in coordination with the National Fire Protection Association.	SE-5	Ongoing	Program	Ventura Regional Fire Safe Council, City of Ventura Fire Department, Public Works Department
Tsunami Awareness: Establish education and training meetings for the public about tsunami evacuation protocols and routes.	SE-4	Ongoing	Program	City of Ventura Fire Department, City of Ventura Police Department, Public Works Department

RPC 2 (b) (ii)