GENERAL PLAN

SAFETY ELEMENT

This Safety Element incorporates the 2021 San Mateo County Multi-Jurisdictional Hazard Mitigation Plan. The Foster City Annex within this plan was adopted by the City on December 13, 2021. Information from the LHMP provides the basis for the local hazards, vulnerabilities, noise, and emergency preparedness discussions, goals, and policies within this element.

ADOPTED BY CITY COUNCIL ON

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CITY OF FOSTER CITY

SAFETY ELEMENT

REVISED 2023

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EXECUTIVE SUMMARY

A. CONDITIONS IN FOSTER CITY AND FOCUS OF THE SAFETY ELEMENT

Foster City aerial view

The City of Foster City is located in San Mateo County, California. Incorporated in 1971, the City is situated on the eastern shoreline of the San Francisco Peninsula between San Francisco and San Jose, east of U.S. 101. Originally designed as a "Planned Community" that is home to over 33,000 residents, the City has a character defined by nine residential neighborhoods supported by commercial centers and light industrial uses. Foster City covers approximately 20 sq. miles, of which 4 sq. miles include existing land and reclaimed marshland. The remaining area is comprised primarily of waters of the San Francisco Bay and Belmont Sloughs. With an elevation of approximately 7 ft above sea level, the city relies on a system of levees and sea walls to manage tidal and flood waters from both the Bay (east of the City) and Peninsula (west of the City).

The City faces several challenges to overall community safety, including seismic hazards, sea level rise, flooding (including dam inundation), climate change (extreme heat, drought), urban fires, and hazardous materials release. Since incorporation, the city has experienced several of these types of events. Looking into the future, several of these hazards could be further exacerbated by changing climatic conditions due to increased temperatures and changing precipitation patterns.

The Safety Element focuses on identifying public safety risks and creating a unique set of goals, policies, and implementation actions that address these risks. The Safety Element allows the City to address these conditions by reducing the impacts associated with these hazards or preventing hazardous conditions in the future. The Safety Element also addresses emergency evacuation in the City and creates policies designed to enhance and streamline the evacuation process during emergency events. This Safety Element is one component of the Foster City General Plan, which, once adopted, strives to align itself with other elements, as required by the California Government Code, including (1) Land Use and Circulation Element, (2) Housing Element, (3) Parks and Open Space Element, (4) Noise Element, and the (5) Conservation Element.

B. PURPOSE OF SAFETY ELEMENT

The Safety Element is one of seven mandatory elements of the General Plan. The principal purpose of the element is the identification of potential risks within the city that pose a threat to the community's welfare, public health, and overall safety. Recurrent updates to the Safety Element ensure that the goals, policies, and implementation actions remain relevant and responsive to the community's changing needs. **Table S-1** displays the California Government Code Section 65302(g)(1) requirements, which includes a list of safety concerns that should be examined in each Safety Element.

Table–S-1: Required Safety Element Hazards (CA Gov Code Section 65302(g)(1))

Hazard Topic	Location in the Element
Seismically Induced Surface Rupture	Not a significant hazard for Foster City
Ground Shaking*	Page 16-17 (Seismic Shaking)
Ground Failure*	Page 17
Subsidence	Not a significant hazard for Foster City
Liquefaction (areas with shallow groundwater [<50 feet]) *	Page 17
Slope Instability leading to Mudslides and Landslides	Not a significant hazard for Foster City
Other Geologic Hazards known to the legislative body	Not a significant hazard for Foster City
Flooding*	Page 23
Tsunami*	Page 20
Seiche	Not a significant hazard for Foster City
Dam Failure*	Pages 24, 26
Wildland Fires	Not a significant hazard for Foster City
Urban Fires*	Page 28
Climate Change*	Pages 31-32
Evacuation*	Appendix A
Other Seismic Hazards identified under Chapter 7.8 (commencing with Section 2690) of Division 2 of the Public Resources Code	
Hazards denoted by an (*) are potential hazards relevant to Foster City.	

Each Safety Element must also geographically identify each hazard's risk location and potential extent using a map. The hazards mapped in this element include flooding, dam inundation, seismic/ geologic hazards, and evacuation.

C. MOVING FORWARD

The City reaffirms the importance of protecting the community from potential natural hazard risks. The City's location and history with hazards make it likely that Foster City will experience risks from flooding, seismic, and geologic events in the future. Foster City can also expect some of these risks to be exacerbated as climate change accelerates. The Safety Element, in conjunction with the 2021 San Mateo County Multi-Jurisdictional Local Hazard Mitigation Plan, is the best avenue to understand and address natural hazard risks within the community of Foster City.

INTRODUCTION

A. PURPOSE

Foster City takes great pride in its responsibility to safeguard the well-being of its community members. Among other things, this includes adequately anticipating potential emergencies caused by natural and human-caused hazards and planning response strategies in the event of emergencies and disasters. This element provides the necessary context to understand the hazards that threaten the community and outlines policies and practices that take tangible steps toward ensuring the community's continued prosperity.

B. SCOPE

The Foster City Safety Element addresses the relevant planning hazards mandated by California Government Code Section 65302(g). Under state planning law, this element identifies and discusses the following hazards as they relate to the City:

- Seismic and geologic hazards such as seismic shaking, liquefaction, seiche, and tsunamis
- Urban fire hazards
- Flood hazards, including dam inundation
- Climate adaptation and resiliency strategies (addressing extreme weather and drought)

The element also identifies and addresses the following safety issues, as required by law:

- Disaster and emergency preparedness, including evacuation
- Hazardous materials and waste

C. ELEMENT ORGANIZATION

This element is organized to be consistent with the other General Plan Elements. The goals, policies, and implementation programs provide declarative statements about the City's approach to safety-related issues. A definition of these key terms is provided below:

Goal: A general statement of the desired community outcome. It is denoted as *Goal S-X* in this element.

Policy: Policies are actions a community will undertake to meet its goals. They are denoted as *Policy S-X.X* in this element.

Implementation Action/Programs: A list of recommended programs and future actions necessary to achieve the declared element goals and policies.

Many of the previous elements' policies have been incorporated into this element either as a new policy or an implementation action. Some previous goals and policies have been modified from the previous text language to ensure new goals, policies, and implementation actions meet City needs and best practice standards. Together, this element's goals, policies, and implementation actions/programs provide a framework for decision-making that promotes greater safety and resilience for the Foster City community.

D. CONSISTENCY WITH OTHER ELEMENTS

Integrating safety considerations throughout the General Plan creates a consistent framework that prioritizes the community's well-being. The Foster City Safety Element is an essential component of the General Plan and works in tandem with other elements to guide these efforts.

Land Use and Circulation

The Land Use and Circulation Element focuses on past, present, and future development issues affecting Foster City. The element guides the layout of the City's development patterns and transportation infrastructure that existing and proposed developments will rely upon. Understanding the natural and human-caused hazards that threaten a community can help reduce the possibility of disaster by avoiding the designation of sensitive land uses in hazard-prone areas. Several goals within the element focus on protecting and enhancing the community as part of the development and entitlement process. The circulation portions of the element identify enhancements to the transportation network to accommodate future traffic. Addressing these conditions may ensure adequate capacity during future evacuation events. Key policies that may address safety element issues include LUC D-11, LUC H-5a, LUC-L-10, and LUC-L-11.

Housing

The Housing Element is more closely associated with land use and incorporates many safety considerations into its goals and objectives. Building practices and codes addressed in the Housing Element contribute to community safety by improving the built environment's resiliency to natural and human-caused hazards. Additionally, the Housing Element can help identify vulnerable populations and inform the Safety Element to ensure proper protections are in place.

Parks and Open Space

The Parks and Open Space Element addresses the preservation of parks and open space within the City. By design, the open space areas of the City are primarily park spaces, which are intended to enhance residents' quality of life. With 429.4 acres for recreation (156 parklands, 212 waterways, 46.4 walkways/pedways, and 15 acres of satellite facilities from local schools), parks and open space play a key role in the community and provide valuable services to visitors and residents.

Noise

The Noise Element seeks to limit the community's exposure to excessive noise levels by identifying sources and acceptable thresholds for noise and establishing policies to ensure compatibility between land uses and the community's noise environment. It also provides a basis for comprehensive local programs to control and abate environmental noise and protect residents from excessive exposure.

Conservation

The Conservation Element addresses preserving and conserving natural resources in Foster City. In accordance with the City's vision, this element aims to (1) Preserve and Improve the Quality of Life within Existing Neighborhoods, (2) Assure the Proper Development of Undeveloped Property, and (3) Assure that Redevelopment of Developed or Underutilized Property Occurs in an Appropriate Manner. The key issues discussed in this element include human life-sustaining elements, wildlife habitat, and the recycling of renewable resources.

E. CONSISTENCY WITH LOCAL HAZARD MITIGATION PLAN

The 2021 San Mateo County Multi-jurisdictional Local Hazard Mitigation Plan (MJHMP) serves three primary purposes: 1) it provides a comprehensive analysis of the natural and human-caused hazards that threaten the City, with a focus on mitigation; 2) it keeps Foster City eligible to receive additional federal and state funding to assist with emergency response and recovery, as permitted by the federal Disaster Mitigation Act (DMA) of 2000 and California Government Code Sections 8685.9 and 65302.6; and 3) it complements the efforts undertaken by the Safety Element. The San Mateo County MJHMP complies with all requirements set forth under the federal Disaster Mitigation Act of 2000 and received approval from the Federal Emergency Management Agency (FEMA) in 2021. **Sections of the Safety Element are supplemented by the MJHMP, which is incorporated by reference in this element, as allowed by California Government Code Section 65302(g)**. To access the MJHMP, visit the City's website, Foster City's Local Hazard Mitigation Plan and Maps.

F. CONSISTENCY WITH AIRPORT LAND USE COMPATIBILITY PLANS

An Airport Land Use Compatibility Plan (ALUCP) is the primary document used by an airport land use commission to help promote compatibility between an airport and its surrounding environment. An ALUCP acts as a guide for the airport land use commission and local jurisdictions in safeguarding the general welfare of the public as the airport and the area surrounding the airport grows.

Airport planning boundaries define where height, noise, hazards, and safety standards, policies, and criteria are applied to certain proposed land use policy actions. ALUCP height standards for determining obstructions to air navigation are defined in Federal Aviation Regulations (FAR) Part 77, Objections Affecting Navigable Airspace. The FAR Part 77 criteria limit the location and height of structures both on and off airport property. The criteria are intended to prevent buildings and other objects from penetrating the airspace required for safe aircraft takeoffs and landings.

Foster City is located within two ALUCPs, as described below.

Comprehensive Airport Land Use Compatibility Plan for the Environs of San Francisco International Airport.

This ALUCP identifies portions of Foster City within Airport Influence Areas A and B. As described in the ALUCP, for Area A, a real estate disclosure is required. For areas of the city within Area B the Airport Land Use Commission (the C/CAG Board) would exercise its statutory duties to review proposed land use policy actions, including land development proposals. The real estate disclosure requirements would also be required.

The ALUCP also identifies a number of airspace protection policies to protect the navigable airspace around the airport for the safe and efficient operation of aircraft in flight that are applicable to Foster City:

- Policy AP-1 requires jurisdictions to notify sponsors of proposed projects to file Form 7460-1 with the Federal Aviation Administration (FAA) for any proposed project that may exceed the FAA notification height. Policy AP-1 also requires the local jurisdiction to consider FAA determination study findings as part of its review and decision on a proposed project.
- Policy AP-2 requires project sponsors to comply with the findings of FAA aeronautical studies with respect to any recommended alteration in building design, height, and marking and lighting to be consistent with the ALUCP.
- Policy AP-3 requires proposed projects to comply with structure height provisions outlined in the ALUCP including the critical aeronautical surfaces map and the heights determined by the FAA.
- Policy AP-4 requires proposed projects to undergo review for compatibility with other flight hazards as outlined in the policy, including but not limited to, sources of glare, dust, smoke, electrical interference, etc.

Comprehensive Airport Land Use Compatibility Plan for the Environs of San Carlos Airport.

This ALUCP identifies the entirety of Foster City as within one of two airport influence areas (AIAs) - Area A or Area B. Applicable policy requirements for projects located within these areas are described below:

Airport Influence Area Policy 1 – Real Estate Disclosure Area. Within Area A of the AIA the real estate disclosure requirements of state law apply. Section 11010 (b) (13) of the Business and

Professions Code requires people offering subdivided property for sale or lease to disclose the presence of all existing and planned airports within two miles of the property. The law requires that, if the property is within an "airport influence area" designated by an airport land use commission, the following statement must be included in the notice of intention to offer the property for sale:

Airport Influence Area Policy 2 – Policy/Project Referral Area. Within Area B of the AIA, the C/CAG Board shall exercise its statutory duties to review proposed land use policy actions, including new general plans, specific plans, zoning ordinances, plan amendments and rezonings, and land development proposals. The real estate disclosure requirements in Area A also apply in Area B. For the purposes of this policy, parcels along the edge of the Area B Boundary that are split by the boundary shall be considered as fully within Area B.

This ALUCP also identifies overflight policies for the San Carlos Airport. The overflight policies were recently amended and would be applicable to the project. The following is a description of the policy requirement:

Overflight Policy 2 – Overflight Notification Zone 2. All new residential development projects, other than additions and accessory dwelling units (ADUs), within the Overflight Notification Zone 2 shall incorporate a recorded overflight notification requirement as a condition of approval to provide a permanent form of overflight notification to all future property owners. The following statement must be included in the notice:

The ALUCP also identifies a number of airspace protection policies to protect the navigable airspace around the airport for the safe and efficient operation of aircraft in flight that are applicable to Foster City:

- Airspace Protection Policy 1 requires local jurisdictions to notify the FAA of proposals related to the construction of potentially hazardous structures and to evaluate proposed projects in accordance with the airspace protection policies identified in the ALUCP.
- Airspace Protection Policy 2 requires jurisdictions to notify sponsors of proposed projects to file Form 7460-1 with the FAA for any proposed project that may exceed the FAA notification height.
- Airspace Protection Policy 3 requires proposed project sponsors to comply with the findings of FAA aeronautical studies with respect to any recommended alterations in the building design and height and any recommended marking or lighting within the property project.
- Airspace Protection Policy 4 sets forth criteria for determining the acceptability of a project with respect to height.
- Airspace Protection Policy 5 requires projects to be compatible with the maximum building height as outlined in the policy.
- Airspace Protection Policy 6 requires proposed projects to undergo review for compatibility with other flight hazards as outlined in the policy, including but not limited to, sources of glare, dust, smoke, electrical interference, etc.

G. REGULATORY ENVIRONMENT

California Government Code 65302(g)(1)

California Government Code Section 65302(g)(1) establishes the legislative framework for California's safety elements. This framework consolidates the requirements from relevant federal and state agencies, ensuring that all cities comply with the numerous statutory mandates. These mandates include:

- As applicable, protect against significant risks related to earthquakes, tsunamis, seiches, dam failure, landslides, subsidence, flooding, and fires.
- Including maps of known seismic and other geologic hazards.
- Where applicable, address evacuation routes, military installations, peak-load water supply requirements, and minimum road widths and clearances around structures related to fire and geologic hazards.
- Identifying areas subject to flooding and wildfires.
- Avoid locating critical facilities within areas of high risk.
- Assessing the community's vulnerability to climate change.
- Include adaptation and resilience goals, policies, objectives, and implementation measures.

California Government Code Sections 8685.9 and 65302.6

California Government Code Section 8685.9 (also known as Assembly Bill 2140 or AB 2140) limits California's share of disaster relief funds paid out to local governments to 75 percent of the funds not paid for by federal disaster relief efforts. However, if the jurisdiction has adopted a valid hazard mitigation plan consistent with DMA 2000 and has incorporated the hazard mitigation plan into the jurisdiction's General Plan, the State may cover more than 75 percent of the remaining disaster relief costs. All cities and counties in California must prepare a General Plan, including a Safety Element that addresses various hazard conditions and other public safety issues. The Safety Element may be a standalone chapter or incorporated into another section as the community wishes. California Government Code Section 65302.6 indicates that a community may adopt an LHMP into its Safety Element as long as the LHMP meets applicable state requirements. This allows communities to use the LHMP to satisfy state requirements for Safety Elements. As the General Plan is an overarching long-term plan for community growth and development, incorporating the MJHMP into it creates a stronger mechanism for implementing the MJHMP.

The 2021 San Mateo County MJHMP and the Foster City Annex to this plan have been incorporated by reference in the Safety Element.

California Government Code 65302(g)(3) adopted through SB 1241 (2012)

California Government Code Section 65302(g)(3) requires the Safety Element to identify and update mapping, information, goals, and policies to address wildfire hazards. As part of this requirement, any jurisdiction that includes State Responsibility Areas or Very High Fire Hazard Severity Zones in the Local Responsibility Areas (LRA), as defined by the California Board of Forestry and Fire Protection (Board), is required to transmit the updated element to the Board for review and approval. Foster City does not have Very High Fire Hazard Severity Zones within the City limits and is not required to comply with these requirements.

California Government Code 65302(g)(4) adopted through SB 379 (2015)

California Government Code Section 65302(g)(4) requires the Safety Element to address potential impacts of climate change and develop potential strategies to adapt/mitigate these hazards. Analysis of these potential effects should rely on a jurisdiction's Local Hazard Mitigation Plan or an analysis that includes data and analysis from the State of California's Cal-Adapt website.

California Government Code 65302(g)(5) adopted through SB 99 (2019)

California Government Code Section 65302(g)(5) requires the Safety Element to identify evacuation constraints associated with residential developments, specifically focused on areas served by a single roadway.

California Government Code 65302.15(a) adopted through AB 747 (2020) and AB 1409 (2021)

California Government Code 65302.15(a) requires upon the next revision of a Local Hazard Mitigation Plan on or after January 1, 2022, or beginning on or before January 1, 2022, if a local jurisdiction has not adopted a local hazard mitigation plan, the safety element to be reviewed and updated as necessary to identify evacuation routes and their capacity, safety, and viability under a range of emergency scenarios. The bill would authorize a city or county that has adopted a local hazard mitigation plan, emergency operations plan, or other document that fulfills commensurate goals and objectives to use that information in the safety element to comply with this requirement by summarizing and incorporating by reference that other plan or document in the safety element. To comply with this requirement, the City has prepared the Foster City AB 747 Emergency Evacuation Assessment (Appendix A).

National Flood Insurance Program

The National Flood Insurance Program (NFIP) was created in 1968 to help communities adopt more effective floodplain management programs and regulations. The Federal Emergency Management Agency is responsible for implementing the NFIP and approves the floodplain management plans for participating cities and counties. Foster City participates in the NFIP and

uses Chapter 15.36 Floodplain Management Regulations of the Foster City Municipal Code to administer flood/stormwater management regulations throughout the City.

Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act (California Public Resources Code [PRC], Chapter 7.5, Section 2621-2699.6) was intended to reduce the risks associated with surface faults and requires that the designated State Geologist identify and map "Earthquake Fault Zones" around known active faults. Per PRC Section 2623 a, cities and counties shall require a geologic report defining and delineating any hazard of surface fault rupture before the approval of a project. If the jurisdiction finds no undue hazard of that kind exists, the geologic report on the hazard may be waived with the State Geologist's approval. For a list of project types, please refer to PRC Section 2621.6.

Seismic Hazards Mapping Act

The Seismic Hazards Mapping Act (California Public Resources Code, Chapter 7.8, Section 2690-2699.6) created a statewide seismic hazard mapping and technical advisory program in 1990 to help cities and counties more effectively address the effects of geologic and seismic hazards caused by earthquakes. Under PRC 2697, cities and counties shall require a geotechnical report defining and delineating any seismic hazard before approving a project located in a seismic hazard zone. If the jurisdiction finds that no undue hazard of this kind exists based on information resulting from studies conducted on sites near the project and of similar soil composition to the project site, the geotechnical report may be waived. After a report has been approved or a waiver granted, subsequent geotechnical reports shall not be required, provided that new geologic datum, or data, warranting further investigation is not recorded. Each jurisdiction shall submit one copy of each approved geotechnical report, including the mitigation measures to be taken, if any, to the State Geologist within 30 days of its approval of the report. For a list of project types, please refer to PRC Section 2693.

Cortese List

Government Code Section 65962.5 (typically referred to as the "Cortese List") identifies sites that require additional oversight during the local permitting process as well as compliance with the California Environmental Quality Act (CEQA). The list is generally a compilation of properties and businesses that generate, store, and/or have been impacted by the presence of hazardous materials/wastes. Many properties identified on this list may be undergoing corrective action, clean up, or abandoned and in need of these activities. The City regularly checks federal and state agencies that maintain this list to verify any locations within the City that contain these sites.

HAZARDS / TRENDS

A. EMERGENCY PREPAREDNESS

The ability to anticipate, evaluate, and mitigate potential risks posed by natural and human-caused hazards is paramount to a City's longevity. Although this element specifically addresses natural and human-caused hazards, emergency preparedness involves many more considerations beyond identifying the hazards themselves. The Emergency Preparedness section consolidates and briefly describes Foster City's hazard prevention and response strategies.

Police Services

Foster City Police Department and Officers

The Foster City Police Department (FCPD) is responsible for public safety and law enforcement within the City. The organizational structure of the FCPD was designed to create the most efficient system to accomplish its goals and mission while providing the best possible level of service to the public it serves. The FCPD is split into two divisions, the Administrative Division and the Patrol Division, each of which is commanded by a Captain, which in turn is overseen, administered, and managed by the Foster City Chief of Police.

Fire Services

San Mateo Consolidated Fire Department Station No. 28 and Engine.

Fire services and protection are provided by the San Mateo Consolidated Fire Department (SMCFD), which proudly serves the communities of Foster City, Belmont, and San Mateo. The Department is responsible for protecting people, property, and the environment from fire and hazardous materials exposure; providing emergency medical care; offering programs preparing citizens for emergencies; and providing non-

emergency services, including fire prevention, emergency preparedness, and other valuable services.

Emergency Management

Emergency Management is also provided by the Fire Department, which includes the Office of Emergency Services and the CERT Program. The Fire Department manages and maintains emergency plans and trains City staff and community members. The Fire Chief and City Manager coordinate planning, training, and preparation for response to major emergencies or natural disasters. The SMCFD also coordinates the volunteer-composed Community Emergency Response Team (CERT). CERT training educates the public about disaster preparedness for hazards that can impact their city, workplace, and neighborhoods and trains them in basic disaster response skills.

Preparedness (Emergency Operations Plan)

The Emergency Operations Plan (EOP) is primarily responsible for informing Foster City's emergency management strategies. These strategies are typically organized under four categories: mitigation, preparedness, response, and recovery. Preparedness activities focus on ensuring City Departments are adequately trained and prepared for future hazard events. A key element of preparedness is ensuring the City's Emergency Operations Center (EOC) is adequately supplied and staffed by trained personnel in the event of an emergency.

Foster City Police Department and the San Mateo Consolidated Fire Department working as a cohesive unit to offer aid to citizens in response after an automobile accident.

Response

Emergency response activities typically focus on actions necessary to save lives and prevent further property damage during an emergency/disaster. Many of these activities are conducted in tandem with the Foster City Police Department and the San Mateo Consolidated Fire Department's standard emergency response procedures. To guide response activities, the City will rely on the EOP and work closely with organizations such as CERT, which helps orchestrate internal and external communications, logistics, and assistance during large-scale emergencies. If City resources become overwhelmed, the City will request support through the Operational Area using automatic aid and mutual aid agreements currently in place. However, the City recognizes that mutual aid resources depend on availability and may be limited during a large regional incident. Therefore, consideration for strengthening self-sufficiency is a priority.

Recovery

Recovery activities typically occur after an emergency/disaster event. These activities focus on reestablishing services to any impacted areas, repairing and/or reconstructing damaged buildings and infrastructure, and aiding residents and businesses with permitting and approvals of building plans as part of the reconstruction process. Depending on the scale and type of incident, recovery could occur in specific community locations and/or require specialized expertise to address the issues created. Cleanup of hazardous wastes shall be considered part of the recovery process from a major disaster event (fire, flood, earthquake, tsunami) and is generally handled by the SMCFD.

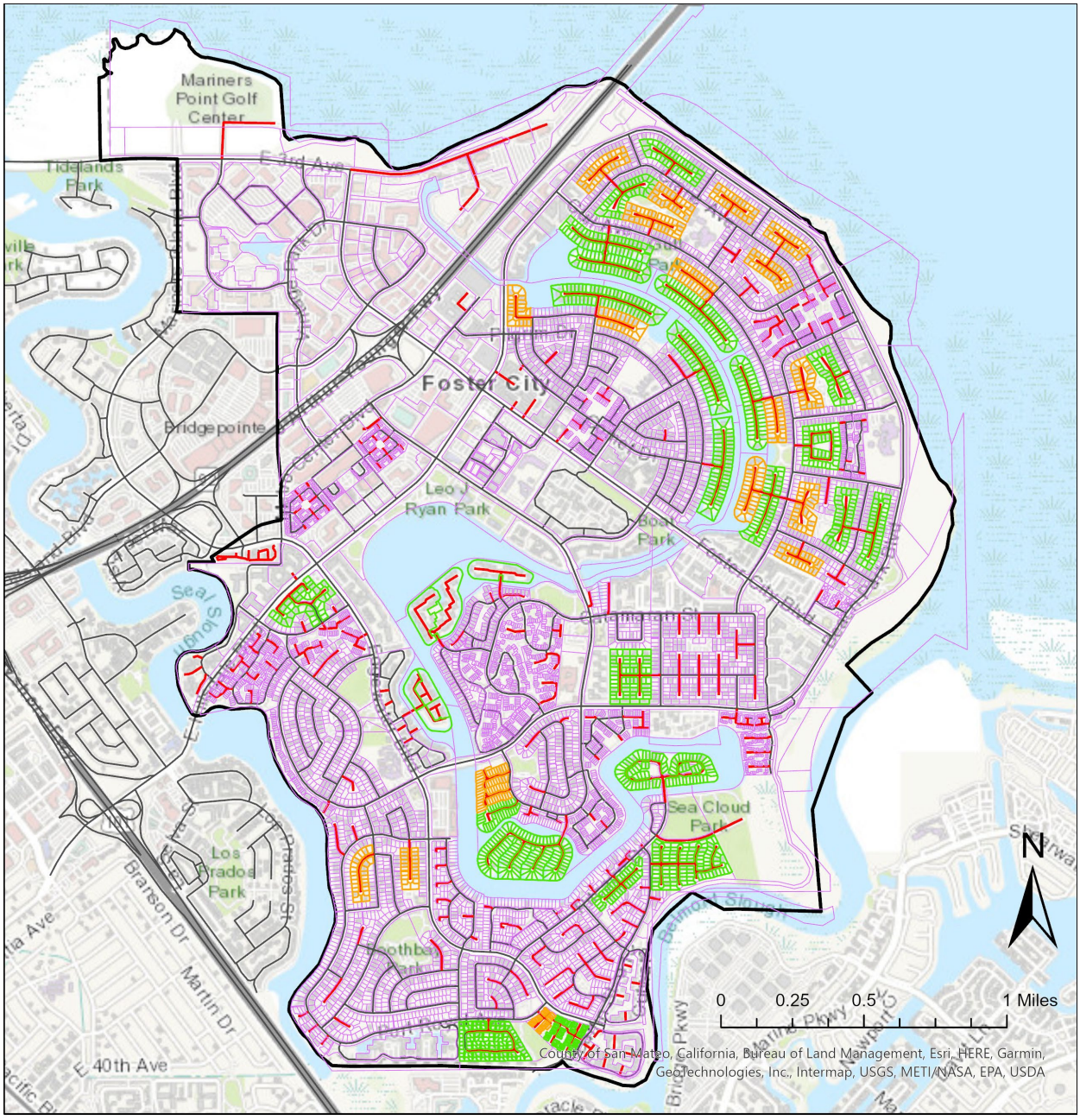
Mitigation

The EOP, in conjunction with the San Mateo County MJHMP, identifies and assesses the natural and human-caused hazards that threaten the City and recommends proactive policy and procedural actions that reduce the risks associated with these hazards. This preemptive planning is intended to decrease the probability of emergency situations and minimize the effects should one occur. Examples of hazard mitigation and prevention can be found in many city policies, but they are most prominently displayed in the numerous codes regulating construction and development in high-hazard areas.

Evacuation

As part of the City's preparedness initiatives, an Evacuation Analysis has been prepared that identifies the routes used for evacuation purposes. Given the geographical makeup of Foster City (considered an island according to the Land Use Element) and its unique infrastructure, the City already has limited egress and ingress routes, creating potential issues during evacuation scenarios. **Figure S-1** depicts the potential evacuation routes that could be used during a hazard event. These roadways are intended to meet evacuation needs; however, the City recognizes that some constraints may affect evacuation, namely the narrow roadways and bridges that allow access to many parts of the City, including many island neighborhoods bordering the lagoon. These locations may be vulnerable if failure or blockage occurs. Should any of these connections become compromised, a major portion of the City could become cut off, and traffic would need to be re-routed around the potential constraint. This could become further compounded should evacuation out of the City itself be required, as the ingress/egress routes into and out of the City are bridges spanning lagoons, sloughs, and the Bay. **Figure S-1** also identifies constrained roadways (single ingress/egress conditions) and parcels that use these roadways (constrained parcels). These constrained locations are required to be identified by California Government Code Section 65302(g)(5) [SB99]. The current Foster City Municipal Code prohibits dead-end roadways that exceed 600 feet in length.

FIGURE S-1 – SB 99 PARCELS



Legend

- Constrained Access Parcels
- Constrained Parcels of Concern
- Foster City Parcels
- Constrained Access Roadways
- Foster City Roadway Network
- Foster City Limits

GOAL S-1A: ENSURE THE CITY HAS AN EFFECTIVE EMERGENCY PREPAREDNESS AND RESPONSE PROGRAM.

Policies / Implementation Actions

S-1.1	**Ensure effective emergency response through established procedures, ongoing training programs, periodic exercises of the City's Emergency Operations Plan, and mutual aid agreements.** a. Maintain the City's Emergency Operations Plan, indicating responsibilities and procedures for responding to an emergency. b. Participate in general mutual-aid agreements and agreements with adjoining jurisdictions for cooperative response to fires, floods, earthquakes, and other disasters.
S-1.2	**Plan for and provide facilities and materials anticipated to be needed to respond to emergencies.** a. Maintain the local government's emergency operations center in a full functional state of readiness. b. As an infrastructure operator, designate a backup Emergency Operations Center with redundant communications systems. c. Pre-position emergency power generation capacity (or have generation rental/lease agreement for these generators) in critical buildings to maintain continuity of government and services. d. Ensure that critical intersection lights function following a loss of power by installing and maintaining battery back-ups and emergency generators. e. Develop a plan for speeding the repair and functional restoration of water and wastewater systems through stockpiling of shoring materials, temporary pumps, surface pipelines, portable hydrants, and other supplies. f. Provide emergency power at critical City facilities such as major sewer lift stations and lagoon pumps.
S-1.3	**Provide police services necessary to maintain community order and public safety.** a. Provide adequate personnel, training, and equipment to support the provision of police services. b. Review proposals for new and modified buildings for compliance with crime prevention requirements.
S-1.4	**Prepare a recovery framework (prior to a disaster event) to help guide actions and priorities during and after a disaster event occurs.** a. Prepare a recovery framework (prior to a disaster event) to help guide actions and priorities during and after a disaster event occurs. b. Consider and adopt regulations to guide response and recovery of City operations following a disaster event.
S-1.5	**Anticipate the potential for disasters and ensure the ability to respond promptly, efficiently, and effectively, to provide continuity of services during and after an emergency.**
S-1.6	**Minimize risks of potential hazards in the vicinity of SFO and San Carlos Airports.** a. Comply with the project referral, airspace protection, real estate transaction disclosure and overflight notification policies of the SFO and San Carlos ALUCPs

GOAL S-1B: EMPOWER RESIDENTS AND COMMUNITY GROUPS TO BE BETTER EDUCATED, PREPARED, AND SELF-RELIANT IN ORDER TO PROTECT THEMSELVES FROM HAZARDS THAT MAY AFFECT FOSTER CITY.

S-1.7	**Offer information and programs regarding emergency preparedness.** a. Continue to provide emergency preparedness classes and Community Emergency Response Team (CERT) training. b. Continue educating the public about emergency preparedness, including schools, businesses, and community groups.
S-1.8	**Offer information and programs regarding seismic and geologic hazards, potential effects on buildings, and ways to mitigate these risks.** a. Include seismic safety education in City public education programs. b. Assess non-structural seismic hazards as part of annual inspections of businesses. c. Work with homeowners' associations to educate the need for earthquake-resistant connections when pipes enter and exit bridges and encourage the retrofit of these facilities. d. Maintain a geotechnical report library at City Hall.
S-1.9	**Educate the Public about Fire Hazards.** a. Provide fire education/prevention programs to the public, including schools, businesses, and community groups, through publications, training classes, and other means.
S-1.10	**Educate the Public about Crime Prevention** a. Provide crime prevention programs to educate and involve the community, including but not limited to Neighborhood Watch, Apartment Watch, Business Watch, newsletters, security surveys, and programs with community groups and organizations.
S-1.11	**All new residential development projects other than additions and accessory dwelling units (ADUs) within Overflight Notification Zone 2 for the San Carlos Airport shall incorporate a recorded overflight notification requirement as a condition of approval pursuant to the San Carlos Comprehensive Airport Land Use Compatibility Plan for Environs of San Carlos Airport (San Carlos Airport Final ALUCP).**

GOAL S-1C: A COMMUNITY THAT CAN EASILY EVACUATE.

S-1.12	**Ensure adequate evacuation capacity and infrastructure is available for existing and new development.** a. Develop an Evacuation Master Plan that identifies routes, potential hazard incidents, and criteria regarding capacity, safety, and viability.
S-1.13	**In areas with inadequate access or without at least two evacuation routes, provide adequate mitigation actions to address the deficiencies required by the Fire Code and State law.** a. Identify existing and planned residential developments in hazard areas that do not have at least two emergency evacuation routes.
S-1.14	**Identify and map evacuation routes (primary and secondary), evacuation zones, and key constraints for use by emergency management staff and first responders.**

S-1.15	**Coordinate with Caltrans and the County of San Mateo regarding transportation-related projects that can address potential roadway network issues and constraints.**
S-1.16	**Prioritize roadway and storm drain infrastructure retrofitting and enhancement projects along primary evacuation routes.**
S-1.17	**Ensure all new development and redevelopment provides adequate ingress/egress for emergency access and evacuation.**
S-1.18	**Ensure all new developments and redevelopments include multiple points of ingress/egress.**
S-1.19	**Identify and construct additional evacuation routes in areas of high hazard concern or limited mobility.**
S-1.20	**Monitor changes to hazard conditions and vulnerabilities to ensure the accessibility or viability of evacuation routes in the future.**
S-1.21	**Develop an implementation program that identifies areas of the City with limited ingress/egress, limited circulation capacity, and/or critical infrastructure that could impact evacuation efforts.**
S-1.22	**Develop an education and outreach program on the potential evacuation scenarios and activities that residents and businesses can do to better prepare for these events.**
S-1.23	**Explore the feasibility of using boats as a potential vessel/vehicle to evacuate from islands should traditional/planned evacuation routes (bridges, causeways) become compromised in a major emergency event where evacuation is necessary.**
S-1.24	**Explore the feasibility of creating alternate or secondary routes out of the city in the event an emergency evacuation becomes necessary.** a. Identify potential emergency access connections along the city's southern portions and determine the need for reciprocating access agreements with property owners, homeowner associations, neighboring jurisdictions, and resource agencies to ensure emergency access connections can expand in these areas.

B. SEISMIC AND GEOLOGIC HAZARDS

Seismic and geologic hazards involve the movement of the Earth's surface. This section identifies four common seismic hazards that threaten Foster City and establishes policies and procedures to protect the community during an event. A key consideration for seismic hazards is the potential for cascading effects resulting from an event. When an earthquake occurs, the seismic shaking can cause natural gas and water/sewer pipelines to rupture, which can cause other impacts like flooding, erosion, or fires. The goals, policies, and actions throughout this element are designed to work together to reduce the individual and collective risk of these hazards.

Seismic Hazards

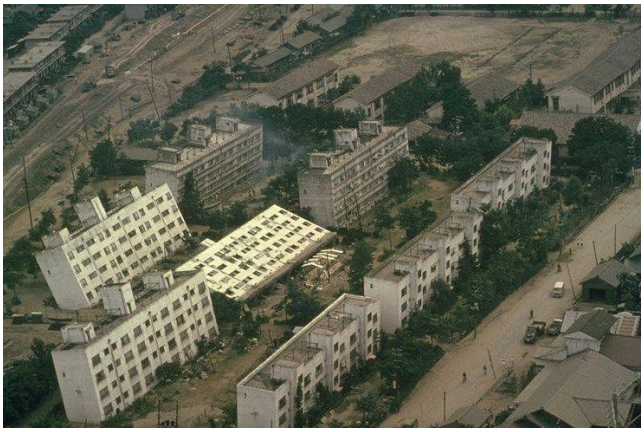
The Bay Area is a seismically active region that experiences earthquakes regularly. Foster City is prone to seismic hazards due to its location and proximity to active earthquake faults. These hazards can be characterized as follows:

Seismic Shaking

Seismic shaking is the recognizable movement caused by the energy released from an earthquake. The same mechanism that creates a surface rupture is also responsible for seismic shaking and can produce an equally devastating effect. Earthquakes may occur without surface rupture, which can still cause significant damage to buildings and other structures. Infrastructure such as roads, pipelines, and power lines are also susceptible to damage and pose additional safety concerns. Unlike surface rupture, seismic shaking consequences are not restricted to the area immediately surrounding the fault. Energy resonating through the ground can travel hundreds of miles and cause damage in many locations simultaneously. The closer to the earthquake's source (epicenter), the stronger the shaking.

Seismic shaking is of particular concern for Foster City due to its proximity to active and potentially active faults that can generate significant earthquakes. No Alquist-Priolo Special Study Zones, which identify active earthquake faults by the California Geological Survey, are within the City limits. However, the proximity to the San Andreas (approximately 5.7 miles southwest of the City) and the Hayward Faults (approximately 12.8 miles northwest of the City) increases the probability of severe lateral displacement and ground shaking should an earthquake occur. Other fault systems of concern to Foster City are the Butano fault (approximately 18.1 miles southwest of the city), the San Gregorio fault (approximately 12.4 miles to the west of the city), and the Monte Vista-Shannon fault (approximately 5.45 miles to the southwest of the city). **Figure S-2** identifies the locations of these fault systems and the Alquist-Priolo Special Study zones surrounding the City.

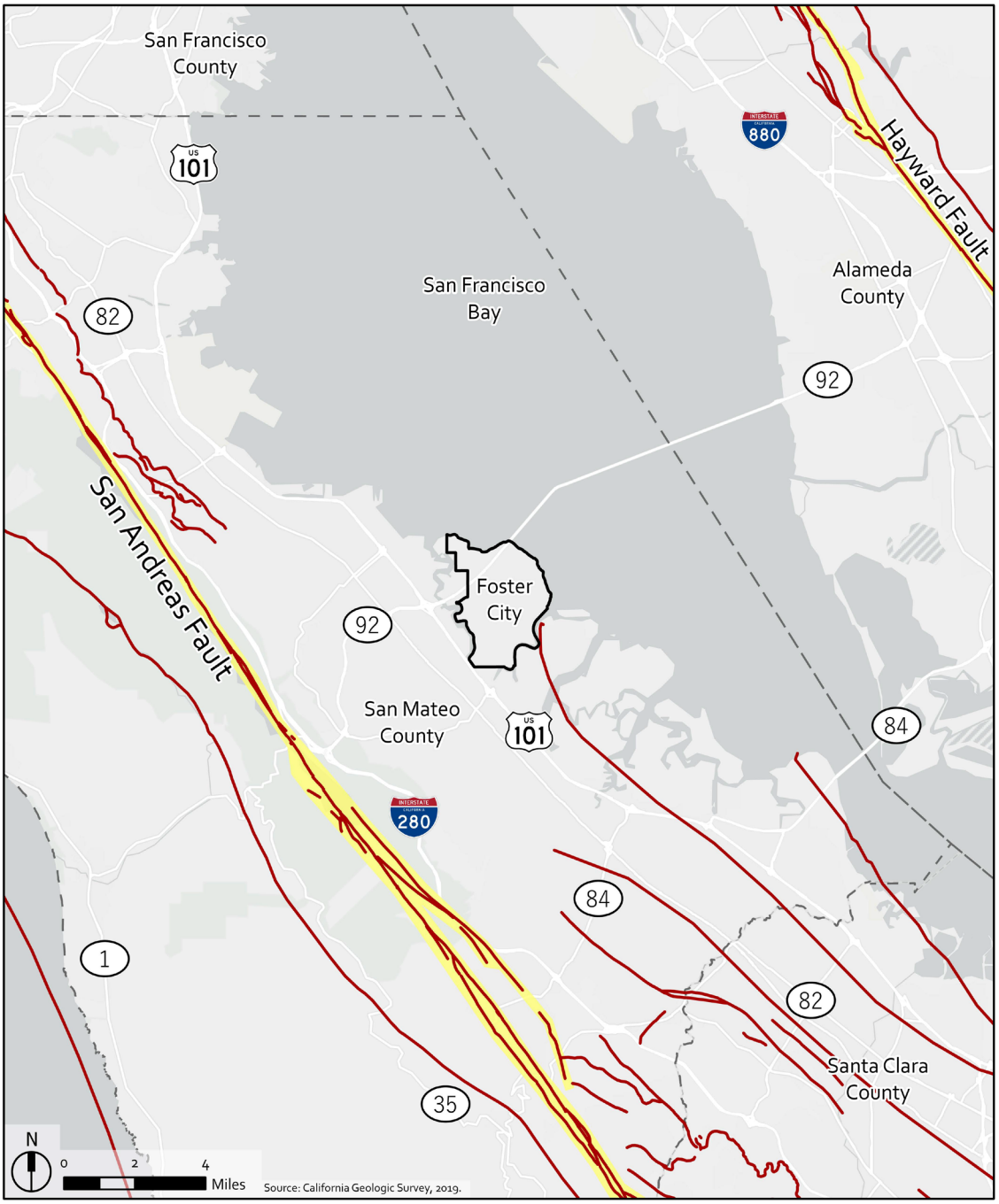
Liquefaction



Liquefaction during the 1964 Niigata Earthquake

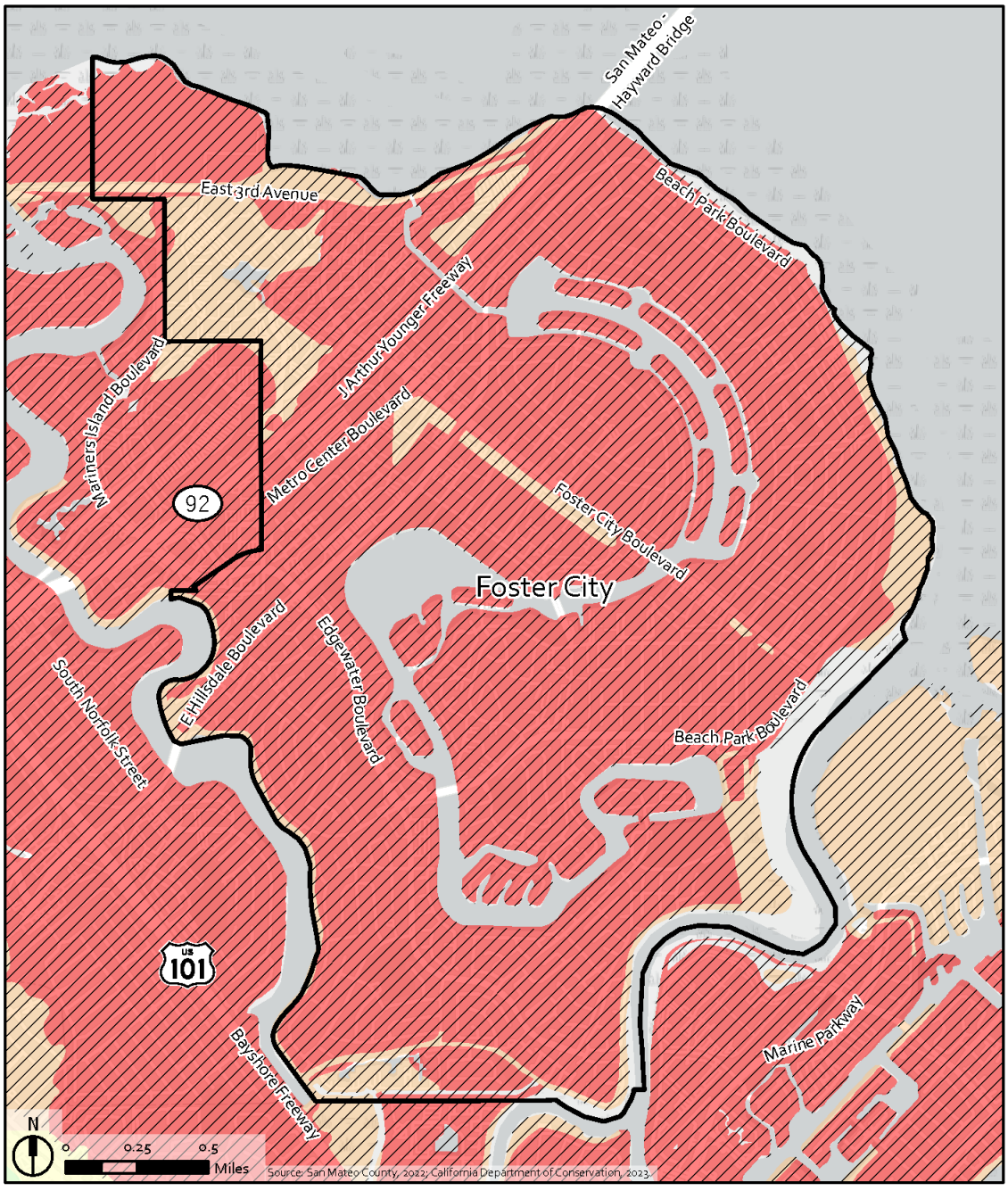
Liquefaction is a phenomenon that occurs when intense vibrations from an earthquake cause saturated soil to lose stability and act more like a liquid than a solid. This poses significant problems for buildings and other structures in areas where liquefaction can occur, as the ground may give way under the weight of the structure and its foundation. In addition, underground structures are vulnerable to liquefaction. Most of the city lies within the very high and medium liquefaction susceptibility zones. The conditions necessary for liquefaction to occur require the presence of water (surface or shallow groundwater) and loose fine-grained soils (sands and silts), and strong seismic shaking, which can lose structural integrity during an earthquake. **Figure S-3** depicts the areas of the city potentially susceptible to liquefaction.

FIGURE S-2: FAULTS / ALQUIST PRIOLO SPECIAL STUDY ZONES NEAR FOSTER CITY



Regional Faults

FIGURE S-3: LIQUEFACTION SUSCEPTIBILITY AREAS

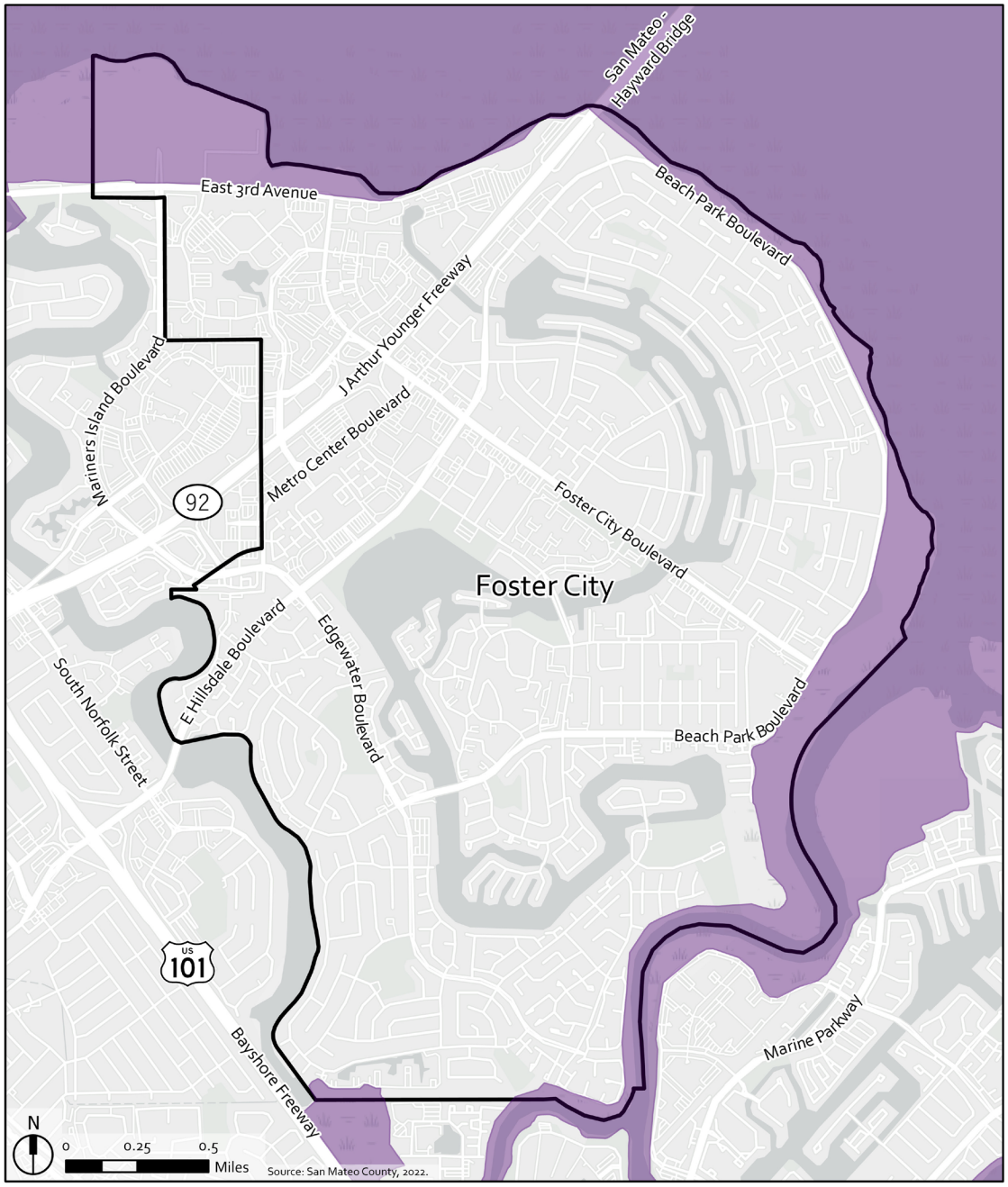


Tsunami

Tsunamis are giant waves caused by earthquakes, landslides, or volcanic eruptions under the water or along the shore. A large and sudden change in atmospheric pressure can also trigger a rare type of tsunami called a meteotsunami. Out in the depths of the ocean, tsunami waves do not dramatically increase in height. But as the waves travel towards land, they increase in height as the depth of the ocean decreases. The speed of tsunami waves depends on ocean depth rather than the distance from the source of the wave. Tsunami waves may travel as fast as jet planes over deep waters, only slowing down when reaching shallow waters. A seiche occurs when resonant wave oscillations form in an enclosed or semi-enclosed body of water such as a lake or bay. Seiches may be triggered by moderate or larger local submarine earthquakes and sometimes by large distant earthquakes. The greatest hazard is from the inflow and outflow of water, where strong currents and forces can erode foundations and sweep away structures and equipment.

Part of the danger of tsunamis is the ability to cause damage far away from the triggering event. Although tsunamis weaken as they travel and typically cause the most damage near the event's origin, large ones can retain enough energy to be destructive hundreds or thousands of miles away. According to tsunami inundation mapping completed by the California Office of Emergency Services (CalOES), areas outside the City's levee system are at the greatest risk. This includes the marshlands, tidal flats, and former bay margin lands that have been artificially filled but are still either at or below sea level. The San Francisco Bay itself is at minimal risk of tsunamis generated from local faults, as they move from side to side as opposed to up and down. The greater threat comes from tsunamis generated by large earthquakes in other areas of the Pacific Ocean. **Figure S-4** depicts the potential tsunami inundation areas that may impact the City (it should be noted that this map reflects hazard areas based on levee height before the Foster City Levee Project has been completed).

FIGURE S-4: FOSTER CITY TSUNAMI HAZARD AREAS



*Tsunami Hazard Area is based on the levee heights prior to the 2020-2023 Levee Improvements Project.

Tsunami Hazard Area

Foster City Safety Element Update

GOAL S-2: A COMMUNITY MORE RESILIENT TO SEISMIC AND GEOLOGIC HAZARDS.

Policies / Implementation Actions

S-2.1	**Protect the City's infrastructure and facilities from damage due to seismic and geologic hazards through proper design and retrofitting of older facilities to current standards.** a. Conduct assessments of key critical facilities (Police Department, Recreation Center, City Hall) and their use related to an earthquake to identify strategies to improve facility resilience, including determining the feasibility of retrofitting/ replacing the building. b. Implement recommendations for seismic upgrades to key critical infrastructure (pump stations, water storage tanks, etc.) c. Install specially engineered pipelines in areas subject to faulting, liquefaction, or other seismic/geologic hazards. d. Facilitate biannual inspections by the California Department of Transportation (CALTRANS) of City-owned bridges (Bicentennial, Foster City Boulevard, Rainbow, and Shell Boulevard) and incorporate needed improvements into the capital improvement program.
S-2.2	**Minimize injury, loss of life, property damage, and economic and social disruption caused by seismic and geologic hazards.**
S-2.3	**Require that new development be designed and built per the most recent California Building Code, with additional local requirements, as necessary, tailored to Foster City.** a. Develop an inventory of seismically vulnerable structures (unreinforced masonry, soft story construction, and non-ductile concrete). b. Require site-specific geotechnical and engineering reports (that include liquefaction analysis) for new structures, redevelopments, and major remodels. c. Develop a retrofit program and potential funding sources for seismically vulnerable structures. d. Adopt and enforce the most current uniform codes with additional local requirements as necessary tailored to Foster City.
S-2.4	**Encourage utility service providers to continue upgrading their facilities and infrastructure throughout the City to improve seismic/geologic resilience and survivability.**
S-2.5	**Locate essential and critical facilities (i.e., fire stations, hospitals, police stations, schools, and utility infrastructure), in areas of low seismic and geologic hazard risk, to the greatest extent feasible**
S-2.6	**Ensure planning, preparedness, and emergency response capabilities accommodate tsunami hazard events.**
S-2.7	**Review shoreline development policies that expose structures to wave attack or degrades natural means of shoreline protection in consultation with the OneShoreline Planning Guidance Policy.**

C. FLOOD HAZARDS

Lagoon dredging to remove sediment mitigate flood risk.

Flooding is caused by the accumulation of water on the ground surface. This typically occurs after heavy rainfall but can also result from water delivery/storage infrastructure failures such as pipes, storage containers, and dams/reservoirs. Worsening drought conditions caused by climate change may exacerbate the effects of flooding, as surfaces that typically absorb water can quickly dry out and become less permeable. Flooding presents dangers to people and structures alike. Standing water may be deep enough to cause drowning; even shallow water can easily damage buildings and property. Fast-moving water is hazardous, as it may sweep people or cars downstream or cause damage to structures.

Inland Flooding

Inland floods are a common result of coastal storms; they can also occur after rain falls for many days in a row. Often inland flooding can result from brief periods of intense precipitation that overwhelm infrastructure or result from damaged infrastructure (levee failure or storm drain overflows). When the volume of water on land overcomes the capacity of natural and built drainage systems to carry it away, inland flooding can result. Localized ponding can occur in low-lying areas within the city, especially if storm drain infrastructure or private drainages aren't properly maintained or sized large enough to convey the runoff.

Coastal Flooding

High tide coastal flooding in Foster City.

Coastal flooding normally occurs when low-lying land is submerged by seawater. The extent of coastal flooding is based on the floodwater elevation and the topography of the adjacent coastal land. The majority of the city borders either the San Francisco Bay or the Belmont/San Francisco Bay sloughs (a wetland, swamp, or shallow lake; that is often a backwater to a larger body of water like the San Francisco Bay). Foster City is protected from the Bay by a levee and sea walls owned and operated by the City. These improvements surround much of the city's outer bay-front perimeter, providing necessary flood protection. Foster City recently initiated a Levee Improvement Project designed to increase the height and width of the levee system to increase protection against storm/tidal surges and meet sea level rise projections through 2050 (See Climate Adaptation, Sea Level Rise for more detail).

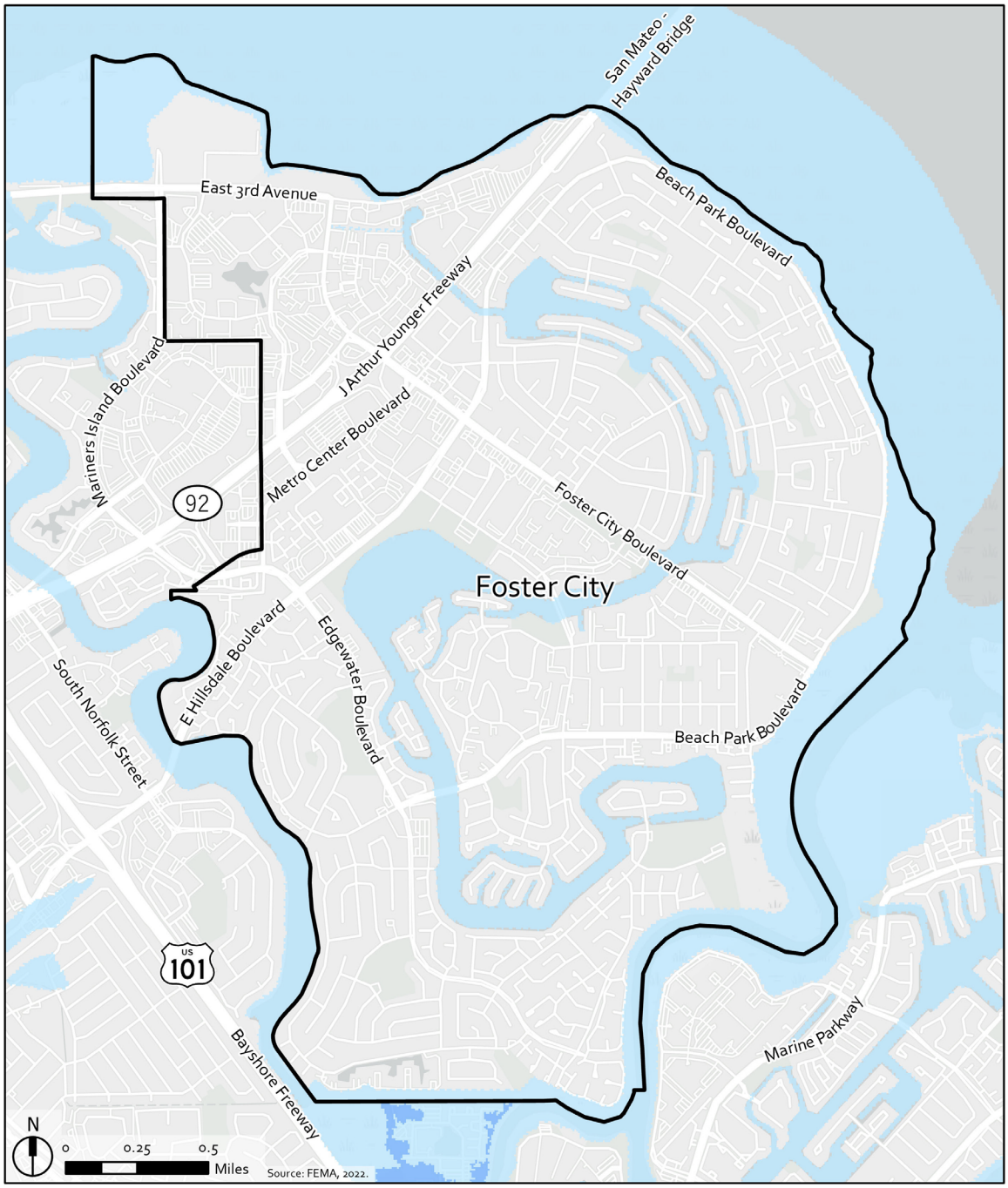
Figure S-5 depicts the FEMA flood hazard zones mapped within the City.

Dam Inundation

When dams designed to hold water fail, the body of water suddenly and abruptly moves downstream. These downstream areas can become inundated depending on how much water is behind the dam and the topography of these areas. The specific areas of land that would become flooded and covered with water resulting from a dam break are considered an "inundation zone." These downstream areas are typically much larger than the areas identified on flood maps because the volume of water released will often overwhelm any stormwater infrastructure in these areas. The Lower Crystal Springs Reservoir is the largest of the dams that affect San Mateo County and the only dam that could potentially inundate Foster City. The dam acts as part of the water system that brings water to the peninsula via San Mateo Creek and forms the Lower Crystal Springs Reservoir, which acts as a water supply for San Francisco and other cities in San Mateo County. **Figure S-6** depicts the potential inundation area associated with the failure of this dam.

Lower Crystal Springs Reservoir as viewed from the Sawyer Camp Trail.

FIGURE S-5: FEMA FLOOD HAZARD AREAS

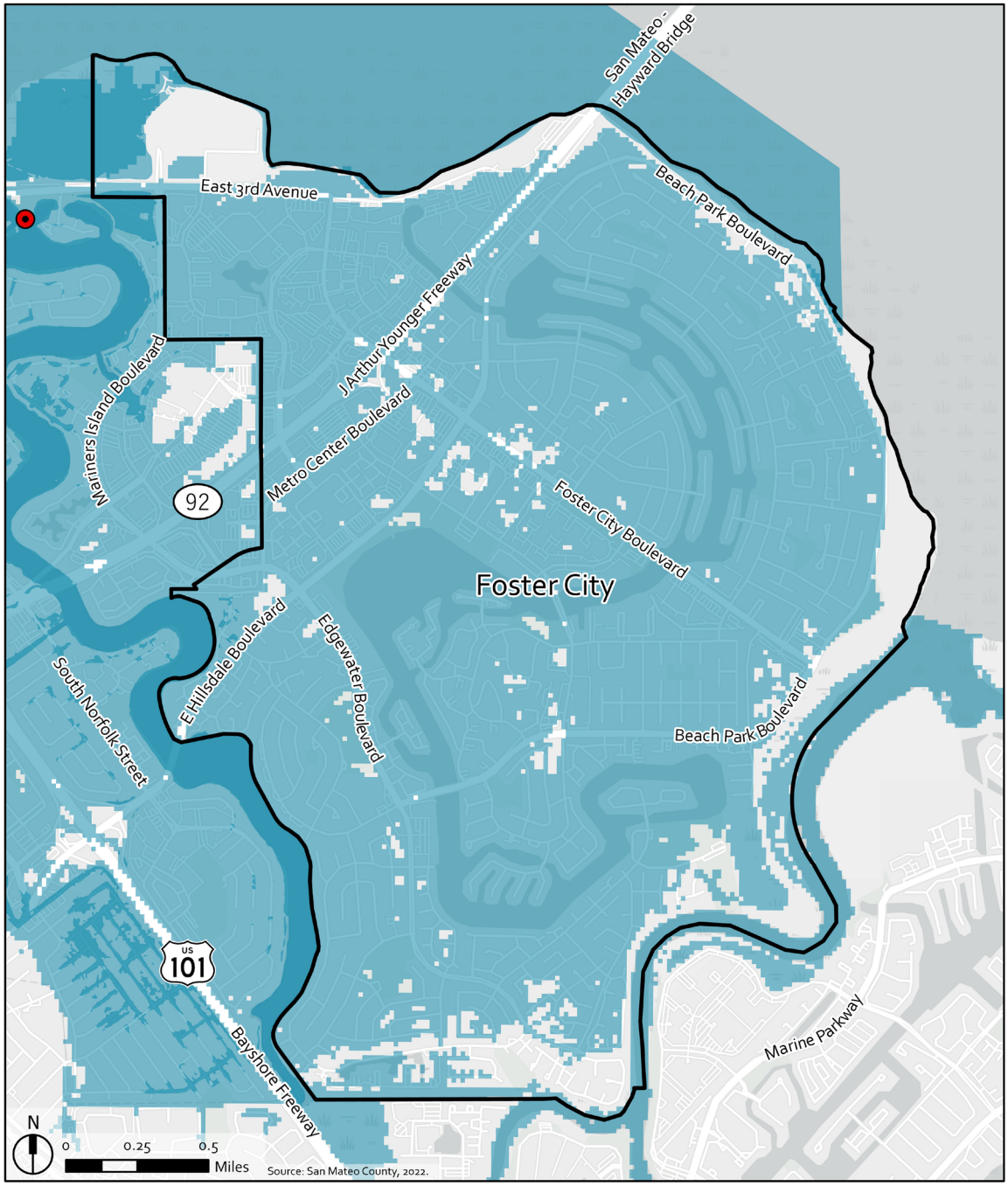


*Flood Hazard Area is based on the levee heights prior to the 2020-2023 Levee Improvements Project.

FEMA Flood Hazard Areas

Foster City Safety Element Update

FIGURE S-6: DAM FAILURE INUNDATION AREA



*Dam Failure Inundation Area is based on the levee heights prior to the 2020-2023 Levee Improvements Project.

Dam Failure Inundation Area

Foster City Safety Element Update

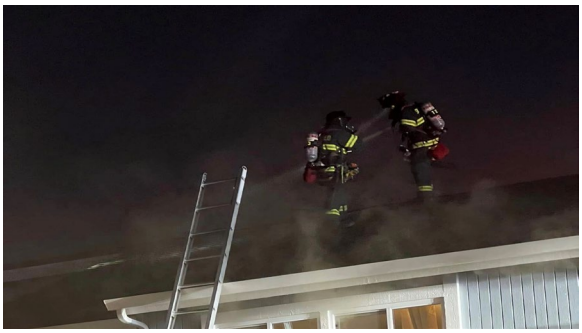
GOAL S-3: A COMMUNITY MORE RESILIENT TO INUNDATION RESULTING FROM FLOOD AND DAM FAILURE.

Policies / Implementation Actions

S-3.1	**Locate new essential public/critical facilities outside of FEMA flood hazard zones and dam inundation zones to the greatest extent feasible.** a. Evaluate proposed development within special flood hazard areas for conformance with the City's flood plain regulations as contained in Chapter 15.36 of the Foster City Municipal Code.
S-3.2	**Continue participation in FEMA's National Flood Insurance Program for affected properties.** a. Update the local floodplain management ordinance as necessary to ensure compliance with National Flood Insurance Program (NFIP) requirements pursuant to Title 44 of the Code of Federal Regulations (CFR).
S-3.3	**Protect and preserve natural features such as wetlands that serve as natural mitigation against the impacts of flooding.**
S-3.4	**Maintain and enhance the City's levees and lagoon system for flood protection.** a. Complete the Levee Improvements Project and continue to work with FEMA to maintain FEMA accreditation and protect the City against sea level rise. b. Maintain the City's levees and lagoon for flood protection pursuant to the "Operation and Maintenance Manual, Foster City Levees and Pump Station" and the "Lagoon Management Plan."
S-3.5	**Ensure data and information for flood hazards are readily available and up to date.** a. Monitor and periodically evaluate the community flood protection and evacuation plans to assist persons and property owners and protect properties from 100-year flood threats and dam inundation. b. Monitor and periodically update as required the following mapping and plans to maintain flood and dam inundation hazard resilience within the City: • Flood Insurance Rate Maps (FIRM) prepared by Federal Emergency Management Agency (FEMA). • Local Hazard Mitigation Plan (HMP) to include accurate information and data for all potential Flood Hazards. • Local maps showing areas that are subject to flooding and areas with a history of repeated flood damage.
S-3.6	**Require mitigation for new developments, redevelopments, or major remodels within flood and dam inundation zones to reduce future flooding or address evacuation needs.**

D. URBAN FIRE

Urban Fires



Firefighters on the roof of multi-unit residential structure on fire in Foster City

The possibility of an urban fire confronts every city. Many urban fires begin as isolated incidents caused by faulty electrical appliances, cooking mishaps, improper storage of chemicals, or industrial malfunction but can spread to other buildings if conditions permit. Buildings in the urban environment are more prone to fires that start inside or grow from a fire in a neighboring structure. Many factors contribute to an urban fire's severity and extent, but modern building codes and practices have helped reduce their effects. Many designs have been implemented to reduce urban fires, including fire sprinklers, which can extinguish small fires and reduce the speed at which large fires spread. Despite these improvements, it is important to acknowledge the risks associated with fires in urban areas. No matter its size, any fire can be fatal or cause people severe harm and can damage buildings and other structures. Foster City adopted stringent fire safety regulations for high-rise buildings (75 feet) and mid-rise buildings four or more stories in height (but below 75 feet) before they were required by later codes. The Fire Department annually conducts fire inspections on high-rise buildings to ensure effective risk reduction measures are implemented.

Open House at the San Mateo Consolidated Fire Department fire station.

One unique fire risk is the potential for fire following an earthquake. Natural gas pipelines that connect at the street or shifting gas appliances may break gas lines. Fires ignited by rupture gas lines or electrical failures may produce more ignitions than firefighters can respond to. Some jurisdictions have required the installation of automatic gas shut-off valves to reduce this risk, and improvements to the building code to reduce urban fire risk. These actions have the potential to reduce the impacts of fire following an earthquake.

Water Supply

The Estero Municipal Improvement District (EMID) provides water services in Foster City. According to the District's Urban Water Management Plan, adequate water supplies are available to meet existing and future customer demands within the city during normal years. However, as documented in Table 7-5 in the EMID 2020 Urban Water Management Plan, during single and

multiple dry years, EMID's total annual water demand is expected to exceed EMID's available water supplies from 2025 to 2045. This is especially important in ensuring adequate supplies are available for fire suppression needs. As a standard practice, new developments and major remodels are required to conduct water pressure/flow testing and mitigate issues if the supply is deemed inadequate in normal and dry years.

GOAL S-4: MINIMIZE THE LOSS OF LIFE, INJURIES, AND PROPERTY DAMAGE DUE TO FIRES.

S-4.1	**Minimize loss of life, injuries, and property damage due to fires by reviewing development proposals, public education, and maintenance of well-trained fire suppression personnel**. a. Review proposals for new and modified buildings to ensure that fire safety provisions are included as required by the most current uniform codes and local regulations. b. Conduct annual inspections of businesses and multi-family dwellings in order to ensure compliance with fire safety and hazardous materials requirements. c. Continue to provide inspections of residential care facilities at the request of the Department of Social Services. d. Require fire sprinklers in all new or substantially remodeled housing, regardless of distance from a fire station, to the extent allowed by State law. e. Establish ongoing maintenance and funding for vegetation management and brush clearance along city-maintained roads, open space areas, and waterways.
S-4.2	**Design community spaces to minimize pockets, peninsulas, or islands of flammable vegetation to reduce fire susceptibility.**
S-4.3	**Require all redevelopment after a fire to meet current Fire Prevention Code Standards.**
S-4.4	**Maintain access (ingress and egress) for fire apparatus vehicles along public streets for emergency equipment and evacuation.**
S-4.5	**Provide an adequate supply of water for daily use and emergency situations.** a. Maintain a water supply and delivery system that can meet potential firefighting demands through the annual exercise of fire hydrants and periodic review of storage needs. b. Study the adequacy of water storage and/or supply facilities. c. Ensure the adequacy of the water delivery system through periodic testing, flushing, and replacement of parts as needed. d. Continue to evaluate critical water supply transmission mains on an ongoing basis. e. Continue to evaluate the water pressure-reducing stations that reduce SFPUC's supply pressure to EMID system pressure. f. Provide and maintain consolidated remote monitoring capabilities for the water distribution, wastewater collection, and lagoon management systems that can be monitored 24 hours a day.

E. HAZARDOUS MATERIALS AND WASTE

Natural hazards are not the only threat to a community's safety. Human-caused dangers, such as various hazardous materials and wastes, are often found throughout a community and can pose significant risks. Generally speaking, hazardous materials are identified as toxic, flammable, explosive, corrosive, infectious, radioactive, or a combination of these characteristics. Hazardous wastes are categorized similarly but are identified separately from materials because they no longer serve a meaningful use.

In the Community

Although common household chemicals pose little threat to the community at large, hazardous materials and wastes used by businesses and industry present a greater risk. Mechanical dealerships, repair shops, gasoline and diesel fuel stations, and dry cleaners are examples of businesses that regularly use and store chemicals or other hazardous materials. Pipelines and tanks within the City also transport and store chemicals that could pose a risk if a failure occurs. These releases are anticipated to be isolated to properties where storage occurs. Releases also tend to involve transporting raw materials and their byproducts by pipeline or truck. Regulation of the use, storage, and transportation of hazardous materials and wastes rests on state and federal agencies; however, cities play a large role in minimizing the risks and impacts of exposure through careful planning and preparation. The City's main truck route includes State Route 92 (the J. Arthur Younger Freeway), which allows for transporting chemicals and materials into and out of the City from regional routes like US 101 and Interstate 880.

In the Home

Exposure to hazardous materials is not uncommon, as many household cleaning products contain chemicals that can harm both humans and the environment. However, proper use can largely avoid the health risks associated with these hazardous materials. Properly storing household cleaning products and other common hazardous materials, such as those used in automotive and home repair, is also an important component of responsible management. Following the manufacturer's instructions on the packaging and keeping products out of the reach of children are two simple steps that can help reduce the risk of exposure.

GOAL S-5: A COMMUNITY PROTECTED FROM EXPOSURE TO HAZARDOUS MATERIALS AND WASTES

Policies / Implementation Actions

S-5.1	**Protect the community from unreasonable risks associated with hazardous materials.**
S-5.2	**Continue to enforce applicable codes related to hazardous materials.**
S-5.3	**Restrict the transport of hazardous materials to identified truck routes throughout the City.**
S-5.4	**Commercial and industrial facilities shall be required to participate in a hazardous material and waste mitigation and response program.**
S-5.5	**Control the development of uses that store, transport, or dispose of hazardous materials pursuant to Chapter 8.07 of the Municipal Code.** a. Participate in San Mateo County hazardous waste reduction programs consistent with the San Mateo County Hazardous Waste Management Plan.
S-5.6	**Promote using non-toxic alternatives for cleaning and pest management in the home and yard.**

F. CLIMATE ADAPTATION

Climate Effects on Foster City

Although climate change is not a hazard, variations in environmental conditions can impact some of the natural hazards affecting Foster City. Projections of future conditions include increased temperatures, increased extreme heat days, changes in precipitation, sea level rise, more prolonged droughts, and changes in the size and frequency of wildfire incidents. **Table S-2** identifies the current/historical conditions and projected future conditions associated with climate change that could occur in Foster City.

Table S-2: Potential Climate Change effects for Foster City	
Historical/ Current Conditions	**Future Conditions**
Annual Mean Temperature (1961-1990)	Annual Mean Temperature (2070-2099)
69.3° F	**71.3° to 75.6° F**
Extreme Heat Days (92.9° F)	Extreme Heat Days (2070-2099)
3 days per year	**10 to 43 days per year**
Annual Mean Precipitation	Annual Mean Precipitation (2070-2099)
17.5 inches	**13.5 to 26.3 inches**
Source: https://cal-adapt.org/tools/local-climate-change-snapshot	

Climate-Related Hazards

Temperature

Increasing temperatures associated with climate change can act as a hazard multiplier. By the end of the century, annual mean temperatures are projected to increase between approximately 2 and 6.3 degrees, impacting City residents and businesses. These increases are also anticipated to increase the number of extreme heat days, from 3 days to between 10 and 43 days per year. These potential temperature increases may impact residents living in poorly insulated structures or structures that do not have adequate air conditioning. For residents living in these structures, temperatures above 85 (within the structure) may cause discomfort. By the end of the century, the number of days over this temperature threshold could be nearly 15 times what the City typically experiences.

While climate change is projected to exacerbate many of the hazards already affecting the City, many of these hazards may interact with each other. Increased temperatures can affect both water supplies and vegetation growth. With drier conditions, vegetation growth may be reduced, and soils may dry out, making them less capable of absorbing moisture. If this condition persists, areas of the City may be more prone to flooding if soils are less absorbent.

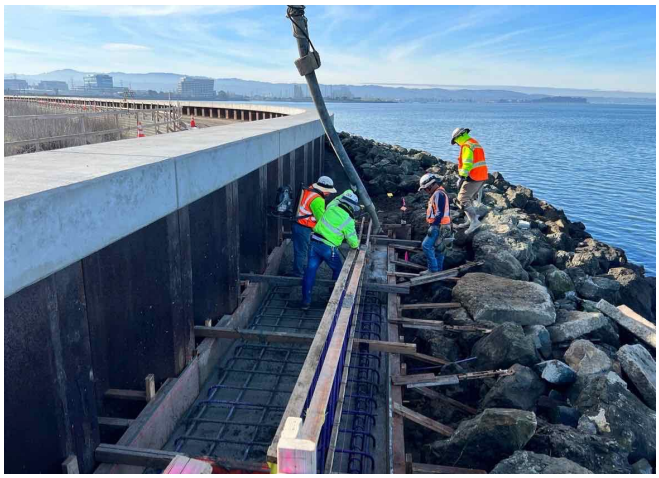
Precipitation

While temperatures are anticipated to increase in the coming decades, climate change projections suggest that annual mean precipitation may decrease or increase by several inches. While it is difficult to predict the exact amount of change in any given year, many projections anticipate that future rain events will become more intense, which could increase flooding in some locations. Recent events have generated rain totals of more than six inches in a single month, with 2.6 inches occurring during a 24-hour period. With changes in future precipitation, it is expected that changes to local vegetation may also occur, which could impact drainages and increase the need for flood management activities and drainage infrastructure in some areas. With future temperature increases coupled with fluctuating precipitation amounts, City services and infrastructure may require retrofitting if adequate capacity is not available.

Sea Level Rise

Sea level is the base level for measuring elevation. Hence, sea level rise is a climate change phenomenon through which the ocean water volume increases. Sea level rise is caused primarily by two contributing factors related to global warming: the addition of water from melting ice sheets and glaciers and the thermal expansion of seawater as it warms. Higher sea levels mean that storm surges can push farther inland than storms were able to before, leading to a potential increase in the frequency of nuisance flooding and greater destruction of property and structures. Sea level around the globe is increasing as a result of human-caused global warming activities, with recent rates being unprecedented over the past 2,000-plus years. With continued ocean and atmospheric warming, sea levels will likely rise for centuries at rates higher than the current century. In October 2020, Foster City began the Levee Improvements Project, which will raise the height of the levee system protecting the City from the ocean waters of the San Francisco Bay. This project not

Levee retaining wall under construction



Concrete being poured into newly reinforced levee and sea wall as part of the Levee Improvements Project.

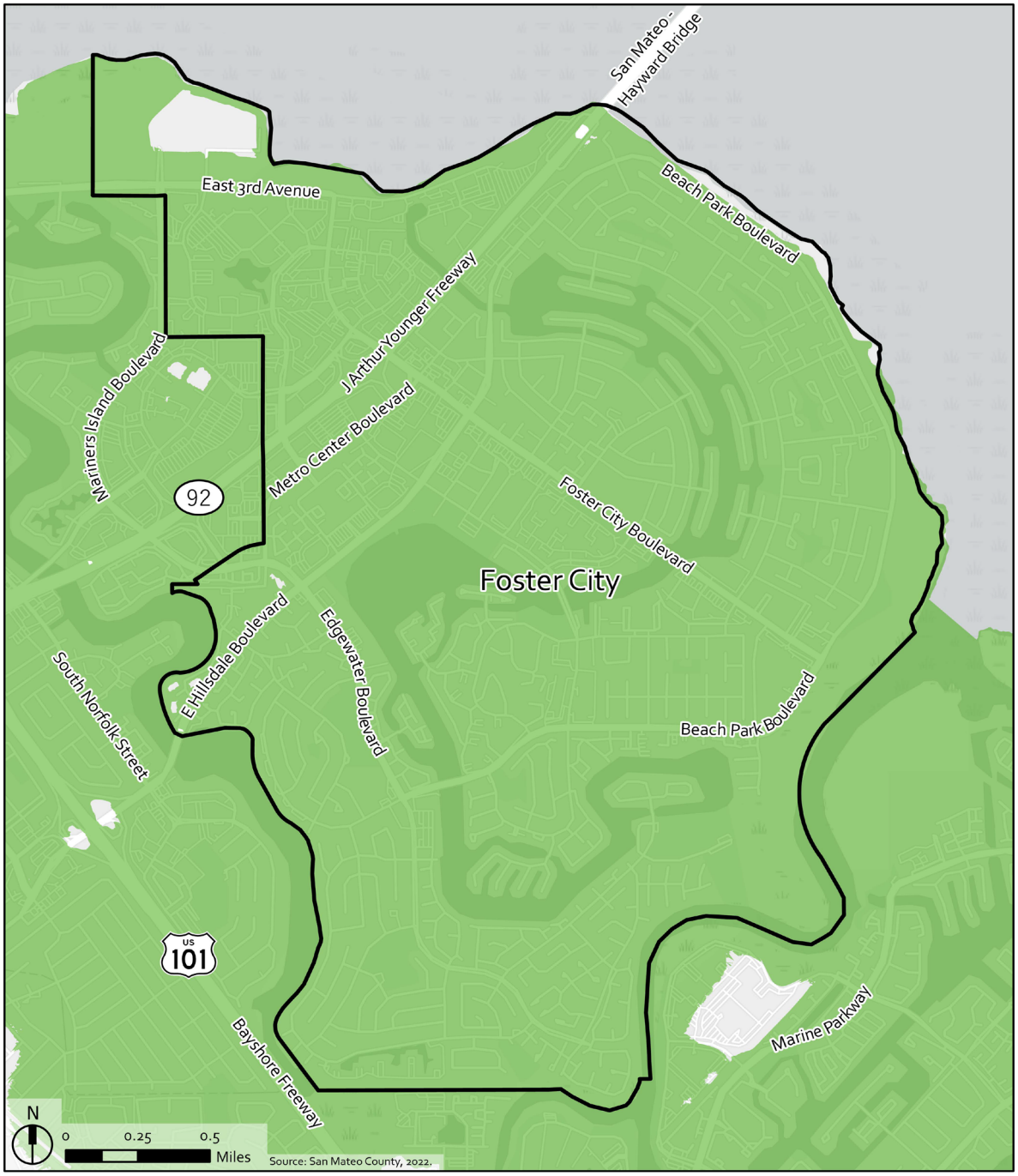
only protects the citizens and properties of Foster City, but also maintains FEMA accreditation. Scheduled for completion in January 2024, the improved levee system increases the protection afforded from sea level rise while simultaneously making the levee system more resistant to earthquake damage. **Figure S-7** identifies a worst-case scenario of 9 feet of sea level rise along the San Francisco Bay shoreline (It should be noted that this map reflects hazard areas based on levee height before the Foster City Levee Project has been completed).

GOAL S-6: A COMMUNITY PREPARED FOR FUTURE CLIMATE-RELATED IMPACTS.

Policies / Implementation Actions

S-6.1	**Prepare adaptation strategies that address sea level rise and other climate change-induced events.** a. Incorporate consideration of sea level rise into the development review and infrastructure planning processes, including response strategies that increase resilience to mid-century sea level rise risks for both new and existing development.
S-6.2	**Collaborate with local, regional, state, and/or federal jurisdictions and agencies on climate resiliency and adaptation strategies.** a. Develop a climate resiliency plan that integrates and builds upon the strategies identified in City, County, and regional climate action/adaptation efforts. b. Monitor climate change-related effects with local, regional, state, and/or federal partners to provide information about the effectiveness of existing infrastructure and programs. c. Coordinate with regional, state, and federal agencies to monitor the indicators and impacts of climate change. d. Monitor and integrate the findings of the following plans into the General Plan to maintain up-to-date information on climate adaptation resiliency: • The San Mateo County Sea Level Rise Vulnerability Assessment • The San Mateo County Multi-Jurisdictional Hazard Mitigation Plan • The San Mateo County Climate Action Plan – Climate Change Vulnerability Assessment • The Foster City Climate Action Plan

FIGURE S-7: SEA LEVEL RISE IN FOSTER CITY



*Inundation areas are a combination of Our Coast Our Future 200 cm (6.6 feet) of SLR with 100-year storm for the Pacific Ocean coastline, and Adapting to Rising Tides 108 inches (9 feet) of SLR for the San Francisco Bay coastline.

Sea Level Rise

Foster City Safety Element Update

APPENDIX

A. AB 747 EMERGENCY EVACUATION ASSESSMENT

FEHR PEERS

Draft Memorandum

Date: February 27, 2023

To: Marlene Subhashini and Thai-Chau Le, City of Foster City

From: Mike Hawkins and Terence Zhao, Fehr & Peers

Subject: Foster City AB 747 Emergency Evacuation Assessment

SF22-1249

Fehr & Peers has completed a general, programmatic assessment of emergency evacuation routes for the City of Foster City. This assessment is consistent with Assembly Bill 747 (AB 747) requirements. AB 747 is a recently adopted piece of state legislation relating to emergency access. It requires that the safety element be reviewed and updated to identify evacuation routes and their capacity, safety, and viability under a range of emergency scenarios. This is a requirement for all safety elements or updates to a Local Hazard Mitigation Plan (LMHP) completed after January of 2022.

This document is intended to provide an assessment of roadway capacity under a representative scenario of reasonably foreseeable evacuation conditions and should not be considered an evacuation plan. Please note that emergency evacuation can occur due to any number of events, that emergency events requiring evacuation are inherently unpredictable by nature, as is individual behavior related to evacuation events. For example, driver behavior can be disorderly; evacuation progress can proceed in a nonlinear fashion (for example, it is anticipated that evacuees would vacate at a rate that more closely resembles a bell curve from the time that the evacuation order is issued); and there is general unpredictability in operational issues, such as power issues that would trigger traffic signals to operate in "red flash mode" in which traffic would need to proceed through intersections in an all-way stop configuration. These are conditions which would affect the total evacuation time estimated in our assessment that are beyond the scope of our assessment. The City should develop evacuation contingency plans for other scenarios not described in this study.

As such, this assessment is intended to provide the City with a broad understanding of the capacity of the transportation system during an evacuation scenario; it does not provide a guarantee that evacuations will follow modeling that is used for analysis purposes, nor can it

guarantee that the findings are applicable to any or all situations. This document may be used to highlight where City staff may want to focus specific efforts to improve evacuation efficiency, such as through the recommendations provided in "Strategies to Reduce Evacuation Times".

Moreover, as emergency evacuation assessment is an emerging field, there is no established standard methodology. We have adopted existing methodologies in transportation planning that, in our knowledge and experience, we believe are the most appropriate within the limits presented by the tools and data available and the budgetary and time constraints in our scope of work, and by the current knowledge and state of the practice.

While this assessment should help the City better prepare for hazard-related events and the associated evacuations, the City should take care in planning for any potential evacuation scenario. Fehr & Peers cannot and does not guarantee the efficacy of any of the information used from this assessment as such would be beyond our professional duty and capability. We would be happy to conduct additional analyses in further detail, analyze different scenarios, or employ other methodologies, if desired.

Executive Summary

Given the inherent uncertainty associated with any evacuation scenario, emergency evacuation assessments must rely on representative evacuation scenarios developed from available studies and input from hazard experts. For the purposes of this analysis, a flooding event resulting from a failure at the Lower Crystal Springs Dam was selected as the representative evacuation scenario for this Emergency Evacuation Assessment. This event was selected based on the 2021 San Mateo *Multi-Jurisdictional Local Hazard Mitigation Plan (LHMP)*[1]and discussions with Foster City's emergency service providers because it includes several general features that are associated with a range of reasonably foreseeable evacuation scenarios.

This evacuation assessment is provided for two representative time periods: weekday night and weekday midday conditions. This provides information about evacuation conditions when the most residents are in Foster City (weekday night) and when the most workers are in Foster City (weekday midday) to provide a range of representative scenarios that Foster City can use to inform evacuation planning.

Foster City has a limited number of roadways that provide access in and out of the City and the total capacity for available evacuation routes is estimated to be just over 17,000 vehicles per hour. This representative scenario would require a full citywide evacuation, with different areas and evacuation routes becoming inaccessible between 1.5 and 6 hours. This study compares the cumulative evacuation vehicle demand to the available capacity of egress routes until the time that the evacuation routes are no longer passable. All evacuation links are assumed to be inaccessible after three hours, resulting in a total evacuation capacity of **36,125 vehicles.** The total future evacuation demand under these representative scenarios, including the build out of the current General Plan and 2023-2031 Housing Element, would range from **32,738 – 35,791 vehicles**. These vehicle demand estimates rely on conservative assumptions, such as that all households will evacuate all vehicles rather than leaving some behind, no residents or employees shelter in-place, and that 100 percent of employees drive alone and will evacuate alone in their own vehicle. Therefore, under this representative scenario, the roadway capacity would be adequate to accommodate the anticipated future vehicle demand. This memorandum presents a range of strategies that the City can take to increase the capacity of roadways (supply-side strategies) and reduce the vehicular demand to prepare for the range of evacuation scenarios that could arise.

[1] https://www.smcgov.org/media/53476/download?inline=

Representative Evacuation Scenario

Fehr & Peers and City staff worked together to identify evacuation scenarios appropriate for analysis in this context. The four highest risk categories for Foster City in the 2021 San Mateo *LHMP*, in order, are (1) Sea Level Rise/Climate Change, (2) Flooding, (3) Dam Failure, and (4) Earthquake. For the purposes of this analysis, a flooding event resulting from a failure at the Lower Crystal Springs Dam, located west of Foster City, was selected as the representative evacuation scenario for this Emergency Evacuation Assessment. This event was selected based on the LHMP and discussions with Foster City's emergency service providers because it includes several general features that are associated with a range of reasonably foreseeable evacuation scenarios:

- A high-risk scenario identified in the LHMP (per Table 9-12 of the LHMP) that would necessitate citywide evacuations, as opposed to a "shelter in place" response.
- A clear outcome that could be modeled based on available studies.
- The closure of several evacuation roadways and a change to roadway capacity over time, thus requiring emergency operators and the public to adapt to evolving circumstances.

As a result, the following scenarios were considered but ultimately not selected as the basis of this analysis because they would result in reduced evacuation traffic levels:

- A major earthquake event, considered independently of any major infrastructure failure, which was rejected as the default emergency response is to "shelter in place."
- A major earthquake event leading to major infrastructure failure, which was rejected as failure of infrastructure in the wake of an earthquake is unpredictable and results in similar outcomes (e.g., closure of evacuation routes and changing conditions over time), whereas a comparable scenario – the failure of the Lower Crystal Springs Dam – was considered a more defined scenario.
- Sea-level rise or other major inundation resulting from seawater, which was considered to be comparatively less likely given the City's recent efforts to make its coastline more resilient.
- A gas-related leak or explosion, which was ruled out due to the limited geographic nature of such events, as any such event would likely only require parts of the City to be evacuated.
- Wildfire, which is considered to be a low risk for the City of Foster City in the 2021 San

Mateo *Multijurisdictional Local Hazard Mitigation Plan*.

While the remainder of this analysis is based on assumptions associated with the representative scenario, the features of this representative scenario could apply to a wide range of evacuation scenarios, including other high-risk scenarios identified in the LHMP. Emergency scenarios that require evacuation are inherently difficult to predict and it is plausible that any number of scenarios may cause the need for an evacuation of part of or all of Foster City. It is also plausible that some combination of emergencies could occur that would put further strain on the transportation network. For example, an earthquake could cause a dam failure. For more information on other emergency scenarios, see the 2021 San Mateo *LHMP*. The recommendations presented in the "Strategies to Reduce Evacuation Times" are meant to help the City plan for a range of potential evacuation scenarios to increase the capacity of roadways during an evacuation (supply-side strategies) and reduce the vehicular demand.

The representative scenario is specifically defined as the results of inundation modeling by the San Francisco Public Utilities Commission, which operates the Dam, as part of its Lower Crystal Springs Dam Safety Program. This modeling is required by the California Department of Water Resources (DWR) under California Water Code section 6161, and the modeling results may be accessed via the DWR's website, under its Division of Safety of Dams (DSOD). While these inundation modeling results form the basis of the characteristics of the representative evacuation scenario, especially relating to the precise depth and movement of floodwater on the evacuation routes, the main assumptions of this scenario definition are generally summarized as follows:

- The Dam is assumed to fail on a sunny day.
- The floodwater that will impact Foster City will have flowed westward from the bayfront parts of the City of San Mateo, with floodwater reaching the western boundaries of Foster City between 1.5 and 2 hours after the initial failure of the Dam.
- The time at which the floodwater will reach other parts of Foster City varies – generally speaking, the areas lying west of Central Lake will see flooding by 3 to 4 hours following the initial failure of the Dam, while those areas lying east of Central Lake will see flooding by 5 to 6 hours following the initial failure of the Dam.
- The amount of floodwater expected to be present in Foster City varies by locations, with maximum flood depths ranging from less than 1ft in some areas to over 8ft in others. However, virtually all locations within Foster City are expected to be inundated in some fashion.
- Two evacuation time periods are used for the dam failure and flood scenario: weekday night and weekday midday conditions.

Although “shelter in place” is usually feasible for many emergency scenarios, such as floods or earthquakes, this evacuation analysis assumes a citywide evacuation to represent a true “stress test” of the City’s evacuation routes under the largest evacuation event with the highest demand for capacity possible. Therefore, no “shelter in place” is assumed, and all residents, employees and visitors are the subject of the evacuation order.

Evacuation Capacity and Demand

Evacuation assessment is an emerging field, and there is no established standard methodology. We have adopted a methodology in transportation planning that, in our knowledge and experience, we believe is the most appropriate. First we estimate the available capacity of egress routes until the time that they are no longer passable due to flooding (about 3 hours). Then we estimate the cumulative evacuation vehicle demand over that time period, and compare the two. We have completed this analysis for two time periods for future plus Housing Element 2023-2031 conditions. Finally, we break the data down by Traffic Analysis Zone (TAZ) and by time to inundation. A TAZ is an area delineated by local transportation officials for tabulating land use and traffic-related data in travel demand models, usually consisting of one or more census blocks, block groups, or census tracts.

Evacuation Roadways and Capacities

Foster City has a limited number of roadways that provide access in and out of the City. They are listed in **Table 1** alongside their capacities. The capacities, which are also used for this analysis, are based on those found in the C/CAG-VTA Travel Demand Model (the "Model"), last updated in 2020. Note that under a dam failure/flooding scenario, US 101 north of SR 92 is forecast to be flooded, requiring that the California Highway Patrol (CHP) divert traffic on US 101 north and south of Foster City to other routes (e.g., northbound US 101 to westbound SR 92 to I-280). The flooding across US 101 north of Foster City would also require that through trips on SR 92 would be diverted (e.g., eastbound trips on SR 92 to southbound US 101) or stopped (e.g., westbound trips on SR 92 stopped at the toll plaza). As through traffic would be stopped on SR 92 after evacuation orders are given due to the dam failure and flooding, the full capacity of SR 92 would be available for outbound Foster City evacuees under this scenario. This capacity analysis does not include use of any contra-flow lanes for outbound evacuees as inbound lanes may be needed for emergency vehicle access to supplement first responders located within Foster City.

It is expected that all of these roadways will become inaccessible at some point, which is represented by the floodwater advancement in the representative scenario. **Table 1** lists the estimated time for this to occur for each roadway. **Table 2** lists the estimated total amount of evacuation capacity available before all links become inaccessible. While the assumptions included in Tables 1 and 2 are based on the representative scenario as previously described, it is possible that other combinations of roadways may have reduced capacity or may be inaccessible under a range of emergency scenarios. For example, an earthquake could cause the San Mateo Bridge to be unusable. Therefore, the representative scenario presents information about evolving roadway capacities over time that can be used for a range of evacuation scenarios.

Table 1: Evacuation Roadways and Capacities

Evacuation Roadway	Capacity (vehicles/hour)	Expected Inundation Time (hours after initial dam failure)
Fashion Island Blvd	900	1 to 1.5
State Route 92 westbound	7,600	2 to 3 (access ramps)
State Route 92 eastbound	5,850	3 to 3.5 (Metro Center Blvd/Foster City Blvd ramps) 2 to 3 (all other access ramps)
Hillsdale Blvd	2,700	2 to 3
Links Total	**17,050**	All links inaccessible 3 hours after event

Table 2: Evacuation Capacity Over Time

Hours After Initial Dam Failure	Capacity (vehicles)	Notes
0 - 1	17,050	All roadways are available during this timeframe
1 - 2	16,150	Fashion Island Blvd not available during this timeframe
2 – 3	2,925	During this timeframe, only State Route 92 eastbound will likely be available via the Metro Center Blvd/Foster City Blvd ramps – the throughput is assumed to be at 50% of mainline capacity
Total Capacity	**36,125**	All links inaccessible 3 hours after event

East Third Avenue is a major arterial in the north of Foster City. However, flood modeling indicates that it is among the first locations within Foster City to be inaccessible, and it leads directly to areas that are modelled to be fully inaccessible before Foster City. Therefore, it is not available for evacuation use under this scenario.

Furthermore, the capacities of State Route 92 as shown represent their mainline capacities, and this analysis will assume that measures can be in place to manage and maximize traffic flow at ramps onto State Route 92 so that evacuation traffic can take full advantage of the full mainline capacities.

Evacuation Demand

The number of residents, anticipated vehicle ownership per household, and employees in Foster City were referenced to estimate the number of vehicles that would need to evacuate.

Residential and Employment Populations

Table 3 summarizes land use information at the TAZ level for all TAZs within Foster City using information for number of households and residents as well as number of employees found in the Cumulative (2040) scenario of the Model which has been adjusted to account for residential growth associated with the Housing Element 2023-2031. These numbers represent the best approximation of Foster City's future residential and employment populations, accounting for new developments, including a full build-out of developments contained within its General Plan and Housing Element 2023-2031 sites. The land use information from the Existing (2020) scenario of the Model are also shown in **Table 3** for reference and comparison, but they are not used as part of this analysis.

Evacuation Vehicle Demand

Table 4 summarizes census data from the 2016-2020 American Community Survey (ACS) 5-Year data on household vehicle ownership for Foster City census tracts. As shown, the vast majority of households in Foster City own either one or two vehicles, and that the total number of vehicles owned by households within Foster City averages to just under two vehicles per household.

Table 3: Residential and Employment Populations

TAZ	Cumulative (2040) Model Scenario Including Housing Element			Existing (2020) Model Scenario		
	Total Households	Total Population	Total Employment	Total Households	Total Population	Total Employment
1654	56	144	10,668	48	110	6,543
1612	3,412	8,065	1,370	889	1,995	839
1655	1,777	4,212	9,078	1,178	2,494	5,563
1966	1,295	3,106	296	977	2,550	182
1970	2,115	4,843	447	1,539	3,589	458
1971	1,386	3,957	473	1,380	3,590	218
1972	869	2,599	716	887	2,667	477
1973	3,602	8,581	455	1,535	4,147	224
1541	80	189	1,451	2	5	890
1967	1,420	4,087	999	1,342	3,691	818
1968	1,573	4,154	298	1,309	3,630	258
1969	1,827	4,560	263	1,352	3,463	337
Total	**19,412**	**48,496**	**26,514**	12,438	31,931	16,807

Source: C/CAG-VTA Model, 2020

Table 4: Household Vehicle Ownership

Census Tract	0 vehicle	1 vehicle	2 vehicles	3 vehicles	4 or more vehicles	Sum
6081608001	31	579	561	126	65	1,362
6081608002	16	369	613	247	62	1,307
6081608013	45	356	745	139	74	1,359
6081608023	20	162	414	85	119	800
6081608024	62	372	488	141	120	1,183
6081608025	208	1,006	887	144	30	2,275
6081608100	92	324	605	190	103	1,314
6081608200	42	386	616	243	87	1,374
6081608300	59	416	487	225	82	1,269
Total Households	575	3,970	5,416	1,540	742	12,243
% of Households	5%	32%	44%	13%	6%	-
Total Vehicles	0	3,970	10,832	4,620	2,968	**22,390**
					Average Vehicles per Household	**1.83**

Source : 2016-2020 ACS 5-year data

Evacuation Demand Assumptions

This section synthesizes population and vehicle ownership assumptions to calculate total vehicle demand according to the timing of evacuations, roughly broken into two evacuation possibilities.

Weekday Night

The first time period is an evacuation occurring during the late night hours on a weeknight, when it is assumed that the employment population will be mostly absent, but the entire residential population will be present. While the majority of employment in Foster City is office/life science employment, we assume that ten percent of retail employment is working an overnight shift and would all need to evacuate. Residential assumptions are the most conservative possible: it assumes that every household in Foster City is occupied and will take every vehicle they own with them as part of the evacuation.

As the total numbers of residents and households used for this analysis are estimated 2040 land use forecasts from the C/CAG Model, they are larger than the Census vehicle ownership data that is based on current population numbers. To identify total auto ownership levels for 2040, the proportional allocation of households by vehicle ownership levels in the census data are applied to the model population figures using the current percentage distribution of household vehicle ownership. This calculation is shown in **Table 5**.

Table 5: Household Vehicle Ownership for Model Cumulative (2040) Scenario

Scenario	0 vehicle	1 vehicle	2 vehicles	3 vehicles	4 or more vehicles	Sum
Total Households (Census figures)	575	3,970	5,416	1,540	742	12,243
% Breakdown of Households by Vehicle Ownership	5%	32%	44%	13%	6%	-
Households by Vehicle Ownership (extrapolated Using Census Household vehicle ownership breakdowns and household figures from Model Cumulative scenario)	912	6,295	8,587	2,442	1,176	19,412
Total Vehicles (Model Cumulative scenario)	0	6,295	17,175	7,325	4,706	**35,501**

Source: 2016-2020 ACS 5-year data, C/CAG-VTA Model

Weekday Midday

The second time period is an evacuation occurring in the middle of a workday, when the residential population of Foster City is much smaller than during a weekday night as residents are outside Foster City at their jobs or for other reasons, but the employment population would be present in full numbers. For this analysis, two population profiles for an evacuation of this type are considered:

- The first population profile is the more conservative –at time of evacuation, 100 percent of the employment population will be present at work, and 100 percent of those workers will have driven alone to work in their personal vehicle and evacuate with that vehicle; a number of Foster City residents are at home at the time of evacuation – specifically, 25 percent of the total residential evacuation demand will also be present.
- The second population profile has a slightly lower evacuation profile that is more consistent with home-based-work mode share profiles for Foster City employee commutes, but still conservative – 100 percent of workers are at their local place of work, but 90 percent are auto drivers – that is, 10 percent of workers will have either been part of a carpool or used some other means of getting to work.

Table 6 shows a summary of estimated evacuation demand for each of the time periods analyzed and for the two weekday population profiles. It also groups the TAZs by approximate inundation time based on the dam inundation mapping by the San Francisco Public Utilities Commission. Capacities of outbound roadway links, as presented in **Table 1**, are replicated for reference and

comparison. As shown, the evacuation demand (32,738 – 35,791) is lower than the evacuation capacity (36,125) in all three sets of assumptions.

Table 6: Summary of Estimated Evacuation Demand

TAZ	Expected Inundation (hours after initial dam failure)	Total Households	Total Population	Total Employment	Weekday Night	Weekday Midday - All Employees Drive Alone	Weekday Midday - 90% of Employees Drive Alone
1654	2	56	144	10,668	192	10,694	9,627
1655	3	1,777	4,212	9,078	3,355	9,890	8,983
1966	3	1,295	3,106	296	2,369	888	858
1541	3	80	189	1,451	161	1,488	1,342
1612	3+	3,412	8,065	1,370	6,241	2,930	2,793
1972	3+	869	2,599	716	1,614	1,113	1,042
1968	3+	1,573	4,154	298	2,880	1,017	987
1970	3+	2,115	4,843	447	3,877	1,414	1,369
1971	3+	1,386	3,957	473	2,551	1,107	1,059
1973	3+	3,602	8,581	455	6,601	2,102	2,056
1967	3+	1,420	4,087	999	2,605	1,648	1,548
1969	3+	1,827	4,560	263	3,344	1,098	1,072
Total for areas inaccessible by hour 2		56	144	10,668	192	10,694	9,627
Total for areas inaccessible by hour 3		3,152	7,507	10,825	5,885	12,266	11,184
Total for areas not inaccessible by hour 3		16,204	40,845	5,021	29,714	12,429	11,927
Total		19,412	48,496	26,514	**35,791**	**35,389**	**32,738**

Potential Future Evacuation Planning

As the total evacuation demand levels for a full city-wide evacuation under a dam failure/flood scenario during two time periods are near capacity levels, it is recommended that the City of Foster City and the San Mateo Consolidated Fire Department, Office of Emergency Services continue to collaborate with the San Mateo County Department of Emergency Management (SMC DEM) to create a Working Group of interagency partners to develop a detailed Evacuation Plan to address a citywide evacuation. It is anticipated that interagency partners may include City staff, SMC DEM staff, the San Mateo Consolidated Fire Department, the San Mateo County Sheriff, and other agency staff that would have evacuation or traffic control responsibilities. Potential elements of a citywide evacuation plan may include respective agency evacuation responsibilities, improved communication systems/technology, advanced warning systems, identification of residents without vehicles that are in need of evacuation assistance, evacuation plans for schools and senior residential facilities, office/life science employee daytime evacuation notification and management strategies, scenario planning, strategies to reduce evacuation times, multi-city evacuation coordination strategies, early evacuation notification areas, local traffic management strategies, vehicle crash emergency clearance crews, and/or local evacuation shelters/centers for hazards where shelter-in-place is called for.

The following provides additional context for evacuation planning considerations.

Evacuees Without Access to a Vehicle

As shown in **Table 4**, five percent of all households residing in Foster City do not own a vehicle. While this number may be a useful proxy for the number of evacuees likely to need assistance evacuating, the number may be higher depending on the specific timing of the evacuation. For example, in a workday evacuation, it is likely that a number of workers in Foster City will have gotten to work without driving their own vehicle and need transportation; if the evacuation occurs during the school day, it is likely that many schoolchildren will need transportation even if they are theoretically part of households that have vehicles available, as it would be difficult and inadvisable to attempt to have them picked up.

The City may want to consider a program that ensures a more accurate estimate of the number of individuals needing assistance, and that there are programs in place to ensure that there is transportation options available for those who need them. Examples of programs that the City can implement include:

- Encourage establishing carpool arrangements between neighbors to provide rides during evacuation situations through education and existing tools such as ZoneHaven or Nextdoor
- Establish plans for evacuation of areas with concentrated vulnerable populations, such as senior centers and schools, to designated evacuation centers
- Coordinate plans to commit public transportation vehicles, school buses, and other shuttle vehicles (such as employer-offered shuttle buses) to providing transportation for evacuees needing assistance

Evacuation on Other Modes

Individuals who are able and willing to evacuate on foot, using bicycles, or other modes should be encouraged to do so using sidewalks and trails.

There are several pedestrian/bicycle paths that are available for residents to evacuate Foster City without using the major vehicle evacuation paths. These paths include a footbridge across the O'Neil Slough in the south end of Foster City, at Egress bridge, at the base of the Marina Lagoon, at Wheelhouse Lane near Sea Cloud Park, and along portions of the Bay Trail. These paths provides access for nonmotorized modes to Clipper Drive, Concourse Place, and Island Parkway in Belmont and Redwood City. Nearby residents should be notified of the existence of this link and instructed on its use, and anyone able and willing to use this route should be welcome to.

Stranded Evacuees

In preparation of the unfortunate situation where it is not possible to evacuate everyone from within Foster City prior to all roadways being inaccessible, the City should develop clear protocol and guidance for stranded individuals that provide alternative ways to safety. The City should consider doing the following:

- Identify taller buildings in which individuals can seek refuge in higher floors; proactively identify which buildings are most likely to be safest in the event of an emergency
- Investigate the possibility of temporarily sheltering stranded individuals in boats

These considerations should be made in light of the fact that there is likely to be a non-negligible period of time in which all land routes into Foster City are impassable for emergency response vehicles.

Strategies to Reduce Evacuation Times

As a target for further investigation and study to strengthen its evacuation readiness, there are a number of potential measures and efforts the City can undertake that may reduce evacuation times, which can be categorized into supply-side and demand-side strategies.

Supply-side Strategies

Supply-side strategies focus on managing and increasing the supply for evacuation capacity – that is, increasing the amount of evacuation vehicle throughput.

Additional Evacuation Routes

All of Foster City's roadway links to areas beyond its boundaries are located within its northern third: there are no external links south of Hillsdale Boulevard or east of the Foster City Boulevard on-ramps for State Route 92. Large swathes of Foster City, namely its entire southeastern half, must drive across town to reach an evacuation gateway.

These concerns surrounding evacuation should be part of any future considerations by the City to create additional roadways and bridges, especially in the southeast parts of Foster City, which is the farthest from the evacuation routes. For example, the potential Edgewater Boulevard – Island Drive bridge that would connect Foster City with Redwood Shores could provide an additional evacuation route in the southeast of Foster City.

Roadway Capacity Management

Another key area of concern is maintaining an acceptable standard of roadway operations to ensure that the evacuation capacity of the roadway network is not degraded.

First and foremost, the City should make every effort to coordinate with emergency responders across agencies to ensure the availability of personnel to direct traffic. Presence of personnel can enable such capacity-boosting measures as directing vehicles to use contraflow lanes or shoulders to maximize throughput where possible.

In particular, the ramps onto State Route 92 should be a particular point of emphasis. The mainline lanes of the highway have high capacity and can allow large numbers of vehicles to evacuate so long as the on-ramps to the highway do not become bottlenecks. The presence of personnel can help maximize ramp capacities by guiding evacuating vehicles to form multiple

lanes on on-ramps, using shoulders as necessary, and by helping direct traffic to facilitate smoother merges from the on-ramps onto the mainline lanes for the large volumes of traffic.

Moreover, having on-scene personnel who can respond to ongoing conditions – such as potential signal failures, hazardous roadway conditions, or changes in routing in real time is also a crucial asset in an inherently unpredictable situation.

Other Supply-Side Strategies

Other supply-side strategies to consider can include:

- Create a plan for clearing disaster-induced roadway hazards along key evacuation routes
- Work with Caltrans and other regional agencies to investigate limiting accessibility to major regional routes to facilitate evacuation: for example, limiting SR-92 and/or US-101 to only evacuation traffic and redirecting general traffic elsewhere
- Create an "evacuation mode" for signal systems that can maximize traffic flows, or protocol for deactivating certain signals in favor of personnel on-site to direct traffic

Demand-Side Strategies

Demand-side strategies focus on managing the demand for evacuation capacity – that is, managing evacuation volumes to move as many people as efficiently as possible within existing capacity constraints.

Limiting the Number of Evacuation Vehicles

Reducing the number of evacuating vehicles is a key aspect of reducing evacuation demand. As shown in **Table 4**, each household in Foster City owns, on average, just under two vehicles, and almost one in five households own three or more vehicles. The evacuation vehicle demand from residents can be significantly reduced if each household were to limit themselves to evacuating in no more than one vehicle, as shown in **Table 7**.

In addition to being advised or required to take no more than a certain number of vehicles per household, residents should also be advised to not make return trips after they have evacuated, or to stay away if they were not in Foster City when evacuation orders are given. This measure can also reduce vehicle volumes and, crucially, reduce contraflow traffic. However, it must be implemented in conjunction with coordinated efforts to evacuate anyone within Foster City without access to a vehicle as described earlier, as to avoid situations such as parents needing to return to Foster City following an evacuation order to pick up their children from school.

Table 7: Summary of Estimated Evacuation Demand – One Vehicle Per Household

TAZ	Expected Inundation (hours after initial dam failure)	Total Households	Total Population	Total Employment	Weekday Night	Weekday Midday - All Employees Drive Alone	Weekday Midday - 90% of Employees Drive Alone
1654	2	56	144	10,668	143	10,681	9,615
1655	3	1,777	4,212	9,078	1,799	9,501	8,594
1966	3	1,295	3,106	296	1,235	605	575
1541	3	80	189	1,451	90	1,470	1,325
1612	3+	3,412	8,065	1,370	3,253	2,183	2,046
1972	3+	869	2,599	716	853	923	851
1968	3+	1,573	4,154	298	1,502	673	643
1970	3+	2,115	4,843	447	2,025	951	906
1971	3+	1,386	3,957	473	1,338	803	756
1973	3+	3,602	8,581	455	3,446	1,313	1,268
1967	3+	1,420	4,087	999	1,361	1,337	1,237
1969	3+	1,827	4,560	263	1,744	698	672
Total for areas inaccessible by hour 2		56	144	10,668	143	10,681	9,615
Total for areas inaccessible by hour 3		3,152	7,507	10,825	3,125	11,576	10,493
Total for areas not inaccessible by hour 3		16,204	40,845	5,021	15,523	8,882	8,380
Total		19,412	48,496	26,514	**18,791**	**31,139**	**28,488**

Other Demand-Side Strategies

Other demand-side strategies to consider can include:

- Improve communications and advance disaster alerts, with the goal of maximizing the evacuation time window
- Dynamic route guidance and monitoring for evacuees, with the goal of ensuring evacuees know their evacuation routes, that evacuees are directed away from routes that are inaccessible, and evacuation traffic is balanced across gateways
- Phased evacuations, with the goal of prioritizing areas that will need to evacuate earlier, potentially utilizing Zonehaven
- Faster clearing of road closures
- Street parking management on high hazard days