



**CITY COUNCIL / PLANNING COMMISSION
JOINT SPECIAL MEETING AGENDA
CITY OF HALF MOON BAY**

TUESDAY, NOVEMBER 18, 2025

**ADCOCK COMMUNITY CENTER
535 KELLY AVENUE
HALF MOON BAY, CA 94019**

**Robert Brownstone, Mayor
Debbie Ruddock, Vice Mayor
Patric Jonsson, Councilmember
Paul Nagengast, Councilmember
Deborah Penrose, Councilmember**

**Steve Ruddock, Planning Chair
David Gorn, Planning Vice Chair
Christopher Del Nagro, Planning Commissioner
Jacob (Jim) Rems, Planning Commissioner
Rick Hernandez, Planning Commissioner**

7:30 PM

This agenda contains a brief description of each item to be considered. Those wishing to address the City Council on any matter not listed on the agenda, but within the jurisdiction of the City Council to resolve, may come forward to the podium during the Public Forum portion of the agenda and will have a maximum of three minutes to discuss their item. Comments on Consent Calendar items should be made during the Public Forum section of the agenda. Those wishing to speak on a Business or Public Hearing matter will be called forward at the appropriate time during that item's consideration.

Please Note: Anyone wishing to present materials to the City Council, please submit seven copies to the City Clerk.

Copies of written documentation relating to each item of business on the agenda are on file in the Office of the City Clerk at City Hall where they are available for public inspection. If requested, the agenda shall be available in appropriate alternative formats to persons with a disability, as required by Section 202 of the Americans with Disabilities Act of 1990 (42 U.S.C. Sec. 12132.) Information may be obtained by calling 650-726-8271.

In compliance with the Americans with Disabilities Act, special assistance for participation in this meeting can be obtained by contacting the City Clerk's Office at 650-726-8271. A 48-hour notification will enable the City to make reasonable accommodations to ensure accessibility to this meeting (28 CFR 35.102-35.104 ADA Title II).

<http://halfmoonbay.gov>

HYBRID MEETING PUBLIC COMMENT PARTICIPATION PROTOCOLS

*This closed session meeting will take public comment in-person and via Zoom. Remote participation is provided as a supplemental way to provide public comment, but this method does not always work. The public is encouraged to attend in person to ensure full participation. All Councilmembers and staff will participate in person. During any public comment portions, attendees may use the “raise your hand” feature and will be called upon and unmuted when it is their turn to speak. Please click to join the webinar: <https://us06web.zoom.us/j/85007693509> or join by phone at 669-900-9128, using Webinar ID 850 0769 3509. If joining by phone, use *9 to raise your hand, *6 to mute and unmute.*

1. CONVENE SPECIAL MEETING / ROLL CALL

2. SPECIAL STUDY SESSION: CITY COUNCIL / PLANNING COMMISSION

2.A LOCAL RESPONSIBILITY AREA FIRE HAZARD SEVERITY ZONES MAPS

Staff Recommendation: Receive a report about Fire Hazard Severity Zones maps and the implications to the Half Moon Bay community associated with the maps and Defensible Space Zones.

[STAFF REPORT](#)

[ATTACHMENT](#)

2.B HALF MOON BAY SAFETY ELEMENT UPDATE

Staff Recommendation: Receive a presentation on the progress of the City’s Safety Element update, provide for public comment, hold a discussion, and provide any direction or recommendations in response.

[STAFF REPORT](#)

[ATTACHMENT](#)

3. ADJOURN SPECIAL MEETING

BUSINESS OF THE COUNCIL OF THE CITY OF HALF MOON BAY

AGENDA REPORT

For meeting of: **November 18, 2025**

TO: Honorable Mayor and City Council, Honorable Chair and Planning Commission

VIA: Matthew Chidester, City Manager

FROM: Todd Seeley, Interim Public Works Director

TITLE: **LOCAL RESPONSIBILITY AREA FIRE HAZARD SEVERITY ZONES MAPS**

RECOMMENDATION:

Receive a report about Fire Hazard Severity Zones maps and the implications to the Half Moon Bay community associated with the maps and Defensible Space Zones.

FISCAL IMPACT:

There is no fiscal impact associated with the receipt of this report.

STRATEGIC ELEMENT:

This recommendation supports the *Fiscal Sustainability, Healthy Communities and Public Safety, and Infrastructure and Environment* Elements of the Strategic Plan.

BACKGROUND:

On February 24, 2025, the Coastside Fire Protection District received the updated Fire Hazard Severity Zone (FHSZ) maps from the State Fire Marshal's Office. These maps were developed pursuant to Government Code Section 51178, which mandates the identification and classification of areas in California based on their relative fire hazard severity. The designation is a crucial step in implementing fire prevention strategies and ensuring the safety of residents in high-hazard areas.

Fire Hazard Severity Zone maps arose from major destructive fires, prompting the recognition of these areas and strategies to reduce wildfire risks. Legislative response led to mandated mapping across California under the California Public Resources Code 4201-4204, encompassing all State Responsibility Areas (SRA).

The Fire Hazard Severity Zone map evaluates hazard, not risk. The map is like flood zone maps, where lands are described in terms of the probability level of a particular area being inundated by floodwaters, and not specifically prescriptive of impacts. Hazard is based on the physical conditions that create a likelihood and expected fire behavior over a 30 to 50-year period without considering mitigation measures such as home hardening, recent wildfire, or fuel

reduction efforts. Risk is the potential damage a fire can cause the area under existing conditions, accounting for any modifications such as fuel reduction projects, defensible space, and ignition resistant building construction.

Fire Hazard Severity Zones are found in areas where the state has financial responsibility for wildfire protection and prevention, called the State Responsibility Area. More than 31 million acres are in this area. Under Senate Bill 63, Government Code 51178 was amended to add the Moderate and High Fire Hazard Severity Zones with the Very High in local jurisdictions.

DISCUSSION:

The publishing and adoption of these maps has led to nervousness and uncertainty for many property owners in Half Moon Bay. In addition to the FHSZ maps, State mandates for defensible space are set to be implemented which could impact multiple properties in Half Moon Bay. In 2020, California enacted Assembly Bill 3074, mandating the creation of an ember-resistant zone—referred to as “Zone 0”—within five feet of structures in designated high fire hazard areas. This initiative aims to reduce the risk of homes igniting from wind-driven embers during wildfires, a leading cause of structural fires.

Despite the law’s passage, implementation has faced delays. Originally set to take effect in 2023, the regulations have not been finalized, leaving many homeowners uncertain about compliance requirements. In response, Governor Gavin Newsom issued Executive Order N-18-25 in February 2025, directing the State Board of Forestry and Fire Protection to expedite the adoption of Zone 0 regulations. The goal is to have these regulations in place by the end of 2025.

Anecdotally, staff and Council have heard reports of insurance policies being cancelled or not renewed, or measures being imposed to allow property owners to renew their policies. Some portions of downtown Half Moon Bay lie in the Very High Severity Zone, and this could potentially lead to insurance policies being affected in these areas or could lead to the removal of street trees or possibly even awnings that currently exist on storefronts to come into compliance with Zone 0 requirements.

The areas in Half Moon Bay where there are large, vegetated swaths are also problematic due to the sheer size and complexity of these areas. In the Frenchman’s Creek Park area which lies in the Very High Severity Zone, there are approximately 60 city-owned trees along the creek and park area that may need to be addressed in the future at a significant cost to the city. In addition to parts of Main Street, both Carter Park and the Corporation Yard lie in the Very High Severity Zone, and both of those properties have a significant number of trees currently on them. On March 1, 2025, Governor Newsom proclaimed a state of emergency which reduces the administrative burden to allow for removal of trees for critical fuel reduction projects, and staff is researching the availability of grant funding to address these issues if required to do so.

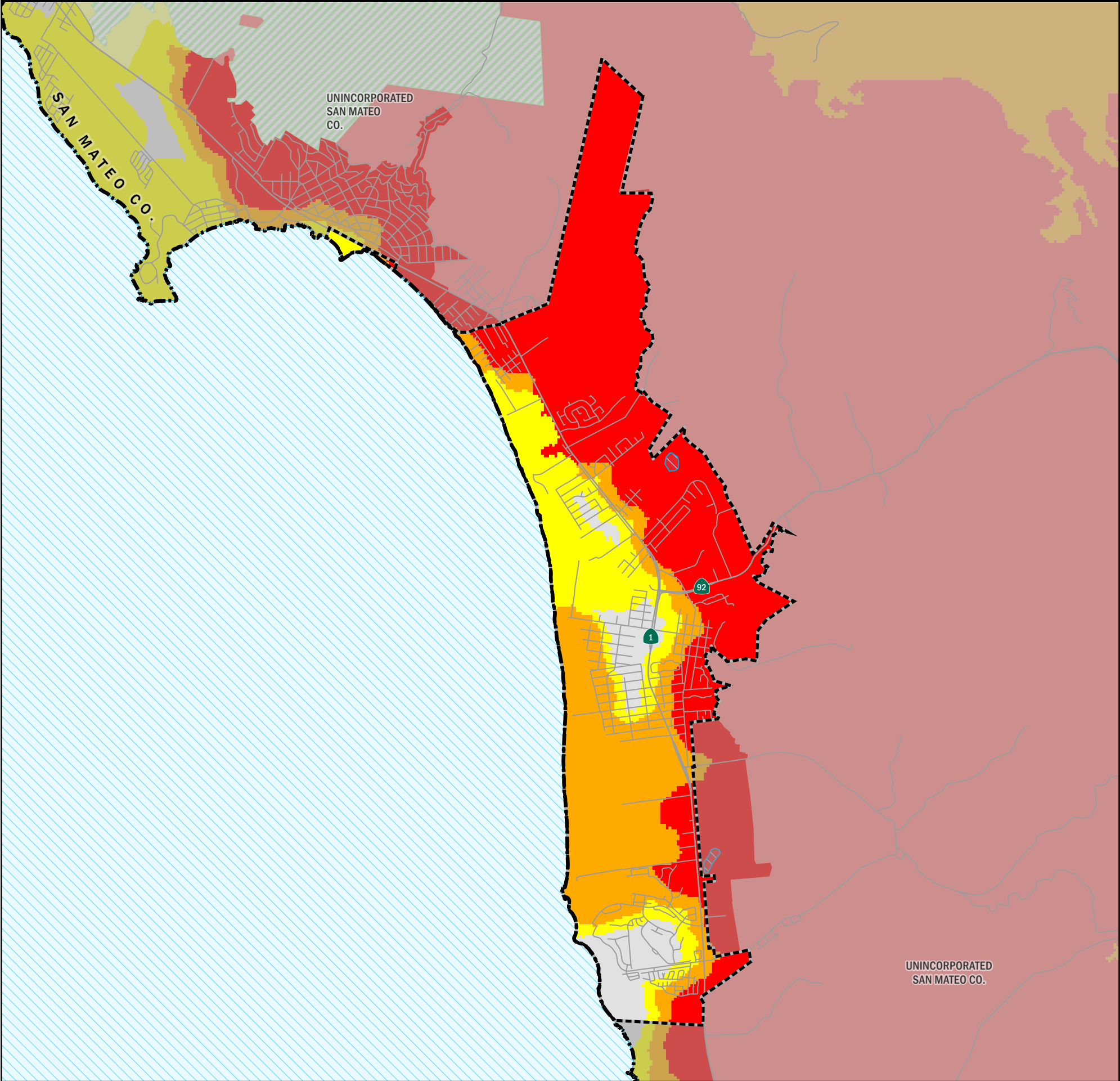
ATTACHMENT:

Half Moon Bay Local Responsibility Area Fire Hazard Severity Zones Map



Local Responsibility Area Fire Hazard Severity Zones

As Identified by the
State Fire Marshal
February 24, 2025



Fire Hazard Severity Zones (FHSZ) in Local Responsibility Area (LRA), as Identified by the State Fire Marshal

Very High High Moderate

Fire Hazard Severity Zones in State Responsibility Area (SRA), Effective April 1, 2024

Very High High Moderate

Mi 0 1 2

Km 0 1 2 3

Projection: NAD 83 California Teale Albers

Scale: 1:47,000 at 11" x 17"

Incorporated City

Unzoned LRA

Waterbody

Federal Responsibility Area (FRA)

BUSINESS OF THE COUNCIL AND PLANNING COMMISSION OF THE CITY OF HALF MOON BAY

AGENDA REPORT

For meeting of: **November 18, 2025**

TO: Honorable Mayor and City Council
Honorable Chair and Planning Commissioners

VIA: Matthew Chidester, City Manager

FROM: Leslie Lacko, Community Development Director

TITLE: **HALF MOON BAY SAFETY ELEMENT UPDATE**

RECOMMENDATION:

Receive a presentation on the progress of the City's Safety Element update, provide for public comment, hold a discussion, and provide any direction or recommendations in response.

BACKGROUND:

The Safety Element is a State-mandated General Plan Element that identifies potential natural and human-caused hazards that could affect residents, businesses, and services in the community. The purpose of the Safety Element is to establish a framework that identifies and anticipates these hazards and prepares the community to minimize risks and harm resulting from these hazards.

In recent years, the complexity of Safety Elements has grown in response to additional state requirements, more sophisticated mapping technologies, and expanded community outreach driven by heightened public interest in climate change and hazard planning. In response, several jurisdictions in San Mateo County expressed interest in collaborating on an update of their respective Safety Elements, which resulted in this multi-jurisdictional effort. The result will be an updated Safety Element that complies with State regulations while being tailored to the City of Half Moon Bay, is consistent with other General Plan Elements and other City plans, and will enhance the City's eligibility for grant funding.

State Law Requirements

A Safety Element is a required component of a county or city's General Plan, and recent changes to State law require local jurisdictions to update their Safety Elements. The specific components of a Safety Element update include:

1. Updated background information and mapping on hazardous conditions and evacuation concerns;

2. A vulnerability assessment that considers how climate change may affect natural hazards in the community, and the effects on populations and assets;
3. Amendments to goals, policies, objectives, and implementation measures, especially as they relate to climate change resiliency; and
4. Alignment of programs from other City and some County planning documents as well as State resources.

Relationship with the Local Coastal Program and Other Plans

The Safety Element is a high-level, broad document providing a comprehensive consideration of the safety of the community. It will be informed by other planning efforts. For example, the Local Hazard Mitigation Plan (LHMP) is a detailed implementation plan that identifies hazard risk mitigation projects, which through their identification in the LHMP are then eligible for FEMA Hazard Mitigation Grant funding. The certified Local Coastal Plan (LCP) includes policy and specific regulations related to safety. The LUP has policies, and the Implementation Plan includes zoning and development code sections of the Municipal Code. The LCP intersects with the Safety Element in many areas, especially the Environmental Hazards chapter, all of which staff has reviewed for consistency.

Key State Laws. The focus on Safety Element requirements in recent years is an attempt by the legislature to better align local land use planning with the changing landscape associated with natural and human-caused hazard risks. Catastrophic wildfires, severe flooding, extreme heat, and other climate-driven hazards have exposed gaps between local planning, emergency management, and infrastructure decision-making. To address these gaps, legislation like SB 1241 (wildfire), SB 379 (climate adaptation and resiliency), SB 99 (residential evacuation routes), and AB 747/1409 (evacuation route assessment) have been adopted since 2012 and must be addressed in the Safety Element.

Wildfire. With wildfire becoming a major issue throughout the State, Safety Elements are now expected to address the risks associated with wildfires and to be updated regularly. This requirement went into effect in 2014 and is triggered by updates to a City/County Housing Element and/or Local Hazard Mitigation Plan. The legislation (SB 1241) modified the California Government Code as follows:

Government Code §65302(g)(3) requires the Safety Element to address the risk of fire for land classified as state responsibility areas and land classified as very high fire hazard severity zones. For jurisdictions where these types of lands are classified, the Safety Element requires review by the CAL FIRE Land Use Planning Program and adoption by the California Board of Forestry and Fire Protection.

As a General Plan Element, the Safety Element must be consistent with the other Elements of the General Plan. For Half Moon Bay, this requires consistency with the LUP, which serves as the City's General Plan Land Use Element in that the City is located wholly within the Coastal Zone.

Climate Adaptation

California has focused on addressing the effects of climate change since 2006, however most of that work has focused on greenhouse gas emissions and climate mitigation. In response to many effects that climate change has on natural hazards, the legislature adopted SB 379, which modified the California Government Code requiring the following:

Government Code §65302(g)(4). Upon the next revision of a local hazard mitigation plan, the safety element shall be reviewed and updated as necessary to address climate adaptation and resiliency strategies applicable to the city or county. This update often is accompanied by a vulnerability assessment that identifies the risks posed by climate change. Results from the vulnerability assessment can help establish goals, objectives, and policies to help address hazards affected by climate change.

AB 2684. Related to climate change, the state recently adopted AB 2684 which requires jurisdictions to address extreme heat impacts on their communities. Under this requirement a community needs to identify areas most vulnerable to extreme heat, assess health and infrastructure risks, and include goals, policies, and implementation measures to reduce those risks. Addressing this issue can often overlap with emergency management activities, especially during extreme heat events. This requirement does not go into effect until January 1, 2028.

Evacuation Concerns

Evacuation has become a major concern in California due to the increasing frequency and intensity of disasters such as wildfires, floods, and extreme weather events driven by climate change. Recent wildfires—like those in Paradise (Camp Fire, 2018) and Lahaina, Hawaii (2023, as a comparable example)—demonstrated how limited road networks, rapid hazard escalation, and insufficient warning time can endanger lives. In many California communities, Half Moon Bay included, evacuation routes are constrained by geography (canyons, coastal zones, or mountain roads), older infrastructure, and high population densities, making safe and timely evacuations difficult.

The State has responded through legislation that requires local governments to analyze evacuation routes looking at their capacity, safety, and viability within their General Plan Safety Elements. This ensures that land use decisions, transportation planning, and emergency management are better aligned to protect public safety. The following legislative requirements apply to the Half Moon Bay Safety Element:

Single Ingress/Egress Conditions [Government Code §65302(g)(5)] requires the Safety Element to identify and understand the locations within the jurisdiction where single ingress/egress (locations with one access point) conditions are located.

Evacuation Assessment [Government Code §65302.15]: AB 747 (2019)/ AB 1409 (2021) requires each city and county to identify evacuation routes and evaluate their capacity, safety, and viability and evacuation locations under a range of emergency scenarios

within the Safety Element. This assessment must consider potential hazards such as wildfire, flooding, and seismic events, as well as factors like roadway capacity, congestion, and accessibility for vulnerable populations.

DISCUSSION:

The Draft Safety Element establishes a comprehensive framework for reducing risks from natural and human-caused hazards while improving community resilience. The element identifies key local hazards including earthquakes, landslides, flooding, wildfire, drought, sea level rise, extreme heat, and hazardous materials and sets forth goals, policies, and actions to protect people, property, and the environment. The element also addresses climate adaptation, emergency preparedness, and public safety coordination to prepare Half Moon Bay for both current and future challenges. The Safety Element's nine goals (SE-1 through SE-9) are supported by specific policies and actions designed to improve public safety, protect infrastructure, and foster community awareness and collaboration. Below is a high-level overview of goals. All the goals, policies, and actions are in the Draft Safety Element, beginning on page 40 (Attachment 1).

Goal SE-1: A community that understands and prepares for the threat associated with earth processes.

- Policies under this goal focus on implementing seismic safety regulations, requiring fault investigations, and restricting development in hazardous areas.
- Actions include retrofitting unreinforced masonry in City-owned buildings, updating geologic hazard maps, and requiring geotechnical analyses for new subdivisions. Collectively, these measures ensure new and existing structures meet the highest seismic safety standards and minimize exposure to earthquakes, landslides, and liquefaction hazards.

Goal SE-2: A community where flooding no longer impacts residents and businesses.

- Supporting policies require floodplain mapping updates, elevation of habitable structures above base flood elevations, and preservation of natural floodplains. The Element also addresses tsunami and dam failure risks, mandating siting standards for critical facilities, and coordination of early warning systems.
- Implementation actions include updating the Storm Drain Master Plan, improving stormwater infrastructure, and maintaining Half Moon Bay's Tsunami Ready status. Together, these strategies strengthen flood resilience and enhance public awareness through multilingual outreach and hazard disclosure.

Goal SE-3: A community prepared and ready for wildfire events when they occur.

- This goal's policies emphasize fire-safe design, defensible space, and compliance with California Fire Code, and Fire Safe Regulations. It encourages development outside High and Very High Fire Hazard Severity Zones, or mandates fire-safe design and defensible space when unavoidable and promotes vegetation management and long-term maintenance of firebreaks on public and private land.

- Actions include infrastructure upgrades, evaluation of high-risk neighborhoods, and participation in Firewise and Community Wildfire Protection Plans. These measures promote preparedness, improve emergency access, and reduce fire risks in the wildland-urban interface.

Goal SE-4: A community where exposure to hazardous materials is minimized or eliminated.

- Policies discourage hazardous industries, encourage compliance with State chemical disclosure laws, and ensure coordination among emergency response agencies.
- Actions include maintaining and testing the City's coordination with the County, Coastside Fire and the Sheriff on hazardous materials incident response, hosting household hazardous waste collection events, and providing multilingual education on safe handling and disposal. Together, these steps safeguard public health and the environment while strengthening interagency emergency response.

Goal SE-5: A community that balances interactions between airport operations and daily life.

- Policies call for coordination with the Half Moon Bay Airport and surrounding jurisdictions on emergency preparedness and disaster response planning. Joint training exercises and cross-agency communication are emphasized to maintain safety in air operations while minimizing community disruptions.

Goal SE-6: A community better prepared for future weather challenges and conditions.

- Policies promote drought-tolerant plantings, graywater systems, and coordination with the Coastside County Water District to prepare for reduced supply.
- Actions support agricultural resilience, regenerative land management, and education to reduce water and energy demand to help residents adapt to a changing climate.

Goal SE-7: A community prepared for changing temperatures.

- Policies promote cooling centers, tree canopy expansion, building retrofits, and heat safety protocols for outdoor workers. Identify vulnerable populations, such as the elderly and agricultural laborers, to guide outreach and emergency services. These measures protect residents' health during heatwaves and maintain energy and water access in prolonged high-temperature events.

Goal SE-8: A coastal community that understands the dynamic natural processes affecting the coast.

- This goal integrates shoreline hazards, sea level rise, and emergent groundwater management. Policies ensure coastal development complies with the Local Coastal Program and coordinates with regional partners like OneShoreline and the California Coastal Commission. The Element encourages use of best available sea level rise projections, regular vulnerability assessments, and investments in resilient infrastructure to protect public assets, roadways, and natural resources.

Goal SE-9: A community that is prepared for future hazard and disaster events.

- Policies strengthen emergency preparedness, evacuation planning, and continuity of operations. The City will maintain updated emergency operations and hazard mitigation plans, expand shelter capacity, and integrate renewable energy and battery systems into public facilities.
- Actions include ongoing Community Emergency Response Team (CERT) training, enhanced mutual aid agreements, and multilingual public information programs. Collectively, these measures build a resilient city ready to respond and recover from emergencies while protecting vulnerable populations.

CONCLUSION:

The Safety Element, included as Attachment 1, includes a range of policies and actions under each of the 9 goals. It will be impossible to discuss each policy at the study session on November 18, 2025; therefore, staff encourages the public, City Council members, and Planning Commissioners to provide written comments to staff up until November 20, 2025. After all comments have been received and edits have been made, the next steps are as follows:

- Send the Draft Safety Element to CalFire for review
- Incorporate CalFire comments and then launch a second public draft
- Bring separately to Planning Commission and then City Council for public hearings and votes early in 2026

ATTACHMENTS:

Safety Element Draft <https://www.halfmoonbay.gov/961/Safety-Element-Update>



INTRODUCTION

The City of Half Moon Bay is located along the coast of San Mateo County, approximately 23 miles south of San Francisco. As a coastal community, Half Moon Bay connects to the Bay Area via Highway 1, with Pacifica and San Francisco to the north and Santa Cruz to the south. Highway 92 connects the city to the Peninsula and East Bay communities. As one of the earliest settlements in San Mateo County, Half Moon Bay enjoys a traditional downtown and unique agricultural heritage complementing the city's popular recreational activities supported by local beaches, parks, and scenic setting on the Pacific Ocean.

The city's location along the coast and rural setting drives the various natural and human-caused hazards that can affect the community. This element provides the policy framework for addressing emergency preparedness and evacuation, geologic and seismic hazards, flooding, severe weather and drought, extreme heat, shoreline hazards such as sea-level rise and emergent groundwater, fire, and human-caused hazards such as hazardous materials and airport safety. More details about the hazards and related topics present in the City of Half Moon Bay are included in a background report prepared as part of this process, attached to this Safety Element as Appendix A.



PLAN INTEGRATION

To support the Safety Element, the City relies on a variety of other plans and documents to help address community needs and support the discussions, findings, goals, policies, and actions within this element, including a Local Hazard Mitigation Plan, Vulnerability Assessment, a General Plan, and Local Coastal Program.

Local Hazard Mitigation Plan

A key document that supports the element is the Multi-Jurisdictional Local Hazard Mitigation Plan (LHMP), prepared by San Mateo County in partnership with Half Moon Bay, other incorporated communities, and special districts and agencies in San Mateo County. The County and its partners prepared the LHMP in accordance with the federal Disaster Mitigation Act of 2000 and the Federal Emergency Management Agency's guidance. As a participant in the Multi-Jurisdictional LHMP, Half Moon Bay adopted an Annex to this plan that covers the specific hazards relevant to the community. The LHMP identifies and profiles hazards, analyzes the people and facilities at risk, and develops mitigation actions to reduce or eliminate hazard risk. Implementation of these mitigation actions—both short- and long-term—occurs through planning, policy updates, programs, projects, and other activities.

In compliance with California Government Code Section 8685.9 (also known as Assembly Bill 2140), the current LHMP has been incorporated into the Safety Element, making the City eligible for additional funding opportunities under the California Disaster Assistance Act. The integration of the LHMP into the Safety Element allows Half Moon Bay to use the LHMP to satisfy State requirements and creates a stronger mechanism for implementing the LHMP. The LHMP is available online at <https://www.smcgov.org/dem/multijurisdictional-local-hazard-mitigation-plan>.

Vulnerability Assessment

To support the findings of the LHMP and address climate change requirements in accordance with Government Code Section 65302(g)3, the City prepared a Climate Adaptation Vulnerability Assessment, published in 2025, that identified the relevant hazards that could be exacerbated by climate change. This report is attached to this Safety Element as Appendix B. Much of the information within this assessment is based on data from Cal-Adapt, which is California's climate change data and visualization platform that provides localized data from global climate models. Overall, the hazards posing the greatest risk to Half Moon Bay include severe weather, wildfire, and flooding, which are discussed in further detail later in this Safety Element. The goals, policies, and actions identified in this element were included to help address the vulnerabilities of key populations and assets potentially vulnerable to climate change.

Half Moon Bay General Plan and Local Coastal Program

In addition to the LHMP, the Safety Element also works in concert with other elements of the General Plan as well as the City's Local Coastal Land Use Plan. Key elements that support the City's ability to address hazards and disasters include:

- Land Use – which promotes the proper use of land within the city, ensuring development does not occur in locations that may be hazard-prone.

- Circulation – identifies the circulation network within the city and the improvements that can help facilitate evacuations and the movement of people to safe locations.
- Local Coastal Land Use Plan – updated in 2020, this plan identifies policies and standards that apply to properties within the coastal zone of the city. Key chapters that integrate with the Safety Element include Chapter 2, *Development*; Chapter 6, *Natural Resources*; and Chapter 7, *Environmental Hazards*. A key document supporting this plan is the City's Sea Level Rise Vulnerability Assessment, adopted in 2016. The analysis in this assessment informs many of the policies and actions supporting sea level rise mitigation and shoreline hazards.

DRAFT



GEOLOGIC AND SEISMIC HAZARDS

Due to the city's location along the California coastline, several geologic and seismic hazards are prevalent and have the potential to affect residents and businesses in the community.

GEOLOGIC HAZARDS

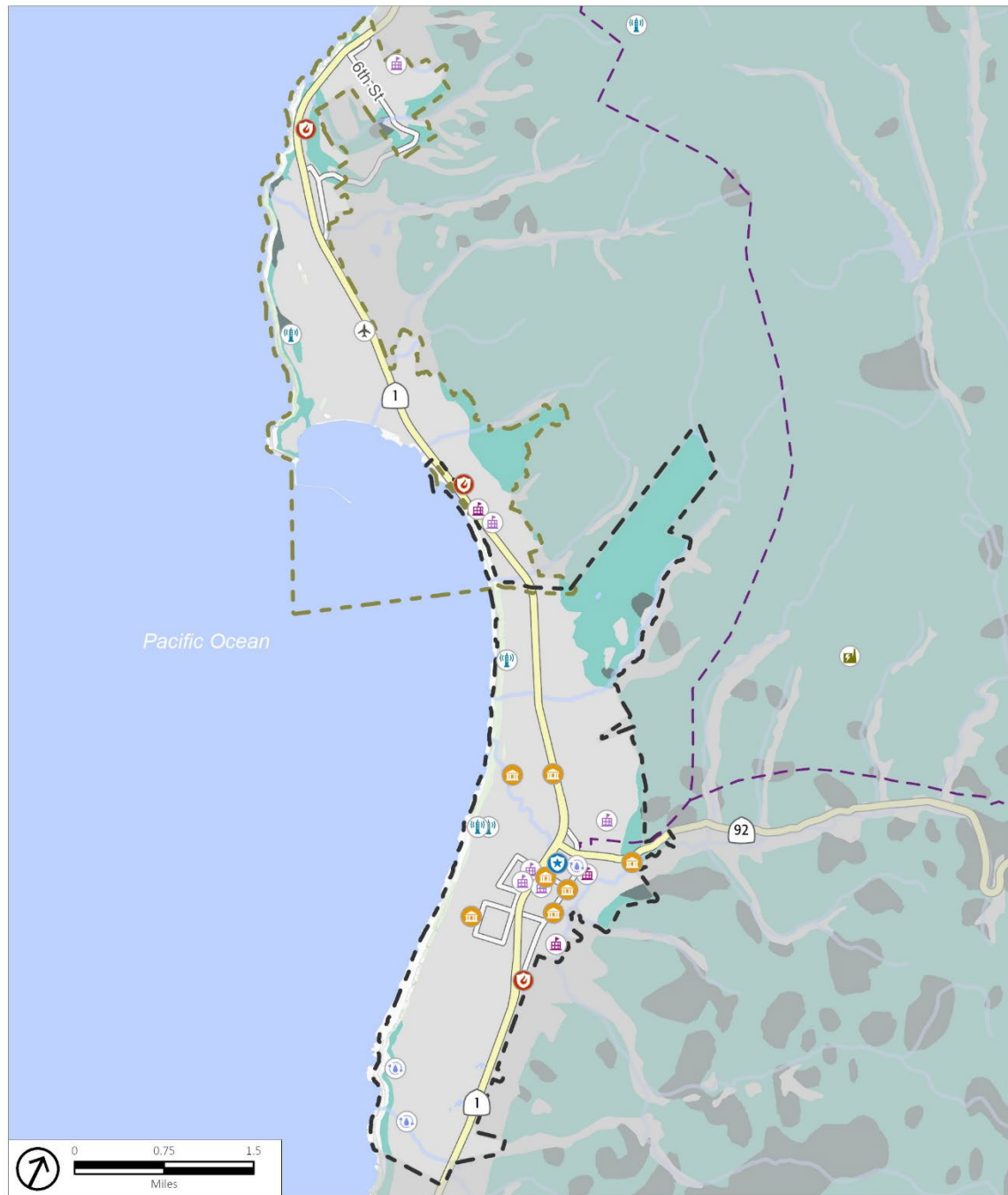
Situated along the coast between the foothills of the Santa Cruz Mountains and the Pacific Ocean, Half Moon Bay is potentially susceptible to geologic hazards like landslides, soil creep, cliff erosion, and land subsidence.

Landslide

Landslides are masses of rock, earth, or debris that move down a slope when the slope loses structural integrity. They can range from slow movements to rapid flows, such as mudslides—fast-moving rivers of water-saturated soil and rock that form during intense rainfall. Landslides result from a mix of geological conditions, weather events like storms or earthquakes, wildfires, and land modifications. In San Mateo County, they most commonly occur during or after winter storms that saturate steep, slide-prone soils, though earthquake-induced landslides can happen year-round. Many large landslides recur in areas with a history of movement triggered by heavy precipitation or seismic activity, making the annual probability of landslides in the region high.

Landslides pose serious risks to downslope structures and infrastructure, potentially damaging property, disrupting roads, and causing flooding and erosion. Landslides can displace residents, block Highways 1 and 92, and damage critical infrastructure, such as electricity, water, and sewer pipelines, disrupting daily life and requiring costly repairs. The danger of landslides increases with steep slopes, unstable soils, and proximity to water or fire-damaged land. Geologists and engineers assess landslide potential using soil type, slope steepness, past activity, and erosion risks. In Half Moon Bay, the highest landslide susceptibility is in the northeastern uplands and foothills (Figure SE-1, *Landslide and Geologic Hazard Areas*), along Highway 92, and coastal areas near the southern City limits, including the terrain surrounding the Half Moon Bay Golf Links and the Ritz Carlton. This map also identifies superficial deposits, which are soils and other sediments laid down by winds and water, and are not likely to result in large slides.

FIGURE SE-1: LANDSLIDE AND GEOLOGIC HAZARD AREAS



Source: ESRI, 2023; County of San Mateo, 2023; City of Half Moon Bay, 2023; PlaceWorks, 2023; USGS

Landslide Susceptibility
 Most landslides
 Few landslides
 Surficial deposits

Government Facilities
 Airport
 Parks and Open Space
 Sphere of Influence
 City of Half Moon Bay

Fire Stations
 Law Enforcement
 Public Schools (K-12)
 Private Schools (K-12)

California Power Plants
 Pump Stations
 Communication Facilities
 Transmission Lines





Soil Creep

Soil creep is the slow downslope movement of soil and weathered bedrock. It is like a landslide but occurs on a much longer timescale (less than half an inch to over 3 feet per year) and can vary in amount of movement. The rate of soil creep depends on slope steepness, slope composition, climatic factors, and changes by human activities (buildings and fill placement). Although it is too slow to be perceptible, the cumulative effects of creep are easily recognized: cracked sidewalks, pavement, and walls; leaning or bent trees and fences; and shifts in the alignment of linear features, such as railroad tracks, streets, and fences. The potential for soil creep exists throughout the city; however, areas with steep topography, little vegetation, and/or loose soils/geologic units are more prone to these conditions.

Cliff Erosion

Erosion is the geological process in which earthen materials are worn away and transported by natural forces such as wind or water. Erosion generally occurs on steeper slopes and cliffs, particularly where unnatural slope cuts and grading have occurred. Wave action removes materials from the base of coastal cliffs along the western edge of the city, causing varying degrees of land sliding and cliff erosion. Erosion rates depend on the steepness of slopes, rock types, how hard or soft the ground is, how easily it can absorb water, and the incoming intensity and direction of wind or water. Most of Half Moon Bay is classified as having moderate stability, with higher stability in the southern portion of the city and lower stability in the northern portion. Areas of greatest concern include the bluffs along Half Moon Bay State Beach, which are rapidly eroding in certain areas, and sea level rise is speeding up the process.

Differential Settlement and Subsidence

Subsidence and differential settlement (the uneven lowering of the ground surface) are minor natural hazards in Half Moon Bay. Differential settlement occurs when areas of soil sink or settle at different rates. When buildings or structures straddle lands with differing settlement rates, the portion of the building or structure above the sinking soil can be damaged. Typically, differential settlement occurs slowly so that acute harm to humans is not generally a concern. However, over time, differential settlement can result in substantial damage to buildings and structures.

Climate Change Concerns

Changing climatic conditions may exacerbate some geologic hazards in Half Moon Bay. Key hazards of concern include landslides and cliff erosion. In Half Moon Bay, landslides commonly occur during or after intense rainfall in the hillside neighborhoods of the city, particularly in areas previously affected by wildfires where vegetation loss destabilizes slopes. These events threaten infrastructure, disrupt transportation networks, and contribute to downslope erosion. The inland areas of Half Moon Bay are most susceptible to landslide hazards, especially along Highway 92 and east of Rocket

Farms Wholesale Center. Despite varying levels of risk identified throughout the city, the overall annual probability of landslides remains high due to recurring conditions that contribute to slope instability.

Cliff erosion is a concern because rising sea levels are expected to change the rates of erosion and areas potentially affected throughout the community. Increased sea level will expose a larger amount of bluff face to wave activity and increased storm activity, increasing erosion rates. As sea level inundation expands farther into the community, more areas will be at risk of erosion.

Climate change is also expected to exacerbate landslide hazards by increasing the frequency of wildfires and severe storms that can likely elevate the risk of landslides, particularly fast-moving debris flows. Wildfires remove stabilizing vegetation and alter soil properties, making slopes more vulnerable to erosion during and after subsequent storms.

SEISMIC HAZARDS

Earthquakes are vibrations of the Earth's surface caused by the release of energy within the crust, usually from sudden dislocations along faults or volcanic activity. Most damaging earthquakes result from accumulated stress along faults, where rock eventually breaks and shifts, producing seismic waves that radiate outward. Faults are zones of weakness where stress can build up and be released repeatedly, meaning earthquakes can recur with the same fault or trigger additional movement nearby. California's high seismic activity is due to the movement between the North American and Pacific Plates along the San Andreas Fault, which runs through San Mateo County.

Fault rupture occurs when the sliding movement along a fault reaches the surface, which can happen during large earthquakes and cause significant structural damage. Ruptures typically begin 3 to 10 miles underground at the earthquake's hypocenter. Faults are more prone to rupture if they move frequently, have recent activity, show significant displacement, or are aligned to release tectonic stress. Geologists assess fault hazards by their activity: "active" faults have ruptured at the surface within the past 11,000 years, while "potentially active" faults have exhibited surface rupture within the last 1.8 million years, both posing risks despite differences in recency. Fault rupture becomes a major issue when it occurs in areas where structures have been built atop active faults. This is more common in older communities where development occurred prior to 1971, when the Alquist Priolo Special Study Zone Act was enacted.

Fault Locations

Half Moon Bay is in a region of high seismicity because of its close location to three very active faults (San Andreas, Hayward, and San Gregorio). The primary seismic hazard for the county and Half Moon Bay is potential ground shaking from these three large faults (Figure SE-2, *Regional Faults and*



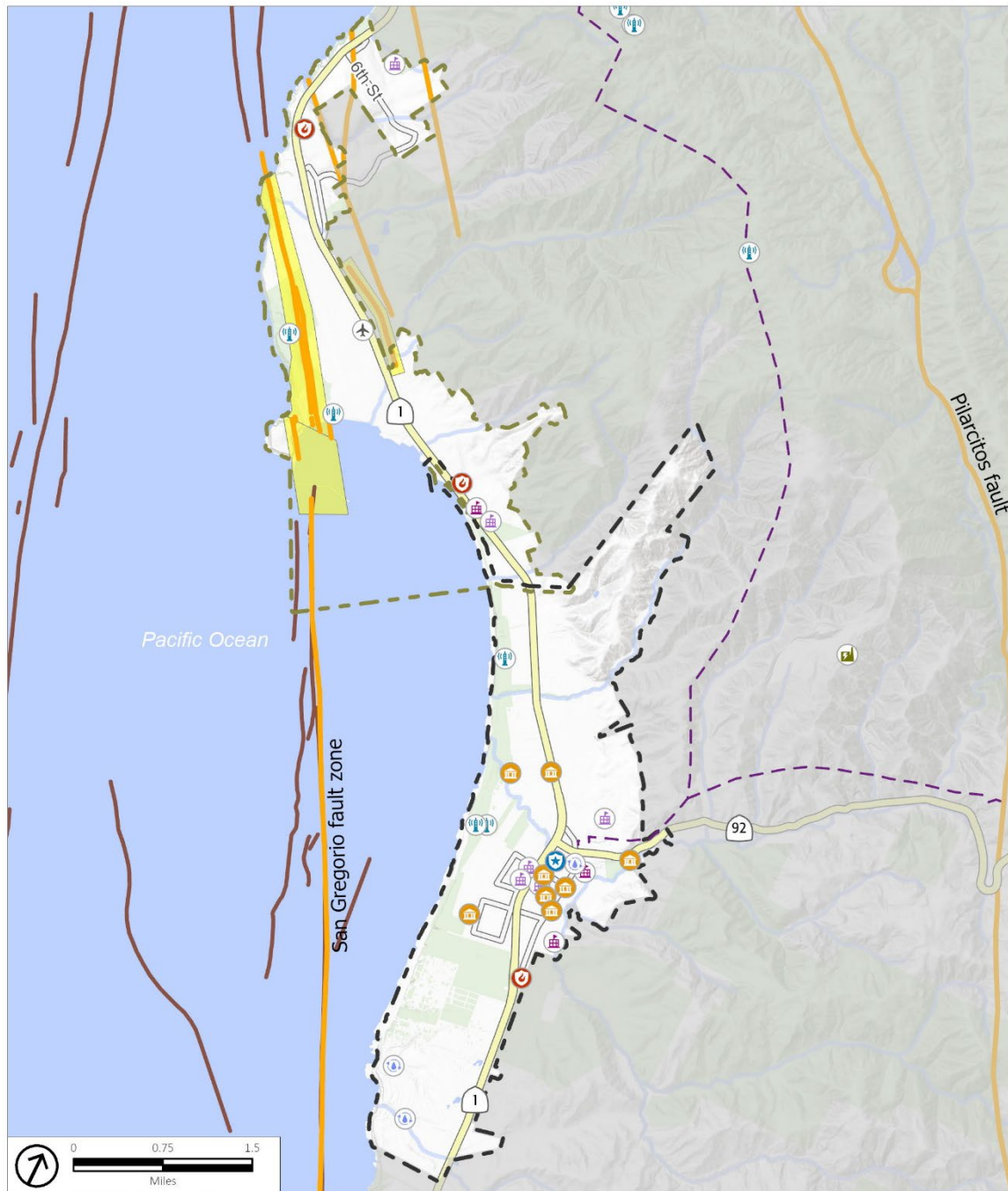
Alquist-Priolo Fault Zones). Half Moon Bay is particularly at high risk, as portions of the San Gregorio Fault are within the Sphere of Influence and are within an Alquist-Priolo Special Study Zone requiring analysis during the development review process. While the San Gregorio Fault is closer to Half Moon Bay, the larger San Andreas Fault can produce a stronger earthquake. These two faults are two of the most active faults in the Bay Area. Several other faults are also capable of producing significant ground shaking in Half Moon Bay, including the Hayward, Rodger's Creek-Healdsburg, Calaveras, Concord-Green Valley, Serra, and Pilarcitos Faults.

Table SE-1: Active Faults within Half Moon Bay Vicinity

Fault Name	Location and Extent	Earthquake Probability (M6.7+ in 30 yrs)	Proximity to Half Moon Bay	Key Hazards and Notes
San Andreas Fault	810 miles long; runs from Gulf of California to Mendocino fracture zone via San Mateo County (e.g., San Bruno, Daly City)	21%	~5 miles east	Major plate boundary; violent shaking expected during rupture; highly active and well-studied
San Gregorio Fault	Offshore, west of San Mateo County; comes onshore near Pillar Point in Half Moon Bay; runs from Monterey Bay to Bolinas Bay	6%	~0.25 miles east at closest; ~2 miles on average	Less studied; significant threat due to proximity despite lower probability; principal offshore fault
Hayward Fault	45 miles long; East Bay through San Jose, Oakland, Berkeley	31%	~24 miles east	Crosses critical infrastructure; high risk due to urban location; growing hazard priority region-wide

Source: City of Half Moon Bay, 2025, *Half Moon Bay Safety Element Background Report*.

FIGURE SE-2: REGIONAL FAULTS AND ALQUIST-PRIOLO FAULT ZONES



Source: ESRI, 2023; County of San Mateo, 2023; City of Half Moon Bay, 2023; PlaceWorks, 2023; USGS, 2020

- | | | | |
|-----------------------|-----------------------|--------------------------|----------------------------|
| City of Half Moon Bay | Airport | Public Schools (K-12) | Surface Faults |
| Sphere of Influence | Law Enforcement | Private Schools (K-12) | Quaternary |
| Parks and Open Space | Fire Stations | California Power Plants | Offshore Faults |
| Creeks and Waterways | Government Facilities | Pump Stations | Alquist Priolo Fault Zones |
| | | Communication Facilities | |
| | | Transmission Lines | |





Secondary Seismic Hazards

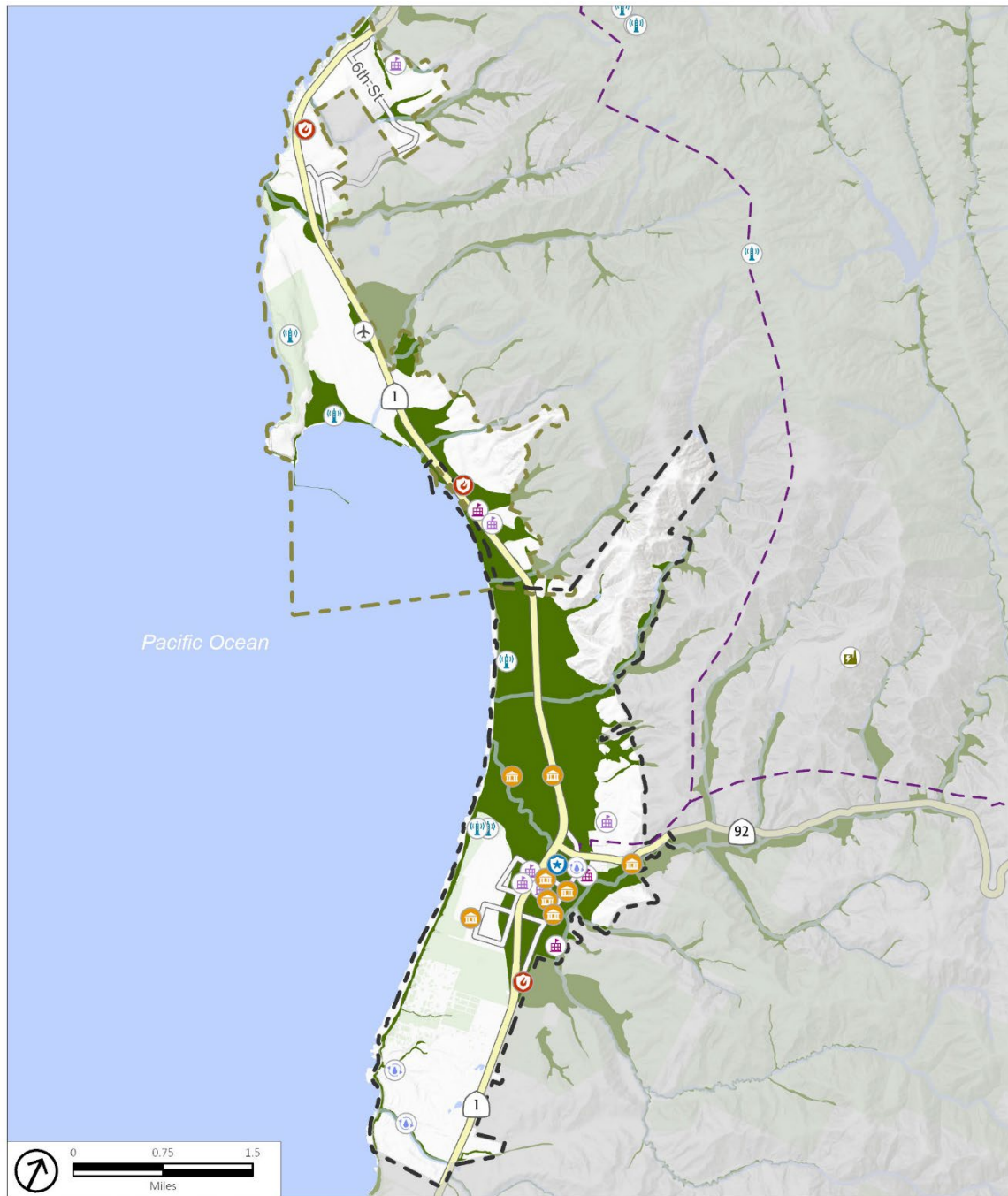
In addition to shaking and surface rupture, secondary seismic hazards have the potential to impact the community. These hazards include landslides (discussed previously under Geologic Hazards), liquefaction, and tsunamis.

Liquefaction

Soil liquefaction occurs when water-saturated sands, silts, or gravelly soils are shaken so violently that the individual grains lose contact with one another and float freely in the water, turning the ground into a puddinglike liquid. Building and foundations lose load-bearing strength and may sink into what was previously solid ground.

Half Moon Bay's location along California's coastline, the composition of the underlying soils, the presence of a shallow groundwater table, and proximity to active faults, make it particularly susceptible to liquefaction. This susceptibility is moderate throughout most of the city; however, it increases significantly around Pillar Point Beach, and along Pilarcitos Creek, Frenchman's Creek, Arroyo Leon Creek, and Cañada Verde Creek areas. Figure SE-3 depicts the liquefaction hazard areas within the city.

FIGURE SE-3: LIQUEFACTION HAZARD AREAS



Source: ESRI, 2023; County of San Mateo, 2023; City of Half Moon Bay, 2023; PlaceWorks, 2023; CGS, 2021

- | | | | |
|-----------------------|-----------------------|--------------------------|-------------------|
| City of Half Moon Bay | Airport | Public Schools (K-12) | Liquefaction Zone |
| Sphere of Influence | Law Enforcement | Private Schools (K-12) | |
| Parks and Open Space | Fire Stations | California Power Plants | |
| Creeks and Waterways | Government Facilities | Pump Stations | |
| | | Communication Facilities | |
| | | Transmission Lines | |





Tsunami

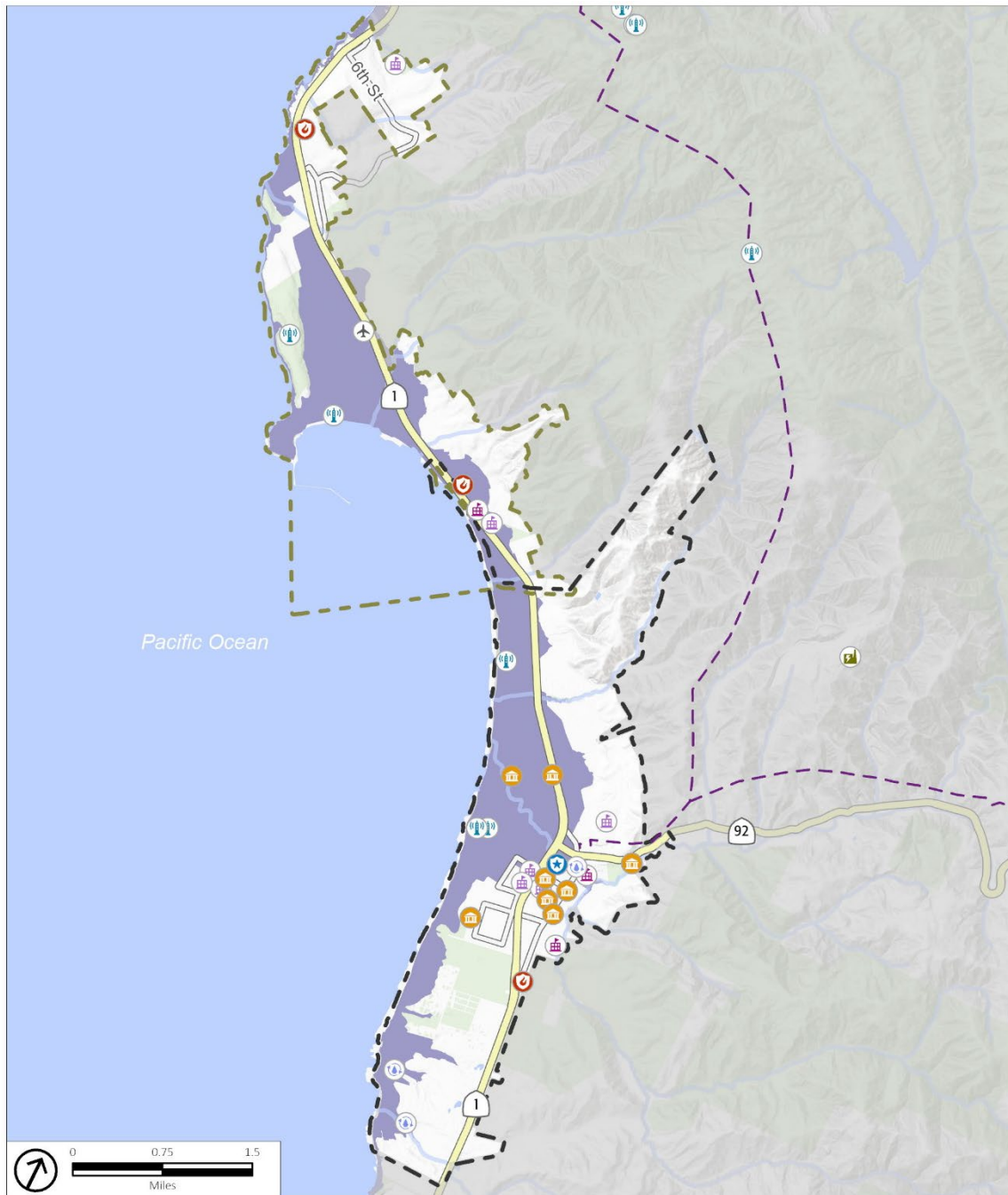
Tsunamis are powerful waves generated by seismic activity, such as underwater earthquakes or volcanic eruptions, which radiate outward and impact coastlines. They can be local or distant based on the proximity of the source to the affected shoreline. Local tsunamis are especially dangerous due to limited warning time, sometimes arriving within an hour. In deep ocean waters, tsunamis may be barely noticeable, but as they approach the shore, their speed decreases and height increases, producing destructive waves. These waves can take various forms—from fast-rising tides to massive, cresting walls of water—and often arrive in multiple surges, with later waves being more damaging than the first. Tsunami destruction can come from both the advancing wave and the retreating water, which may sweep away structures and deposit heavy debris. While distant tsunamis affecting the Bay Area often originate from subduction zones in Alaska or the Pacific Northwest, local tsunamis can also be triggered by nearby faults. The two past tsunamis that have affected the city occurred in 1964 (Alaska earthquake) and 2011 (Japan earthquake).

Half Moon Bay is particularly vulnerable to tsunamis due to its Pacific coastal location. According to the California Office of Emergency Services inundation maps, a severe tsunami could inundate the entire western coastline of the city, with especially severe impacts in the low-lying northern areas around Pillar Point Harbor, which is not within City boundaries but has economic and social ties to the community (see Figure SE-4, *Tsunami Hazard Areas*). Flooding could extend inland past Highway 1, reaching as far east as Pilarcitos Creek and Highway 92, and down the Arroyo Leon watershed. In the southern part of the city, the Half Moon Bay Golf Links and Ritz Carlton are also at risk of inundation. The potential for widespread damage highlights the importance of tsunami preparedness and the role of early warning systems, which monitor seismic activity and issue alerts across the Pacific region.

Climate Change Considerations

In addition to landslide hazards, climate change is expected to exacerbate other seismic hazards. While there is no direct connection between earthquakes and climate change, some of the secondary hazards could be exacerbated by changing climatic conditions. Increasing sea level could cause tsunami inundation zones to increase. As sea level rises, it is expected that saturated soil may occur farther inland within the city, increasing liquefaction potential.

FIGURE SE-4: TSUNAMI HAZARD AREAS



Source: ESRI, 2023; County of San Mateo, 2023; City of Half Moon Bay, 2023; PlaceWorks, 2023; CGS, 2021

- | | | | |
|-----------------------|-----------------------|--------------------------|---------------------|
| City of Half Moon Bay | Airport | Public Schools (K-12) | Tsunami Hazard Zone |
| Sphere of Influence | Law Enforcement | Private Schools (K-12) | |
| Parks and Open Space | Fire Stations | California Power Plants | |
| Creeks and Waterways | Government Facilities | Pump Stations | |
| | | Communication Facilities | |
| | | Transmission Lines | |





FLOODING AND INUNDATION

FLOODING

Flooding is the rising and overflowing of a body of water onto normally dry land. Flooding can be extremely dangerous, and even six inches of moving water can knock a person over in a strong current. Floods are among the costliest natural disasters in terms of human hardship and economic loss nationwide, significantly threatening the health and lives of community members and causing substantial damage to structures, landscapes, and utilities. Standing water can damage roads, foundations, and electrical circuits, and can also spread vector-borne illnesses. Other problems connected with flooding and stormwater runoff include erosion, degradation of water quality, and loss of environmental resources.

Floods are usually caused by large amounts of stormwater, either from a period of very intense precipitation or a long period of steady precipitation. Four types of flooding primarily affect Half Moon Bay:

- Riverine flooding, the most common type of flood event, occurs when a watercourse such as a stream or creek overruns its banks.
- Stormwater flooding, sometimes called “ponding”, occurs when rainfall and runoff accumulate in low-lying areas or areas with insufficient drainage, forming standing water.
- Flash floods are sudden events, typically caused by intense and localized storms. There is often little or no warning of flash floods, making them particularly dangerous.
- Coastal floods occur when the ocean inundates normally dry lands by ocean waters, often a result of storm surges, tsunamis, or extreme high tide events.

FEMA Regulatory Flood Zones

The Federal Emergency Management Agency (FEMA) creates and updates flood maps based on previous flooding to help communities identify areas at high risk of flooding in the future, designating these areas as flood zones. These zones, typically located along rivers, creeks, lakes, and coastal areas, are mapped using Digital Flood Insurance Rate Maps (DFIRMs). The most critical zones are the 100-year floodplain (1 percent annual chance of flooding) and the 500-year floodplain (0.2 percent chance of annual flooding). These maps inform local planning, development, and insurance requirements, helping communities prepare for and reduce flood risk.

In Half Moon Bay, the flood risk is influenced by several small watersheds that drain into the Pacific Ocean. Watersheds include Pilarcitos Creek, Arroyo Leon, Frenchman’s Creek, and several unnamed creeks throughout the city. FEMA has partially mapped flood zones in the city. The FEMA mapping

extends to beaches, Frenchman's Creek, and segments of Pilarcitos and Arroyo Leon Creeks. As a result, other flood-prone areas in the city may not be fully represented in FEMA's official flood zone data. Figure SE-5, *Mapped Flood Hazard Zones*, identifies the mapped FEMA flood zones for Half Moon Bay.

To regulate properties within FEMA flood hazard zones and provide access to flood insurance, Half Moon Bay participates in the National Flood Insurance Program (NFIP). According to the Half Moon Bay LHMP, approximately 80 flood insurance policies are currently in force (as of March 2021), totaling over \$27 million. Municipal Code Chapter 14.34 provides flood damage prevention regulations in compliance with the NFIP, which meets FEMA requirements.

Dam Failure

A dam failure is a catastrophic type of structural failure characterized by the sudden, rapid, and uncontrolled release of impounded water or the likelihood of such an uncontrolled release. Dam failures can result from several natural causes, such as earthquakes, erosion of the dam face or foundation, a landslide that displaces a large volume of water, rapidly rising flood waters, and structural/design flaws. A dam failure of any size could cause a loss of life, damage to property, and lead to the displacement of people in its pathway. A catastrophic dam failure, depending on the size of the dam and the population downstream, could exceed the response capability of local communities.

The California Division of Safety of Dams (DSOD, a division of the Department of Water Resources [DWR]) routinely and periodically inspects the dam for performance and problem identification. If DSOD identifies a problem that could lead to failure potential, the dam owner takes mitigating actions such as reducing the water level to avoid catastrophic loss of water or other actions specified in that dam's Emergency Action Plan.

The Johnston Dam (owned by Peninsula Open Space Trust) and Pilarcitos Dam (owned and operated by San Francisco Public Utilities Commission) can affect the city in the event of a dam failure. Figure SE-6, *Dam Inundation Areas*, shows these inundation zones. The area of the city susceptible to inundation is adjacent to Highway 92 along Pilarcitos Creek, portions of Arroyo Leon, and then spreads out along the geographically flatter areas as it travels west to the coast. It's possible that inundation from Dam failure could partially or fully block access on Highway 92, which provides critical access East, as well affect critical infrastructure such as the City's Emergency Operations Center and the SAM sewage treatment plant.

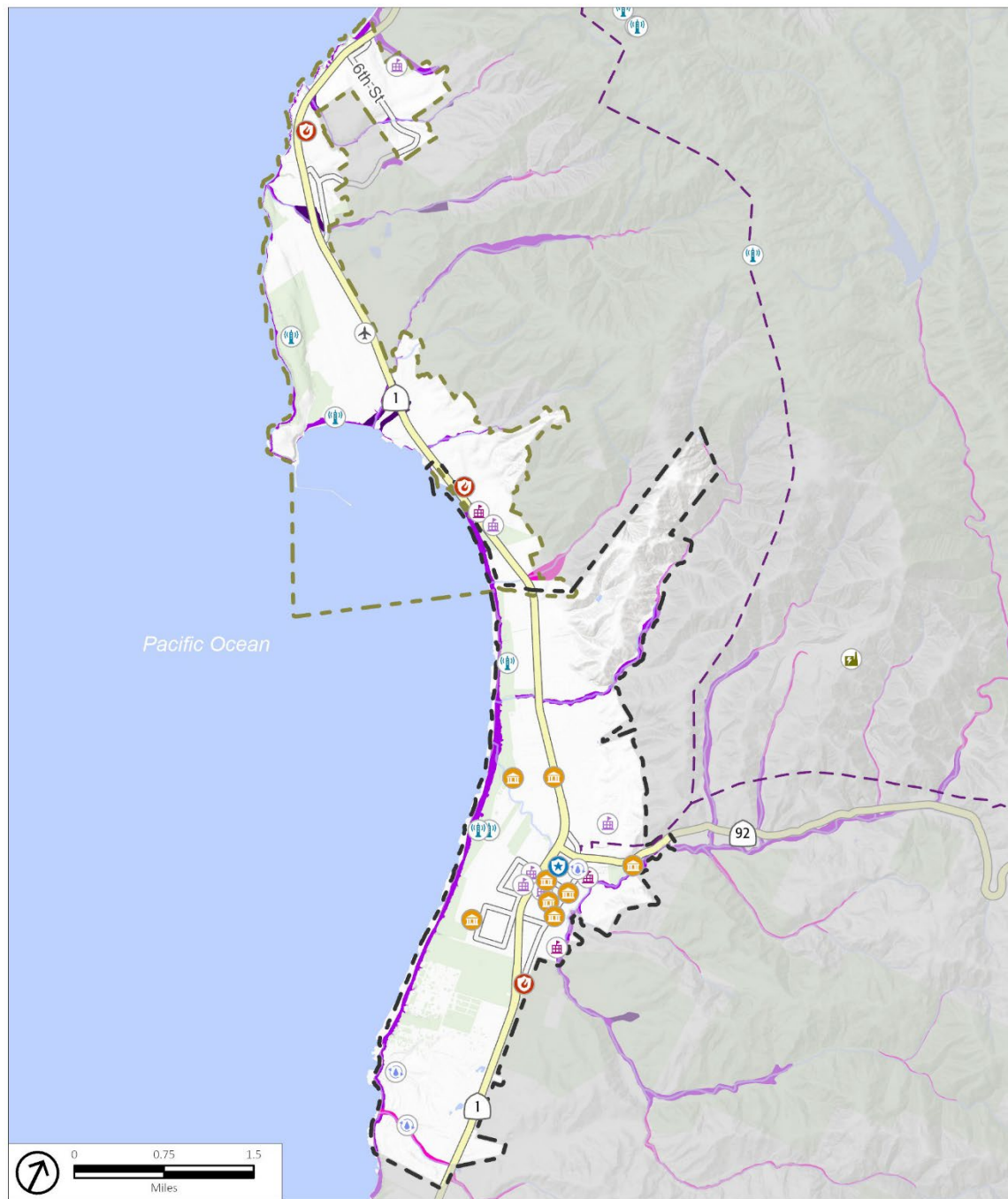
CLIMATE CHANGE CONSIDERATIONS

Flooding is a chronic and growing concern for Half Moon Bay, intensified by climate change. Rising sea level, more intense storms, and longer droughts followed by heavy rain are expected to increase



both the frequency and severity of flood events. Climate-driven changes, such as more powerful atmospheric rivers, are projected to make events like today's 100-year storms occur more frequently—possibly every 50 or 60 years, or sooner, by 2100. These shifts mean that current 100- and 500-year floodplains are expected to expand significantly, with formerly rare events becoming more common. Droughts that dry and harden soil will also worsen runoff during rainstorms, increasing flood risk downstream. Areas most at risk include low-lying neighborhoods, creekside communities, and coastal visitor-serving areas, such as Cañada Cove Mobile Home Park and Pelican Point RV Park. As sea level rise and tides push farther inland, these areas could face major damage, displacement, and long-term public health and economic consequences.

FIGURE SE-5: MAPPED FLOOD HAZARD ZONES



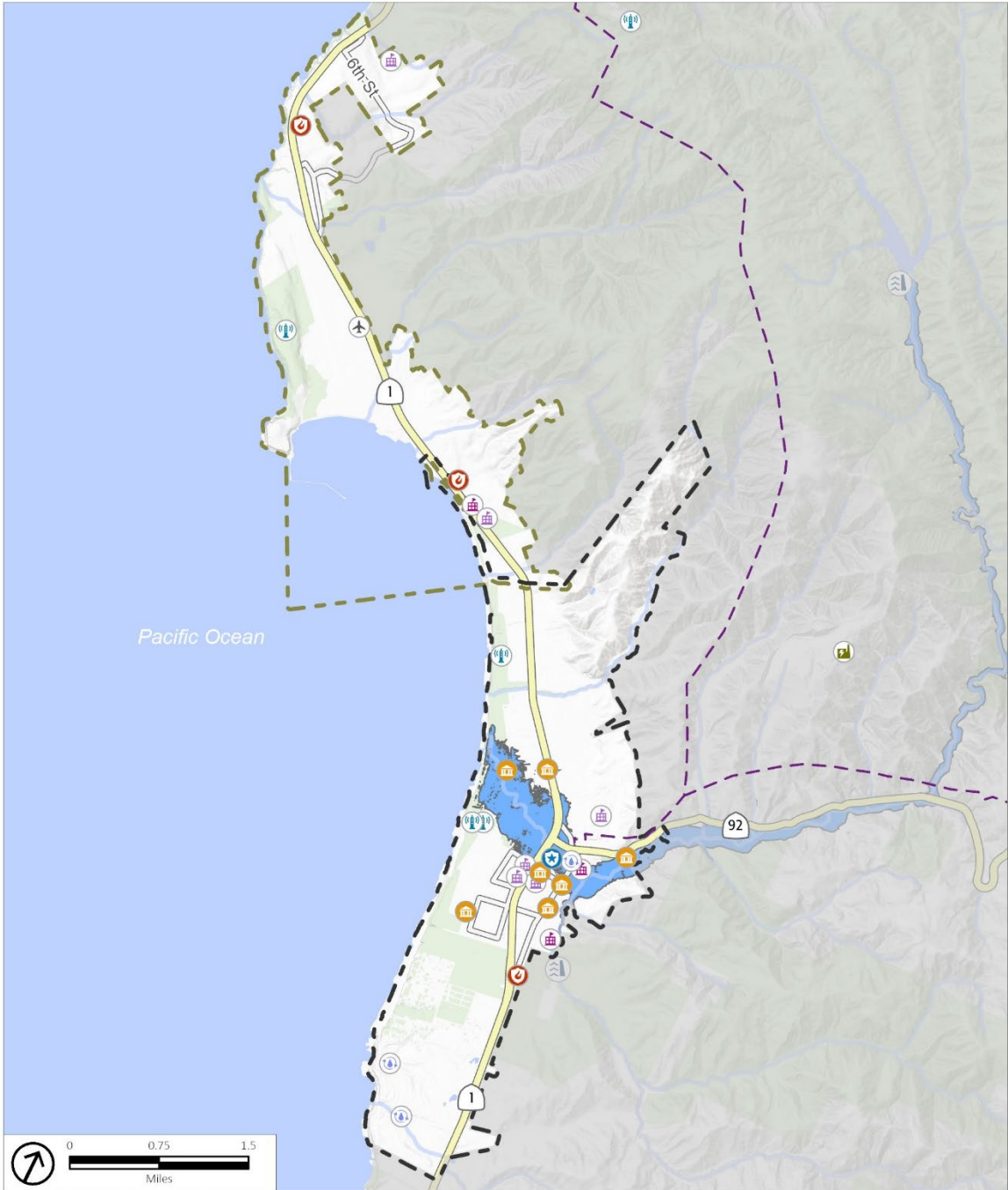
Source: ESRI, 2023; County of San Mateo, 2023; City of Half Moon Bay, 2023; PlaceWorks, 2023; FEMA; DWR, 2021

- | | | | |
|-----------------------|-----------------------|--------------------------|--|
| City of Half Moon Bay | Airport | Public Schools (K-12) | Designated Flood Hazard Zones
100 Year Flood Plain (DWR)
100 Year Flood Zone (FEMA)
500 Year Flood Zone (FEMA) |
| Sphere of Influence | Law Enforcement | Private Schools (K-12) | |
| Parks and Open Space | Fire Stations | California Power Plants | |
| Creeks and Waterways | Government Facilities | Pump Stations | |
| | | Communication Facilities | |
| | | Transmission Lines | |





FIGURE SE-6: DAM INUNDATION AREAS



Source: ESRI, 2023; County of San Mateo, 2023; City of Half Moon Bay, 2023; PlaceWorks, 2023; California Division of Safety of Dams, 2023

- | | | | |
|-----------------------|------------------------|--------------------------|----------------------|
| City of Half Moon Bay | Fire Stations | California Power Plants | State-regulated Dams |
| Sphere of Influence | Law Enforcement | Pump Stations | Dam Inundation Areas |
| Parks and Open Space | Public Schools (K-12) | Communication Facilities | Pilarcitos |
| Airport | Private Schools (K-12) | Transmission Lines | |
| Government Facilities | | | |



FIRE HAZARDS

Fire hazards include both wildfires and urban fires. The combination of complex terrain, Mediterranean climate, and productive natural plant communities, along with ample natural ignition sources, has created conditions for wildfires in Half Moon Bay. Fire conditions arise from a combination of high temperatures, low-moisture content in the air and plant matter, an accumulation of vegetation, and high winds. Three types of fires are of concern to the City: (1) wildland fire, (2) wildland-urban interface (WUI) fires, and (3) structural fires.

WILDLAND FIRE

A wildland fire is any uncontrolled fire on undeveloped land that requires fire suppression. Wildland fires can occur naturally and are important to many ecosystem processes; however, most are started by people. Wildland fires occur on mountains, hillsides, and grasslands. Fuel, weather, and topography are primary factors that affect how wildland fires spread. The climate of San Mateo County and the surrounding area keeps the grass dry and more readily combustible during fire season.

WILDLAND-URBAN INTERFACE FIRES

The WUI is an area where buildings and infrastructure mix with areas of flammable wildland vegetation, allowing wildland fires to easily spread to buildings and structures. Hundreds of homes now border major forests and brush areas in California, exposing an ever-growing number of people living and visiting wildland areas to the threat of wildfire. Human-caused fires are the leading cause of wildland fires. To help address risks in wildfire-prone areas (that may be considered part of the WUI), the California Department of Forestry and Fire Protection (CAL FIRE) has enacted regulations that apply to building codes, defensible space requirements, and vegetation management programs. These requirements apply to the fire hazard severity zones, which are areas that often overlap with the WUI. Developments in the WUI should incorporate best practices associated with non-combustible building techniques and materials, brush clearance and vegetation management, and adherence to the latest building standards to better address wildfire risks.

STRUCTURE FIRES

According to CAL FIRE, a structure fire is a fire originating in and burning any part of or all of a building, shelter, or other structure. Structure fires occur in built-up environments, destroying buildings and other human-made structures. These disasters are often due to faulty wiring, mechanical equipment, or combustible construction materials. The absence of fire alarms and sprinkler systems can exacerbate the damage associated with a structural fire. Structural fires are largely from human accidents, although deliberate fires (arson) may be a cause of some events. Older buildings that lack modern fire safety features may face greater risk of damage from fires. To minimize fire damage and



loss, the local Fire Code, based on the state Fire Code, sets standards for building and construction. They require the provision of adequate water supply for firefighting, fire-retardant construction, and minimum street widths, among other things. However, it should be noted that the design requirements for water systems in fire prone areas are designed for structural fires, and most systems are incapable of fighting large-scale wildfires and urban conflagrations.

FIRE HAZARD AREAS

CAL FIRE has identified fire hazard severity zones for Half Moon Bay, which include Medium, High, and Very High Fire Hazard Severity Zones (FHSZs) covering a large portion of the city. The Very High FHSZs are within the northern and eastern portion of Half Moon Bay, primarily located east of Highway 1 in the foothill areas beyond the city's developed core (see Figure SE-7, *Half Moon Bay Fire Hazard Severity Zones*). This zone extends westward into the historic downtown and Downtown Center, which is the heart of commercial tourist activity. Additional residential neighborhoods within the Very High FHSZ include homes along Toulouse Court, La Mans Way, and Ruisseau Francais Avenue, as well as residences on Bark Court and Spindrift Way. Another mapped Very High FHSZ lies along the eastern edge of the city, just north of Highway 92. Homes and businesses within the Very High FHSZ require stricter compliance with the California Fire Code and Fire Safe Regulations. Most of the remaining parts of Half Moon Bay are designated as either Moderate or High FHSZs.

Half Moon Bay is designated a Local Responsibility Area (LRA) and receives fire protection services from the Coastside Fire Protection District. Beyond the eastern city limits, both High and Very High Fire Hazard Severity Zones are in unincorporated San Mateo County, designated as State Responsibility Areas (SRAs) under CAL FIRE's jurisdiction. Coordination between the Coastside Fire Protection District and CAL FIRE is supported by mutual-aid agreements, enabling both agencies to assist one another in responding to structural fires and major wildland fire events as needed.

Secondary Hazards

Wildfires can generate a range of secondary effects, which in some cases may cause more widespread and prolonged damage than the fire itself. Fires can damage or destroy homes, causing economic hardship to homeowners and renters (especially those who are uninsured or underinsured) and temporary or permanent displacements. Many of those who live in the highest risk areas are uninsured or underinsured, exacerbating the repercussions of both risk factors. These events can also cause direct economic losses due to destruction of businesses and indirect economic losses in reduced tourism. Wildfires cause the contamination of reservoirs, destroy transmission lines, and contribute to flooding. They strip slopes of vegetation, exposing them to greater amounts of runoff. This in turn can weaken soil and cause landslides and mudslides. Wildfires that burn hot and for long durations can bake soil, thus increasing the imperviousness of the ground. This increases the runoff during storm events and subsequent flooding. Half Moon Bay is also at risk of smoke from

wildfires occurring throughout the region. These incidents can increase the potential for poor air quality, affecting residents, workers, and visitors in the city.

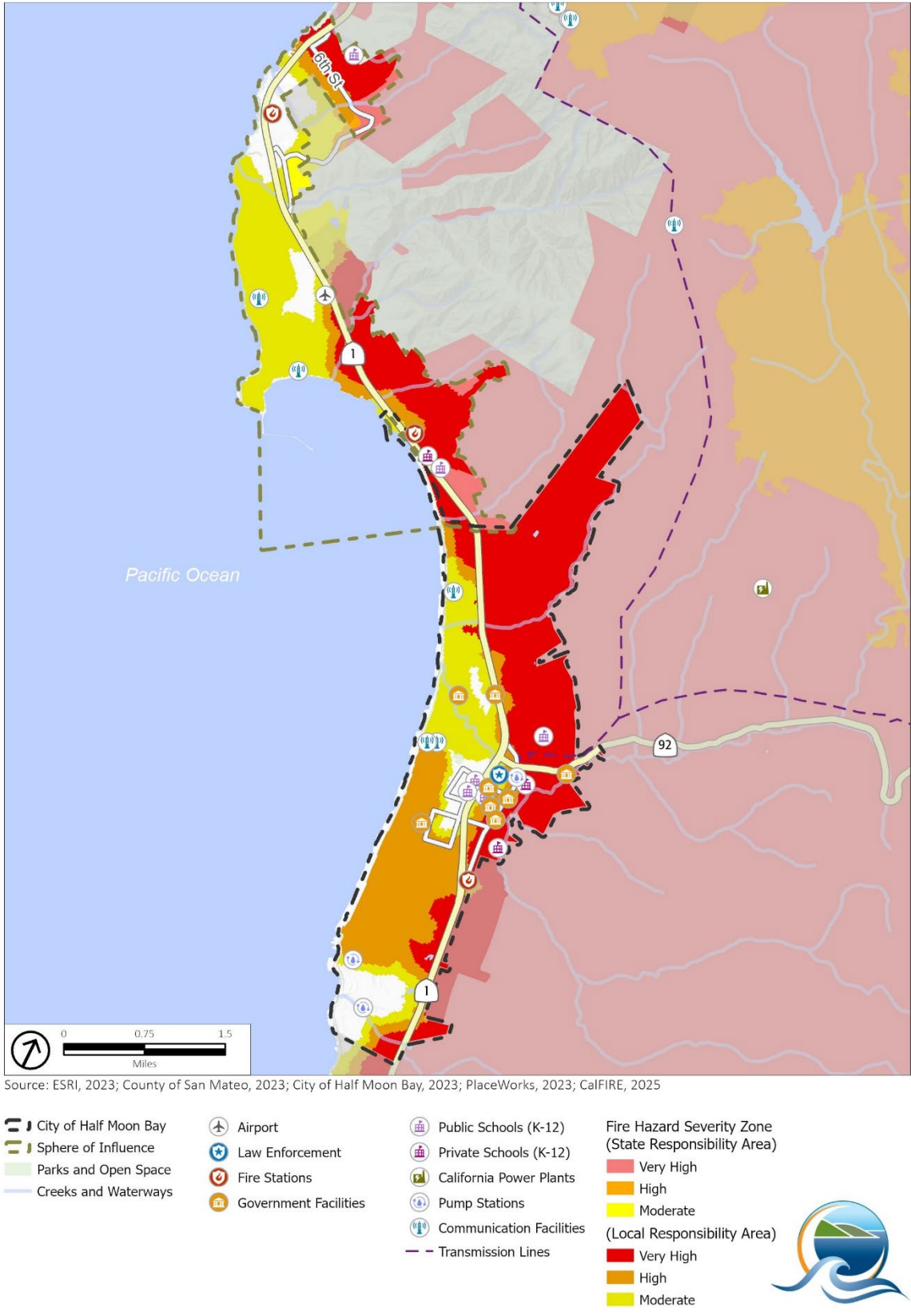
CLIMATE CHANGE CONSIDERATIONS

Wildfires present an increasing threat to Half Moon Bay due to its Mediterranean climate, steep terrain, and abundant vegetation. What was once a seasonal hazard is now a year-round risk, driven by rising temperatures, prolonged droughts, and lower humidity that dries out vegetation and creates ideal fire conditions. Pest outbreaks like Sudden Oak Death and bark beetles also contribute by leaving behind dead trees that serve as fuel. Extreme heat, reduced fog, and erratic winds further increase the unpredictability and intensity of wildfires.

Areas within the city have been designated as Very High FHSZs, particularly in the WUI—where development meets open space—such as neighborhoods east of Highway 1 and hillside communities. Although Half Moon Bay has not experienced significant wildfires historically, growing climate pressures and expanding development near wildlands are increasing the risk. Human activity remains the leading cause of wildfires, and development near fire-prone areas heightens both the likelihood and impact of such events. Even when fires occur regionally rather than locally, Half Moon Bay can still be affected by hazardous air quality and smoke, posing health risks to residents and impacting the area's natural and recreational resources.



FIGURE SE-7: HALF MOON BAY FIRE HAZARD SEVERITY ZONES



HUMAN-CAUSED HAZARDS

HAZARDOUS MATERIALS

Hazardous materials are substances that pose serious risks to human health, public safety, and the environment. These include flammable, corrosive, toxic, or reactive chemicals and materials, which may be stored or used in a variety of facilities such as hospitals, laboratories, treatment plants, fueling stations, and automotive shops. Releases can occur due to equipment failure, human error, or natural disasters like earthquakes, floods, or storms. Transportation accidents can also lead to hazardous spills. A release can cause fires, explosions, toxic exposure, or environmental contamination, with impacts ranging from localized property damage to widespread health hazards and ecological degradation.

In Half Moon Bay, hazardous materials are primarily found in commercial and industrial areas, including auto-related businesses. Oversight and cleanup of contaminated sites—such as those with leaking underground storage tanks—are coordinated by the San Mateo County Health Services Agency in partnership with State and regional environmental agencies. Half Moon Bay also has several wells drilled for oil and gas exploration located east and south of the city. According to the California Geologic Energy Management Division, these wells have been abandoned and capped. Development activities in these areas should be aware of the wells and take steps to avoid spreading any contamination, exposing people and the natural environment to hazardous materials, and adhering to County and State rules and regulations.

Additionally, many older buildings may contain hazardous materials like asbestos and lead-based paint, which pose risks during demolition or renovation. These materials can contaminate air and soil, threatening worker safety and public health. Regulations under the California Division of Occupational Safety and Health (OSHA), federal OSHA, and the Clean Air Act require that structures built before the 1980s be individually surveyed and handled with proper safety protocols.

The Half Moon Bay Landfill is a 14-acre closed Class III landfill that operated from 1962 to 1976 by San Mateo County. Located along Railroad Avenue between Metzgar and Seymour streets, the facility accepted primarily inert material, yard waste, and residential waste, and was capped in 1978. Due to its location, the site of the landfill is subject to erosion from wave action, which caused exposure of waste in the early 1990s, which was subsequently repaired.

Climate change may increase the potential for hazardous material release resulting from hazards like intense precipitation, sea level rise, or extreme heat events. These types of events may damage infrastructure like pipelines and tanks or expose populations to unintended release, similar to what has happened in the past.



AIRPORT HAZARDS

Airport operations present unique safety risks, particularly for areas near airfields due to the potential for aircraft accidents. The Half Moon Bay Airport, located northwest of the city's boundaries, was originally built in 1942 for military purposes. After World War II, it was transferred to the U.S. Navy and later acquired by San Mateo County (1947). Over the years, it has evolved into a vital community asset supporting business, transportation, and emergency services.

Today, the airport is home to approximately 80 aircraft and hosts several aviation-related businesses. It plays a critical role in emergency response, serving as a base for air-ambulance and medivac flights, law enforcement and homeland security patrols, Coast Guard sea-rescue operations, and as a disaster relief staging area if roads become inaccessible. San Mateo County's Airport Land Use Compatibility Plan identifies surrounding land uses, with about half designated for agriculture, followed by residential, open space, commercial, and public uses. These varying land uses within the airport's planning area underscore the importance of careful land use planning to minimize safety risks and ensure compatibility with airport operations.

HUMAN HEALTH HAZARDS

Human health hazards are bacteria, viruses, parasites, and other organisms that can cause diseases and illnesses in people. Some of these diseases may cause only mild inconvenience, but others are potentially life-threatening. These diseases can be and often are carried by animals such as mice and rats, ticks, and mosquitoes. Warmer temperatures and high levels of precipitation can lead to increased populations of disease-carrying animals, creating a greater risk of disease and increased rates of infection. Diseases regularly spread by animals include West Nile virus, Zika virus, and Lyme disease. Human health hazards and diseases can be local, regional, or even global events, with the severity of outbreak varying. Rate of transmission depends on local weather and environment, and fatality rates depend on local conditions such as care system quality and capacity, and the general health and immunity of the local population.

CLIMATE CHANGE CONSIDERATIONS

Human health hazards in Half Moon Bay, including bacteria, viruses, parasites, and other pathogens, pose serious risks to physical and mental well-being, often spread by common vectors like rats, mice, ticks, and mosquitoes. Climate change is intensifying these risks by creating warmer and wetter conditions that allow disease-carrying vectors to thrive and expand their range, increasing the spread of illnesses such as West Nile virus, dengue fever, and Lyme disease. Additionally, heatwaves and extreme weather events worsen health outcomes by causing heat-related illnesses, aggravating respiratory issues, and contaminating ocean waters through runoff, which raises pathogen levels. As these hazards grow more severe and widespread, they place increasing pressure on healthcare systems, raise economic costs, and highlight the urgent need for proactive public health measures, particularly in communities with limited healthcare access, like Half Moon Bay.

Another significant concern for Half Moon Bay is the vulnerability of the Half Moon Bay landfill to impacts associated with sea level rise. Given wave action has exposed landfill materials in the past, as sea level rise occurs, the City and County should anticipate larger exposure of the landfill to wave action.

SEVERE WEATHER AND DROUGHT

Severe weather is generally any destructive weather event, but it usually occurs in San Mateo County as localized storms that bring heavy rain, hail, thunderstorms, and strong winds. The most common severe weather events that have historically impacted Half Moon Bay are heavy rains (usually a result of atmospheric rivers), thunderstorms, and windstorms.

ATMOSPHERIC RIVERS

Atmospheric rivers are long, narrow regions in the atmosphere that transport water vapor from the tropics. When the atmospheric rivers make landfall, they release this water vapor in the form of precipitation, often causing heavy rain that can lead to flooding and mudslide events. These events can cause significant injuries, disrupt travel, and damage property. However, they also play a critical role in replenishing California's water supply.

Atmospheric rivers are relatively frequent weather phenomena that impact the California coast, including Half Moon Bay. On average, California experiences 20 to 30 atmospheric river events per year, with the majority occurring during the wetter months from late fall through early spring (roughly October to April). For Half Moon Bay, atmospheric rivers typically hit several times each winter season, often bringing significant rainfall that contributes to the majority of the area's annual precipitation. These events can vary in intensity and duration—from a few hours to multiple days—and are responsible for much of the region's flood risk and water supply replenishment. In 2023, flooding from atmospheric rivers was widespread and required FEMA assistance.



THUNDERSTORMS

A thunderstorm is a rain event that includes thunder and lightning. According to the National Oceanic and Atmospheric Administration's (NOAA's) National Severe Storms Laboratory, a thunderstorm is classified as "severe" when it contains hail with a diameter of one inch or greater, wind gusts exceeding 57.5 miles per hour (mph), or generates a tornado. On average, Half Moon Bay experiences only a few thunderstorms each year, mostly during the late summer and early fall months when atmospheric conditions allow for these types of events. These storms tend to be brief and less intense than those farther inland but can still bring lightning, heavy rain, and gusty winds. Overall, thunderstorms are infrequent and generally pose a lower risk compared to other weather hazards like atmospheric rivers or winter storms in the area.

Lightning can cause forest and brush fires and deaths and injuries to livestock and other animals. According to the National Lightning Safety Institute, lightning causes more than 26,000 fires in the United States each year. "Lightning sieges" are extreme lightning events in which lightning strikes multiple points at once. In August 2020, a lightning siege with an estimated 12,000 lightning strikes caused a set of fires known as the CZU Lightning Complex in San Mateo and Santa Cruz Counties, the largest wildfire in recent times for the area. The CZU Fire destroyed 1490 structures, burned 86,509 acres, and killed one person.

WINDSTORMS

Windstorms are generally short-term events involving winds or gusts of over 50 to 60 miles per hour (mph) that are strong enough to cause property damage. Wind speeds can reach up to 100 mph and can produce a damage path extending for hundreds of miles.

Windstorms can cause significant property damage, threaten public safety, and have adverse economic impacts from business closures and power loss. Falling trees and branches can damage buildings, power lines, and other properties and infrastructure. During wet winters, saturated soil causes trees to become less stable and more vulnerable to uprooting from high winds. Utility lines brought down by summer thunderstorms have also been known to cause fires, which start in dry vegetation. Downed trees and power lines, and damaged property also can be major hindrances to emergency response and disaster recovery. Emergency response operations can be complicated when roads are blocked or when power supplies are interrupted. Industry and commerce can suffer losses from interruptions in electric service and from extended road closures.

INDIRECT HAZARDS

Indirect hazards associated with severe weather events include major riverine or urban flooding from heavy rain. When these conditions occur, areas that have loose or saturated soils, especially on slopes (or areas recently burned by wildfires), may experience erosion and/or landslides. During drier

periods, windstorms or thunderstorms can increase the potential for wildfires either due to lightning or the ability for high winds to propagate fire quickly. Windstorms can also impact air quality by transporting dust, pollen, smoke, and ash.

Infrastructure in Half Moon Bay can be impacted during severe weather events because these systems have limited redundancy due to the city's isolated nature. If this occurs, the loss of power or communications adversely impacts all community members, including residents, visitors, and workers. In addition, the Pacific Gas and Electric Company (PG&E) may need to enact a public safety power shutoff (PSPS) event during a severe weather event that turns electricity off to portions of Half Moon Bay at risk of wildfire. These events are intended to reduce the risk of power lines sparking or being damaged, causing a wildfire. A PSPS event may occur at any time of the year, typically during high-wind events and dry conditions.

DROUGHT

Drought is a natural but significant hazard in California, where prolonged periods of reduced precipitation can lead to water shortages affecting households, agriculture, ecosystems, and the local economy. Droughts are typically measured by their impact on precipitation, agricultural output, streamflow, groundwater levels, and social or economic consequences. The severity of a drought depends on its duration, geographic extent, and the magnitude of moisture deficiency. While droughts do not usually cause loss of life, they can lead to increased water costs, damage to property through well failure and crop loss, reduced biodiversity, and higher wildfire risks due to dry vegetation. As an agricultural community, prolonged drought can have significant impacts on the local economy in terms of jobs and crop loss.

Droughts also have long-term effects on groundwater. As water supplies dwindle, communities increasingly rely on groundwater, which is slower to deplete but also slower to recharge. This overuse can result in lowered groundwater levels, dry wells, and reduced streamflow, particularly during dry summer months when groundwater is critical for stream ecosystems. Recovery from groundwater depletion may take years, and with climate change contributing to warmer temperatures and less predictable rainfall, droughts in the future are expected to become more frequent and severe. Prolonged drought also heightens wildfire risk, as vegetation becomes drier and more vulnerable to ignition and pests.

Half Moon Bay's water supply is managed by the Coastside County Water District (Coastside CWD), which provides treated water to the city and nearby unincorporated communities. About 75 percent of its supply is raw water purchased from the San Francisco Public Utilities Commission (SFPUC). The remaining 25 percent is sourced from local surface water and groundwater. Coastside CWD operates wells in the -Airport Subbasin, draws surface water from Denniston Creek, and uses infiltration wells



along Pilarcitos Creek. Coastside CWD operates two water treatment plants to provide treated water to all its customers. These diverse sources underscore the importance of sustainable and reliable water management in the face of increasing drought risk and other emergency water shortages.

CLIMATE CHANGE CONSIDERATIONS

Climate change is expected to intensify windstorms and atmospheric rivers in Half Moon Bay, while slightly increasing the frequency or strength of thunderstorms. Windstorms may become more erratic and damaging due to stronger storm systems and shifting pressure patterns, leading to higher risks of power outages, fallen trees, and property damage—especially when high winds coincide with saturated soils. Thunderstorms, which are currently rare in the region, may occur slightly more often or with greater intensity, potentially bringing more lightning and brief heavy rainfall, which could increase the risk of wildfire and erosion.

According to the California Fourth Climate Change Assessment, atmospheric rivers, which already drive many of the winter storms in Half Moon Bay, are projected to increase in intensity. These events will likely bring heavier rainfall over shorter periods, increasing the risk of flash flooding, coastal erosion, and landslides. The city's stormwater systems and natural landscapes may be strained by the rapid influx of water, especially following drought or wildfire events. As these climate-driven changes unfold, the city will face growing challenges related to infrastructure resilience, emergency preparedness, and environmental management.

Climate change projections suggest that more frequent and severe droughts will occur across the state. Overall, precipitation levels are expected to increase slightly in Half Moon Bay; however, more years with extreme levels of precipitation, both high and low, are likely because of climate change. Reduced winter precipitation levels and warmer temperatures have greatly decreased the size of the Sierra Nevada snowpack (the volume of accumulated snow), which in turn makes less fresh water available for communities throughout California. More intense droughts are expected to harden soil and cause aquifer levels to drop due to reduced groundwater recharge. When rain returns, more water will run off rather than infiltrate into soils and groundwater systems, potentially causing downstream flooding.

EXTREME HEAT

Extreme heat in California is defined as temperatures hotter than 98 percent of the historical highs from April to October between 1961 and 1990. In Half Moon Bay, this threshold is 80.8 degrees Fahrenheit (°F) during the day and 56°F at night. A sequence of five consecutive extreme heat days is considered a heat wave. These events can increase risks to public safety, elevate community costs, strain water resources, and stress the electrical grid, often leading to brownouts or power outages.

Extreme heat can also damage roadways and rail systems, causing disruptions in transportation and infrastructure.

The health impacts of extreme heat are particularly concerning. The Centers for Disease Control and Prevention (CDC) and federal health studies report that hundreds of Americans die each year from heat-related causes, a number that is increasing. In California, heat waves have caused more fatalities than any other type of disaster. Heat-related illnesses, such as cramps, exhaustion, and stroke pose serious risks, especially in regions like Half Moon Bay where residents and infrastructure may be less accustomed to high temperatures. Vulnerable groups include the elderly, young children, and those with preexisting health conditions.

Extreme heat also affects local ecosystems and outdoor workers. Rising temperatures can heat up water bodies beyond tolerable levels for many aquatic species, especially during droughts. Plants and wildlife not adapted to high heat may experience stress or die-off. Outdoor laborers—particularly in agriculture, construction, and landscaping—are at greater risk of heat-related illnesses due to prolonged sun exposure. In addition, high electricity demand for cooling and the reduced efficiency of power lines during extreme heat can overload the energy system, increasing the likelihood of power failures across the community.

CLIMATE CHANGE CONSIDERATIONS

Extreme heat is an increasing issue for Half Moon Bay as the community and natural resources are accustomed to lower temperatures due to the influence of the Pacific Ocean and fog. Climate change is expected to increase extreme heat days in the city from a historic annual average of 4 days per year to an average of 9 days per year by mid-century (2035 to 2064), and an average of 22 days per year by late-century (2070 to 2099). When the daily minimum temperatures remain significantly above normal, warm nights can worsen an extreme heat day because overnight temperatures do not get low enough to provide the community with any relief from high temperatures. Warm nights are projected to increase from a historic 7 nights per year to 45 nights per year by mid-century and 121 nights per year by late-century.

Extreme heat is one of the deadliest climate-related hazards nationwide, with the CDC noting a rise in heat-related deaths—from 297 in 2004 to over 2,300 in 2023. These numbers are likely a significant undercount, as they do not include deaths caused by other factors that are exacerbated by extreme heat. Locally, according to the California Department of Public Health, during a heatwave recorded in September 2022, California saw an estimated 395 excess deaths attributed directly to heat. While San Mateo does not publish heat deaths statistics, according to the San Francisco Chronicle, coroner-confirmed reporting indicates three elderly county residents died of heat stroke during a September 2017 heat wave.



The rising frequency and intensity of extreme heat and warm night events pose significant public health concerns, especially in Half Moon Bay, which has historically experienced milder temperatures due to proximity to the Pacific Ocean. Even slight increases in temperature can overwhelm the ability of community members to cope with extreme heat and warm nights, straining an already limited public health system and infrastructure. This leads to heightened risks of dehydration, heat-related illnesses, and respiratory issues, disrupting daily life and economic activity. Extreme heat also stresses infrastructure, as more residents install air conditioning units and electricity demand increases, it risks overloading the power grid and causing outages. Additionally, rising temperatures harm local ecosystems by increasing water temperatures in local creeks and streams, harming fish and plant species.

Secondary Hazards

Extreme heat days and heat waves have several secondary cascading effects beyond immediate health risks. They can strain infrastructure by increasing electricity demand for cooling, leading to brownouts or blackouts, and cause damage to roads and railways. Heat also stresses water supplies and ecosystems, warming lakes and streams to levels harmful for aquatic life, especially during droughts. Plants and wildlife not adapted to high temperatures may suffer, and agricultural productivity can decline. Outdoor workers face greater exposure to heat-related illnesses, and overall economic and public service systems may be disrupted by reduced labor capacity, increased healthcare needs, and higher energy costs.

SHORELINE HAZARDS

Shoreline hazards affecting Half Moon Bay include coastal flooding, sea level rise, emergent groundwater, and tsunamis. Sea level rise, driven by climate change, is expected to worsen erosion, cause emergent groundwater conditions, and increase the frequency and extent of coastal flooding, especially during King Tides and storm surges. These hazards threaten homes, businesses, transportation routes, and ecosystems along Half Moon Bay's coast.

To help address shoreline hazards, Half Moon Bay actively participates in and supports efforts undertaken by OneShoreline. OneShoreline, established in 2020, also known as the San Mateo County Flood and Sea Level Rise Resiliency District, addresses region-wide challenges like coastal flooding, erosion, and sea level rise for the county and all 20 incorporated cities. On the Pacific Coastside, OneShoreline is actively advancing a resilience project for the flood-prone wastewater treatment plant that serves Half Moon Bay and northern coastal communities, as well as working to reduce coastal erosion. Additionally, a flood early warning station is planned along Pilarcitos Creek just upstream of Half Moon Bay, enhancing real-time monitoring and readiness for downstream properties. Through OneShoreline, Half Moon Bay is directly involved in infrastructure planning and flood mitigation efforts aimed at protecting its coastline and essential facilities.

This section focuses on sea level rise as the other topics have been discussed in previous sections.

SEA LEVEL RISE

Sea level rise, driven by melting polar ice and the thermal expansion of ocean water due to global warming, poses a significant threat to Half Moon Bay. According to the 2024 California Sea Level Rise Guidance, sea level could rise by up to 0.4 feet by 2030, 1.3 feet by 2050, and 6.5 feet by 2100. These projections may be exceeded during King Tides or storm surges, which can add two to three feet of temporary flooding, pushing water farther inland. According to Figure SE-8, *Project Sea Level Rise*, much of Half Moon Bay's coastline, including Pilarcitos Creek, is at risk of periodic or permanent inundation. Coastal dunes and bluffs offer some protection, but critical infrastructure like the wastewater treatment plant and communication facilities remain vulnerable. Rising sea level will also accelerate coastal erosion, threatening parks, hotels, beach access, and other coastal assets.

Half Moon Bay is already exposed to present-day flooding when large rain events coincide with high tides on the San Francisco Bay. The city becomes more at risk of flooding when considering the effects of rising sea level. Future flooding and coastal erosion could pose considerable risks to life, safety, critical infrastructure, the city's natural and recreational assets, and the economy. Results from the San Mateo County Sea Level Rise Vulnerability Assessment indicate the following impacts from sea level rise:

- The assessed value of parcels in San Mateo County exposed to near-term (present-day) flooding exceeds \$1 billion due to critical facilities such as wastewater infrastructure, schools, and correctional facilities.
- The assessed value of parcels across the county exposed to erosion and flooding in the long term (50–100 years) totals roughly \$39.1 billion.
- More than 30,000 residential parcels and 3,000 commercial parcels may also be vulnerable in the long term.
- Flooding, erosion, and sea level rise not only directly threaten people and property in the sea level rise hazard areas, but they also affect all communities in the county, even those on high ground. Such indirect effects are present because assets and infrastructure in the sea level rise areas provide critical services and functions to communities outside these areas.

Looking closer at Half Moon Bay's specific impacts, the 2016 Half Moon Bay Sea Level Rise Vulnerability Assessment indicates that all areas along the coastline are vulnerable to the effects of sea level rise. This includes portions of Pilarcitos Creek and Frenchman's Creek lower watersheds where they connect to the Pacific Ocean (see Figures SE-8 and SE-9).

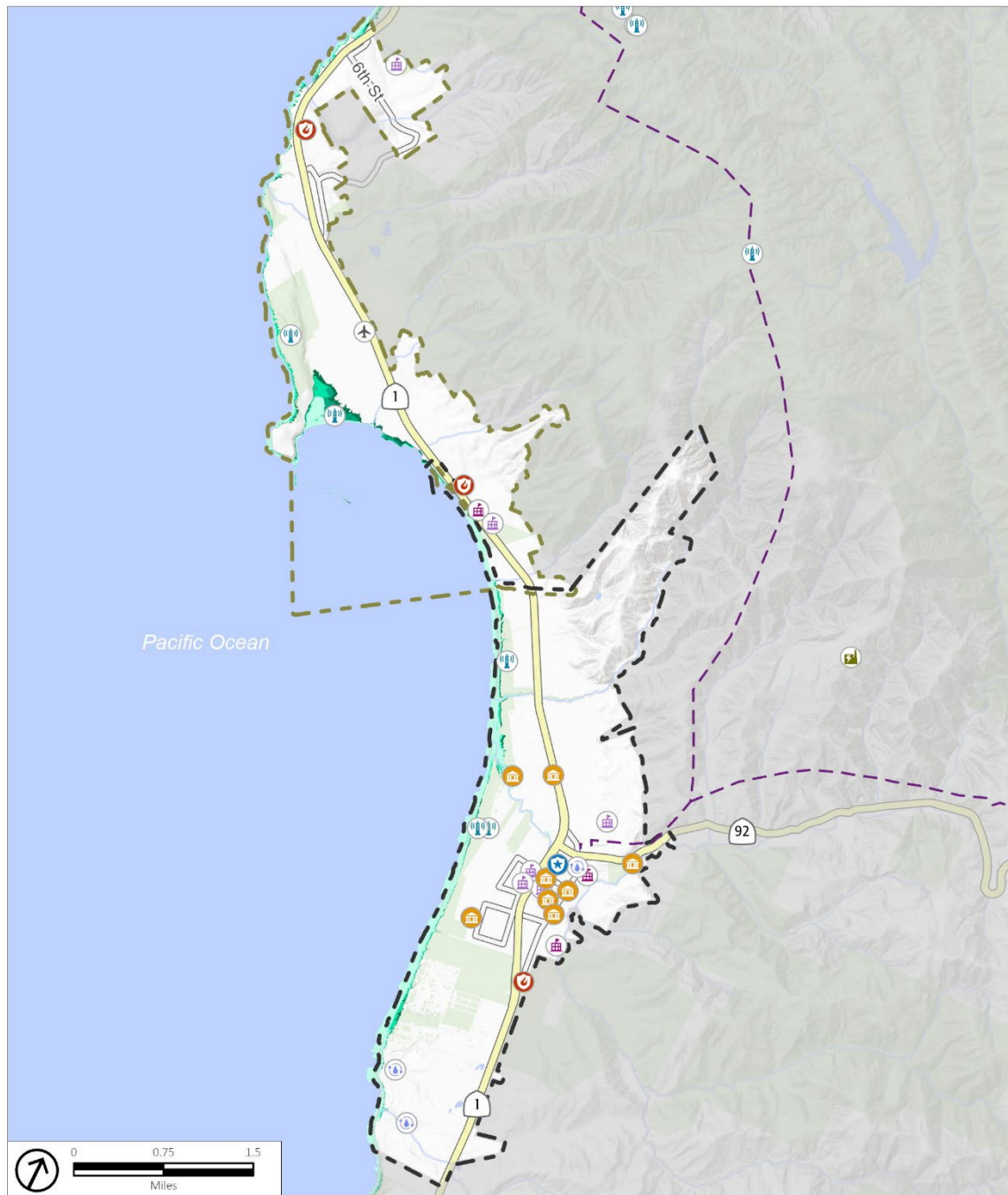


While the estuary at Frenchman's Creek is impacted by sea level rise, the impacts associated with inland creeks is considered negligible. In Half Moon Bay, at the high-end scenario of future sea level rise projections, 103 acres are subject to sea level rise, putting \$30 million of property at risk. The vast majority of the properties expected to be inundated are located along the beach, however according to the 2016 Sea Level Rise Vulnerability Assessment other resources like key roadways (Highway 1 and Mirada Road), creeks and drainages, coastal trails and accessways, sensitive habitats, infrastructure (SAM Wastewater Treatment Plant), residential and commercial uses along the coastline, and hazardous materials waste sites may be impacted by sea level rise.

EMERGENT GROUNDWATER

Sea level rise has secondary effects beyond inundation. As sea level rise, the dense saltwater moves inland beneath the ground/soil, which forces up the layer of the less-dense fresh groundwater that floats above it. In many coastal areas, even a few inches of sea level rise can raise the fresh groundwater table enough to flood basements of homes and buildings, escape through cracks in sewer lines, and damage underground infrastructure hindering its effectiveness. It can also seep into toxic sites (e.g., oil wells, fuel storage tanks) from below, releasing hazardous materials and spreading these pollutants far beyond the limits of the original contamination areas. Low-lying inland areas could flood from below by emergent groundwaters, faster than coastal floodwaters overtop the shoreline. This rising groundwater will create potential exposure pathways that could impact not only the environment, but public health as well. Exposure to new or unearthed pollutants can occur as water rises through the soil; as well as contamination of drinking water sources; contaminants evaporating and rising into the air inside homes, schools, and workplaces; and potential flooding of septic systems and leaching raw sewage into nearby waterways. Rising groundwater can further impact Half Moon Bay as groundwater could reach the surface in low-lying areas, such as Elmar Beach and Pillar Point Harbor, potentially increasing susceptibility to liquefaction during earthquakes. Figures SE-9 and SE-10, *Groundwater Emergence, High Level Sea Level Rise Scenario – North Coast and South Coast*, show the potential emergent groundwater conditions for high-end sea level rise (6.6 feet) scenario in the city.

FIGURE SE-8: PROJECTED SEA LEVEL RISE



Source: ESRI, 2023; County of San Mateo, 2023; City of Half Moon Bay, 2023; PlaceWorks, 2023; USGS CoSMoS

- | | | | |
|-----------------------|-----------------------|--------------------------|---|
| City of Half Moon Bay | Airport | Public Schools (K-12) | Sea Level Rise
0 ft + 100-year storm
0.8 ft + 100-year storm
3.3 ft
3.3 ft + 100-year storm
6.6 ft
6.6 ft + 100-year storm |
| Sphere of Influence | Law Enforcement | Private Schools (K-12) | |
| Parks and Open Space | Fire Stations | California Power Plants | |
| Creeks and Waterways | Government Facilities | Pump Stations | |
| | | Communication Facilities | |
| | | Transmission Lines | |





FIGURE SE-9: GROUNDWATER EMERGENCE, HIGH LEVEL SEA LEVEL RISE SCENARIO (NORTH HALF MOON BAY)

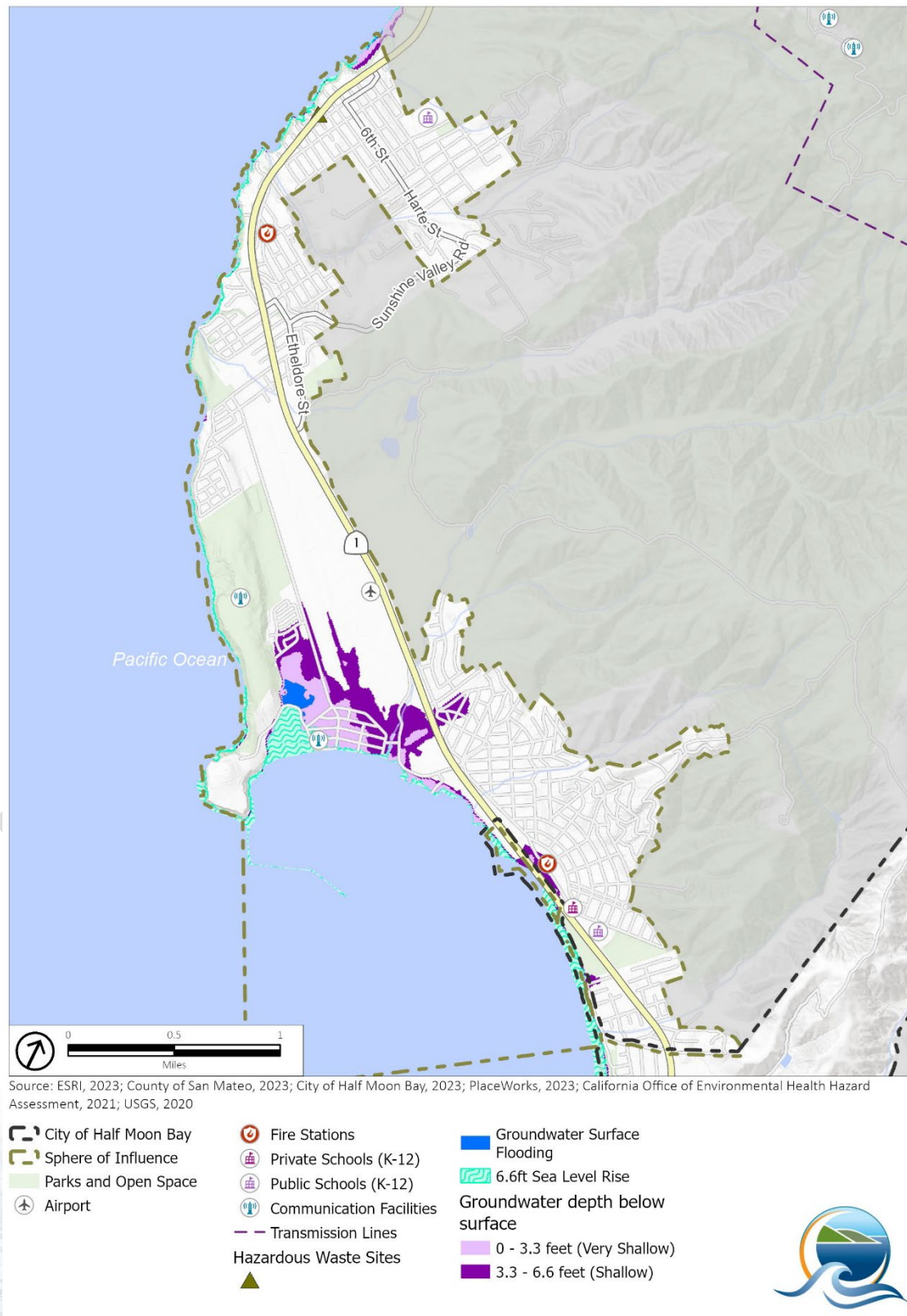
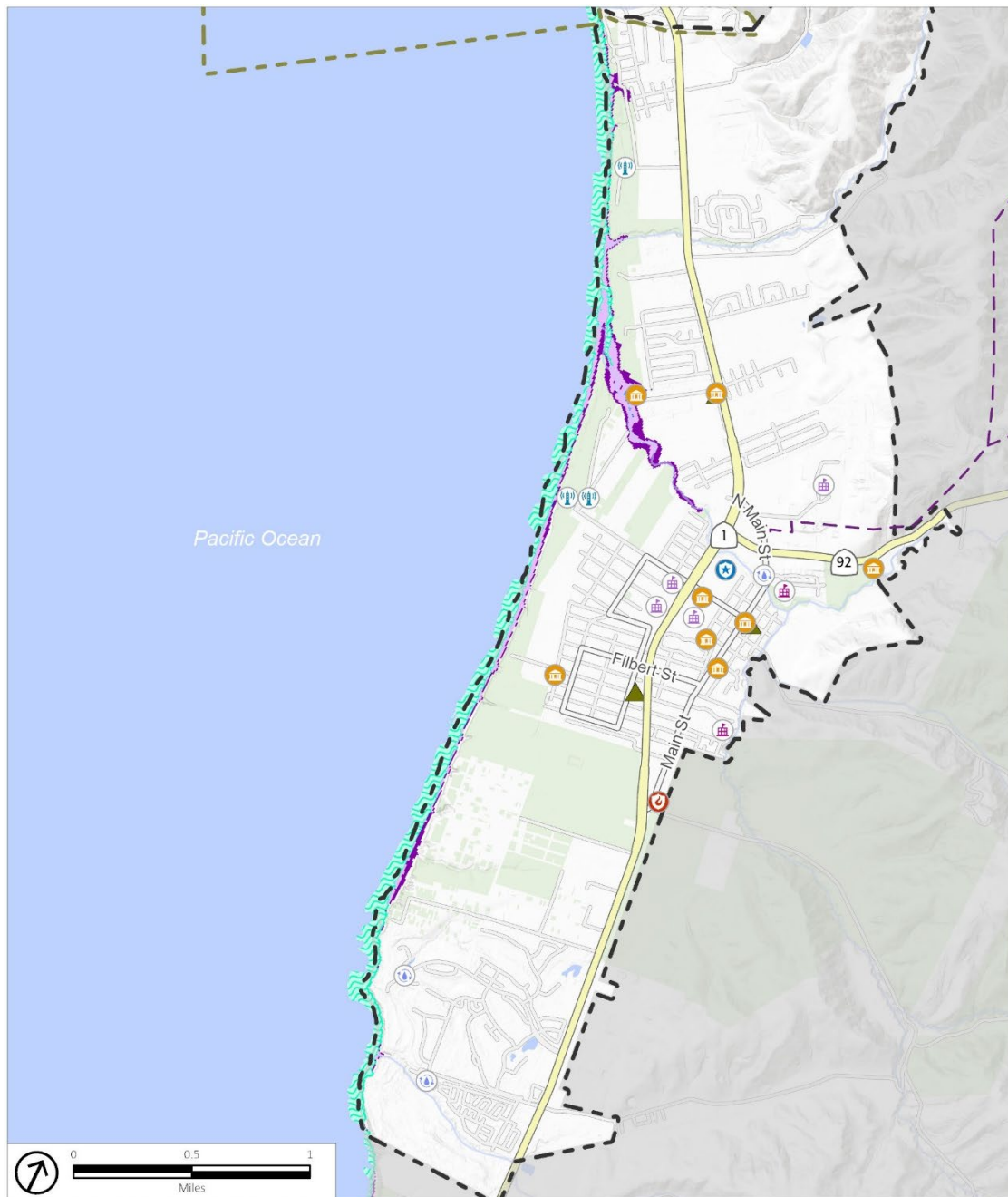


FIGURE SE-10: GROUNDWATER EMERGENCE, HIGH LEVEL SEA LEVEL RISE SCENARIO (SOUTH HALF MOON BAY)



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

- | | | |
|-----------------------|--------------------------|--|
| City of Half Moon Bay | Public Schools (K-12) | Groundwater Surface Flooding |
| Sphere of Influence | Private Schools (K-12) | 6.6ft Sea Level Rise |
| Parks and Open Space | Pump Stations | Groundwater depth below surface |
| Law Enforcement | Communication Facilities | 0 - 3.3 feet (Very Shallow) |
| Fire Stations | Transmission Lines | 3.3 - 6.6 feet (Shallow) |
| Government Facilities | Hazardous Waste Sites | |





EMERGENCY PREPAREDNESS

The City of Half Moon Bay employs a multipronged approach for mitigating, responding to, and recovering from emergencies. This approach relies on a variety of plans, programs, and technologies that are changing and improving on a constant basis.

EMERGENCY ALERT SYSTEMS

Half Moon Bay uses a multi-tiered emergency alert system coordinated between local and county agencies that includes the following.

City Alerts (Website and E Notifications)

The City maintains an Emergency Alert icon and Alert Center on its official website. During an emergency or road closure, updates are posted providing the latest information. This is a voluntary system, where residents can opt-in to receive email notifications directly.

SMC Alert/Rave Mobile Safety

San Mateo County's SMC Alert is the primary emergency notification system available to the City of Half Moon Bay, which can reach people by text, email, and phone message. Half Moon Bay relies on SMC Alert for larger regional emergency notifications. Alerts are available in a wide variety of languages, including English and Spanish, which are the primary languages spoken in Half Moon Bay.

Individuals can sign up for SMC Alert via the County's website at:

<https://www.smart911.com/smart911/ref/reg.action?pa=smcgov>.

Public Radio

The City partners with KHMB radio station 100.9 FM and AM 1710 to provide the area with up-to-date information during emergencies.

Public Sirens

Eight coastal sirens in San Mateo County, including in Half Moon Bay, can be activated remotely by county emergency managers for events like tsunamis.

Wireless Emergency Alerts

Wireless Emergency Alerts (WEAs) are short emergency messages from authorized public alerting authorities that can be broadcast from cell towers to any WEA-enabled mobile device in a locally targeted area. WEA is a partnership among FEMA, the Federal Communications Commission, and wireless providers to enhance public safety. Half Moon Bay residents, workers, and visitors benefit from the Emergency Alert System (EAS) for broadcast messages, Wireless Emergency Alerts (WEA) for phone-based warnings, and California EDIS for statewide emergency bulletins.

MAJOR EVACUATION ROUTES AND CONSTRAINTS

Half Moon Bay's evacuation network relies mainly on Highway 1 and Highway 92 as primary routes for residents to leave the area during emergencies. While these routes function properly for everyday use, locations along these routes may have vulnerabilities that could affect their use during an emergency. Bridges can often become vulnerable during intense earthquake events and drainages adjacent to or crossing under these roadways could be vulnerable during intense rain events. The San Mateo County Sheriff's Office leads evacuation efforts, coordinating closely with Half Moon Bay, the Coastside Fire Protection District, and the County Department of Emergency Management, to ensure evacuations are efficient and safe. While there is currently no publicly available, standardized evacuation plan for Half Moon Bay, during an evacuation, the City will rely on incident conditions, roadway capacities, and the identification of areas of safety to determine which routes should be used for evacuation.

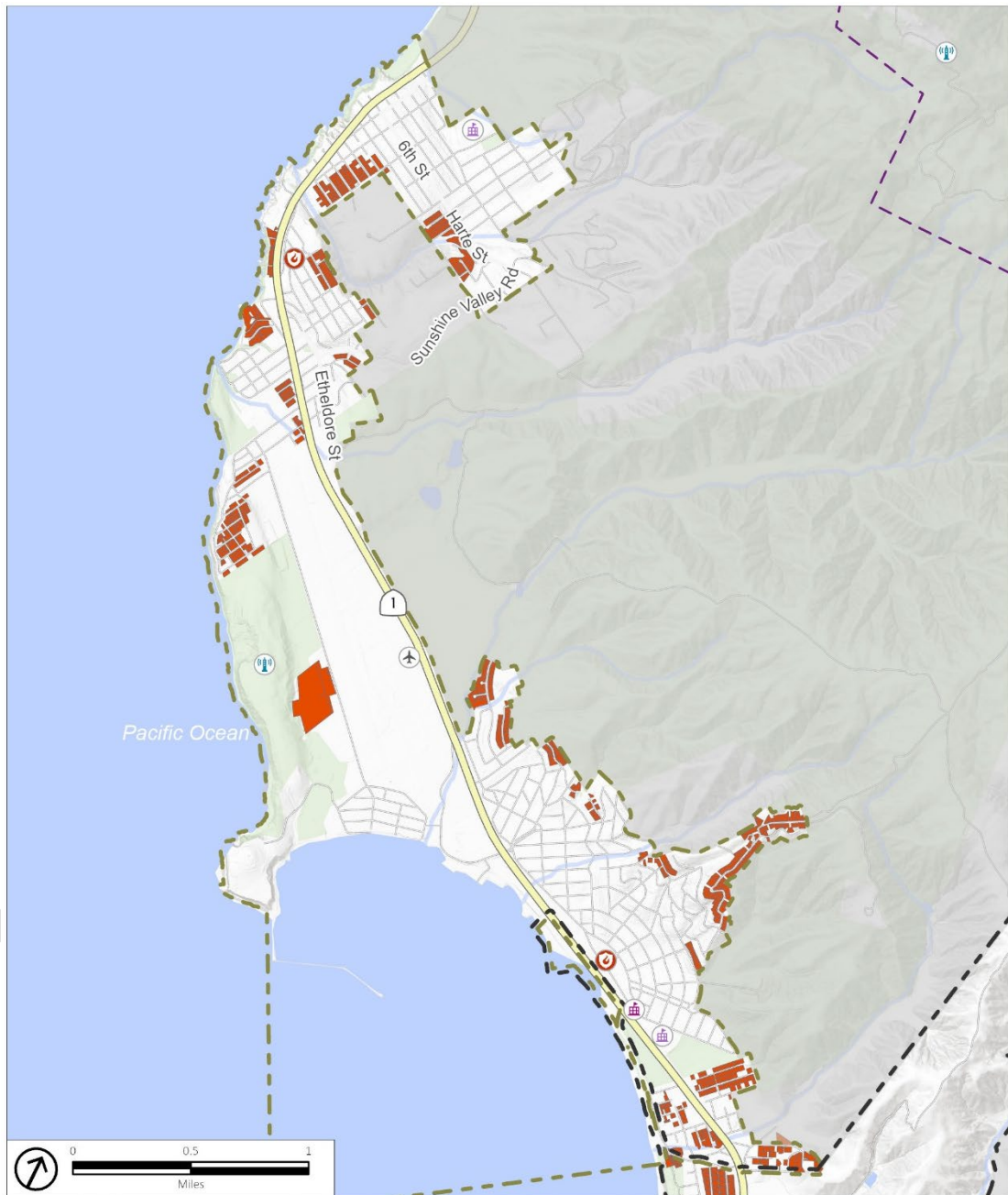
The City faces challenges due to some residential areas having access to fewer than two evacuation routes, increasing vulnerability during fast-moving emergencies like wildfires or flash floods. Figures SE-11 and SE-12 show residential parcels that have only a single point of access to an evacuation route. If this point of access is blocked or destroyed, such as by floodwaters or debris, it can delay or prevent evacuations or emergency response. The project team identified these parcels in accordance with the requirements of California Government Code Section 65302(g)(5). This includes parcels that are adjacent to potential evacuation routes, but can only be accessed through a single point of access. To ensure adequate evacuation capabilities, Half Moon Bay will need to take the necessary steps to understand the safety, capacity, and viability of evacuation routes, working closely with neighboring jurisdictions and San Mateo County. Ultimately, the City aims to improve preparedness and reduce evacuation risks for all residents, especially those in hazard-prone areas with limited access.

Genasys EVAC/Zonehaven

Public safety agencies throughout San Mateo County use the Genasys Protect app to communicate areas under evacuation orders/warnings during an emergency. Genasys is not an alert and warning system, but it provides first responders and public safety workers with tools to navigate the evacuation process, including information about when it is safe to return. The Genasys platform divides the community into zones to provide information tailored to impacted areas. Users of the app can choose the zone or zones for which they would like to receive alerts. The City of Half Moon Bay and surrounding unincorporated areas are divided into seven evacuation zones on the Genasys platform.



**FIGURE SE-11: RESIDENTIAL PARCELS WITH A SINGLE POINT OF INGRESS/EGRESS
(NORTH HALF MOON BAY)**

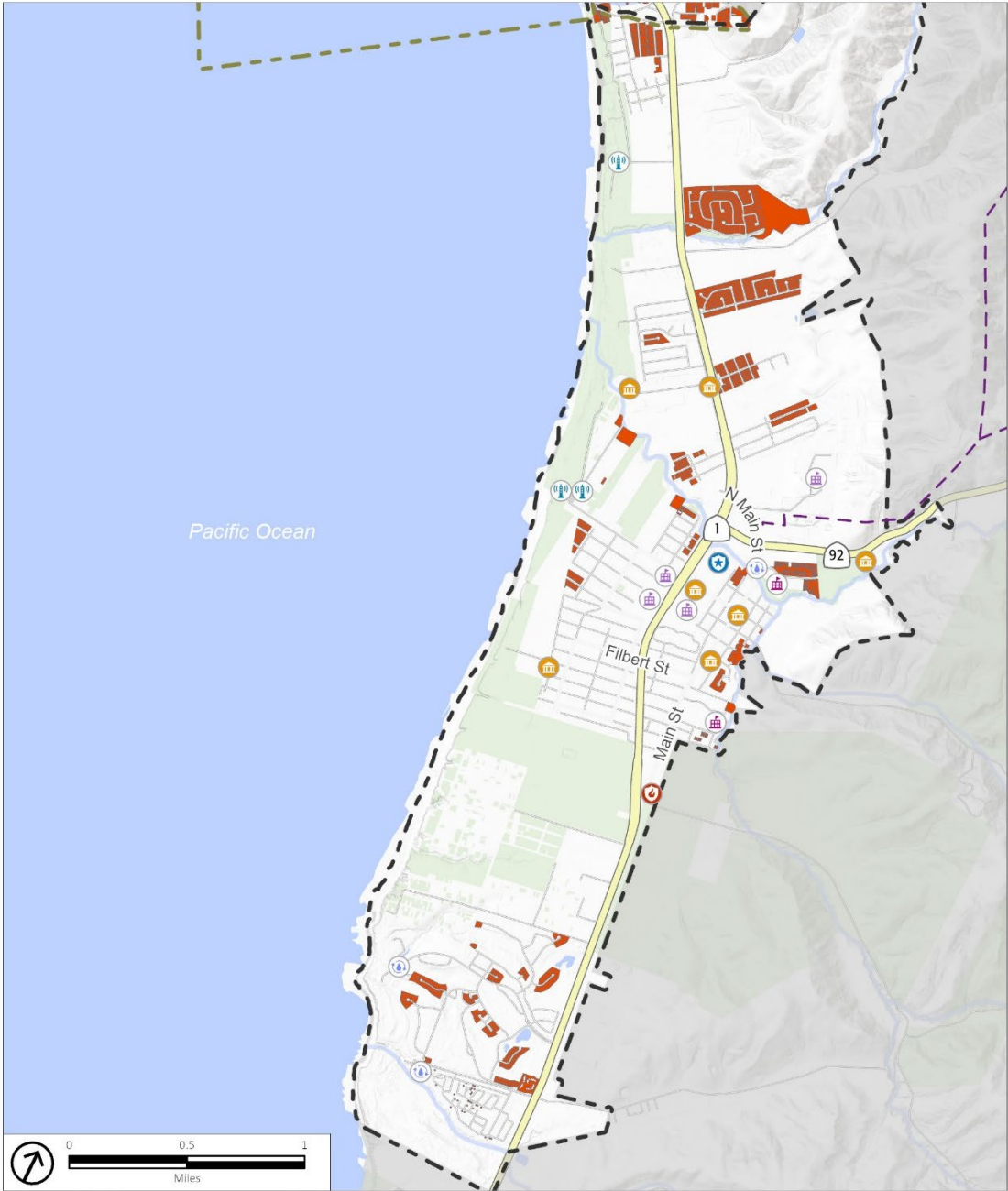


Source: ESRI, 2023; County of San Mateo, 2023; City of Half Moon Bay, 2023; PlaceWorks, 2023

- | | | |
|-----------------------|--------------------------|--|
| City of Half Moon Bay | Fire Stations | Transmission Lines |
| Sphere of Influence | Private Schools (K-12) | Evacuation-Constrained Residential Parcels |
| Parks and Open Space | Public Schools (K-12) | |
| Airport | Communication Facilities | |



FIGURE SE-11: RESIDENTIAL PARCELS WITH A SINGLE POINT OF INGRESS/EGRESS
(SOUTH HALF MOON BAY)



Source: ESRI, 2023; County of San Mateo, 2023; City of Half Moon Bay, 2023; PlaceWorks, 2023

- | | | |
|-----------------------|--------------------------|--|
| City of Half Moon Bay | Government Facilities | Transmission Lines |
| Sphere of Influence | Public Schools (K-12) | Evacuation-Constrained Residential Parcels |
| Parks and Open Space | Private Schools (K-12) | |
| Law Enforcement | Pump Stations | |
| Fire Stations | Communication Facilities | |





CLIMATE CHANGE CONSIDERATIONS

Climate change presents several emergency management challenges for Half Moon Bay, including more intense and potentially more frequent extreme weather events—such as storms, atmospheric rivers, and heatwaves—that increase the risk of flooding, power outages, and health emergencies. Rising sea level further threaten coastal infrastructure, evacuation routes, and emergency shelters through flooding impacts. Hotter, drier conditions also elevate wildfire risks, especially in the WUI, necessitating stronger evacuation plans and community outreach. Public health is impacted by heatwaves and the spread of vector-borne diseases, placing additional strain on healthcare systems. At the same time, extreme heat and storms stress power grids, threatening communication and emergency response capabilities. The potential for compound hazards, such as post-wildfire landslides, calls for multi-hazard planning and adaptable emergency strategies.

GOALS AND POLICIES

Geologic and Seismic Hazards

GOAL SE-1: A community that understands and prepares for the threat associated with earth processes.

Policies

- Policy SE-P1.1:** Ensure federal, state, and local regulations regarding the identification and mitigation of seismic hazards are implemented and require that new developments/projects be built to the latest siting, design, and construction standards that promote structural integrity and functionality during a seismic event.
- Policy SE-P1.2:** Require fault investigations for faults shown on California Geological Survey maps and Half Moon Bay Geologic Maps during the development review process and require adequate setbacks for buildings for human occupancy, where necessary.
- Policy SE-P1.3:** Design and construct new Half Moon Bay facilities and utility infrastructure (either public or private) that cross active fault traces to accommodate horizontal and/or vertical displacement.
- Policy SE-P1.4:** Ensure land use designations in areas subject to seismic hazards are consistent with the Half Moon Bay Municipal Code and meet community safety standards.
- Review State building code updates and make any necessary local amendments to address local geologic, topographic, or climatic conditions.
- Policy SE-P1.5:** No structure proposed for occupancy, such as schools, hospitals, or theaters, churches, or offices, shall be approved in areas of high geologic or seismic hazard, as identified by a qualified geologist.

- Policy SE-P1.6:** Subdivisions shall be designed to concentrate homesites, minimize placement of roads and other improvements on unstable lands, and shall demonstrate suitable and stable building sites, as identified in a geotechnical analysis performed by a qualified geologist.
- Policy SE-P1.7:** Ensure development in hazardous geologic locations follow these requirements:
1. No new building site shall be approved on a hazardous fault trace, active landslide, or other geologic or seismic hazard area that poses a significant risk.
 2. Ensure all developments proposed in areas susceptible to liquefaction address this hazard in compliance with current local, county, and state requirements.
 3. Prioritize development in stable geologic areas (i.e., outside of landslide-prone areas) that require minimal engineered solutions and promote nature-based solutions, wherever feasible.
 4. Restrict development projects that will cause hazardous geologic conditions or expose existing developments to unacceptable levels of risk, unless effective mitigation can be incorporated.
 5. Require a geotechnical analysis performed by a qualified geologist as part of the development review process and follow the recommendations of the geologist.
- Policy SE-P1.8:** Roads and/or utility lines crossing landslide-prone areas shall include special design and construction techniques to minimize risk of failure.
- Policy SE-P1.9:** High-density/intensity development shall not be permitted in areas of high landslide potential.
- Policy SE-P1.10:** In areas of high landslide potential, minimize alteration of the land or hydrology that is likely to increase the hazard potential, including:
1. Saturation due to drainage or septic systems;
 2. Removal of vegetative cover; or
 3. Steepening of slopes or undercutting the base of a slope.
- Policy SE-P1.11:** Lands where soils are in a continually saturated condition shall not be used for structural purposes or filled with heavy earth fills due to their inherently weak and unstable nature. Uses requiring septic systems in such areas shall not be allowed.
- Policy SE-P1.12:** Soils and geologic reports for hillside construction shall be prepared for all new development in areas exceeding 20 percent slope and reviewed for adequacy by appropriate City staff or consultants selected by the City at the applicant's expense.



Policy SE-P1.13: Establish early warning and evacuation systems for hillside residents to evacuate prior to heavy rains that may lead to landslides and debris flows.

Actions

Action SE-A1.1 Continue enforcement of unreinforced masonry buildings that exhibit structural deficiencies in their capacities for earthquake resistance under Ordinance No. 13-89 establishing a seismic hazard identification program for unreinforced masonry buildings.

Action SE-A1.2 Modify the City's Grading Ordinance to specifically address identified areas with seismic hazards.

Action SE-A1.3 Qualifying subdivisions, including structures for human occupancy and other critical structures within an Earthquake Fault Zone shown on current maps published by the California Geological Survey shall prepare a site-specific fault investigation report by a certified engineering geologist for Half Moon Bay review and approval.

Action SE-A1.4 Any proposed new living space within a fault setback shall be supported by a fault investigation and contain at a minimum: the results of subsurface investigations, locations of hazardous faults adjacent to the project site, recommended setback distances of proposed structures from hazardous faults, and additional recommended measures to accommodate warping and distributive deformation associated with faulting (e.g., strengthened foundations, engineering design, flexible utility connections). The recommendations should be incorporated into project design plans.

Action SE-A1.5 Review the structural integrity of all City-owned critical facilities and strengthen, remove, or replace those that are found unable to meet current safety standards. Structures with historical significance are exempt from removal and replacement, however their use may require modification.

Action SE-A1.6 Identify and retrofit seismically vulnerable City-owned structures (e.g., unreinforced masonry, soft-story, non-ductile concrete construction, etc.) to increase community resilience.

Action SE-A1.7 Identify seismically vulnerable structures (e.g., unreinforced masonry, soft-story, non-ductile concrete construction, etc.) to promote mitigation of these conditions on private properties.

Action SE-A1.8 Maintain and update maps of geologic and seismic hazard areas in response to significant updates in best available science and information.

Flooding and Inundation

GOAL SE-2: A community where flooding no longer impacts residents and businesses.

Policies

- Policy SE-P2.1:** Increase public awareness about flooding and flood risks and approaches to avoid and minimize flood risks on private property through multilingual and multi-format outreach. Establish thresholds for engagement, especially for vulnerable areas, and reiterate outreach if these standards are not met.
- Policy SE-P2.2:** Require that development proposals rely on the latest mapping and information to determine areas prone to flooding.
- Policy SE-P2.3:** Ensure disclosures of the presence of flooding hazards during transactions of property within areas of special flood hazard.
- Policy SE-P2.4:** Incorporate mitigation measures into all development proposals that reduce or eliminate flood risk to the greatest extent feasible.
- Policy SE-P2.5:** Retain natural floodplains and guide development to areas outside of areas of special flood hazard, where feasible.
- Policy SE-P2.6:** Require habitable structures proposed in special flood hazard areas (Federal Emergency Management Agency or City-designated zones) to be safely elevated three feet above the base flood elevation or similarly City-designated elevation and not contribute to the flooding of surrounding structures and properties.
- Policy SE-P2.7:** Promote subdivision design that avoids special flood hazard areas when possible and identify these areas on the approved subdivision map.
- Policy SE-P2.8:** All proposed developments shall construct on-site and off-site flood hazard mitigation and drainage improvements or pay their pro-rate fair share of improvement costs, when applicable.
- Policy SE-P2.9:** Improve storm drainage infrastructure in areas that regularly experience flooding during storms or extreme tides.

Actions

- Action SE-A2.1** Update and expand the Storm Drain Master Plan to address current and projected future needs in Half Moon Bay, including details on drainage conditions and needed improvements within the watershed.
- Action SE-A2.2** Maintain and update flood hazard mapping (flooding and dam or impoundment inundation) to incorporate significant updates in best available science and information, including but not limited to the most current official FEMA FIRM to determine the general location of flood hazard areas. Support and pursue study



and mapping of inland watercourses, prioritizing Pilarcitos Creek, as well as updated dam inundation and local impoundment mapping.

Tsunami

Policies

- Policy SE-P2.10:** Site critical facilities outside of tsunami hazard zones. Where critical facilities must be located in tsunami hazard zones, promote the design and construction that adheres to the Federal Emergency Management Agency's **Guidelines for Design of Structures for Vertical Evacuation from Tsunamis**, to reduce or eliminate tsunami damage and facilitate evacuation on short notice.
- Policy SE-P2.11:** Ensure residents, businesses, and visitors know where tsunami inundation could occur within the City by distributing and publicly posting this information in frequented areas.
- Policy SE-P2.12:** Ensure the community takes significant steps to protect lives and property from tsunami threats and maintain the City's status as a Tsunami Ready community.

Dam Failure

Policies

- Policy SE-P2.13:** Ensure land uses in potential dam inundation areas are consistent with Half Moon Bay standards/regulations and meet community safety standards.

Actions

- Action SE-A2.1** Continue enforcement of Chapter 14.34, *Flood Damage Prevention*, of the City of Half Moon Bay Municipal Code.
- Action SE-A2.2** Support measures for the abatement of flooding hazards, including, but not limited to, (1) removal or relocation of development from flood hazard areas, (2) construction of impoundments or channel diversions provided that adequate mitigation of environmental impacts can be demonstrated, and (3) debris clearance and silt removal programs conducted in a manner so as not to disrupt existing riparian communities.
- Action SE-A2.3** Work with the San Mateo Area Office of Emergency Services to develop and maintain a Tsunami Warning Plan to alert affected governmental agencies and beachside residents and businesses. This plan should be coordinated with local television, social media, and radio media.
- Action SE-A2.4** Encourage the San Mateo Area Office of Emergency Services to develop and maintain a dam inundation warning plan to alert affected governmental agencies,

residents, and businesses in the potential hazard areas. This dam inundation plan should be coordinated with local television and radio media.

Fire Hazard

GOAL SE-3: A community prepared and ready for wildfire events when they occur.

Policies

- Policy SE-P3.1:** Require new developments and major remodels or renovations to comply with the California Building Code, California Fire Code, and local adopted ordinances for construction and adequacy of water flow and pressure, ingress/egress, and other measures to ensure adequate fire protection.
- Policy SE-P3.2:** Encourage new development outside of the High and Very High Fire Hazard Severity Zones. If development is proposed in these zones, require fire-safe design, including, but not limited to, defensible space and home hardening, and compliance with fire-safe regulations, the adopted California Fire Code, and local ordinances.
- Policy SE-P3.3:** Ensure new development does not degrade water supply infrastructure and roadway capacity for existing development.
- Policy SE-P3.4:** Require that the length of cul-de-sacs be limited to a maximum of 250 feet unless otherwise approved by the Fire District as a part of an overall development plan.
- Policy SE-P3.5:** Require a five-foot ember-free zone on all habitable structures throughout the city.
- Policy SE-P3.6:** Require all developments in the Very High Fire Hazard Severity Zones to meet or exceed statewide Fire Safe Regulations (Title 14, California Code of Regulations, Section 1270, *SRA Fire Safe Regulations*, and Title 14, California Code of Regulations, Section 1299.01, *Fire Hazard Reduction Around Buildings and Structures Regulations*).
- Policy SE-P3.7:** Require all new developments within mapped Fire Hazard Severity Zones provide a minimum of two points of access by means of public roads that can be used for emergency vehicle response and evacuation purposes, where practicable.
- Policy SE-P3.8:** Require fire protection plans consistent with requirements of the California Fire Code, including a risk analysis, fire response capabilities, fire safety requirements (defensible space, infrastructure, and building ignition resistance), mitigation measures and design considerations for non-conforming fuel modifications, wildfire education maintenance and limitations, and evacuation plans for new development and major remodels in very high fire hazard severity zone areas designated by the City and CAL FIRE.



- Policy SE-P3.9:** Require new development to incorporate design measures that enhance fire protection in fire hazard severity zones. This shall include, but is not limited to, the incorporation of fire-resistant structural design, use of fire-resistant landscaping, home hardening, defensible space, and vegetation management around the perimeter of structures.
- Policy SE-P3.10:** Develop retrofit guidelines for existing non-conforming properties to understand what improvements may be necessary to comply with the California Fire Code, local ordinances, and best management practices.
- Policy SE-P3.11:** Coordinate with local and regional agencies to require vegetation management and long-term maintenance of fire hazard reduction projects (including community fire breaks) on all private and public roads and properties in the fire hazard severity zones (see Figure SE-7).
- Policy SE-P3.12:** If feasible, locate new public/critical facilities (schools, hospitals, fire stations, etc.) outside of fire risk areas. Ensure new public/critical facilities that are in fire-prone areas (FHSZs and/or WUI), adhere to the California Fire Code/local ordinances, and incorporate mitigation strategies that enhance fire response and evacuation capabilities.
- Policy SE-P3.13:** Maintain functionality and make improvements, where feasible, to existing emergency evacuation routes within the city, taking into account current and future natural and human-caused hazards.
- Policy SE-P3.14:** Require new development and redevelopments that increase density/intensity of use to provide circulation network enhancements that improve evacuation capabilities.
- Policy SE-P3.15:** Educate residents (with special attention to at-risk populations) and businesses on vegetation management practices, including fire safety, landscape installation and maintenance, defensible space, and other fire hazard reduction strategies.
- Policy SE-P3.16:** Support fire prevention, public education, early detection programs, and property inspections to identify and avoid fire hazards. Provide special attention to at-risk populations and ensure that they can access in-language information and resources.
- Policy SE-P3.17:** Coordinate with Coastside Fire Protection District to ensure fire service capabilities are maintained and enhanced through proactive maintenance of fire equipment and training of fire personnel.
- Policy SE-P3.18:** Coordinate with Coastside Fire Protection District on the need for additional fire-safe design regulations for the built out, populated areas of the city.
- Policy SE-P3.19:** Support programs for ongoing staff training focused on understanding risks posed by older structures and infrastructure, as well as risk-reduction activities.

- Policy SE-P3.20:** Coordinate with Coastside County Water District on maintaining adequate water supplies and infrastructure to meet current and future water demands.
- Policy SE-P3.21:** Support regional and subregional efforts to ensure that an adequate water supply, including groundwater, remains available.
- Policy SE-P3.22:** Coordinate with water providers to maintain and enhance water supply infrastructure to ensure adequate supplies for existing and future daily demands and firefighting suppression requirements.

Actions

- Action SE-A3.1** Require new development to pay a fee and/or participate in an Assessment District for Fire District equipment, facility expansions, additional staff, and other capital improvements when the need arises to accommodate the increased service demand of new development and/or provide for needed capital improvements through future Capital Improvement Programs.
- Action SE-A3.2** Regularly re-evaluate fire-prone areas and conditions and adopt reasonable safety standards covering such elements as vegetation management around homes, adequacy of existing and future water supplies, fire flow tests, fire hydrants, routes or throughways for fire equipment access, clarity of addresses and street signs, and long-term maintenance in compliance with Fire Safe Regulations, adopted California Fire Code, and local ordinances.
- Action SE-A3.3** Identify the feasibility of improving emergency access for existing developments that do not meet minimum road standards for emergency equipment, such as:
- Action SE-A3.4** Additional vehicle pullouts at key locations.
1. Limiting or restricting on-street parking at key hillside locations.
 2. Potential for construction of new or improved emergency access routes.
 3. Roadside clearance improvements.
 4. Leveraging existing alternative or secondary routes, including fire roads, trails, and easements.
- Action SE-A3.5** Support the compliance/creation of voluntary fire mitigation projects and plans like Community Wildfire Protection Plans and/or Firewise Communities to increase community resilience.



- Action SE-A3.6** Work with the Fire District and Coastside County Water District to establish a priority list for upgrading fire flow capabilities in neighborhoods that may have inadequate fire flows.
- Action SE-A3.7** Collaborate with San Mateo County on implementing the Connect the Coastside Plan for infrastructure improvements on Highway 92 to improve emergency access for all users.

HUMAN-CAUSED HAZARDS

Hazardous Materials

GOAL SE-4: A community where exposure to hazardous materials is minimized or eliminated.

Policies

- Policy SE-P4.1:** Discourage industries that rely extensively on the use of hazardous materials.
- Policy SE-P4.2:** Ensure that development proposals involving hazardous waste facilities are consistent with the San Mateo County Hazardous Waste Management Plan.
- Policy SE-P4.3:** Support implementation and enforcement of State chemical disclosure laws and regulations.
- Policy SE-P4.4:** Encourage annual inspections of hazardous material users and hazardous waste generators to comply with State and local regulations.
- Policy SE-P4.5:** Prohibit assembly-type uses (e.g., theaters, day care centers, churches, etc.) from being co-located in industrial zones designed to accommodate uses that manufacture, store, and/or dispose of hazardous materials.
- Policy SE-P4.6:** Coordinate with the San Mateo County and Coastside Fire Protection District regarding responsibilities and protocols to be taken in the event of a hazardous material release incident.
- Policy SE-P4.7:** Enhance coordination with other emergency response agencies in the event of a hazardous material release (i.e., California Highway Patrol and County Sheriff and Fire Departments).
- Policy SE-P4.8:** Require new development on property containing abandoned gas well sites, to relocate the abandoned well, or otherwise mitigate any potential adverse impacts.
- Policy SE-P4.9:** Prior to authorizing new development projects or structures proposed to be located over or in proximity of an abandoned oil and gas well site, the project must be approved by the California Department of Conservation. If construction over an abandoned oil and gas well is unavoidable, any gas venting system over the

well must be installed and approved to the satisfaction of the California Department of Conservation and the Bay Area Air District through a soil vapor extraction permit.

Policy SE-P4.10: Encourage the County of San Mateo to pursue funding, design, implement, and complete a project to ensure clean closure of the County-owned and managed landfill located between the Pacific Ocean and Railroad Avenue, south of Poplar Street.

Actions

Action SE-A4.1 Provide information and assistance to residents, businesses, and industry that request information regarding the proper use, storage, transportation, handling, and disposal of hazardous substances.

Action SE-A4.2 Conduct and/or support the operation of household hazardous waste collection programs to be conducted to benefit Half Moon Bay. The City should also provide multilingual educational programs regarding the proper use and disposal of hazardous substances.

Action SE-A4.3 Create a Hazardous Materials Incident Response Plan for the City of Half Moon Bay. This review should be conducted in conjunction with a simultaneous review of the hazardous materials users list compiled and maintained by the Fire District in compliance with chemical disclosure laws.

Action SE-A4.4 Ensure the Half Moon Bay Police Department and the Half Moon Bay Fire Protection District periodically conduct an annual test of the City's Hazardous Materials Incident Response Plan to ensure its ongoing efficacy.

Airport Safety

GOAL SE-5: A community that balances interactions between airport operations and daily life.

Policies

Policy SE-P5.1: Work with adjoining jurisdictions and the Half Moon Bay Airport to coordinate and implement a disaster response plan.

Policy SE-P5.2: Coordinate with the Half Moon Bay Airport on emergency response capabilities and support emergency trainings and exercises at the facility.



Severe Weather and Drought

GOAL SE-6: A community better prepared for future weather challenges and conditions.

Policies

- Policy SE-P6.1:** Encourage new developments and existing property owners to incorporate sustainable, energy-efficient, and environmentally regenerative features into their facilities, landscapes, and structures to reduce energy demands and improve on-site resilience. Support financing efforts to increase community access to these features.
- Policy SE-P6.2:** Encourage new development to incorporate design and construction techniques that reduce energy use and increase resilience to heat and severe weather.
- Policy SE-P6.3:** Support Coastside County Water District promotion of water efficiency measures in all public and private development.
- Policy SE-P6.4:** Encourage water-efficient practices in site and building design for private and public projects.
- Policy SE-P6.5:** Work with the Coastside County Water District to prepare for a reduced water supply resulting from more frequent and severe drought events. Implement water efficiency measures and support sustainable water supplies.
- Policy SE-P6.6:** Require drought-tolerant landscaping in new private and municipal development, in accordance with applicable State and local laws.
- Policy SE-P6.7:** Ensure that new landscaping does not exacerbate wildfire or flood risks and aligns with vegetation and stormwater management standards.
- Policy SE-P6.8:** Coordinate with Coastside County Water District to promote the use of native and drought-tolerant plants in landscaping for both public spaces and private properties through multilingual educational materials, community outreach, and workshops.
- Policy SE-P6.9:** Coordinate with Coastside County Water District to encourage the installation graywater measures in existing private development, including by helping residents identify rebates and other financial incentives.
- Policy SE-P6.10:** Support Coastside County Water District programs that help residential and nonresidential customers save water by using the most efficient appliances and fixtures, fixing leaks, and practicing water-wise landscaping. Ensure that water conservation measures enacted support increased resilience in the agricultural sector.
- Policy SE-P6.11:** Improve agricultural resilience through support of efforts by local farmers to raise crops that are better adapted to future climate conditions.

Policy SE-P6.12: Promote regenerative agriculture and landscaping techniques that improve soil health and ecosystem functioning.

Policy SE-P6.13: Encourage the use of integrated pest management methods to reduce the exposure of farmworkers and nearby communities to pesticides.

Extreme Heat

GOAL SE-7: A community prepared for changing temperatures.

Policies

Policy SE-P7.1: Encourage new and existing development to incorporate building and site design features that reduce the effects of extreme heat, improve indoor air quality, and reduce energy demand. These features could include air conditioning, air filtration, drinking-water fountains, energy-efficient duct work, energy-efficient windows and doors, improved awnings and shading, and shade trees and other green infrastructure. Help residents connect with contractors and financial assistance programs to implement these improvements.

Policy SE-P7.2: Require local businesses to develop workplace heat safety protocols and provide training for employers and employees in heat-exposed occupations, especially for agricultural workers, to meet or exceed State requirements for workplace heat safety standards.

Policy SE-P7.3: Preserve and expand the urban tree canopy to lessen the impacts of extreme heat.

Policy SE-P7.4: Explore opportunities to develop mobile providers of water, backup power, and medical supplies that can be deployed to vulnerable communities during high heat events, power outages, and other emergencies.

Policy SE-P7.5: Use heat vulnerability mapping to identify and prioritize areas and populations most at risk, such as the elderly and agricultural workers. Collaborate with public health agencies, local governments, and community organizations to update these assessments periodically.

Shoreline Hazards (Includes Sea Level Rise and Emergent Groundwater)

GOAL SE-8: A coastal community that understands the dynamic nature processes affecting the coast.

Policies

Policy SE-P8.1: Ensure development activities proposed within the coastal zone are consistent with the Local Coastal Program Land Use Plan.



- Policy SE-P8.2:** Coordinate with OneShoreline, adjacent jurisdictions, neighboring counties, and regional, State, and federal agencies to develop and implement coordinated approaches to sea level rise with other jurisdictions and asset owners in San Mateo County.
- Policy SE-P8.3:** Coordinate across City departments, and with community-based organizations and private businesses, on hazard mitigation and resilience. Coordinated efforts shall align goals, share data and expertise, and maximize available funding for implementation.
- Policy SE-P8.4:** In partnership with OneShoreline and the California Coastal Commission, use the best available sea level rise projections to regularly identify the areas, people, and social structures of Half Moon Bay that are vulnerable to temporary and permanent inundation from sea level rise. Use this information to continue to develop or adjust planning and adaptation strategies.
- Policy SE-P8.5:** Integrate planning for sea level rise into all relevant City processes related to development, including specific plans, zoning ordinance updates, and entitlement of new development.
- Policy SE-P8.6:** Require new development to flood-proof underground and first floors to accommodate emergent groundwater.
- Policy SE-P8.7:** Site new critical facilities and public infrastructure in areas that are not vulnerable to emergent groundwater hazards. If new critical facilities and public infrastructure cannot be located outside of areas prone to emergent groundwater, ensure that facilities are constructed to appropriate standards to maintain operations under these future conditions over the life of the project.
- Policy SE-P8.8:** Prepare stormwater systems for projected sea level rise to ensure safe conveyance, treatment, and management of stormwater as groundwaters rise over time.
- Policy SE-P8.9:** Require new development or redevelopment in emergent groundwater areas to assess the vulnerability to shallow groundwater rise through a geotechnical investigation and incorporate project measures to monitor and reduce seasonal and permanent impacts, including buoyancy, seepage, infiltration, liquefaction, corrosion, and contaminant mobilization hazards.
- Action SE-A8.1** Collaborate with OneShoreline to develop a standardized dataset for modeling sea level rise impacts at both the regional and local scale accounts for both coastal and bay geomorphic features.

Emergency Preparedness and Evacuation

GOAL SE-9: A community that is prepared for future hazard and disaster events.

Policies

- Policy SE-P9.1:** Ensure consistency between the Safety Element, the Local Coastal Program Land Use Plan, and the City of Half Moon Bay Annex to the San Mateo Multi-Jurisdictional Local Hazard Mitigation Plan.
- Policy SE-P9.2:** Locate critical facilities outside of identified hazard areas whenever possible, accounting for how climate change may increase the frequency and intensity of hazards. If critical facilities must be in hazard areas, ensure these facilities and their access routes are protected from the hazard risks characteristic to each location.
- Policy SE-P9.3:** Coordinate with the County and surrounding jurisdictions, school districts, recreation and park districts, and community-based organizations to ensure adequate and equitably located emergency shelters, community resilience centers, and alternate care sites are available when natural disasters and other highly hazardous conditions occur.
- Policy SE-P9.4:** Ensure the designs for new and significantly renovated community-oriented City facilities allow for flexible uses and support multiple community purposes, including being used as community resilience centers.
- Policy SE-P9.5:** Renovate existing City-owned facilities and design future City facilities to incorporate renewable energy generation systems, battery energy storage systems, and energy-efficient design and features, as feasible.
- Policy SE-P9.6:** Maintain and enhance electrical transmission infrastructure and provide resources and/or incentives to enable the installation of emergency power supplies, including solar panels and battery energy storage systems, for residential and nonresidential properties.
- Policy SE-P9.7:** Explore secondary means of ingress and egress for existing development via fire roads, trails, easements, or other infrastructure in areas with evacuation constraints in hazard-prone areas.
- Policy SE-P9.8:** Coordinate with transit agencies, school districts, community service organizations, and faith-based organizations to assist with evacuation efforts, ensuring evacuation services are available to vulnerable populations, including those with limited English proficiency, limited mobility, or limited access to transportation, communication, and other lifeline resources and services.
- Policy SE-P9.9:** Collaborate with surrounding jurisdictions to ensure the ongoing maintenance and readiness of potential evacuation routes serving Half Moon Bay and the



sphere of influence, including making improvements to existing roads to support safe evacuations, as needed.

- Policy SE-P9.10:** Maintain an Emergency Operations Plan that meets current and anticipated community needs in the event of a major disaster or hazardous event and conforms with the California Standardized Emergency Management System (SEMS).
- Policy SE-P9.11:** Support and encourage Community Emergency Response Team (CERT) training to residents and members of the business community to increase disaster awareness and emergency response capability.
- Policy SE-P9.12:** Expand and enhance a post-disaster recovery strategy that focuses on community resilience, sustainability, and an evaluation for redevelopment potential following a major disaster.
- Policy SE-P9.13:** Coordinate with emergency responders, Caltrans, and regional transit agencies to maintain potential evacuation routes to ensure adequate capacity, safety, and viability of those routes in the event of an emergency, including making improvements to existing roads to support safe evacuations as needed.
- Policy SE-P9.14:** Ensure emergency alert systems provide community members with alerts about upcoming or current emergency events in languages and formats accessible to the entire community.
- Policy SE-P9.15:** Continue to coordinate with the emergency service and medical service providers to ensure preparedness and provide emergency response.
- Policy SE-P9.16:** Maintain and enhance internet communications infrastructure to ensure residents and businesses receive timely information and notifications.
- Policy SE-P9.17:** Establish a public outreach education program (with special attention to at-risk populations) that educates residents and businesses about the natural hazards in Half Moon Bay.
- Policy SE-P9.18:** Collaborate with other jurisdictions and local community-based organizations to evaluate opportunities to preserve and improve the cost and quality of property insurance for community members.
- Policy SE-P9.19:** Ensure that communication, education, and information materials on short-term recovery activities are available to all residents with a focus on accessibility for vulnerable populations.
- Policy SE-P9.20:** Require new development to assist emergency responders by providing high-visibility street signage for streets, adequate access for fire and emergency vehicles and equipment, and fuel clearance around roadways.

- Policy SE-P9.21:** Retrofit and maintain City-owned roadways as needed to meet current standards and encourage private property owners to do the same, to the extent feasible and given the absence of other site constraints.
- Policy SE-P9.22:** Support regional and subregional efforts to: coordinate as appropriate continuity of Operations Plan, plans and procedures for Emergency Operations Centers, and emergency response training systems; maintain inter-agency and public communications systems that will provide mutual aid and be reliable during and following an emergency; and formulate definitive plans and procedures for evacuation of hazard-prone areas and high-risk uses.
- Policy SE-P9.23:** Expand or enhance mutual aid agreements to further enhance City capabilities during an emergency incident.
- Policy SE-P9.24:** Encourage regional partnerships and mutual aid agreements between the City and other agencies/entities, further strengthening emergency response capabilities.
- Policy SE-P9.25:** Standardize the issuance of press releases for major planning efforts and development projects to provide information to the community and encourage involvement at workshops and hearings.
- Policy SE-P9.26:** Promote greater public awareness of disaster risks, personal and business risk reduction, and personal and neighborhood emergency response through outreach initiatives available to all residents with a focus on accessibility for vulnerable populations.
- Policy SE-P9.27:** Continually update and refine the City's Safety Element, Local Hazard Mitigation Plan, Emergency Operations Plan, and other plans as staff may deem relevant with the latest available information on hazards and disaster risk.
- Policy SE-P9.28:** Ensure adequate resources are available in all areas of Half Moon Bay to respond to health, fire, and police emergencies.
- Policy SE-P9.29:** Improve the coordination of disaster-related programs within City departments.
- Policy SE-P9.30:** Ensure residents and businesses are prepared for effective response and recovery efforts during emergencies, including the provision of information about the current nature and extent of local safety hazards and emergency plans, including evacuation plans and procedures to accommodate special-needs populations.
- Policy SE-P9.31:** Base policies, programs, and regulations on the latest research and best practices that implement new technologies and methods to improve fire and police services.

Actions

- Action SE-A9.1** Update the City's Local Hazard Mitigation Plan every five years to maintain Federal Emergency Management Agency grant eligibility.



- Action SE-A9.2** Incorporate the San Mateo Multi-Jurisdictional Local Hazard Mitigation Plan, as approved by the Federal Emergency Management Agency, into this Safety Element by reference, as permitted by California Government Code Section 65302.6.

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