

City of San Bruno
Peninsula Resilience Planning
Draft Safety Element Background Report

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INTRODUCTION

This Existing Conditions Background Report discusses the natural and human-caused hazard issues that can affect the City of San Bruno. Each issue identified in this report includes a general overview of each hazard, how/where the hazard affects the city and its residents, information on past hazard events, current programs and regulatory frameworks in place to reduce the impacts associated with these hazards, as well as future conditions (including potential climate change impacts associated with these hazards). The intent of this report is to provide background information that informs how and why the goals, policies, and implementation actions within the updated General Plan Safety Element were developed.

The following are the key issues considered relevant to the City of San Bruno:

[Issue 1 – Emergency Preparedness and Response](#)

[Issue 2 – Geologic Hazards](#)

[Issue 3 – Flooding](#)

[Issue 4 – Sea Level Rise](#)

[Issue 5 – Seismic Hazards](#)

[Issue 6 – Fire Hazards](#)

[Issue 7 – Severe Weather](#)

[Issue 8 – Drought](#)

[Issue 9 – Extreme Heat](#)

[Issue 10 – Hazardous Materials](#)

[Issue 11 – Airport Hazards](#)

[Issue 12 – Human Health Hazards](#)

ISSUE 1: EMERGENCY PREPAREDNESS AND RESPONSE

General Overview

The City of San Bruno employs a multipronged approach for mitigating, responding to, and recovering from emergencies. This section reviews the city's major evacuation routes, emergency alert systems, and other emergency response programming. State law (Senate Bill 99, or SB 99) requires that the San Bruno Safety Element identify residential areas with only one way in and out, as these may be areas where evacuations are constrained. State law (Assembly Bill 747, or AB 747) also requires that the Safety Element identify potential evacuation routes and their capacity, safety, and viability.

Emergency Alert Systems

SMC Alert/Rave Mobile Safety

SMC Alert is the primary alerting system available to the City of San Bruno. Messages sent vary from agency to agency. SMC Alert can be used to issue flood, fire, severe weather, or tsunami warnings; notify the community about the locations of emergency shelters; provide information about available evacuation routes; and activate special teams within the community such as Community Emergency Response Team (CERT) volunteers (see section below for more information). Some cities also use the system for smaller alerts, such as traffic accidents, fires, street closures, flooding, and related incidents. Community members opt in to receive SMC Alert messages via email, cell phones, and voice messages to landline phones. Alerts are available in a wide variety of languages, including English, Spanish, Chinese, and Filipino

(standardized Tagalog), as these are the primary languages spoken in San Bruno. Individuals can sign up for SMC Alert at the County’s website, <https://www.smart911.com/smart911/ref/reg.action?pa=smcgov>.

Rave Mobile Safety was adopted by the County in December 2022 as the new alerting platform for SMC Alert.

Wireless Emergency Alerts

Another alert system includes Wireless Emergency Alerts (WEAs) which 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. Wireless providers primarily use cell broadcast technology for WEA message delivery. WEA is a partnership among FEMA, the Federal Communications Commission and wireless providers to enhance public safety.

Genasys EVAC/Zonehaven

Public safety agencies throughout San Mateo County use the Genasys Protect app (formerly known as Zonehaven) to communicate areas that are being evacuated due to fire or other emergencies. Genasys is not an alert and warning system, but EVAC provides first responders and public safety workers with tools to navigate the evacuation process, including information about when it is safe to return. Many jurisdictions within San Mateo County host evacuation plans and maps on the Genasys platform.

The Genasys platform divides the community into a number of 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. San Bruno currently has 17 evacuation zones identified within the EVAC portal.

Major Evacuation Routes

If an evacuation is necessary in San Bruno, it will be conducted by members of the East Palo Alto Police Department. They will work closely with the Menlo Park Fire Department, the San Mateo County Department of Emergency Management, and emergency responders in neighboring communities to make sure that evacuations are conducted as quickly and safely as possible.

Currently, no standard plan covers evacuations throughout San Mateo County and the City of San Bruno does not have an evacuation plan that is publicly available. The City is participating in the county-wide All-Hazards Evacuation Plan, which will analyze potential evacuation scenarios across San Mateo County, identify potential evacuation routes, and recommend improvements. This work began in 2024, and is expected to finish in 2025. The Safety Element will reference this study to meet the requirements of SB 99 and AB 747.

Evacuation Constraints

Under Senate Bill (SB) 99, jurisdictions updating the Housing Element of their General Plan are required to identify residential parcels with access to fewer than two evacuation routes as part of their Safety Element. Occupants and residents of these parcels within the City of San Bruno may be unable to evacuate quickly in the event of an emergency, and are therefore more vulnerable to sudden or fast-spreading emergency conditions, such as flash floods and wildfire.

Past Events

See hazard specific discussions below for past hazard events, some of which may have involved evacuations and emergency alerting.

Existing Programs and Regulations

Preparedness and Response Programs

San Mateo County and the City of San Bruno use a variety of programs, plans, and initiatives to manage and guide emergency response. Resources and programs include both City and County-operated and volunteer programs and resources, as well as participation in regional mutual-aid agreements.

The City of San Bruno is required under State law to prepare and maintain a Standardized Emergency Management System (SEMS) Multi-hazard Functional Plan. The California Governor’s Office of Emergency Services (CalOES) provides guidelines outlining the requirements of this plan at both the County and City levels.

County Initiatives

Department of Emergency Management

The San Mateo County DEM provides essential services that prepares and assists San Mateo County agencies in the event of a disaster or other emergency. DEM coordinates countywide preparedness, response, and protection services and activities for large-scale incidents and disasters. DEM is responsible for alerting and notifying appropriate agencies within the county’s 20 cities when disaster strikes, coordinating all responding agencies, and ensuring resources are available and mobilized during disasters. DEM is responsible for developing and maintaining plans and procedures for all jurisdictions within San Mateo County. In addition to creating plans, DEM develops exercises to evaluate operational and response capabilities.

During significant incidents or emergencies, DEM is responsible for activating the County of San Mateo Emergency Operations Center (EOC) to support local jurisdictions as needed. DEM coordinates and contracts to CalOES and the Federal Emergency Management Agency (FEMA) during an emergency for federal and State support.

The DEM is funded in part through a Joint Powers Authority (JPA) governed by the Emergency Services Council. The City of San Bruno does not have a separate emergency management department. Instead, this function is overseen by both the Fire and Police Departments that coordinate with the City’s Emergency Preparedness Committee.

2021 San Mateo County Multijurisdictional Hazard Mitigation Plan

The San Mateo County DEM prepared and adopted the 2021 Multijurisdictional Hazard Mitigation Plan (MJHMP), a large regional and cross-jurisdictional effort to plan for the reduction of risk from natural and human-caused hazards. The MJHMP assesses vulnerabilities to hazards and identifies mitigation strategies and actions that jurisdictions will pursue to reduce the potential of injury, property damage, and community disruption as a possible result of these hazards. The MJHMP addresses both natural and human-caused hazards, including flooding, drought, wildfire, landslides, severe weather, terrorism, cyber threats, pandemic, and the impact of climate change on hazards, as well as other hazards. The City of San Bruno Annex in the MJHMP, combined with the San Bruno General Plan Safety Element, establishes the foundation for hazard mitigation policy in San Bruno. These policies further increase the resiliency of the

community and the effectiveness of emergency response for the residents and businesses in the city. The City of San Bruno’s MJHMP Annex includes specific information regarding the relevant hazards of concern and mitigation strategies specific to the city.

San Mateo County Operational Area Emergency Services Council

The San Mateo County Operational Area Emergency Services Council is a JPA composed of all local governments within the geographic area of the county, special districts, unincorporated areas, and participating nongovernmental entities. The Council is responsible for providing coordinated plans for the protection of people and property in the event of an emergency. The Council works in coordination with local government entities to review, approve, and recommend adoption of emergency and mutual-aid plans and agreements, rules, ordinances, resolutions, and regulations by the Board of Supervisors and other legislative agencies.

Emergency Operations Plan and Center

The County’s Emergency Operations Plan (EOP) establishes policies and procedures and assigns responsibilities to ensure the effective management of emergency operations within the county. The County’s Office of Emergency Services (OES) implements the EOP and activates the Emergency Operations Center (EOC).

The EOC provides a central location of authority and information and allows for face-to-face coordination among personnel who make emergency decisions. The following functions are performed in the San Mateo County Operational Area EOC:

- Coordinating emergency operations
- Releasing warning information
- Developing emergency policies and procedures
- Collecting and sharing information with county, city/town, special district, State agencies, military, federal agencies, and political representatives
- Maintaining maps, information display boards, and other data pertaining to emergency operations
- Analyzing and evaluating all data pertaining to emergency operations
- Directing and coordinating support of emergency response resources
- Maintaining contact and coordination with Disaster Operations Centers, other local government EOCs, and the Coastal Region
- Providing emergency information and instructions to the public, making official releases to the news media, and the scheduling of press conferences, as necessary

City of San Bruno Emergency Operation Plan

The City’s EOP (last updated in 2008) provides a guide for managing City services and coordinating response in the event of an emergency. Contents of the EOP include general and specific event checklists, emergency management goals, and directions for activating the City’s EOC. The City of San Bruno EOP supports the County’s EOP, as they work together depending on the type of emergency. The City implements its EOP to address emergencies at the local level, such as a local fire or flood. Should these emergencies escalate or spread beyond the city limits, San Mateo County and neighboring jurisdictions would get involved. Ultimately, if the incident involves a significant amount of resources, the County would support the effort relying on the processes and procedures outlined in their EOP.

San Mateo County Emergency Managers Association

The San Mateo County Emergency Managers Association (SMCEMA) is composed of Emergency Managers/Representatives from cities, towns, county departments, special districts, and community organizations within San Mateo County and is intended to support emergency management, training, and exercise planning.

Countywide Hazardous Materials Emergency Response Team

Hazardous materials response, mitigation, and cleanup for San Mateo County is managed by the Belmont Fire Protection District's Hazardous Materials Team through a contractual agreement between the County of San Mateo, the Emergency Services Council, and the Belmont Fire Protection District.

The San Bruno Fire Department oversees hazardous material safety programs, in coordination with the City.

San Mateo County Sheriff's Office Emergency Services Bureau

The Sheriff's Office Emergency Services Bureau is made up of sworn specialized units and volunteer forces to respond to emergency law enforcement activities, search and rescue missions, evidence searches, and requests for mutual aid. San Mateo County Search and Rescue (SMCSAR) is a professional volunteer force of the San Mateo County Sheriff's Emergency Services Bureau.

Disaster Debris Management Plan

Disasters can produce substantial volumes of debris, creating hazardous conditions that endanger the public and disrupt the essential daily lifestyle and economy of the community. The County of San Mateo Disaster Debris Management Plan (DDMP) provides a comprehensive framework for management of debris following a disaster. It addresses the roles and responsibilities of government organizations as well as private firms and nongovernmental organizations that might have a role in debris operations. The County's Public Works Department serves as the lead department for debris management for unincorporated areas of the County.

County of San Mateo Health System

The County of San Mateo Health System operates Emergency Medical Services (EMS), which provides emergency medical resources in response to 911 calls countywide. As of 2019, system response times ranged from 6 minutes and 59 seconds in metro and urban areas to 21 minutes 59 seconds in wilderness regions.

The health emergency preparedness unit (HEP) strengthens the community's ability to respond to all types of public health and medical incidents. The HEP team continually collaborates with community stakeholders and organizations to facilitate response and recovery for public health and medical emergencies.

The San Mateo County Healthcare Coalition (HCC) coordinates strategic planning activities between healthcare facilities of various healthcare delivery sectors, public health agencies, other government entities, and community partners to prepare for, respond to, and recover from emergencies and other incidents that impact public health.

San Mateo County Emergency Medical Services Agency uses ReddiNet as its countywide emergency communications system. ReddiNet allows the County to track hospital status, mass casualty incidents,

hospital bed count, and facility assessments and to locate family members through access to the Family Reunification Center.

The City of San Bruno Fire Department (SBFD) provides emergency medical services to residents and businesses. Approximately 60% of all calls for service are for medical emergencies within the City. All SBFD members are trained in Basic Life support and/or Advanced Life Support. In addition to responding to emergency medical calls for the public, SBFD paramedics also respond as medics to support the County Sheriff's Special Weapons and Tactics (SWAT) team activities throughout the county. These Tactical Paramedics train monthly and are activated about 30 to 50 times a year.

Volunteer Programs

San Mateo County's Coastside Emergency Corps (CEC) is a community-based network of volunteers that assists public safety and health efforts in times of special need or disaster. Members of the CEC may also volunteer to promote community public health and emergency preparedness education. Specialized training of CEC members which is comprised of several volunteer groups including; the San Bruno Community Emergency Response Team (CERT) Team, The San Bruno Amateur Radio Club (Licensed amateur HAM Radio operators), Medical (beyond first aid/CPR,) Large Animal Evacuation Group, ICS/EOC Operations, and Red Cross Shelter Operations.¹

Mutual-Aid Agreements

In some cases, local emergency responders may not have the staff, vehicles, equipment, or other resources to fully respond to an emergency in their jurisdiction. In these instances, the local emergency commanders can request assistance from other communities. This external assistance is known as mutual aid. The California Disaster and Civic Defense Master Mutual Aid Agreement, an arrangement between State agencies and local governments, establishes a framework for mutual aid.

Mutual-aid regions are established under the Emergency Services Act. Six mutual-aid regions numbered I-VI have been established within California. The San Mateo County Operational Area is part of the Mutual Aid Region II and the Coastal Administrative Region.

City Plans and Initiatives

San Bruno Fire Department

The San Bruno Fire Department (SBFD) provides emergency response services in San Bruno. SBFD also provides support throughout the region and statewide as needed through mutual-aid agreements.

There are two SBFD stations: Station 51 at 555 El Camino Real and Station 52 at 1999 Earl Avenue. Station 51, which serves the residents east of Interstate (I-) 280 and Station 52 serves the community west of I-280, although if an event calls for specialized equipment or more resources, either station will respond anywhere in the city to best meet the needs of the event.

San Bruno Police Department

The San Bruno Police Department (SBPD) is a full-service municipal police agency providing law enforcement services for San Bruno. SBPD has 50 sworn officers and over 60 additional employees. SBPD responds to over 32,000 calls for service each year.

Future Conditions

Climate change is expected to affect the frequency and severity of future natural hazards in San Bruno, necessitating an adapted approach to emergency preparedness and response. The San Bruno vulnerability assessment provides more information about how climate change will affect these hazard conditions in future years.

ISSUE 2: GEOLOGIC HAZARDS

General Overview

San Bruno's location in the upland foothills between the Santa Cruz Mountains and the flatlands of the San Francisco Bay make it susceptible to geologic hazards, including landslides, expansive soils, erosion, and settlement. Elevations vary from near sea level along US Highway 101 to 700 feet above sea level in the western portion of the city.

Landslide

A landslide is a mass of rock, earth, or debris moving down a slope. They occur when a slope loses its structural integrity and can no longer hold itself together. Landslides can move slowly or very quickly. Mudslides, a type of landslide, are rivers of rock and soil saturated with water. They develop in the soil overlying bedrock on sloping surfaces when water rapidly accumulates in the ground, such as during heavy rainfall.

Slides are caused by a combination of geological and climate conditions and the influence of urbanization. They can be initiated by storms, earthquakes, fires, or human modification of the land. The sites of large landslides are typically areas of previous landslide movement that are periodically reactivated by significant precipitation or seismic events. In San Mateo County, landslides typically occur during and after severe storms that saturate steep, slide-prone soils. Most weather-induced landslides in the county occur in the winter after the water table has risen. Landslides that result from earthquakes can occur at any time. The probability of a landslide in San Bruno in any given year is high.

Landslides in hillside terrain can pose a serious hazard to downslope property and structures. They can disrupt roadways and other infrastructure lifelines, destroy private property, and cause flooding, bank erosion, and rapid channel migration. Landslides can travel miles from their source, growing as they descend and pick up debris. Structures located upslope of landslide areas are also at risk, should the terrain or soil below the structure fail, potentially causing damage to the building and the structural integrity, resulting in the structure sliding downslope.

The degree of local landslide hazard depends on soil type and steepness of slope. Soil type is a key indicator for landslide potential and is used by geologists and geotechnical engineers to determine soil stability for construction standards. Other factors that increase landslide risk include a slope greater than 33 percent, a history of landslide activity in the last 10,000 years, and stream or wave activity, which can cause erosion and undercut a bank and cause the surrounding land to become unstable. Wildfire can also make landscapes more susceptible to landslides, flash floods, and debris flows.

For San Bruno, the area with the highest landslide susceptibility is the upland areas west of HWY 280, including Junipero Serra County Park. The potential for landslides in this area is considered moderate with areas of higher potential, especially in the hillside neighborhoods in western San Bruno. Susceptibility could be greater in the Junipero Serra Park area due to the presence of undeveloped, natural slopes.

Landsliding activity occurs most frequently during rainy seasons, when frequent heavy rains often saturate soils and cause sliding on steep slopes. Figure 1 depicts the areas in San Bruno susceptible to landsliding.

Expansive Soils

Expansive soils possess a “shrink-swell” characteristic, which is the expansion and contraction of fine-grained clay sediments from the process of wetting and drying. This will generally occur after heavy rains and/or flooding. The soil in eastern San Bruno, known as the Colma Formation, is moderately expansive. Other areas of the city are less susceptible to soil expansion.

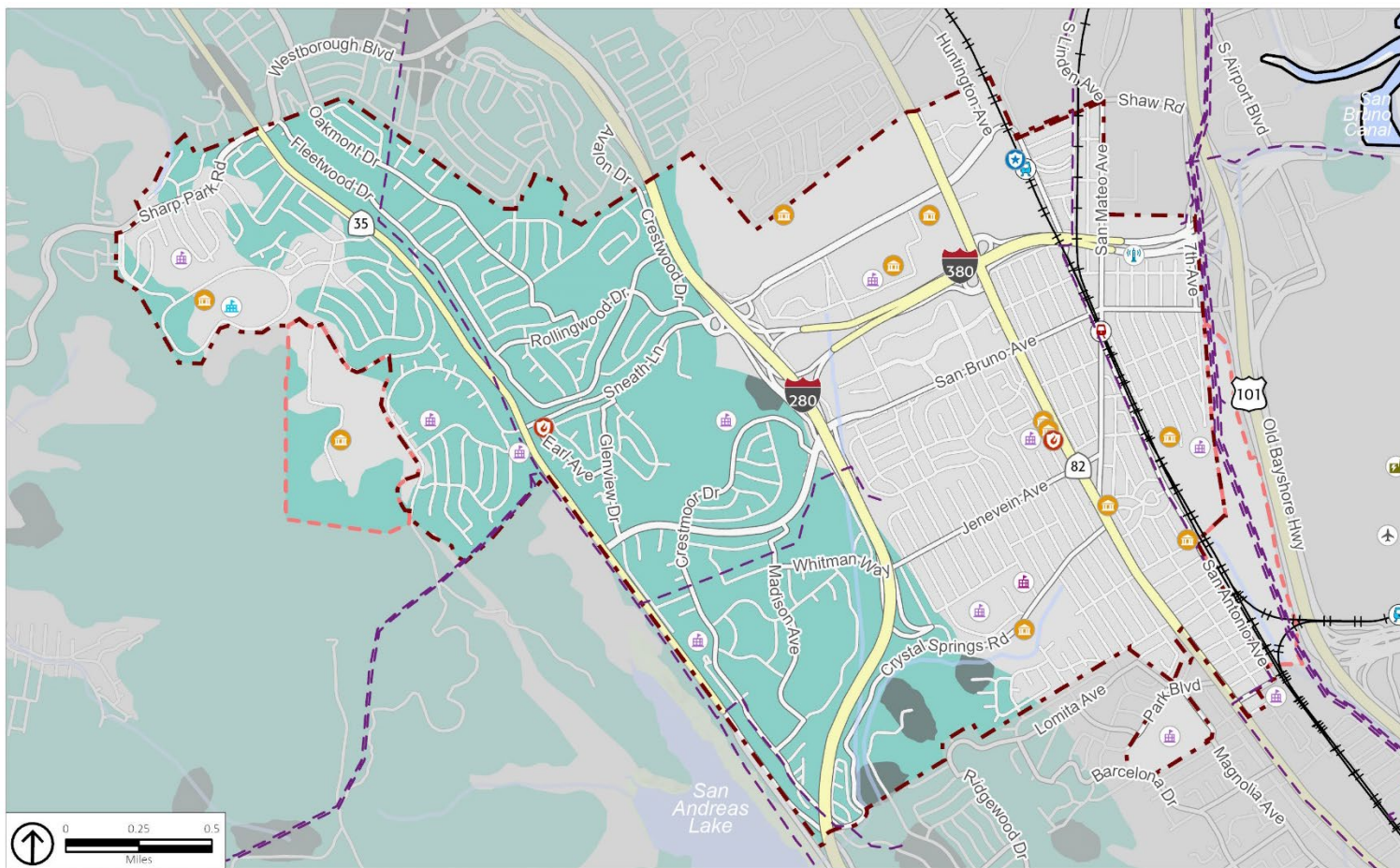
Differential Settlement

Differential settlement describes a condition in which 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 atop the sinking soil can be damaged. Typically, differential settlement occurs slowly, and does not usually create a risk of injury or death. However, over time, differential settlement can result in substantial damage to buildings and structures. Settlement has occurred in the hillside neighborhoods in western San Bruno.

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, particularly where unnatural slope cuts and grading have occurred. Erosion has damaged hillside neighborhoods in western San Bruno.

Figure 1: Landslide Hazard Areas



Source: ESRI, 2023; County of San Mateo, 2023; PlaceWorks, 2023; USGS

- | | | | |
|---------------------------|-----------------------|--------------------------|---------------------------------|
| City of San Bruno | Caltrain Stations | California Power Plants | Landslide Susceptibility |
| Sphere of Influence | Caltrain Network | Public Schools (K-12) | |
| San Mateo County Boundary | Airport | Private Schools (K-12) | Most landslides |
| Parks and Open Space | Law Enforcement | College or University | Few landslides |
| Creeks and Waterways | Fire Stations | Communication Facilities | Surficial deposits |
| BART Stations | Government Facilities | Transmission Lines | |
| BART Network | | | |



Past Events

Table 1 lists geologic events that have occurred in San Bruno and San Mateo County.

Table 1: Past Landslide Events in San Bruno and San Mateo County

| Date | Event Type |
|---------------------------------------|--|
| February, 1998 | As a result of the 1998 El Nino rains, a landslide occurred within the upslope hillside of Crestmoor Drive in the City of San Bruno. Five residences located at the top of the slope were damaged. |
| December 17, 2005 to January 12, 2006 | A series of winter storms caused flooding, landslides, and mudslides in the region. Damage estimates for the San Mateo County region exceeded \$100 million. Three homes were nearly wiped out by mudslides. |
| Winter 2017 | A series of severe winter storms caused flooding and mudslides across San Mateo County. |
| Winter 2019 | Local emergency is declared in San Bruno following a large landslide along the eastern portion of San Bruno Avenue. It caused the closure of 300 feet of the westbound lane and sidewalk along San Bruno Avenue. |
| Winter/Spring 2023 | As a result of the late 2022/early 2023 winter storms, landslides occurred on City property behind 1440 Claremont Drive, at 425 Cunningham Way, and on westbound San Bruno Avenue just east of the access road to Water Tank #4. |
| Winter/Spring 2023 | 5 to 8 feet of outboard bench between the wall and the drainage canyon slid into Crestmoor Canyon. There is a risk that a new landslide in this area will pull the storm drainpipe and manhole downslope. |

Existing Programs and Regulations

San Bruno Municipal Code Title 12 Land Use, Article 1, provides the necessary regulations for Excavation and Grading within the city. Under this chapter, general provisions for excavation and grading, the issuance of permits, requirements for the preparation of soils and engineering geology reports, and regulations for grading activities within the city are provided.

Future Conditions

The frequency and severity of future geologic hazards in San Bruno is expected to continue. Please review the San Bruno vulnerability assessment for details about the effects of climate change on geologic hazards in the community.

ISSUE 3: FLOODING

General Overview

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 life of community members and causing substantial damage to structures, landscapes, and utilities. Floodwaters can damage buildings and infrastructure, carry off structures or vehicles, and bury property under sediment. Standing water can cause damage to roads, foundations, and electrical circuits, as well as 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. There are four types of flooding that primarily affect San Mateo County:

- 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 accumulates 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.

Another form of flooding, dam failure, is discussed in greater detail below.

FEMA Regulatory Flood Zones

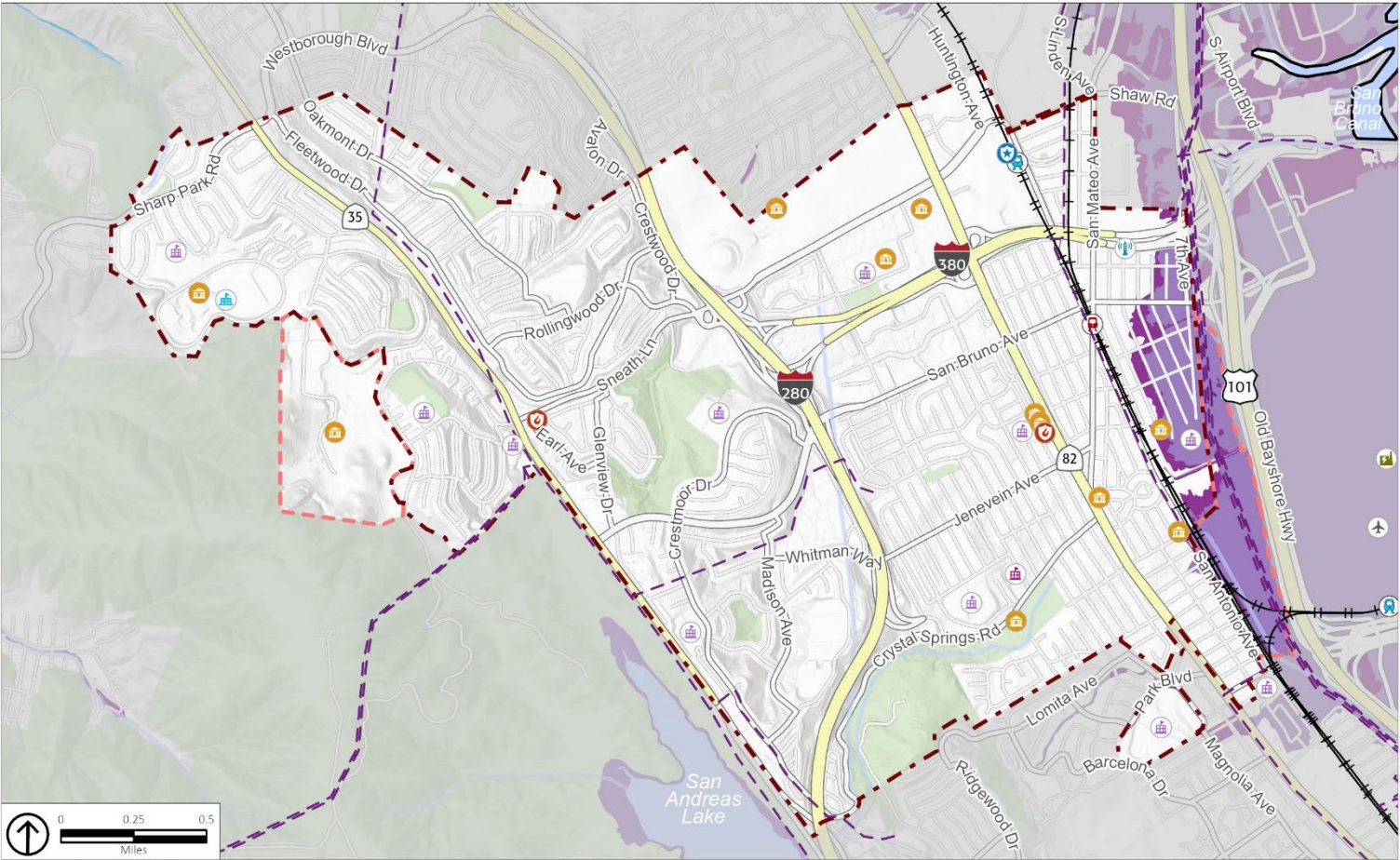
Flood hazard areas, also called floodplains, are the areas that become inundated by a flood. They are usually adjacent to rivers, creeks, or lakes, or along the ocean. Floodplains are officially mapped by FEMA, using maps called Digital Flood Insurance Rate Maps (DFIRMs). The two main floodplains of concern are the 100- and 500-year floodplain. The 100-year floodplain is the area that has a 1 percent (1 in 100) chance of being flooded in any given year, also known as a base flood. The 500-year floodplain is the area that has a 0.2 percent (1 in 500 chance) of being flooded in any given year.

FEMA mapping first identified 100- and 500-year floodplains in parts of San Bruno along US Highway 101, east of the Caltrain tracks, in 2014 (see Figure 2). In response, the City adopted a Floodplain Management Ordinance and can be found in Chapter 11.40, *Floodplain Management Requirements*, in the San Bruno Municipal Code. FEMA made minor revisions to these maps in 2019.

Other areas within the city experience localized flooding because of inadequate storm drains and low elevation, which subjects the areas to tidal influences. The City’s storm drain system does not operate effectively at times of high tide combined with heavy rain. Areas that often experience this flooding are:

- Downtown’s San Mateo and Mastick Avenues, north of Sylvan Avenue
- Kains Avenue, east of Green Avenue
- First Ave through parts of Seventh Avenue (as far north as I-380, and south of Pine Street)
- City Park and portions of Crystal Springs Road
- Magnolia Avenue, adjacent to Capuchino High School
- Santa Helena and San Juan Avenues at San Antonio Ave.

Figure 2: Mapped Flood Hazard Zones



Source: ESRI, 2023; County of San Mateo, 2023; PlaceWorks, 2023; FEMA; DWR, 2021

- | | | | |
|---------------------------|-----------------------|----------------------------|--------------------------------------|
| City of San Bruno | Caltrain Stations | California Power Plants | Designated Flood Hazard Zones |
| Sphere of Influence | Caltrain Network | Public Schools (K-12) | |
| San Mateo County Boundary | Airport | Private Schools (K-12) | |
| Parks and Open Space | Law Enforcement | College or University | |
| Creeks and Waterways | Fire Stations | Communication Facilities | |
| BART Stations | Government Facilities | Transmission Lines | |
| BART Network | | 100 Year Flood Plain (DWR) | |
| | | 100 Year Flood Zone (FEMA) | |
| | | 500 Year Flood Zone (FEMA) | |



Principal Flooding Sources

Natural stream channels in rural parts of San Mateo County typically can accommodate average rainfall amounts and mild storm systems. However, severe floods occur in years of abnormally high rainfall or unusually severe storms. Principal flooding sources for San Bruno, as identified on FEMA flood maps, include the San Bruno Channel and Colma Creek watershed.

San Bruno’s system of storm drains collects and channels surface water (mostly from rainfall) into a series of pipes, trenches, culverts, detention basins, and open channels, which is managed by OneShoreline, which transport and empty into San Francisco Bay. The system is based on the natural drainage patterns created by the City’s topography. Because of the steep slopes in the western third of San Bruno and the more gradual eastward slope east of I-280, a gravity-flow system is used. Its main artery carries water along the former San Bruno Creek watercourse. The northern portion of San Bruno drains toward South San Francisco and into the Colma Creek watershed. The City of San Bruno maintains all storm drainage facilities within the city limits. The city’s primary drainage basins—Crystal Springs Creek, Huntington Creek, and San Bruno Creek—encompass 80 percent of San Bruno’s land area. These highly modified, intermittent channels are part of the storm drain system designed to keep the area safe from flooding. San Bruno Public Works maintains all of the concrete and metal storm drain gravity mains and culverts, San Mateo County owns and maintains both the Angus Ave. and Walnut Ave. Storm Stations, while multiple jurisdictions (San Francisco County, San Francisco International Airport (SFO), Caltrans, and San Mateo County) maintain the open slew levee waterways east of 7th Ave and just west of Highway 101.

The discharge point for these watersheds is the San Bruno Channel, maintained by the Flood Control District, located next to the South San Francisco-San Bruno Water Quality Control Plant just north of SFO. Two pump stations are critical to the movement of stormwater in this district: one at Angus Avenue and one at Walnut Street, which are both owned by the County.

Past Events

Table 2 lists recent San Mateo County and City of San Bruno flood events identified in the National Oceanic and Atmospheric Association (NOAA) National Centers for Environmental Information (NCEI) Severe Storms Database (dating back to 1996), as well as previous flood events affecting the county for which federal disaster declarations were issued. For these flood events, the table identifies the number of the disaster declaration (DR-##).

Table 2: History of Recent Flood Events

| Date | Event | Locations |
|-------------------|--------------------|---|
| December 31, 2005 | Flood | San Bruno and Countywide |
| December 2, 2014 | Flood | San Bruno, Countywide |
| December 11, 2014 | Flash Flood, Flood | San Bruno, Belmont, and San Mateo County |
| November 28, 2018 | Flood | San Bruno |
| January 16, 2020 | Flood | San Francisco International Airport, Countywide |
| January 9, 2023 | Flood | San Bruno, Countywide |

December 31, 2005

Widespread flooding occurred throughout San Mateo County as a result of small stream overflow and poor drainage. Most damage occurred in San Bruno, East Palo Alto, the City of San Mateo, Daly City, Colma, Brisbane, South San Francisco, and Pacifica. Approximately three inches of rain fell on the area over a 24-hour period.

December 2, 2014

Five consecutive days of rain led to a flurry of car wrecks, flooding, and mudslide watches. The California Highway Patrol responded to various reports of flooded roadways, including U.S. Highway 101 near San Francisco International Airport. San Francisco International Airport reported the rain was delaying flights by almost four hours.

December 11, 2014

A storm bringing heavy rains and hurricane force winds hit the region, prompting a flash flood warning. The storm knocked out power to tens of thousands and delayed commuters, including at the San Bruno Bay Area Rapid Transit (BART) station, where clogged drains flooded the ticketing area. The station was closed for nearly two hours while crews mopped up the water. Southbound Highway 280 at Sneath Lane in San Bruno was flooded.

November 28, 2018

A major storm brought heavy rain to San Bruno and the surrounding region. The storm flooded roads near the Caltrain station, causing traffic slowdowns.

January 16, 2020

A potent cold front swept through the region on January 16, 2020, bringing widespread rain, gusty winds, low elevation snow, and thunderstorms. This system caused roadway flooding, downed trees, small hail, and snow at elevations as low as 2,400 feet. Numerous flights were delayed or canceled at San Francisco International Airport.²

January 9, 2023

Weeklong storms resulted in heavy rainfall throughout the Bay Area, including in San Mateo County. The flooding resulted in road closures and some community members had to be rescued from flooded areas more. In San Bruno, a tree was toppled, damaging the garage of a home and crushing a car.

Existing Programs and Regulations

Flood Control Agencies and Activities

Agencies responsible for flood control in San Mateo County include the United States Army Corps of Engineers, OneShoreline, San Francisco Public Utilities Commission (SFPUC), Federal Insurance Administration, and the California Department of Water Resources (DWR). Aside from these federal, State, and regional resources, the City of San Bruno manages and maintains their own system for stormwater management.

Storm Drain Master Plan

The City has a Storm Drain Master Plan, adopted in 2014, that guides the development of a comprehensive approach to storm drain facilities. The master plan allows the City to study and review the existing storm drain collection system performance and develop strategies to improve its level of services. The City owns and operates a storm drain system that covers six main watersheds, which are tracked by alphabetical reference (e.g., Watersheds A through F). The system in general flows from the west of Highway 280 to the east towards the San Bruno Channel. The system has four closed conduit outlets to San Bruno Channel. Two of them are gravity outlets at Pine Street and Cupid Row. The other two are pressure systems via the Walnut Pump Station and the Angus Pump Station were constructed by and are owned by the County.

City Plans and Regulations

The City has adopted a set of building codes that must be adhered to by applicants during construction, such as the mandatory practice that structures must be elevated on a permanent foundation such that the lowest floor of the manufactured home is elevated to or above the base flood elevation and be securely fastened to an adequately anchored foundation system to resist flotation, collapse, and lateral movement, which mitigates inundation risk. San Bruno reviews the effectiveness of these activities regularly and provides FEMA a progress report that identifies action taken to reduce the potential for loss of life and damage to property.

The City adopted its Green Infrastructure Plan in 2020 to guide the identification, implementation, tracking, and reporting of green infrastructure projects within the city.

Future Conditions

Climate change is expected to affect the frequency and severity of future flood hazards in San Bruno. Please review the San Bruno Vulnerability Assessment Report for details.

ISSUE 4: SEA LEVEL RISE

General Overview

Sea level rise is an increase in the ocean's surface height relative to the land. The two major causes of sea level rise are thermal expansion caused by warming of the ocean (since water expands as it warms) and increased melting of land-based ice, such as glaciers and ice sheets. Sea level rise (which includes increases in the levels of San Francisco Bay) is a gradual process, taking place over years or decades, affecting coastal communities and those along the bay shoreline. Sea level rise has the potential to inundate homes, businesses, and infrastructure near shorelines and to cause erosion of shorelines over time. The sea level in the San Francisco Bay Area rose during the 20th century at a rate of 2.0 millimeters per year, and projections suggest that it will rise at a higher rate during the 21st century. This is comparable to a global average during the 20th century of 1.4 millimeters per year—a pace that has not been exceeded in any century since at least 2,800 years ago.³ Rising seas increase the risk of flooding, storm surge inundation, erosion and shoreline retreat, and wetland loss. The cities and infrastructure that line many shorelines are already vulnerable to damage from storms, which will likely increase as the sea level continues to rise and inundate areas further inland.

Rising sea levels can cause the shoreline to flood more frequently and severely during storms or king tide events because ocean levels are higher during normal conditions. The most damaging events over the next

few decades are likely to be dominated by large storm events in combination with high tides and large waves. Additionally, rising sea levels can cause inland areas in the watershed to flood. Impacts will generally become more frequent and more severe in the latter half of this century.

Sea Level Rise: San Mateo County

The County is already exposed to present-day flooding when large rain events coincide with high tides on the San Francisco Bay. The County becomes more highly vulnerable to flooding when considering the effects of rising sea levels. Future flooding and coastal erosion could pose considerable risks to life, safety, critical infrastructure, the County's natural and recreational assets, and the economy. To address the issue, the County performed a regional sea level rise vulnerability assessment (SMC SLR VA) to evaluate the potential impacts of future flooding and inundation. The SMC SLR VA revealed:

- The assessed value of parcels in the project area exposed to near-term (present-day) flooding exceeds \$1 billion.
- The assessed value of parcels 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.

Furthermore, 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. Given the severity of the risks from sea level rise in the county, actions to prepare for risks and reduce them are necessary. A combination of shoreline protection strategies, individual property and facility modifications, land use policies, and emergency flood preparedness actions will be needed to reduce impacts over the near- and long-term. Through the Sea Change SMC Initiative, the County intends to facilitate countywide coordination on sea level rise policies, building standards, and the development of a countywide sea level rise strategy.

Sea level rise has secondary effects beyond inundation. As sea levels 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. Along the San Francisco Bay shoreline, 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. 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 quicker than coastal floodwaters can overtop the shoreline. This rising groundwater will create potential exposure pathways that could impact not only the environment, but public health as well. Rising groundwater can further impact a community by increasing liquefaction susceptibility during earthquakes. Figures 4 and 5 show the areas in San Bruno at risk of emergent groundwater under the mid-level and high-level sea level rise scenarios.

Sea Level Rise: Scenarios

The SMC SLR VA used three sea level rise scenarios to evaluate potential impacts to communities (see Table 3). These three scenarios are referenced when discussing potentially affected assets and infrastructure within the community.⁴

Table 3: Sea Level Rise Scenarios

| | |
|---------------------------|---|
| BASELINE SCENARIO | 1% annual chance flood (present-day extreme flood also known as 100 year flood) |
| MID-LEVEL SCENARIO | 1% annual chance flood + 3.3 feet of sea level rise |
| HIGH-END SCENARIO | 1% annual chance flood + 6.6 feet of sea level rise |

The SMC SLR VA used sea level rise inundation data from the United States Geological Survey (USGS) and from *Point Blue's Our Coast, Our Future* tool, which provided the best available data at the time. The best available science on sea level rise projections at the time was the National Research Council's *Sea Level Rise for the Coasts of California, Oregon, and Washington*.

The scenarios were also informed by regional sea level rise guidance documents, such as the California Coastal Commission's August 2015 *Sea Level Rise Guidance, Interpretive Guidelines for Addressing Sea Level Rise in Local Coastal Programs and Coastal Development Permits*. The methodology incorporated strategies from the San Francisco Bay Conservation and Development Commission's Adapting to Rising Tides (ART) project. According to California's 2024 guidance on sea level rise, communities should plan for as much as approximately 3 feet (36 inches) of sea level rise by 2070, and as much as 6.6 feet (79.2 inches) by 2100.⁵

Sea Level Rise: San Bruno

Portions of eastern San Bruno between SR-82 and US Highway 101 near the eastern city limits are in bayside inundation areas and are vulnerable to the potential effects of sea level rise. According to the SMC SLR VA, the three scenarios in Table 3 would affect San Bruno in various levels of severity. Under the baseline scenario, no land would be inundated in San Bruno, under the mid-level scenario, 65 acres would be inundated, and under the high-end scenario, 128 acres would be inundated (see Figure 3). More detail is available within the SMC SLR VA.⁶

Past Events

Sea level rise is a dynamic phenomenon that is constantly evolving, the impacts of which are not associated or reported as singular events. This phenomenon is already making its presence felt in Bay Area communities. Over the past century, the water levels in San Francisco Bay have risen by eight inches. San Bruno has not experienced any past incidents attributed to sea level rise.

Regulatory Framework

Sea Level Rise Management Agencies and Activities

A number of agencies in San Mateo County and within the greater Bay Area participate in the process of planning for and managing sea level rise, including:

- Bay Conservation and Development Commission (BCDC) - A California state commission and coastal protection agency that regulates development in and around the San Francisco Bay,

including the various jurisdictions and cities in the area. As an upstream community, adjacent to the bay, San Bruno is most concerned with maintaining the bay's water integrity and controlling any contaminants potentially released from the community.

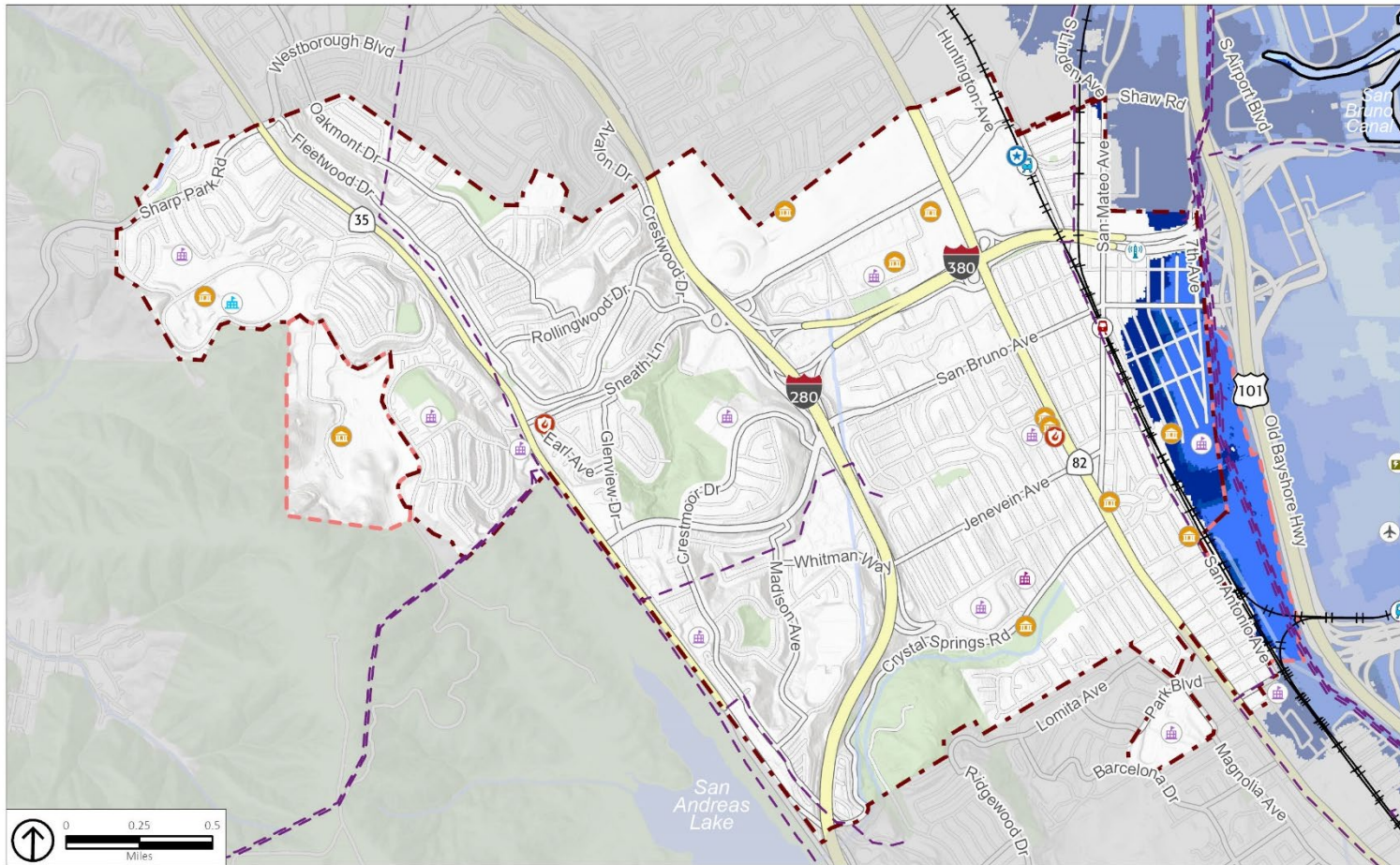
- Adapting to Rising Tides (ART) – A BCDC and NOAA collaborative planning project in partnership with local, regional, state, and federal agencies, which identifies how current and future flooding will affect communities, infrastructure, ecosystems, and economy. ART has improved both local and regional capacity for adaptation planning and responses to address the effects of flooding.
- Sea Change San Mateo County - The SeaChange SMC Community Resilience Grants Program provides funding for cities and organizations to develop solutions that reduce impacts from sea level rise.
- Bay Adapt - Regional Strategy for a Rising Bay is an initiative to establish regional agreement on the actions necessary to protect people and the natural and built environment from rising sea levels.
- OneShoreline - An independent government agency that works across jurisdictional boundaries to secure and leverage public and private resources for the long-term resilience of the San Mateo County region. They plan and build solutions to the climate change impacts of sea level rise, flooding, and coastal erosion, and enhance the environment, recreational opportunities, and quality of life within communities throughout the county.

Major reports and initiatives developed by these agencies include the County of San Mateo South Coast Sea Level Rise Vulnerability Assessment & Adaptation Report, County of San Mateo Sea Level Rise Vulnerability Assessment, and the report Sea Level Rise & Overtopping Analysis for San Mateo County's Bayshore.

Future Conditions

Climate change is expected to affect the frequency and severity of future sea level rise hazards in San Bruno. Please review the San Bruno Vulnerability Assessment Report for details.

Figure 3: Projected Sea Level Rise

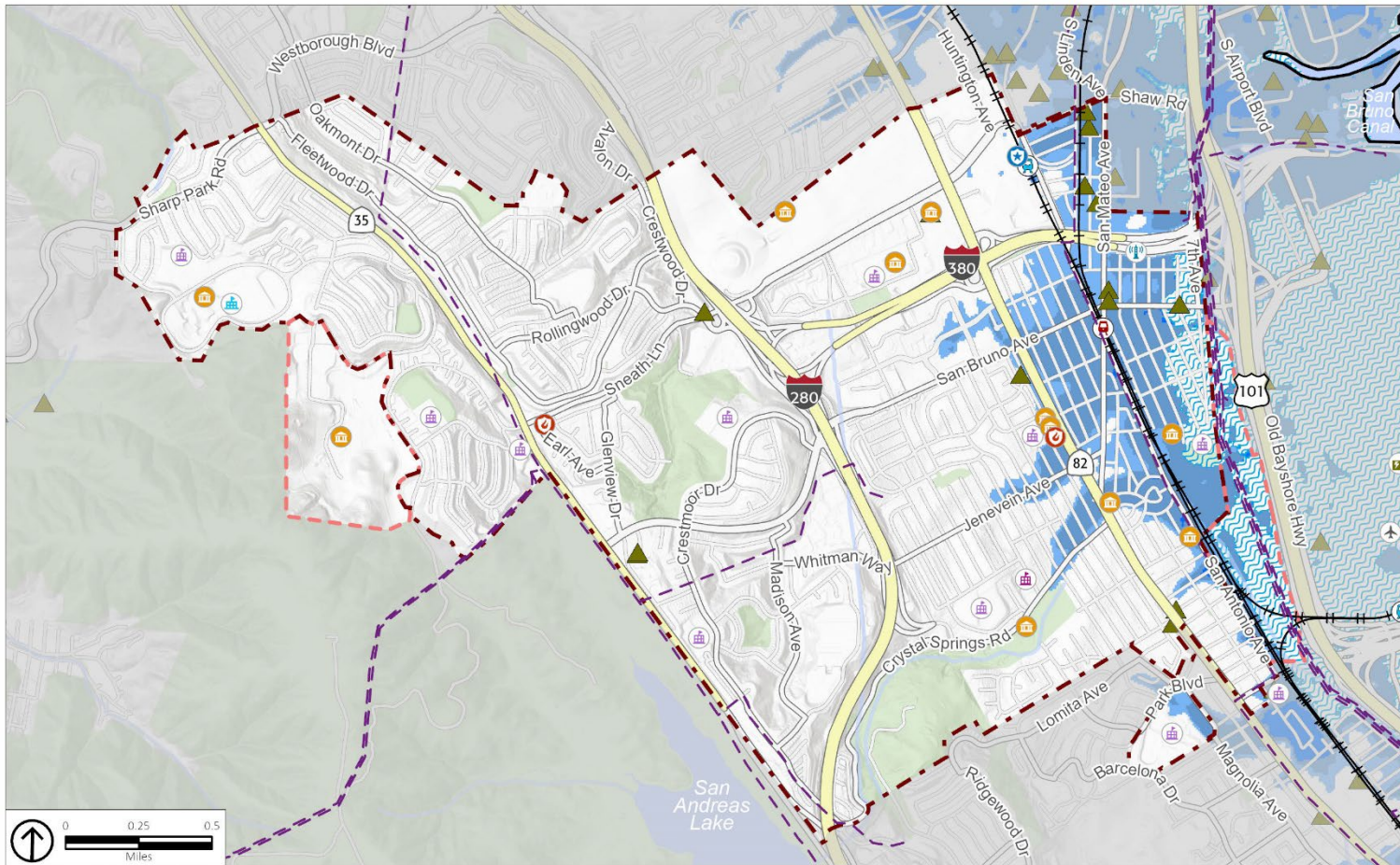


Source: ESRI, 2023; County of San Mateo, 2023; PlaceWorks, 2023; USGS CoSMoS

- | | | | |
|---------------------------|-----------------------|--------------------------|-------------------------|
| City of San Bruno | Caltrain Stations | California Power Plants | Sea Level Rise |
| Sphere of Influence | Caltrain Network | Public Schools (K-12) | |
| San Mateo County Boundary | Airport | Private Schools (K-12) | 0 ft + 100-year storm |
| Parks and Open Space | Law Enforcement | College or University | 0.8 ft + 100-year storm |
| Creeks and Waterways | Fire Stations | Communication Facilities | 3.3 ft |
| BART Stations | Government Facilities | Transmission Lines | 3.3 ft + 100-year storm |
| BART Network | | | 6.6 ft |
| | | | 6.6 ft + 100-year storm |



Figure 4: Projected Emergent Groundwater, Mid-Level Scenario

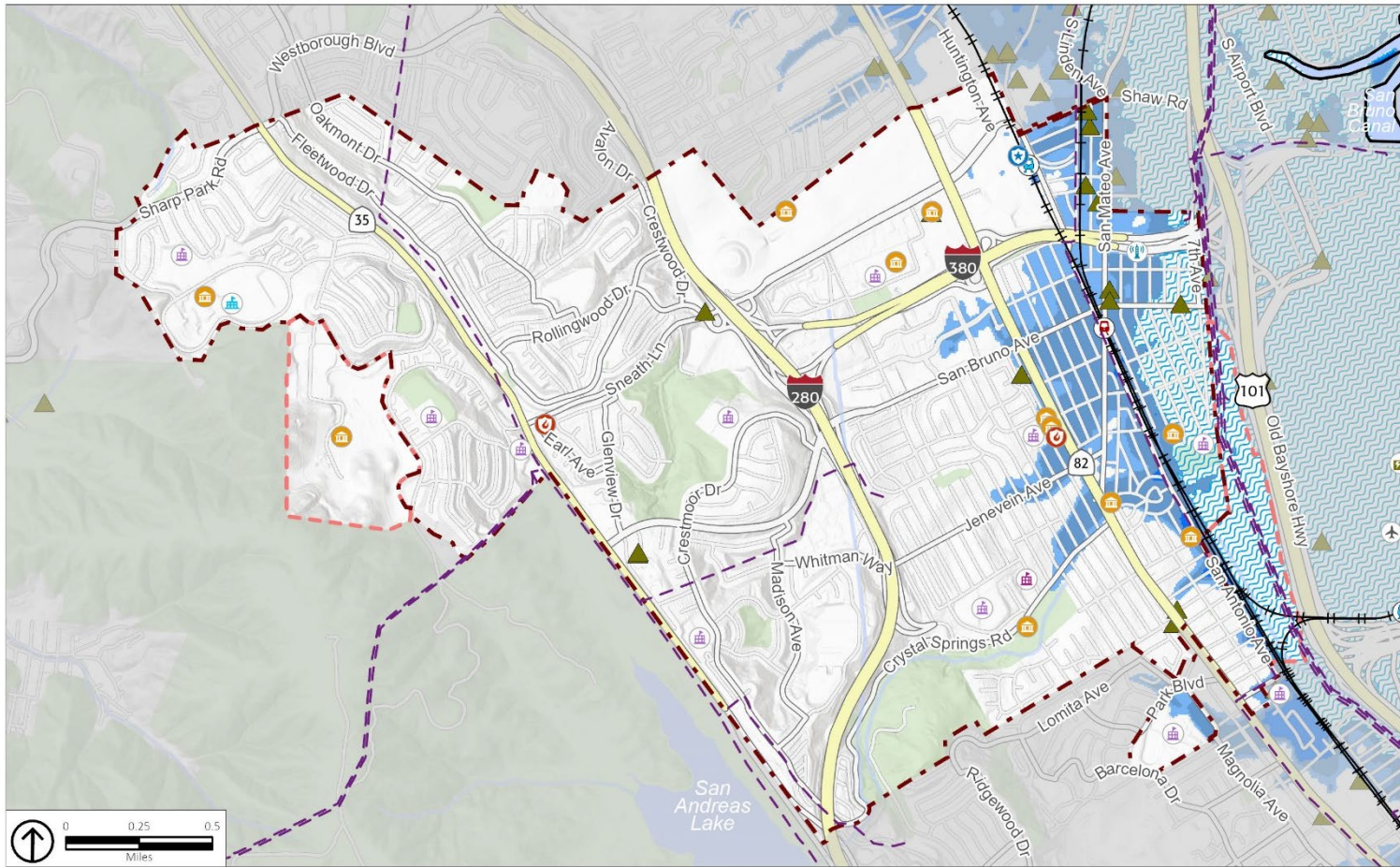


Source: ESRI, 2023; County of San Mateo, 2023; PlaceWorks, 2023; California Office of Environmental Health Hazard Assessment, 2021; USGS, 2020

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|----------------------|---------------------|---------------------------|----------------------|-----------------------------|---------------|--------------|-------------------|------------------|-------------------------|-----------------------|------------------------|-----------------------|--------------------------|----------------------------------|----------------------|----------------------|
| City of San Bruno | Sphere of Influence | San Mateo County Boundary | Parks and Open Space | Creeks and Waterways | BART Stations | BART Network | Caltrain Stations | Caltrain Network | California Power Plants | Public Schools (K-12) | Private Schools (K-12) | College or University | Communication Facilities | Hazardous Material Cleanup Sites | Emergent Groundwater | 3.3ft Sea Level Rise |
| Parks and Open Space | Fire Stations | Government Facilities | Transmission Lines | 0 - 3.3 feet (Very Shallow) | | | | | | | | | | | | |
| | | | | 3.3 - 6.6 feet (Shallow) | | | | | | | | | | | | |



Figure 5: Projected Sea Level Rise High-End Scenario



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

- | | | | | | | | | | | | | | | | | | | | | | | | |
|-------------------|---------------------|---------------------------|----------------------|----------------------|---------------|--------------|-------------------|------------------|---------|-----------------|---------------|-----------------------|-------------------------|-----------------------|------------------------|-----------------------|--------------------------|--------------------|----------------------------------|----------------------|----------------------|--|--------------------------|
| City of San Bruno | Sphere of Influence | San Mateo County Boundary | Parks and Open Space | Creeks and Waterways | BART Stations | BART Network | Caltrain Stations | Caltrain Network | Airport | Law Enforcement | Fire Stations | Government Facilities | California Power Plants | Public Schools (K-12) | Private Schools (K-12) | College or University | Communication Facilities | Transmission Lines | Hazardous Material Cleanup Sites | Emergent Groundwater | 6.6ft Sea Level Rise | Groundwater depth below surface | |
| | | | | | | | | | | | | | | | | | | | | | | 0 - 3.3 feet (Very Shallow) | 3.3 - 6.6 feet (Shallow) |



ISSUE 5: SEISMIC HAZARDS

General Overview

An earthquake is the vibration of the earth's surface following a release of energy in its crust. This energy can be generated by a sudden dislocation of the crust or by a volcanic eruption. Most destructive quakes are caused by dislocations of the crust as stress builds up along sections of the crust. When the stress exceeds the strength of the rocks or the friction holding the halves of the fault together, the crust breaks and snaps to a new position. In the process of breaking, vibrations called "seismic waves" are generated. These waves travel outward from the source of the earthquake at varying speeds.

Geologists have found that earthquakes reoccur along faults, which are zones of weakness in the earth's crust. When a fault experiences an earthquake, there is no guarantee that all the stress has been relieved. Another earthquake can still occur. In fact, relieving stress along one part of a fault may increase it in another part. California is seismically active because of movement of the North American Plate and the Pacific Plate to the west. The major boundary between these plates, the San Andreas Fault, runs through San Mateo County. The majority of the seismic hazards are on well-known active faults. However, inactive faults, where no displacements have been recorded, also have the potential to cause earthquakes.

The sliding movement of the surface of the earth on either side of a fault is called fault rupture. Fault rupture begins below the ground surface at the earthquake hypocenter, typically between 3 and 10 miles below the ground surface in California. If an earthquake is large enough, the fault rupture will travel to the ground surface, potentially destroying structures built across its path.

Faults are more likely to experience earthquakes if they have more rapid rates of movement, have experienced recent earthquakes, experience greater total displacements, and are aligned so that movement can relieve the accumulating tectonic stresses. Geologists classify faults by their relative hazards. "Active" faults, which represent the highest hazard, are those that have ruptured to the ground surface during the Holocene period (about the last 11,000 years). "Potentially active" faults are those that displaced layers of rock from the Quaternary period (the last 1,800,000 years).

Given the close proximity to active faults with relatively frequent movements in the past, all of San Bruno would likely experience severe ground shaking in a large earthquake. San Bruno is especially at high risk as the city straddles the San Andreas Fault, is approximately eight miles east of the San Gregorio Fault, and approximately 17 miles southwest of the Hayward Fault. These two faults are the two principally active faults in the Bay Area. Several other faults, while not as significant as the San Andreas, San Gregorio, and Hayward Faults, are capable of producing significant ground shaking in San Bruno, including the Rodger's Creek-Healdsburg (an extension of the Hayward system), Calaveras, Concord-Green Valley, Serra, and Pilarcitos Faults.

Earthquake Classification

Earthquakes are typically classified by the amount of energy released, measured as magnitude, or by the impact on people and structures, measured as intensity.

Magnitude

An earthquake’s magnitude is a measure of the energy released at the source of the earthquake. Magnitude is commonly expressed by ratings on the moment magnitude scale (Mw), the most common scale used today.⁷ This scale is based on the distance a fault moved and the force required to move it. The scale is presented in Table 4.

Table 4: Moment Magnitude Scale

| Classification | Magnitude |
|----------------|----------------|
| Great | 8.0 or greater |
| Major | 7.0 to 7.9 |
| Strong | 6.0 to 6.9 |
| Moderate | 5.0 to 5.9 |
| Light | 4.0 to 4.9 |
| Minor | 3.0 to 3.9 |
| Micro | Less than 3.0 |

Intensity

The most commonly used intensity scale is the modified Mercalli intensity scale. Ratings of the scale as well as the perceived shaking and damage potential for structures are shown in Table 5. The modified Mercalli intensity scale is generally represented visually using shake maps, which show the expected ground shaking at any given location produced by an earthquake with a specified magnitude and epicenter. The intensity of an earthquake varies depending on the distance from the earthquake, the rock and soil conditions at sites, and variations in the propagation of seismic waves from the earthquake due to complexities in the structure of the earth’s crust. A shake map shows the variation of ground shaking in a region immediately following significant earthquakes.

Table 5: Mercalli Scale and Peak Ground Acceleration Comparison

| Modified Mercalli Scale | Perceived Shaking | Potential Structure Damage | |
|-------------------------|-------------------|----------------------------|----------------------|
| | | Resistant Buildings | Vulnerable Buildings |
| I | Not felt | None | None |
| II to III | Weak | None | None |
| IV | Light | None | None |
| V | Moderate | Very Light | Light |
| VI | Strong | Light | Moderate |
| VII | Very Strong | Moderate | Moderate/Heavy |
| VIII | Severe | Moderate/Heavy | Heavy |
| IX | Violent | Heavy | Very Heavy |
| X to XII | Extreme | Very Heavy | Very Heavy |

Fault Locations

San Mateo County is in a region of high seismicity because of the presence of the San Andreas Fault that bisects the county, the Hayward Fault across the bay to the east, and the San Gregorio Fault to the west (see Figure 6). The primary seismic hazard for the county and San Bruno is potential ground shaking from these three large faults.

Figure 6: Regional Faults



Source: ESRI, 2023; County of San Mateo, 2023; PlaceWorks, 2023; USGS, 2020

- | | | | |
|---------------------------|-----------------------|--------------------------|-----------------------------------|
| City of San Bruno | Caltrain Stations | California Power Plants | Surface Faults |
| Sphere of Influence | Caltrain Network | Public Schools (K-12) | Historic |
| San Mateo County Boundary | Airport | Private Schools (K-12) | Quaternary |
| Parks and Open Space | Law Enforcement | College or University | Alquist Priolo Fault Zones |
| BART Stations | Fire Stations | Communication Facilities | |
| BART Network | Government Facilities | Transmission Lines | |



San Andreas Fault

The San Andreas Fault is a transform boundary that spans the boundary of the Pacific and North American plates, running 810 miles from the Gulf of California through the Mendocino fracture zone off the shore of northern California.

The San Andreas Fault has three segments. The southern segment extends from the Gulf of Mexico to Parkfield, in Monterey County. The central segment extends from Parkfield to Hollister, in San Benito County. The northern segment extends northwest from Hollister, through San Mateo County, including Daly City and San Bruno, to its junction with the Mendocino fracture zone and the Cascadia subduction zone in the Pacific Ocean. The San Andreas Fault has a 21 percent chance of generating a magnitude 6.7 or greater earthquake in the next 30 years.

Depending on its size, a rupture along the peninsula could cause extremely violent ground shaking throughout the county and potentially within San Bruno. Most major earthquakes that occur along the peninsula and involve fault rupture are likely to cause earthquake-induced landslides in the hillside areas and liquefaction at the bay margins. Ultimately, the larger the earthquake, the greater the potential effects to the county and San Bruno.

Hayward Fault

The Hayward Fault is a 45-mile-long fault that parallels the San Andreas Fault in the East Bay. The Hayward Fault extends through some of the Bay Area's most populated areas, including San Jose, Oakland, and Berkeley.

The Hayward Fault has a 31 percent chance of producing a magnitude 6.7 or greater earthquake in the next 30 years. An earthquake of this magnitude has regional implications for the entire Bay Area, as the Hayward Fault crosses numerous transportation and resource facilities, such as highways and the Hetch Hetchy Aqueduct. Disruption of the Hetch Hetchy system has the potential to severely impair water service to San Mateo County. The Hayward Fault is increasingly becoming a hazard priority throughout the Bay Area because of its increased chance for activity and its intersection with multiple highly populated areas and critical facilities. San Bruno is approximately 16.7 miles from segments of this fault.

San Gregorio Fault

The San Gregorio Fault is a northwest-trending right-lateral slip deformation near the western edge of San Mateo County, crossing briefly over uninhabited land in San Mateo County around Pillar Point at Half Moon Bay. The fault runs from southern Monterey Bay through Bolinas Bay, where its north section intersects with the San Andreas Fault offshore north of San Francisco. San Gregorio is the principal active fault west of the San Andreas Fault for the Bay Area region.

The San Gregorio Fault is one of the less studied fault lines, the result of its primary location offshore and its proximity to the better-known San Andreas Fault and Hayward Fault. Its probability of experiencing a magnitude 6.7 or greater earthquake within the next 30 years is 6 percent—significantly less than San Andreas Fault or Hayward Fault. However, the location of the fault poses a significant threat to San Mateo County. San Bruno is approximately 7.6 miles from segments of this fault.

Earthquake-Related Hazards

According to the USGS Earthquake Hazards Program, an earthquake hazard is anything associated with an earthquake that may affect people's normal activities. In addition to shaking and surface rupture, this can also include landslides (discussed separately), 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. Unless properly secured, hazardous materials can be released, causing significant damage to the environment and people.

San Bruno's location along the San Francisco Bay, the composition of the underlying soils, presence of a shallow groundwater table, and proximity to active faults, makes it particularly susceptible to liquefaction. This susceptibility is greatest along the eastern portion of the city, which is built on Bay tidelands filled in with artificial material (see Figure 7, Liquefaction Hazard Areas).

Tsunami

A tsunami is a series of high-energy waves that radiate outward like pond ripples from an area where a generating event occurs, arriving at shorelines over an extended period. Tsunamis can be induced by earthquakes, landslides, and submarine volcanic explosions. Tsunamis are typically classified as local or distant, depending on the location of their source in comparison to where the waves originate.

In the open ocean, a tsunami may be only a few inches or feet high, but it can travel with speeds approaching 600 miles per hour. As a tsunami enters the shoaling waters near a coastline, its speed diminishes, its wavelength decreases, and its height increases greatly. At the shoreline, tsunamis may take the form of a fast-rising tide, a cresting wave, or a bore (a large, turbulent wall-like wave). The first wave is usually followed by several larger and more destructive waves.

The configuration of the coastline, the shape of the ocean floor, and the characteristics of advancing waves play important roles in the destructiveness of tsunami waves. At some locations, the advancing turbulent wave front will be the most destructive part of the tsunami wave. In other situations, the greatest damage will be caused by the outflow of water back to the sea between crests, sweeping away items on the surface and undermining roads, buildings, bulkheads, and other structures. This outflow action can carry enormous amounts of highly damaging debris, resulting in further destruction. Ships and boats may be forced against breakwaters, wharves, and other craft, or be washed ashore and left grounded after the withdrawal of the seawater.

There is a tsunami warning system for the Pacific Ocean, involving 26 countries with numerous seismic stations, water level stations, and information distribution centers. The warning centers issue tsunami watches, warnings, and advisories. A watch is issued when a large earthquake has occurred far away from the region and the threat is still being determined. The warning system is activated when a Pacific basin earthquake of magnitude 6.5 occurs or an earthquake is widely felt along the North American coast.

While the City is close to the waters of the San Francisco Bay, the potential for a tsunami to impact San Bruno is small. Current tsunami inundation mapping prepared by the California Geological Survey does not show these zones entering the city.

Figure 7: Liquefaction Hazard Areas



Source: ESRI, 2023; County of San Mateo, 2023; PlaceWorks, 2023; CGS, 2021

- | | | | |
|---------------------------|-----------------------|--------------------------|------------------------------|
| City of San Bruno | Caltrain Stations | California Power Plants | Liquefaction Zone |
| Sphere of Influence | Caltrain Network | Public Schools (K-12) | |
| San Mateo County Boundary | Airport | Private Schools (K-12) | |
| Parks and Open Space | Law Enforcement | College or University | |
| Creeks and Waterways | Fire Stations | Communication Facilities | |
| BART Stations | Government Facilities | Transmission Lines | |
| BART Network | | | |



Past Events

Table 6 lists recent earthquakes with a magnitude of 5.0 or greater within 100 miles of San Mateo County. The last significant (greater than magnitude 6.0) seismic event in the San Mateo vicinity was the 7.1 magnitude San Andreas Loma Prieta Earthquake in 1989, which originated 10 miles northeast of Santa Cruz. Other significant local earthquakes include the 1906 earthquake in San Francisco and the 2014 Napa earthquake. Although the 1906 earthquake is most associated with the City of San Francisco, San Mateo County was also greatly affected.

Table 6: Recent Earthquakes Magnitude 5.0 or Larger Within 100-Mile Radius of San Mateo County

| Date | Location | Epicenter Location |
|------------|----------|---|
| 3/22/1957 | 5.3 | Daly City |
| 3/31/1986 | 5.70 | 12 miles east-northeast of Milpitas, CA |
| 10/17/1989 | 7.1 | 10 miles northeast of Santa Cruz, CA |
| 9/3/2000 | 5.17 | 8 miles northwest of Napa, CA |
| 8/10/2001 | 5.50 | 9 miles west of Portola, CA |
| 10/31/2007 | 5.6 | 10 miles northeast of San Jose, CA |
| 8/24/2014 | 6.0 | 6 miles southwest of Napa, CA |

Regulatory Framework

Chapter 11.30 of the San Bruno Municipal Code establishes the Seismic Hazard Identification Program for Unreinforced Masonry Buildings and provides minimum standards for structural seismic resistance. This seismic hazard reduction program is consistent with California Health and Safety Code Sections 19160 through 19168 and Government Code Sections 8875 through 8878. This program is designed to promote public safety by identifying buildings in San Bruno that are at greater risk of damage from earthquakes, and by determining how these deficiencies may cause injury or loss of life.

Future Conditions

The frequency and severity of future seismic hazards in San Bruno is expected to continue.

ISSUE 6: FIRE HAZARDS

General Overview

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 extensive wildfires. Historically, the fire season extended from early summer through late fall of each year during the hotter, dryer months, although it is increasingly a hazard that can occur year-round. 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.

Wildfire/Wildland-Urban Interface Fires

Wildfire is any uncontrolled fire on undeveloped land that requires fire suppression. Wildfires can occur naturally and are important to many ecosystem processes; however, most are started by people. Wildfires 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.

The wildland-urban interface (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. Human-caused fires are the leading cause of wildland fires, and with thousands of people living near and visiting wildland areas, the probability of human-caused fires is growing.

Structural Fires

Structural fires occur in built-up environments, destroying buildings and other human-made structures. These disasters are often due to faulty wiring or 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.

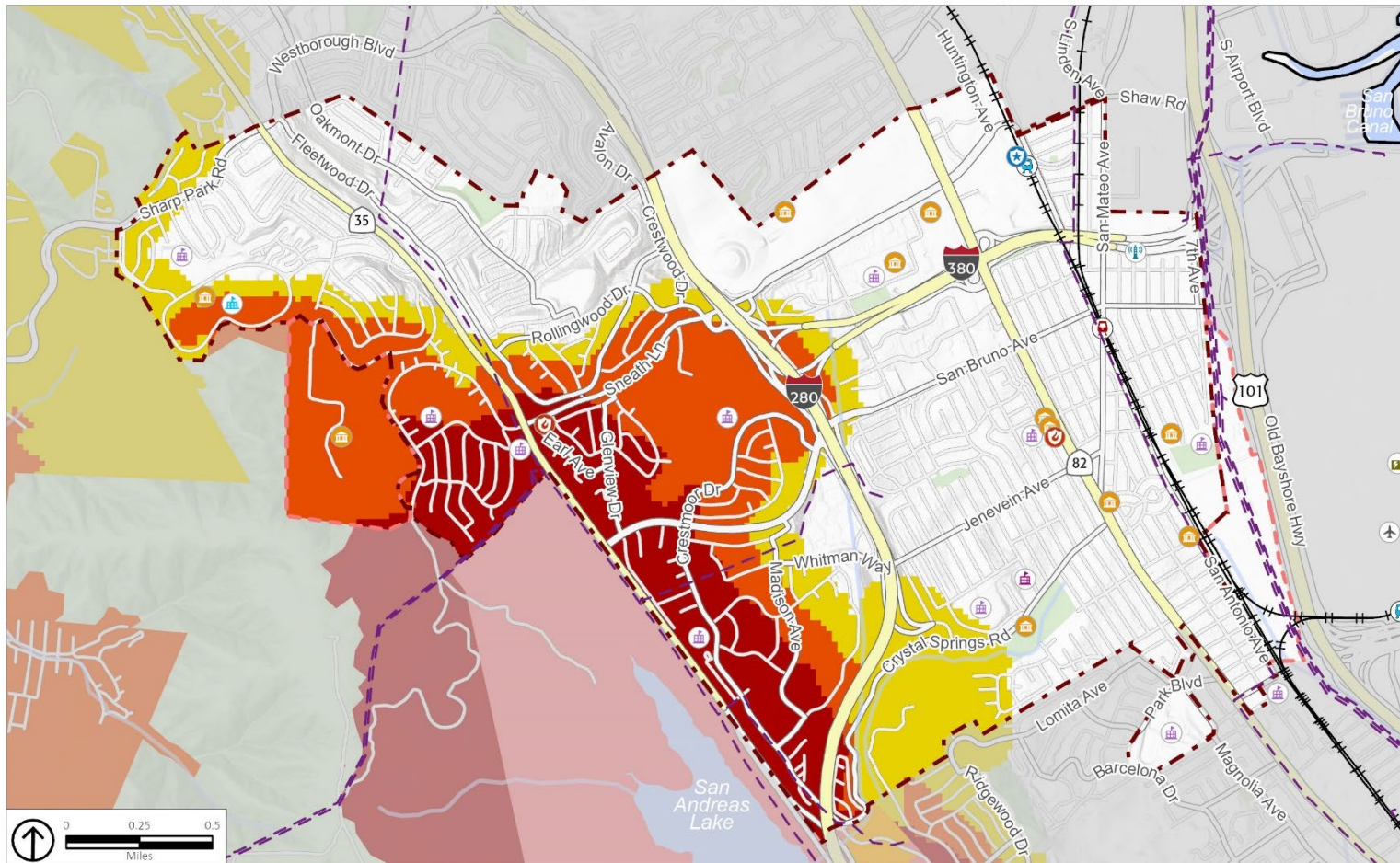
Secondary Hazards

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 cause direct economic losses in the reduction of harvestable timber 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 soils and cause failures on slopes. Major landslides can occur several years after a wildfire. Most wildfires burn hot and for long durations that can bake soils, especially those high in clay content, thus increasing the imperviousness of the ground. This increases the runoff generated by storm events, thus increasing the chance of flooding.

Fire Hazard Areas

CAL FIRE identifies 1,354 acres of San Bruno as being a Fire Hazard Severity Zone (FHSZ), including 427 acres designated as a Very High zone, the greatest severity level. Figure 8 shows the designated FHSZs in the community. In addition, sections of the city have been identified by the US Forest Service's Fire Modeling Institute as having an increased fire hazard potential. These areas are generally near extensive natural vegetation, including Junipero Serra County Park, Crestmoor Canyon, and the San Francisco Water Department's Peninsula Watershed. Dense stands of large eucalyptus trees within the Crestmoor and Rollingwood neighborhoods also pose a fire threat due to the highly flammable nature of these trees. All of these areas possess highly flammable vegetation, which, mixed with steep topography and dry conditions associated with California summers, increase the potential for wildland fires. San Bruno is also vulnerable to smoke from wildfires occurring throughout the region. These incidents can increase the potential for poor air quality, impacting residents, workers, and visitors in the city.

Figure 8: Regional Cal FIRE Fire Hazard Severity Zones



Source: ESRI, 2023; County of San Mateo, 2023; PlaceWorks, 2023; CalFIRE, 2025

- | | | | | | | |
|---------------------------|-----------------------|--------------------------|--|------------------------------------|-----------|----------|
| City of San Bruno | Caltrain Stations | California Power Plants | Fire Hazard Severity Zone (State Responsibility Area) | (Local Responsibility Area) | | |
| Sphere of Influence | Caltrain Network | Public Schools (K-12) | | | Very High | High |
| San Mateo County Boundary | Airport | Private Schools (K-12) | | | High | Moderate |
| Parks and Open Space | Law Enforcement | College or University | | | Moderate | |
| BART Stations | Fire Stations | Communication Facilities | | | | |
| BART Network | Government Facilities | Transmission Lines | | | | |



Past Events

While San Mateo County has a prolific fire history, few of its fires have caused sufficient damage to trigger a State or federal disaster declaration. Notable fires of record are the November 1929 fire near Montara that destroyed 25 homes, a church, and cattle, and the August 2020 CZU Lightning Complex in Santa Cruz and San Mateo Counties, caused by a reported 12,000 lightning strikes.

The CZU Lightning Complex fires burned in San Mateo and Santa Cruz County starting on August 16, 2020. This fire destroyed 1,490 structures, damaged 140 others, and caused one injury and one fatality. Fires burned in both Butano and Big Basin Redwoods State Parks, where several historic buildings were destroyed, including the visitor's center at Big Basin. The fire burned a total of 86,509 acres. According to CAL FIRE, the CZU Lightning Complex fire was the 12th most destructive California wildfire. While the fire did not burn into San Bruno, smoke from the fire did affect air quality in the community and throughout the Bay Area.

Although San Mateo County has not experienced many major wildfire events, nearby Alameda County has demonstrated some worst-case scenario fires that could occur in other Bay Area counties. At the time it occurred, the October 1991 Oakland/Berkeley Hills "Tunnel Fire" was the most damaging fire (now the third-most damaging) and the second deadliest (currently the third deadliest) fire in California. This WUI fire resulted in 25 lives lost, including a fire battalion chief and an Oakland police officer, 148 people injured, and 2,900 structures destroyed. The blaze started from a grass fire in the Berkeley Hills and burned 1,600 acres. According to the Insurance Information Institute, the estimated private property loss was \$1.7 billion.

Regulatory Framework

Wildfire Protection Responsibility Areas

Hundreds of agencies have fire protection responsibility for wildland and wildland-urban interface (WUI) fires in California. Local, state, tribal, and federal organizations have primary legal (and financial) responsibility for wildfire protection. In many instances, two fire organizations have dual primary responsibility for the same parcel of land—one for wildfire protection, and the other for structural or improvement fire protection. The California Department of Forestry and Fire Protection (CAL FIRE) designates lands into responsibility areas based on who is financially responsible for fire protection services.

Local Responsibility Areas

Local Responsibility Areas (LRAs) are areas protected by local agencies, including city and county fire departments, local fire protection districts, and CAL FIRE when under contract to local governments. LRAs may include flammable vegetation and WUI areas where the financial and jurisdictional responsibility for improvement and wildfire protection is that of a local government agency. All of San Bruno is an LRA.

State Responsibility Areas

State Responsibility Areas (SRAs) include unincorporated areas and State lands where the State/CAL FIRE has financial responsibility for fire protection. CAL FIRE can also provide fire protection services by contract to cities and counties. Most of the unincorporated areas bordering San Bruno are SRAs.

Federal Responsibility Areas

Federal Responsibility Areas (FRAs) are fire-prone wildland areas that are owned or managed by a federal agency such as the U.S. Forest Service, National Park Service, Bureau of Land Management, U.S. Fish and Wildlife Service, or U.S. Department of Defense. Primary financial and rulemaking jurisdictional authority rests with the federal land agency. In many instances, FRAs are interspersed with private land ownership or leases. Fire protection for developed private property is usually not the responsibility of the federal land management agency, as structural protection responsibility is that of a local government agency. The Golden Gate National Recreation Area, part of which borders San Bruno, is an FRA.

CAL FIRE Wildfire Mapping

CAL FIRE has modeled and mapped wildfire hazard zones using a computer model that designates moderate, high, or very high FHSZs. FHSZ ratings are derived from a combination of fire frequency (how often an area burns) and expected fire behavior under severe weather conditions. CAL FIRE's model derives fire frequency from 50 years of fire history data. Fire behavior is based on fuel loads (such as the level and type of vegetation), weather conditions (temperature, wind, precipitation, humidity, etc.), slope and elevation, fire ignition patterns, and expected rate of spread. It accounts for flying ember production, which is the principal driver of the wildfire hazard in densely developed areas, as well as the relative density of vegetative fuels that can serve as sites for new spot fires within the urban core and spread to adjacent structures. The model refines the zones to characterize fire exposure mechanisms that cause ignitions to structures.

CAL FIRE periodically reviews and revises the FHSZ boundaries based on updated modeling and scientific information. Individuals should consult the most recent available mapping, available from CAL FIRE's Fire and Resource Assessment Program (FRAP) at <https://frap.fire.ca.gov/>.

County Fire Management and Response

Santa Cruz and San Mateo Counties updated their joint Community Wildfire Protection Plan (CWPP) in 2018. A CWPP is a tool for communities to identify landscape-scale hazards and take strategic action to reduce wildfire risk for healthier ecosystems and more resilient communities. The updated CWPP assesses hazards and priorities within the two counties, identifies at-risk communities, and provides fuel reduction recommendations for high-priority areas. The CWPP can also aid communities to apply for State and federal funding for fire prevention projects and programs.

San Mateo County Resource Conservation District

The San Mateo County Resource Conservation District (RCD) is a special district (not part of the County government) that serves as a resource for technical, financial, and educational assistance to aid in conservation and manage natural resources. San Mateo County RCD was one of the primary agencies involved in the Santa Cruz and San Mateo County CWPP update. The RCD has multiple programs dedicated to wildfire in the county, such as forest health and fire resiliency programs, post-fire recovery assistance, vegetation management programs, fuel break projects, and a neighborhood chipper program assisting residents with defensible space. RCD provides these services to the land under their management.

City Fire Management and Response

In addition to providing fire protection services in San Bruno, SBFDD's responsibilities include fire prevention activities. These activities include plan-checks and field inspections on commercial cooking equipment, fire alarm systems, sprinkler systems, and specialized extinguishing systems in all new and existing

construction within the City of San Bruno. They also provide all new businesses, daycare centers, and care facilities with their initial fire safety clearance.

Municipal Code Chapter 11.24 adopts the California Fire Code, while Section 11.24.020 establishes the city fire prevention division as the fire code enforcement agency, to be operated under the supervision of the fire code official. Both of these are intended to minimize fire risk in San Bruno.

Wildfire Fuel Management Program

This five-year Wildfire Fuel Management Program is a plan developed by the San Mateo County Parks Department designed to identify and prioritize wildfire fuel reduction projects. The program identified several fuel breaks in Junipero Serra County Park as priority projects. The plan outlines how the projects will be implemented and then stipulates how these fuel breaks will be maintained in the future.

Future Conditions

Climate change is expected to affect the frequency and severity of future fire hazards in San Bruno. Please review the San Bruno Vulnerability Assessment Report for details.

ISSUE 7: SEVERE WEATHER

General Overview

Severe weather is generally any destructive weather event, but usually occurs in San Mateo County as localized storms that bring heavy rain, hail, thunderstorms, and strong winds. Severe weather is usually caused by intense storm systems, although types of strong winds can occur without a storm. The most common severe weather events that have historically impacted San Mateo County and City of San Bruno are heavy rains (usually a result of atmospheric rivers), thunderstorms, and windstorms. Utilities may temporarily turn off power to specific areas to reduce the risk of fires caused by electric infrastructure, an action called a public safety power shutoff (PSPS) event.

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 rains 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.

Fog

Fog forms when air close to the ground can no longer hold all the moisture it contains, causing the excess moisture to condense as a low cloud. This occurs either when air is cooled to its dew point or the amount of moisture in the air increases. Heavy fog is particularly hazardous because it can restrict surface visibility. Severe fog incidents can close roads, cause vehicle accidents and airport delays, and impair the effectiveness of emergency response. Fog in the Bay Area has different origins depending on the time of year. In the summer, the area is characterized by cool marine air and persistent coastal stratus and fog.

Public Safety Power Shutoff

Electricity utilities throughout California, including the Pacific Gas and Electric Company (PG&E), have begun to occasionally “de-energize,” or turn off the electricity for power lines that run through areas where there is an elevated fire risk. This is intended to reduce the risk of power lines sparking or being damaged

and starting a wildfire. A PSPS event may occur at any time of the year, usually during high wind events and dry conditions. PSPS events may be limited to specific communities, or they may affect broad swaths of the state. Given the long, connected nature of power supply systems, a shutoff event targeted to a small at-risk area can affect a larger area outside the risk zone. The duration of a shutoff is related to the severe weather that triggers it. However, a shutoff typically ends within 24 hours after the severe weather has passed. The longest stretch of power loss that has affected the City occurred over a three-day period.

Thunderstorms

A thunderstorm is a rain event that includes thunder and lightning. According to 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 tornado. 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, an estimated 12,000 lightning strikes caused a set of fires known as the CZU Lightning Complex in San Mateo and Santa Cruz Counties.

Tornadoes

A tornado is a violently rotating column of air extending between a cloud and the surface of the earth, with winds that can reach destructive speeds of more than 300 mph. A tornado's vortex is typically a few hundred meters in diameter, and damage paths can be up to 1 mile wide and 50 miles long. Tornadoes can occur throughout the year at any time of day but are most frequent in the spring during the late afternoon. However, tornadoes are rare in San Mateo County; only five have been recorded since 1950.

Windstorms

Windstorms are generally short-term events involving winds or gusts of over 50 to 60 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 property 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 roadside 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.

Secondary Hazards

Major riverine or urban flooding can result from heavy rain. Rain falling on saturated soils on slopes or on areas recently burned by wildfire may lead to landslides. Lightning during thunderstorms presents a risk of starting a wildfire. Storms can also exacerbate existing areas of vulnerability, such as increasing the frequency of erosion along coastal cliffs.

Poor air quality is a secondary impact of severe weather. One type of cold wave also allows air pollution to accumulate.⁸

Past Events

Table 7 lists recent severe weather events that affected San Bruno as recorded by NOAA.

Table 7: Recent Severe Weather Events

| Date | Type | Description |
|----------------------------|------------|--|
| October 13, 2009 | High Wind | Heavy rain combined with very strong wind through Northern and Central California to cause numerous trees, tree limbs, and power and telephone poles to fall. PG&E reported over 277,000 customers had lost power in the San Francisco and Monterey Bay areas with \$13 million dollars in damage. Record-breaking heavy rain led to flooding and debris flows. In San Mateo County, at least 47 trees and 31 sets of power lines were knocked over. Wind also caused power outages across San Mateo County. Approximately 58,000 community members lost power during the storm. |
| October 2018 | PSPS | PG&E induced outage due to extreme weather conditions. |
| September to November 2019 | PSPS | PG&E induced outage due to extreme weather conditions |
| December 13, 2021 | Heavy Rain | An atmospheric river impacted the Bay Area on December 31, 2021, resulting in significant rainfall across the San Francisco Bay Area. During the morning, a surface low developed west of San Francisco and the river stalled over the Bay Area. This resulted in significant rainfall totals for many Bay Area communities. Most notably, downtown San Francisco received 5.46 inches of rain, which is the second-wettest day on record. The Oakland Museum received its wettest day since records began in 1970, with 4.75 inches of rain. |

Source: National Centers for Environmental Information, 2021.

Regulatory Framework

While the City does not have specific regulations regarding severe weather incidents, the key elements of the Municipal Code contribute to protecting the community from these types of hazards. The following are key chapters that support City efforts to reduce impacts from these events:

Chapter 8.20 OVERHEAD POLES AND WIRES – Establishes regulation of overhead wires and restricts where they can be used. This is to help mitigate the potential for downed power lines resulting in power loss and also help to mitigate the danger of fires as a result of downed and exposed wiring.

Chapter 8.24 STREET TREES AND OTHER PLANTINGS – Establishes regulation for the care and maintenance of trees to mitigate potential dangers from severe wind and storms.

Future Conditions

Climate change is expected to affect the frequency and severity of future severe weather in San Bruno. Please review the San Bruno Vulnerability Assessment Report for details.

ISSUE 8: DROUGHT

General Overview

Drought is a significant decrease in water supply relative to what is needed to meet typical demand, leading to a water shortage for some activity, group, or environmental sector. While drought is a normal occurrence for Mediterranean climates such as that of San Mateo County, long and severe droughts have the potential to impact ecosystems and economic activity across the entire community. Most droughts are defined based on declines in normal precipitation levels, declines in agricultural production, declines in streamflow and groundwater levels, or socioeconomic impacts from water shortages.

The severity of any given drought depends on the degree of moisture deficiency, the duration, and the size and location of the affected area. The longer the duration of the drought and the larger the area impacted, the more severe the potential impacts. While drought does not typically directly result in loss of life or damage to structures, drought can have widespread impacts on the environment and the economy. Potential drought impacts include loss of crops, costs incurred by having to drill new wells, increased costs for water straining household finances and reducing commercial profits, reduced habitat and food supply for plants and animals, and increased risk of wildfire.

The demand that society places on water systems and supplies—such as expanding populations, irrigation, and environmental needs—contributes to drought impacts. Drought can lead to difficult decisions regarding the allocation of water, as well as stringent water use restrictions, water quality problems, and inadequate water supplies for fire suppression.

Droughts can affect groundwater storage as reserves are drawn down in anticipation of or in response to drought impacts, or as reduced precipitation causes groundwater supplies to be replenished at a slower rate. Drought affects groundwater sources more slowly than it affects surface water supplies, but groundwater supplies generally take longer to recover. This can lead to a reduction in groundwater levels and problems such as reduced pumping capacity or wells going dry. It can take groundwater supplies years to recover from heightened use during droughts. This reduced replenishment of groundwater affects streams. Much of the flow in streams comes from groundwater, especially during the summer when there is less precipitation. Reduced groundwater levels mean that even less water will enter streams during periods of low precipitation.

Drought can also increase community susceptibility to wildfire. A prolonged lack of precipitation dries out vegetation and makes plants more vulnerable to pests, both of which can increase susceptibility to wildfires.

Water supplied through the City's water system is a combination of purchased water and groundwater pumped from the City's groundwater supply wells. The City purchases its treated water from SFPUC and North Coast County Water District (NCCWD). The City also sources local groundwater from the Westside Groundwater Basin (specifically the South Westside Basin) using four wells. The City's Public Works Department (Water Division) owns, operates, and maintains the potable water distribution system that serves drinking water to users within its water service area.

In recent years, approximately 90 percent of the City’s water supply has been purchased from the SFPUC, with smaller amounts from NCCWD and the City’s groundwater wells. Groundwater previously accounted for about 50 percent of the City’s total water supply. In 2016, the City reduced its use of groundwater in accordance with the Regional Groundwater Storage and Recovery Project.

The City is a member of Bay Area Water Supply and Conservation Agency (BAWSCA). BAWSCA was created on May 27, 2003, to represent the interests of the 26 cities, water districts, and private utilities in Alameda, Santa Clara, and San Mateo Counties that purchase water on a wholesale basis from the Regional Water System (RWS). BAWSCA is the only entity having the authority to directly represent the needs of the cities, water districts, and private utilities (wholesale customers) that depend on the RWS.

Past Events

San Mateo County has a history of severe droughts, which have affected San Bruno. DWR hydrologic data from the early 1900s shows multi-year droughts from 1912 to 1913, 1918 to 1920, 1922 to 1924, and 1928 to 1934. The 1929 to 1934 drought established the criteria for designing storage capacity and yield for large Northern California reservoirs. The following sections describe the most recent prolonged droughts that have impacted the planning area.

1976 to 1977 Drought

California had a severe drought due to lack of rainfall during the winters of 1976 and 1977. 1977 was the driest period on record in California at that time, with the previous winter recorded as the fourth driest in California’s hydrological history at that time. The cumulative impact led to widespread water shortages and severe water conservation measures statewide. Over \$2.6 billion in crop damage was recorded in 31 counties. FEMA declared a drought emergency (Declaration 3023-EM) on January 20, 1977, for 58 California counties.

1987 to 1992 Drought

California received precipitation well below average levels for four consecutive years. While the Central Coast was most affected, the Sierra Nevada range in Northern California and the Central Valley counties were also affected. During this drought, only 56 percent of average runoff for the Sacramento Valley was received. In 1991, the State Water Project sharply decreased deliveries to water suppliers. By February 1991, all 58 counties in California were experiencing drought. Urban areas as well as agricultural areas were impacted.

2007 to 2009 Drought

The state proclaimed a statewide drought emergency on June 4, 2008, after spring 2008 was the driest spring on record. On February 27, 2009, the state proclaimed a state of emergency for the entire state as severe drought continued. The largest court-ordered water restriction in state history (at the time) was imposed.

2012 to 2017 Drought

This drought set several records for the state. The period from 2012 to 2014 ranked as the driest three consecutive years for statewide precipitation. Calendar year 2014 set new records for statewide average temperatures and for low water allocations from the State Water Project. Calendar year 2013 set minimum annual precipitation records for many communities. Detailed executive orders and regulations addressed water conservation and management. The statewide drought emergency was lifted in April 2017.

2020 to 2023 Drought

The U.S. Department of Agriculture declared a drought disaster that included San Mateo County on April 21, 2020. By May of 2021, precipitation levels for the year to date were the third-lowest in the past 127 years.⁹ Between April and December 2021, San Mateo County was at the D3—Extreme Drought level, putting the county at risk for wildfire on a year-round basis.¹⁰ Excessive rainfall and flooding in late December 2022 and early January 2023 alleviated some of the drought conditions. Governor Newsom officially eased drought restrictions in March 2023. As of October 2023, San Mateo County was not considered to be in a state of drought.

Since the SFPUC is the City’s main water wholesaler, the City’s water supply reliability is fundamentally linked with SFPUC’s water supply reliability. According to the 2020 San Bruno Urban Water Management Plan (UWMP) water supply reliability analysis, findings show that during single-dry years and multiple consecutive dry years, the City’s supplies are not adequate to meet projected demands, starting as early as 2030. This shortfall is primarily due to significant cutbacks in the City’s supply from SFPUC, which is significantly reduced in dry years due to the Bay-Delta Plan Amendment. In years with a supply shortfall, the City can implement its Water Shortage Contingency Plan (WSCP) to reduce demands to the level of available supply. In future years, the City will conduct an annual water supply and demand assessments.

Regulatory Framework

San Francisco Public Utilities Commission

The SFPUC issued its most recent Urban Water Management Plan (UWMP) in 2021. The UWMP provides an overview of water deliveries and uses, water supply sources, and water conservation programs. It also includes discussions on supply and demand projections over a 25-year planning horizon (from 2020 to 2045), available water supplies to meet existing and future demands under a range of water supply conditions, and water demand management measures, including the WSCP, to reduce long-term water demand. The SFPUC engages in a number of other water conservation activities, including groundwater monitoring and development of water recycling projects, which help support system-wide water conservation.

Sustainable Groundwater Management Act

The Sustainable Groundwater Management Act of 2014 (SGMA), a three-bill legislative package composed of Assembly Bill (AB) 1739, SB 1168, and SB 1319, was passed in September 2014. The legislation provides a framework for sustainable management of groundwater supplies by local authorities, with a limited role for State intervention when necessary to protect the resource. The legislation lays out a process and a timeline for local authorities to achieve sustainable management of groundwater basins. It also provides tools, authorities, and deadlines to take the necessary steps to achieve the goal. For local agencies involved in implementation, the requirements are significant and can be expected to take years to accomplish. The State Water Resources Control Board may intervene if local agencies do not form a Groundwater Sustainability Agency (GSA) and/or fail to adopt and implement a Groundwater Sustainability Plan (GSP). The Westside Basin has been ranked as a Very Low priority basin. As a Very Low priority basin, the Westside Basin users are not mandated to form a GSA or develop a GSP at this time.

Regional Groundwater Storage and Recovery Project

In December 2014, the Regional Groundwater Storage and Recovery (GSR) Project operating agreement was signed to ensure long-term management and sustainability of the South Westside Groundwater Basin

through a strategic conjunctive use partnership. The partnership with the City, SFPUC, California Water Service (serving South San Francisco and Colma), and the City of Daly City allows the agencies to operate the basin jointly and provides a new 20-billion gallon regional dry-year groundwater supply. The project is included as part of a larger SFPUC Water Supply Improvement Program. The Regional GSR Project is an in-lieu groundwater recharge program that balances groundwater and RWS surface water supply to increase drought year water supplies. Each year, SFPUC will notify the City if SFPUC will be providing additional surface water supplies to offset the City's groundwater pumping. The City implemented the Regional GSR Project conjunctive use operations starting in 2016.

City of San Bruno

South Westside Basin Groundwater Management Plan

The South Westside Basin GWMP was completed in July 2012 by the City, in coordination with the City of Daly City, Cal Water, SFPUC, and other stakeholders. This GWMP was developed to provide a framework for regional groundwater management in the South Westside Basin that sustains the beneficial use of the groundwater resource. The goal of the GWMP is to ensure a sustainable, high-quality, reliable water supply at a fair price for beneficial uses achieved through local groundwater management. The GWMP provides steps for monitoring water quality and quantity in the basin. Each groundwater well in the basin has defined triggers for overdraft (more water is pumped out, then is naturally replenished), seawater intrusion, and various water quality measures. The GWMP identifies two levels of trigger thresholds for each groundwater well based on historical water levels, and actions to address the trigger that is met. The GWMP indicates that the South Westside Basin is not in overdraft, and that the City can sustain a groundwater production rate of 1.8 million gallons daily (MGD) on a long-term basis. While not anticipated, groundwater production could be limited if local monitoring wells detect overdraft is occurring in the vicinity of the City's wells.

Urban Water Management Plan and Water Shortage Contingency Plan

The City of San Bruno published its most recent Urban Water Management Plan (UWMP) in 2021. The UWMP is a foundational planning document and includes descriptions of historical and projected water demands and water supplies, and reliability over a more than 20-year planning horizon. This document also describes the actions the City is taking to promote water conservation, both by the City itself and affiliated agencies and includes a plan to address potential water supply shortages such as drought or other impacts to supply availability (the WSCP). The UWMP is updated every five years in accordance with State requirements under the Urban Water Management Planning Act and amendments (Division 6 Part 2.6 of the California Water Code [CWC] Sections 10610 – 10656).

The WSCP is used in the case of a water shortage event, such as a drought or supply interruption, and defines specific policies and actions that will be implemented at various shortage level scenarios. For example, implementing customer water budgets and surcharges, or restricting landscape irrigation to specific days and/or times. Consistent with DWR requirements, the WSCP includes six levels to address shortage conditions ranging from 10 percent or less to greater than 50 percent shortage.

Municipal Code

Title 10, Municipal Services, Chapter 10.16, Water Conservation, establishes water conservation regulations for the City. Chapter 10 highlights water conservation regulation, water shortage emergency declaration and regulations, water rationing regulations, and the enforcement and penalties for violation.

Future Conditions

Climate change is expected to affect the frequency and severity of future drought conditions in San Bruno. Please review the San Bruno Vulnerability Assessment Report for details.

ISSUE 9: EXTREME HEAT

General Overview

California guidance documents define extreme heat as temperatures that are hotter than 98 percent of the historical high temperatures for the area, as measured between April and October of 1961 to 1990. Days that reach this level are called extreme heat days. In San Bruno, extreme heat is a daytime temperature above 85.9 degrees Fahrenheit (°F), and a warm night is nighttime low of above 57.6°F. An event with five extreme heat days in a row is called a heat wave. Extreme heat affects community members' safety and increases community costs and energy generation as it continues. These events can also exacerbate wildfires and impact water supplies. High demand for power for air conditioning during extreme heat can stress and overwhelm the electrical grid, leading to brownouts or power loss. Extreme heat events may degrade the quality of roadways and railways, resulting in closures and travel delays.

Health impacts are the primary concern with these hazards, though economic and service impacts are also an issue. The Center for Disease Control and Prevention (CDC) recognizes extreme heat as a substantial public health concern. Historically, NOAA data indicates that extreme heat kills about 175 Americans annually, although this number has increased in recent years. From 2004 to 2018, studies by the U.S. Department of Health and Human Services indicate that there is an average of 702 deaths annually that are directly or indirectly linked to extreme heat. According to the California Climate Adaptation Strategy, heat waves have claimed more lives in California than all other declared disaster events combined.

Extreme heat events are dangerous because people exposed to extreme heat can suffer a number of heat-related illnesses, including heat cramps, heat exhaustion, and (most severely) heat stroke. Areas with lower extreme heat thresholds are not necessarily at lower risk, as persons and community assets used to cooler temperatures may be less prepared for extreme heat events.

Extreme temperatures can harm plants and animals that are not well adapted to these events, including natural ecosystems. Extreme heat can increase the temperature of water in lakes, streams, creeks, and other water bodies, especially during drought conditions when water levels are lower. In some cases, water temperatures may exceed comfortable levels for several plants and animals, causing ecological harm. Outdoor workers in construction or landscaping are also much more exposed to the elements than most people, so they are more susceptible to extreme heat conditions and the potential illnesses associated with extreme temperatures.

Indirectly, extreme heat puts more stress on power lines, causing them to run less efficiently. The heat also causes more demand for electricity (usually to run air conditioning units), and in combination with the stress on the power lines, may lead to brownouts and blackouts.

Secondary Hazards

During heat waves, the air becomes stagnant and traps emitted pollutants, often resulting in increases in surface ozone. Heat waves and drought also dry out vegetation and provide more fuel for wildfires whose smoke is a serious medical hazard.

Past Events

In 2022, a combination of heat advisories and an excessive heat warning was issued for parts of Monterey Bay and its near coastal valleys, the San Francisco Bay Shoreline, and Marin Coastal Mountains from September 4 through 8, along with a heat advisory for the Central Coast, San Francisco, and coastal North Bay on September 6. Several daily record high temperature records were shattered, along with a handful of monthly and all-time records. Reports of power outages, heat-related illnesses and deaths were received. Counties opened/operated one or more cooling centers to provide relief from the heat.

Table 8 lists some past extreme heat events in San Mateo County as recorded by NOAA in recent years.

Table 8: Selected Recent Extreme Heat Events

| Date | Description |
|-------------------|--|
| July 22, 2006 | High temperatures reached as high as 103°F with low temperatures at night only falling into the lower 70s. |
| May 17, 2009 | High pressure aloft centered over Reno, Nevada, along with weak offshore flow at the surface caused temperatures to rise to near 100°F in the inland valleys of north-central California. Temperatures rose into the upper 80s to mid-90s across the peninsula of the San Francisco Bay Area. High temperatures resulted in heat exhausted individuals, blown electric transformers, and power outages. |
| September 1, 2017 | A strong upper-level ridge brought widespread hot temperatures to the Bay Area. Numerous daily and monthly records were broken as well as a few record max temperatures. Three San Mateo County community members died over the weekend because of the heat. |
| June 10, 2019 | The combination of high pressure and strong offshore flow resulted in an early season heat wave across the Bay Area from June 9th to the 11th. Multiple daily records were broken across the region and multiple power outages were reported due to the heat. The heat wave across the region triggered power outages knocking out service to 57,000 people across nine counties over a two-day period. |
| August 19, 2020 | A prolonged and oppressive heat wave swept the Central Coast and Bay Area for almost a week from August 14th to August 19th with widespread record-breaking temperatures observed across the region. Multiple days of triple-digit temperatures afternoon highs were recorded inland with some coastal locations even reaching the mid-90s. |
| July 21, 2022 | A strong ridge of high pressure developed over the area, allowing temperatures to soar into the 90s to low 100s for all areas, except parts of the immediate coastline. A heat advisory was issued for all but coastal zones from late morning through the evening of June 21st. |
| September 6, 2022 | A strong ridge of high pressure encompassed the Western United States from September 1 through 8, leading to anomalously hot temperatures along the California coast. A combination of heat advisories and an excessive heat warning was issued for parts of Monterey Bay and its near coastal valleys, the San Francisco Bay Shoreline, and Marin Coastal Mountains from September 4 through 8, along with a heat advisory for the Central Coast, San Francisco, and coastal North Bay on September 6th. The heat wave shattered several daily record high temperature records, along with a handful of monthly and all-time records. There were also reports of power outages, heat related illnesses and deaths due to the high temperatures. |

Locally, since 2006, the city has historically experienced an average of four extreme heat days per year and 14 warm nights. Within recent years, extreme heat days have been most frequent in September.

Regulatory Framework

Title 11 (Buildings, Construction and Fire Protection) of the San Bruno Municipal Code, Chapter 11.07 (Green Building Code), contains provisions that can help reduce the impacts of high heat by requiring the development of energy-efficient and heat-resilient buildings. These standards are updated regularly, most recently on January 1, 2023.

Future Conditions

Climate change is expected to affect the frequency and severity of future extreme heat in San Bruno. Please review the San Bruno Vulnerability Assessment Report for details.

ISSUE 10: HAZARDOUS MATERIALS

General Overview

Hazardous materials are materials that pose a significant risk to public safety or human or environmental health. These include toxic chemicals, flammable or corrosive materials, petroleum products, and unstable or dangerously reactive materials. They can be released through human error, malfunctioning or broken equipment, or as an indirect consequence of other emergencies. Facilities that hold hazardous materials include hazardous waste storage and treatment facilities, laboratories, hospitals, water and wastewater treatment plants, waste management facilities, fueling stations, and automotive shops. The release of hazardous materials can occur as a result of natural hazard events such as earthquakes and other geologic hazards, floods, or severe weather. Hazardous materials can also be released accidentally during transportation, as a consequence of vehicle accidents.

A release or spill of hazardous materials could result in fire, explosion, toxic cloud, or direct contamination of water, people, and property. The effects may involve a local site or many square miles. The large-scale release of hazardous materials in combination with events such as flooding or severe weather can spread contaminants across a wide area and amplify the potential long-term impacts on human and ecological health. Health problems may be immediate, such as corrosive effects on skin and lungs, or gradual, such as the development of cancer from a carcinogen. Damage to property could range from immediate destruction by explosion to permanent contamination by a persistent hazardous material.

The use of hazardous materials in San Bruno occurs most often in its commercial and industrial areas, which is overseen by the San Bruno Fire Prevention Division. Uses that generate hazardous waste can include auto body shops, machine shops, and auto dismantlers. In cooperation with the San Francisco Bay Regional Water Quality Control Board (RWQCB) and the California Department of Toxic Substance Control, the San Mateo County Health Services Agency's Environmental Health Division coordinates investigation and remediation of sites that have been affected by leaking underground storage tanks or hazardous waste. Sites with potentially contaminated soil are largely clustered around industrial areas near El Camino Real.

In addition to the use of hazardous materials at current or former industrial sites, many older buildings may contain lead-based paint or asbestos. Asbestos and lead-based paint can seep into the soil or be released into the air, providing a potential threat to the health of workers, as well as persons in the vicinity. Asbestos cleanup is regulated by federal and State laws that include the Clean Air Act and California Occupational Safety and Health Administration (Cal-OSHA). Both the federal OSHA and Cal-OSHA regulate worker exposure during construction activities that affect lead-based paint, including demolition, removal, surface preparation for repainting, renovation, cleanup, and routine maintenance. All sites with existing structures built prior to the 1980s could be at risk for asbestos and lead-based paint contamination, and therefore require individual surveys.

The natural gas transmission pipelines throughout the city are owned by PG&E. The main transmission line runs along the length of SR-35 as it crosses the city before branching into two lines. One heads northeast along Glenview Drive and then turns east along Fleetwood Drive until it intersects with SR-280. The other line follows San Bruno Avenue West until it intersects SR-280, then turns north eventually exiting the city.

Past Events

On September 9, 2010, a PG&E-owned underground natural gas pipeline exploded in the Crestmoor residential neighborhood near Skyline Boulevard and San Bruno Avenue. The blast leveled structures and it took the combined efforts of some 200 firefighters, 25 fire engines, 4 air tankers, 2 air fire attack planes, and 1 helicopter to extinguish the fire. The blast left a crater 167 feet long, 26 feet wide, and approximately 40 feet deep. The USGS registered the explosion and resulting shock wave as a magnitude 1.1 earthquake. Eight people lost their lives, 51 people required in-patient hospitalization, and 38 homes were destroyed. PG&E estimated the property damage from the rupture to be over \$220 million.

The investigation into the probable cause of the explosion revealed that inadequate quality assurance and control allowed the installation of substandard and poorly welded pipe sections (built in 1956), which over time failed under increased pressure. At the time of the incident, pipeline integrity management programming and exemptions for pressure testing of existing pipelines from State and federal agencies contributed to the unsafe conditions that caused the incident.

In response, PG&E reduced their operating pressures by 20 percent, and was required to re-evaluate how it determines the maximum operating pressure for its extensive pipeline system (1,800 miles). PG&E was then required to report to the California Public Utilities Commission and demonstrate that their lines had been tested and proven to withstand current maximum operating pressure. According to PG&E, they will continue to improve the safety and reliability of its services and utilities to ensure the safety of their customers and their communities.

Smaller hazardous materials incidents (such as small gasoline or oil spillages) have historically occurred periodically in San Bruno. Eighty-five hazardous materials incidents have been reported in San Bruno since 2010. Most incidents took place in residences, on roads, at service stations, or in businesses. Generally, these incidents are confined to a small area, and are quickly contained and cleaned up, they do not pose a long-term threat to the health of community members or to the environment.

Regulatory Framework

In 1993, the Unified Hazardous Waste and Hazardous Materials Management Regulatory Program was established to protect public health and safety, restore and enhance environmental quality, and sustain

economic vitality. A Certified Unified Program Agency (CUPA) manages hazardous materials and waste at a local level. The CUPA consolidates, coordinates, and makes consistent the regulatory activities of several hazardous materials and hazardous waste programs, including Hazardous Materials Management, California Accidental Release Prevention, Hazardous Waste Management, Underground Storage Tanks, Aboveground Storage Tanks, and Emergency Response. In 1996, San Mateo County Environmental Health Services was designated by the State Secretary for Environmental Protection as the CUPA for San Mateo County. In addition, the San Bruno Fire Department also regulates hazardous materials use within the City.

A complete list of active and inactive hazardous waste regulated facilities is currently available on the County's Open Data site. This website is maintained by the California Environmental Protection Agency and includes activities related to hazardous materials and waste, State and federal cleanups, impacted ground and surface waters, and toxic materials.

Future Conditions

The frequency and severity of future hazardous materials releases in San Bruno will depend on the scale of future activities. Increases in the frequency and severity of other natural hazards, such as floods or landslides, can affect the frequency and severity of future hazardous materials releases.

ISSUE 11: AIRPORT HAZARDS

General Overview

Safety risks associated with airport operations comprise a distinct hazards category. Lands surrounding or near an airport have an increased risk of experiencing accidents involving aircraft.

San Francisco International Airport (SFO) is just east of San Bruno in unincorporated San Mateo County. SFO is an agency of the City and County of San Francisco, and the airport property is under San Francisco's jurisdiction. SFO is the largest airport in the San Francisco Bay Area and the second busiest in California. Northeastern portions of San Bruno are beneath flight tracks from arrivals and departures on two of SFO's runways, 10R-28L and 10L-28R.

Past Events

According to the SFO website, in 2022, 186-259 arrival flights and 1310-1717 departing flights flew over San Bruno on a monthly basis.¹¹ According to the National Transportation and Safety Board (NTSB) aviation action database, only three accidents have occurred in San Bruno (in 1967, 1968, and 1970), involving small planes with only one minor injury (1970) reported as a result.

Regulatory Framework

San Bruno Aircraft Noise Insulation Program

Since 1983, the Federal Aviation Administration (FAA) and the City and County of San Francisco Airports Commission, the owner and operator of SFO, have jointly funded local aircraft noise insulation projects in communities near the airport. The goal of these programs is to achieve an interior noise level of 45 decibels (dB) during an aircraft noise event, consistent with Title 24 noise standards. The Aircraft Noise Insulation Program includes all noise-impacted dwelling units within the 65 Community Noise Equivalent Level (CNEL) noise contour, as shown on the FAR Part 150 Noise Exposure Maps (NEMs).

Federal Aviation Administration

The FAA is the federal agency charged with regulating air commerce and achieving efficient use of navigable airspace. The FAA has established FAR Part 77 criteria, which are imaginary surfaces that extend outward from the end of each runway and define the maximum heights of structures within the airport vicinity. Permissible building heights are equal to the difference between the height of the horizontal plane (or imaginary surface of flight pattern) and the ground elevation above mean sea level.

San Francisco Airport /Community Roundtable.

The SFO/Community Roundtable is a voluntary committee to address community noise impacts from aircraft operations at SFO. It monitors a performance-based noise mitigation program implemented by airport staff, interprets community concerns, and attempts to achieve noise mitigation through a cooperative sharing of authority among the aviation industry, the FAA, SFO management, and local government. The SFO/Community Roundtable is the primary vehicle by which the City of San Bruno addresses environmental and social impacts of SFO on community members and businesses in San Bruno.

SFO is responsible for the noise impacts within the immediate vicinity of the airport. The primary mechanism for controlling airport hazards from SFO is the Airport Land Use Compatibility Plan for the Environs of San Francisco International Airport (ALUC). This document regulates aircraft noise, as well as building height, safety policies, and compatibility criteria for areas within the plan's jurisdictional boundary. Applicable City land use and development plans and ordinances are reviewed by the City/County Association of Governments Board of Directors, acting as the San Mateo County's Airport Land Use Commission, to ensure consistency.

Future Conditions

The frequency and severity of future airport hazards in San Bruno will depend on the scale of future activities.

ISSUE 12: HUMAN HEALTH HAZARDS

General Overview

Human health hazards are bacteria, viruses, parasites, and other organisms that can cause diseases and illness 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 mosquitos. 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. The severity of disease outbreaks varies. Transmission rates depend 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.

Past Events

San Mateo County, like the rest of the United States, was included in the March 2020 FEMA major disaster declaration for the COVID-19 coronavirus pandemic. As of winter 2023, approximately 62 cases of COVID-19 were reported in the county each day. As of July 2024, and the county has reported a total of 202,034

COVID-19 cases and 1,043 deaths since monitoring began in January 2020, according to data from the San Mateo County Health Office of Epidemiology & Evaluation.

San Mateo County also dealt with effects from the 1918 to 1920 Spanish flu pandemic. Camp Fremont, a military base in Menlo Park, reported the first death in September 1918. By December of that year, 131 community members had died of the flu.

San Mateo County Health received confirmation on April 1, 2016, from the California Department of Public Health (CDPH) that the first San Mateo County resident had tested positive for Zika virus. The individual was infected with Zika virus while traveling abroad fully recovered. There were 13 cases of Zika reported in the county in 2015 and 2016. No detections of West Nile virus occurred in San Mateo County in 2022. According to testing conducted by the San Mateo County Mosquito and Vector Control District, approximately 3 percent of San Mateo ticks carry the agent for Lyme disease.

Existing Programs and Regulations

San Mateo County Health provides health services, including vaccination clinics, disease testing, and emergency response support, to residents of San Mateo County. The San Mateo County Mosquito and Vector Control District is San Mateo County's community-based mosquito control program. This program uses several methods to help control the risk of disease in San Mateo County, including surveillance, prevention, and control of mosquito populations. The Health Alert Center for San Mateo County allows community members to view all alerts and emergencies put out by the County Health Department.

Contact tracing is a public health practice that health departments use to identify and notify people who have been exposed to someone with an infectious disease. Public health departments have used contact tracing for decades to fight the spread of infectious diseases like measles, tuberculosis, syphilis, and HIV.

There is not much warning time for health or pandemic events. The most commonly relied upon warning signal is the appearance of early cases of a disease within a population. The Health Alert Network is the CDC's primary method of sharing cleared information about urgent public health incidents with public information officers; federal, state, territorial, tribal, and local public health practitioners; clinicians; and public health laboratories. The Health Alert Network collaborates with federal, state, territorial, tribal, and city/county partners to develop protocols and stakeholder relationships to ensure a robust interoperable platform for the rapid distribution of public health information.

Future Conditions

Climate change is expected to affect the frequency and severity of future human health hazards in San Bruno. Please review the San Bruno Vulnerability Assessment Report for details.

CONCLUSION

This background report provides details on the issues that are discussed at a higher level in the City of San Bruno's Safety Element, serving as a foundation for associated goals, policies, and implementation actions. It is a technical appendix to the main Safety Element document. It is not necessary to be familiar with this background report to understand or use the Safety Element, but some readers may find this supplemental information helpful. This background report also contains information that is required by the California Government Code as part of the Safety Element, but which does not need to be included in the main Safety Element document.

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