Redwood City Downtown Fire Station

Public Safety

- Introduction
- Vision
- Atmosphere and Climate Change Resilience
- Hazards Management (Geologic and Seismic, Flooding, Wildfire, Hazardous Materials, Aviation, Terrorism, Emergency Preparedness
- Noise

When people are asked to describe why they choose to live in their community, they often cite safety as a key factor. In cities that provide high levels of public safety services, residents and the business community can focus on productive activities: commerce, recreation, volunteerism, and education, among others. All communities face public safety concerns, from natural disasters such as flooding and earthquakes to human-caused conditions such as hazardous materials spills or air pollution. At the new millennium, public concern and awareness is increasing with regard to human-caused actions that have the potential to create increased risk of natural hazards: global warming. The Public Safety Element addresses those public safety issues that affect Redwood City, and promotes prevention, public education, and emergency preparedness as the approaches that will allow the community to minimize risks to life and property in the event of a disaster.

Introduction

Safety issues of primary concern in Redwood City include wildfire hazard in the western hills and sea level rise along the Bay shoreline, and extreme heat and weather events due to climate change, planning for and responding to natural and human- made hazards, and noise.

Maintaining a safe community requires assessment of the city's public safety needs. This Public Safety Element identifies, evaluates, and addresses such safety issues and provides the goals, policies, and implementation programs that will help reduce potential short and long-term risk of loss of life, injuries, property loss, environmental damage, and social and economic disruption resulting from natural and human-caused emergencies and other public safety issues.

Public Safety Chapters

Atmosphere and Climate Change Resilience
- Air Quality
- Climate Change Resilience

Hazards Management
- Geologic Hazards
- Flooding
- Wildland Fires
- Hazardous Materials
- Aviation Hazards
- Terrorism
- Emergency Preparedness
- Police Services
- Fire Services

Noise
- Understanding Noise
- Noise Conditions - 2008
- Vibrations
- Noise/Land Use Compatibility
- Noise Mitigation
- Noise Contours

Public Safety Vision - 2030

In 2030, Redwood City is a place where residents and businesses have limited exposure to adverse conditions associated with natural and human-caused hazards. Redwood City takes a leadership role in proactively planning to avoid, mitigate, and respond to hazards and emergencies. Redwood City is committed to environmental sustainability efforts that contribute to broad-based initiatives to reduce carbon production, thereby reducing the City's Greenhouse Gas (GHG) emissions that contribute to climate change and the associated local public safety impacts, most notably sea level rise. The City is committed to providing rapid and effective emergency response, and coordinating with regional, State, and federal agencies toward these objectives.

The City recognizes the importance of partnering with and embracing our neighborhoods to improve the health, safety, and well-being for all in our community. The City understands that neighborhoods are an important fabric of the city and works diligently to provide for safe and healthy places to live, work, learn, and establish a sense of community.

Atmosphere and Climate Change Resilience

Particulate matter (PM) is tiny particles suspended in the air. The notation PM10 is used to describe particles of 10 micrometers or less in diameter and PM2.5 represents particles less than 2.5 micrometers in diameter.

Awareness and knowledge of the effects of human activities on the environment have grown significantly in recent years. As such, finding ways to embrace sustainable practices has become a priority for Redwood City and many other California cities. Chief among environmental concerns is the impact of human actions and choices on the atmosphere and climate. With the emergence of the industrial age, human activity began to release increasing amounts of pollutants, carbon dioxide, and other harmful gases into the

atmosphere, largely through the burning of fossil fuels and deforestation. The elevated levels of harmful gases and pollutants create two key concerns: compromised local air quality and a global "greenhouse" effect that has resulted in warming the Earth's atmosphere. The unhealthful conditions associated with pollutants in the air have been known for decades; beginning in the 1970s, legislation such as the federal Clean Air Act was enacted to improve air quality and thus reduce impacts on human health associated with high pollutant levels. Global warming, however, did not really enter the public consciousness until the United Nations (U.N.) Framework Convention on Climate Change adopted the Kyoto Protocol in 1997. This 1997 U.N. Convention highlighted the serious threats to public safety associated with global warming, including sea level rise, associated flooding, and significant effects on agricultural practices and production.

Following the 1997 U.N. Convention, the 2015 U.N. Climate Change Conference, COP21, culminated in the Paris Agreement, which calls for zero anthropogenic GHG emissions to be reached during the second half of the 21st century, increasing the ability to adapt to the adverse impacts of climate change, and fostering climate resilience and low GHG emissions development; making finance consistent with a pathway towards low GHG emissions and climate-resilient development; and outlining the framework for a global carbon market. The 2021 United Nations Climate Change Conference, COP26, built on the Paris Agreement by calling for enhanced commitments towards mitigating climate change and resulted in the Glasgow Climate Pact, in which the U.S. pledged to reduce methane emissions by 30% by the end of the decade and committed to net-zero carbon emissions by 2050.

Air Quality

Asthma and other respiratory conditions may be triggered or exacerbated by poor indoor or outdoor air quality, as well as other environmental conditions. As a result, poor air quality is linked to a higher incidence of public health costs associated with these respiratory illnesses. The California Air Resources Board (CARB) suggests that the annual health impacts of exceeding State health-based standards for ozone and particulate matter include 6,500 premature deaths, 4,000 hospital admissions for respiratory disease, and 350,000 asthma attacks nationwide. The loss of productive workdays also affects the local economy. The American Lung Association reports that nationally, asthma accounts for an estimated 14.5 million lost workdays per year for people over 18 years of age.

Particulate matter (PM) is tiny particles suspended in the air. The notation PM10 is used to describe particles of 10 micrometers or less in diameter and PM2.5 represents particles less than 2.5 micrometers in diameter.

Transportation-related pollutants such as ozone, sulfur dioxide, and small particulate matter (PM10 and PM2.5) are the largest contributors to poor air quality in most cities. Many of these transportation-related pollutants are respiratory irritants and are therefore a major contributing factor to rates of asthma. They are also associated with higher incidence and severity of other respiratory symptoms, impaired lung function, and other health problems. Air pollution is significantly worse near energy-intensive industrial areas, diesel truck routes, rail yards, ports, and busy/congested roadways. Diesel trucks in particular emit high levels of particulate matter.

Sensitive Receptors

CARB recommends that "sensitive land uses" such as residences, residential care facilities, schools, day-care centers, playgrounds, or medical facilities not be located within 500 feet of a freeway or urban road that carries more than 100,000 vehicles per day. The two freeways that are located in or near Redwood City, U.S. 101 and I-280, have volumes that exceed 100,000 vehicles per day. About three percent of residentially zoned properties lie within 500 feet of a freeway, most within the Friendly Acres neighborhood adjacent to U.S. 101.

Traffic in Redwood City: Motorized vehicles are the most significant contributor to greenhouse gas emissions in the city.

CARB also recommends that sensitive land uses not be located within 1,000 feet of ports. Ports contribute to air pollution both through docking and idling ships, and truck traffic associated with a port. While the Port of Redwood City is the smallest active commercial port in the Bay Area, much of its activity consists of bulk materials movement, meaning that dust and particulates represent additional sources of local air pollution.

Environmental Justice communities are neighborhoods identified by the State as being disproportionately affected by economic, health, and environmental burdens. Analysis of data from the California Office of Environmental Health Hazard Assessment and the Center for Disease Control and Prevention shows that some neighborhoods in Redwood City are disproportionately affected by pollution, place, population, and health inequities. The City recognizes the neighborhoods that experience these unique and compounded risks as disadvantaged communities defined in Gov't Code 65302(h)(3)(A) (referred to as "Environmental Justice communities"). In Redwood City these communities are primarily located west of Highway 101 and east of El Camino Real and Middlefield Road. Additionally, the Safety Element focuses on protecting other types of vulnerable populations such as the elderly, disabled, populations facing language barriers, the houseless, and any other population that would face challenges preparing for and responding to increasing climate hazards.

One aspect of environmental justice is reducing Environmental Justice communities' exposure to air pollution. The General Plan incorporates goals, policies, and programs to ensure new hazardous materials and waste facilities, including those that have the potential to affect local air quality, are located safe distances from Environmental Justice communities, are appropriate considering the site's zoning, and properly registered with San Mateo County. The General Plan also includes policies to require periodic assessment of hazardous and solid waste facilities that are in or near Environmental Justice communities and to minimize the possibility of environmental contamination and adverse off-site impacts such as air pollution and odor.

The City's Climate Action Plan includes GHG reduction measures as part of its comprehensive climate change mitigation strategy. GHG education measures, including reducing traffic density, transitioning from fossil fuel-powered vehicles and equipment to electric increasing the use of renewable energy and energy efficient appliances, and eliminating natural gas in the built environment, not only work to mitigate

climate change but also reduce the air pollution burden on Environmental Justice communities and the City's population overall.

State Ambient Air Quality Standards

The State of California has set standards for air quality; exceeding these limits can create a threat to public health. High ozone levels cause smog and can trigger asthma and long-term lung damage, while high levels of particulate matter cause haze and can contribute to cancer and other respiratory ailments. The Bay Area Air Quality Management District (BAAQMD) and California Air Resources Board (CARB) monitors air quality in five sub-areas throughout the Bay Area; Redwood City is located in the South Central Bay Sub-Area.

Street trees in Downtown Redwood City

Air Quality Conditions in Redwood City

The BAAQMD monitoring of Particulate Matter (PM) 10 levels in Redwood City was discontinued on June 30, 2008, but CARB continues to monitor 1-hour and 8-hour ozone, PM2.5 and nitrogen dioxide. Measurements at the Redwood City testing station from 2009 to 2019 showed occasional exceedances of the ozone standards and PM2.5 concentrations due to wildfires over the last several years, affecting air quality throughout the bay area. CARB will continue to monitor, track progress and suggest actions to improve air quality throughout California. .

Greenhouse Gas Emissions in Redwood City

Transportation sources account for the highest percentage of GHG emissions in most urban areas. In 2020, the City completed its 2020 update of the Climate Action Plan (CAP). The 2020 CAP included an updated inventory of the City's GHG emissions inventories using data from 2017 (Table PS-1). The updated GHG emissions inventories show the City has reduced total community emissions by 22.7% compared to the base year, 2005. As in 2005, the highest categories of emissions are transportation activities and building energy use. As such, increasing renewable energy use and energy efficiency in buildings, moving toward building electrification, and reducing vehicle emissions will continue to have significant impacts on reducing GHGs. To achieve a more substantial reduction in emissions, both technological advances (improved vehicle emissions and energy systems) and slowing any increase–or actually reducing–vehicle miles traveled will be necessary. In 2020, Redwood City adopted REACH codes, which are amendments to the Energy and Green Building Standards Codes to reduce GHG emissions by mandating electrification and energy efficiency for all new construction projects. While the City has no ability to address vehicle emissions systems, it can make it easier for people to get around without driving cars. The Built Environment Element sets forth focused strategies to increase bicycle, pedestrian, and transit use; create additional housing opportunities so more people can live closer to the many jobs available in the community; and facilitate the location of commercial goods and services within easy walking distance to

neighborhoods. The City's 2018 Redwood City Moves transportation plan adopts Vehicle Miles Traveled metrics that further emphasize reducing vehicular trips and facilitating other types of transportation.

Table PS-1: Citywide Greenhouse Gas Emissions and Energy Use – Year 2017

	CO_2 Equivalent (Total Metric Tons)	Percent of Total
Residential	68,032	13.8%
Commercial/Industrial	132,944	26.9%
Transportation (Local Roads)	80,191	16.2%
Transportation (State Highways)	142,810	28.9%
Transportation (Off-Road Equipment)	54,332	11%
Caltrain and Freight Trains	1,754	< 1%
Waste	11,924	2.4%
Wastewater and Water	2,908	< 1%
Total	**494,944**	**100%**

Source: City of Redwood City 2020 Climate Action Plan.

Following the adoption of the first CAP in 2013, the City has achieved the following accomplishments:

- Implementation of over 25 City energy efficiency projects with utility incentives and grants between 2013 and 2018.
- Upgrade of public EV charging stations in 2014 to support transportation electrification in the community.
- Installation of a solar system at Red Morton Community Center in 2015 with no capital outlay.
- Provide education, outreach, and incentive programs to businesses and residents.
- Installation of 363 solar systems between 2013 and 2017.
- Adoption of Peninsula Clean Energy (PCE) in 2016 and moving all municipal accounts to 100% renewable and carbon-free energy.
- Saving businesses and residents in utility cost through PCE while providing cleaner energy with fewer emissions.

The 2020 CAP establishes the goal of reducing carbon emissions by 50 percent below 2005 levels by 2030 and achieving carbon neutrality before 2045. To achieve these goals, the City will need to reduce total emissions by approximately 350,562 metric tons of carbon dioxide equivalent (mtCO2e) by 2030. The CAP

identifies key GHG reduction strategies in the food and consumption, energy and water, solid waste, and transportation and land use sectors needed to achieve the City's emissions reductions goals.

Climate Change Resilience

Climate change presents one of the most significant challenges of our time. As levels of GHG emissions increase in the atmosphere, the Earth's climate system is being destabilized. As more GHGs are trapped inside the Earth's atmosphere, more of the sun's energy is trapped as heat, which means temperatures keep getting hotter.

Even if we stopped emitting GHGs tomorrow, the climate would continue to change due to the length of the carbon cycle — the ability of the Earth to absorb excess carbon in the ocean and plants. Therefore, climate change is inevitable, and communities must plan to adapt to it.

Adaptation planning is most effective at the local level. To develop its adaptation strategy, Redwood City will refer to the following integrated set of policies and tools:

- California Adaptation Planning Guide from the California Office of Emergency Services (2020 Update)
- Safeguarding California Plan: California's Climate Adaptation Strategy (2018 Update)
- Cal-Adapt 2.0 (released October 2017 and updated regularly, most recently in January 2020)
- California's Climate Change Assessment (most recently updated in 2018)
- State of California General Plan Guidelines (updated periodically, most recently updated in 2017)
- Adaptation Clearinghouse
- State Hazard Mitigation (2018 Update)

In addition, the County of San Mateo has embarked on a multi-sector adaptation strategy, Climate Ready San Mateo County, to plan, assess, and implement strategies to address sea level rise and flooding, changes in precipitation, extreme heat, and wildfires in San Mateo County. Redwood City plans to coordinate closely with the County on adaptation planning efforts.

San Mateo County Multi-Jurisdictional Local Hazard Mitigation Plan

The San Mateo County Multi-Jurisdictional Local Hazard Mitigation Plan (SMC LHMP) (smcgov.org) complies with all requirements set forth under Disaster Mitigation Act (DMA) 2000 and includes information on local hazards that is to the Public Safety Element. Sections of the Safety Element are supplemented by the most recently adopted SMC LHMP, which is incorporated by reference, as allowed by California Government Code Section 65302(g). The SMC LHMP presents environmental hazard analysis, describes important transportation and utility infrastructure at risk from environmental hazards, describes emergency evacuation systems, and includes mitigation actions to protect Redwood City populations and infrastructure from environmental hazards. As an SMC LHMP planning partner, Redwood City developed an annex to the LHMP containing hazard information specific to Redwood City and committed to implementing a Hazard Mitigation Action Plan. Redwood City's Hazard Mitigation Action

Plan contains measures to build the City's resilience against climate change, flooding, seismic events, dam failure, wildfire, severe weather, tsunami, and sea level rise.

San Mateo County OneShoreline Program

The San Mateo County Flood and Sea Level Rise Resiliency District, also known as OneShoreline, is an independent government agency that works across jurisdictional boundaries to secure and leverage public and private resources for the long-term resilience of the County. OneShoreline plans and builds solutions to the climate change impacts of sea level rise, flooding, and coastal erosion, and enhances the environment, recreational opportunities, and quality of life within communities throughout the county. Redwood City is collaborating with OneShoreline on the Redwood Shores Sea Level Rise Protection Project to establish long-term resilience against sea level rise in the Redwood Shores community, which is at significant risk of damage from flooding from high tides and storm events, and sea level rise. The key objective of the project is to modify the Redwood Shores levee system to be eligible for accreditation by FEMA. OneShoreline is also managing the Bayfront Canal Flood Protection and Ecosystem Restoration Project on behalf of and with funding from Redwood City, adjacent cities, and San Mateo County. Safety Element policies establish coordination efforts with the Oneshoreline program to plan for and mitigate the effects of sea level rise.

The Role of Equity

Commonly, climate change disproportionately threatens those who are the most vulnerable to its impacts and the least able to adapt to increasing environmental hazards. Many climate change impacts, including secondary health impacts, will disproportionately affect socially vulnerable populations (see sidebar for the definition of "social vulnerability"). That's why the San Mateo County Board of Supervisors emphasized the need to take health, socio-economic, and racial equity into account in policymaking and climate solutions at all levels in their 2019 climate emergency declaration.

Social Vulnerability

This term refers to populations with greater vulnerability to climate impacts because of their social inequities, physical characteristics, or baseline conditions.

Source: City of Redwood City Climate Action Plan (2020)

According to Local Governments for Sustainability (ICLEI), an international organization of local and regional governments, climate equity ensures that all people have the opportunity to benefit equally from climate solutions, while not taking on an unequal burden of climate impacts.

The General Plan incorporates goals, policies, and programs to lessen pollution burdens while continuing to sustain, if not improve residents healthy living opportunities. Policies and programs in the Built Environment, Building Community, and Natural Resources Elements that work to reduce the pollution burden on Environmental Justice communities also ensure Environmental Justice communities and other vulnerable populations are not taking on an unfair burden of climate change impacts. Similarly, the goals, policies, and programs included in this Element to mitigate and adapt to climate change will reduce health risks to all vulnerable communities.

Environmental Justice Communities

This term refers to populations disproportionately affected by pollution, place, population, and health inequities. Environmental Justice communities encompass disadvantaged communities designated by the State and other vulnerable populations with increased sensitivity to and less adaptive capacity against environmental hazards.

Effects of Climate Change

Direct changes to the local climate include increases in average temperature, annual precipitation, and sea level rise, which can be categorized as primary impacts. Secondary impacts are those associated with these direct changes such as heatwaves, intense rainstorms, landslides, droughts, and wildfires.

Waterfront development in Redwood City

Sea Level Rise

As sea levels rise, more areas of Redwood City will be vulnerable to 100-year flood events. According to the State's Cal-Adapt tool (cal-adapt.org, accessed 2021), along the Redwood City shoreline, Bayshore sea levels are projected to rise approximately 24 inches by 2050 and 84 inches by 2100. Figure PS-1 shows possible significant flooding, erosion, and water damage impacts to the built environment along both sides of Highway 101. Under all sea level rise scenarios, San Carlos Airport and Redwood Shores will be inundated by rising Bay waters. Eventually, sea level may increase enough to permanently flood low-lying areas in the eastern part of Redwood City along the Bayshore.

Rising sea levels can cause the bay shoreline to flood more frequently and severely. Due to ocean levels being higher during normal conditions due to sea level rise, shoreline floods, such as king tides and storm surge, can be exacerbated and reach even further onto land. During strong storms and king tides, shoreline flooding may damage or destroy homes and commercial buildings in low-lying areas in eastern Redwood City. These events can also disrupt transportation routes such as Highway 101, Veteran's Boulevard, Bay Road, Broadway, Main Street, and Woodside Road (State Route 84). Essential facilities and infrastructure, such as the Caltrain transit station, Kaiser Permanente Medical Center, fire stations, police stations, bridges, electric vehicle charging stations, solid waste facilities, and water and wastewater infrastructure, may be frequently inundated, causing them and the community services they support to

be negatively impacted. Figures PS-2 and PS-3 show buildings and infrastructure at risk of damage from sea level rise and associated flooding impacts.

In addition to contributing to increased overland flooding, sea level rise can lead to the intrusion of salt water into groundwater aquifers, causing shallow groundwater tables to rise. This phenomenon can in turn cause ponding of water or flooding in low lying areas with little to no past flooding occurrences; infiltrate underground water, sanitary sewer, water, and storm drain pipelines; increase soil liquefaction risk during seismic events; and remobilize old soil contaminants. This effect of sea level rise has been studied less in coastal communities compared to increased overland flooding. The City will likely need to coordinate with other jurisdictions to study the impacts of rising groundwater tables on property and infrastructure.

Annual Precipitation and Severe Storms

According to the State's Cal-Adapt tool (cal-adapt.org, accessed 2021), the historical annual average (1961-1990) rainfall in Redwood City is 20.2 inches and is expected to increase slightly by 1.1 inches by the end of century under a high GHG emissions scenario. While the City and the rest of the State do not expect to see average annual rainfall changing significantly over the next 50-75 years, rain will likely be delivered in more intense storms within a shorter wet season. Severe storms may potentially cause widespread impacts across the City including power outages, damaged and impassable roadways, interruptions in public transit operations, dam overflows, bridge collapses, and property damage from increased flooding of streams and creeks. More intense storms can also result in increased storm surge and king tide events.

Annual Temperature and Extreme Heat

According to the State's Cal-Adapt tool (cal-adapt.org, accessed 2021), the historical annual average (1961-1990) maximum temperature in Redwood City is 70.0 °F. The average maximum temperature in Redwood City is expected to increase above this baseline by 8.9 °F by the end of the century under a high GHG emissions scenario. Extreme heat days, which are days when the daily maximum temperature is above the threshold temperature of 99.1°F, have a historical average of four days. This is expected to increase to average of 18 days by the end of the century under a high emissions scenario. Extreme heat events can put a strain on the electrical supply, transmission, and distribution systems, which in turn increase the risk of very costly and disruptive blackouts. Extreme heat can also adversely impact transportation infrastructure, such as causing the softening and expansion of asphalt surfaces, resulting in buckling, potholed and rutted roads. Prolonged heatwaves can affect sensitive populations such as elderly residents, lower-income populations who cannot afford air conditioning systems or potential price surges for water and electricity, and homeless individuals without access to cooling centers.

Drought

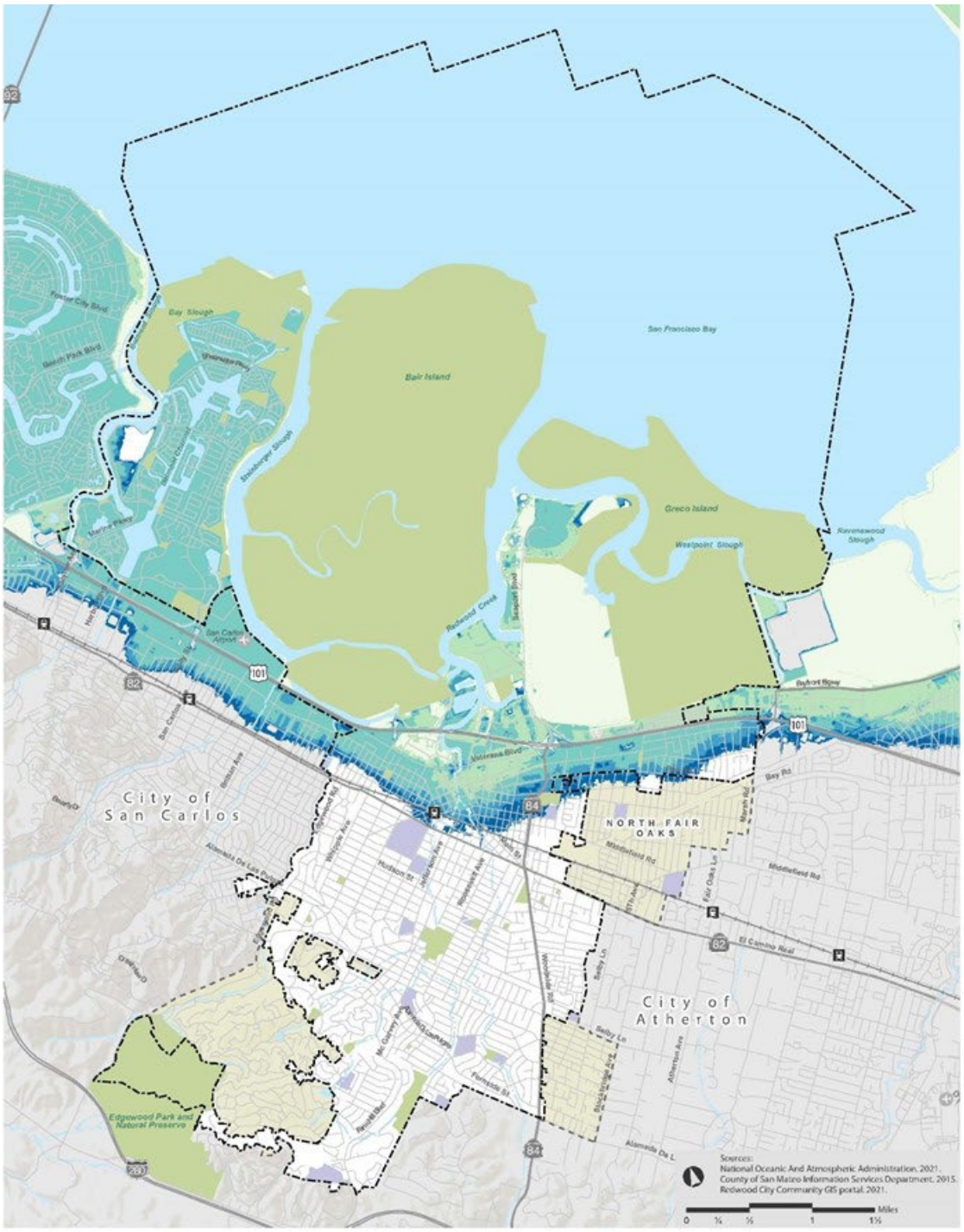
Drought is characterized as a period of unusually persistent dry weather that continues long enough to cause serious problems such as regional water supply shortages. Research suggests that extended drought occurrences could become more pervasive in future decades. According to the State's Cal-Adapt tool (cal-adapt.org, accessed 2021), the modeled historical baseline shows that the 30-year average maximum length of a dry spell is 124 days in Redwood City. This is expected to increase by 13 days in the high

emissions scenario by the end of the century. Prolonged drought may result in a long-term decrease in the Sierra Nevada snowpack, which would reduce freshwater availability through the Hetch Hetchy water system that supplies Redwood City and also could reduce the availability of hydro-electric power. Rising surface temperatures also imply greater moisture loss in vegetation and on the ground surface. These conditions can put stress on existing water supply and water storage facilities. Low-income populations and communities of color are potentially more likely to experience water shortages during periods of drought as they are less able to afford any price surges caused by increased demand for water.

The provision of recycled water for non-potable use is a key tool the City uses to reduce demand on its domestic water system. Redwood City has supplied recycled water to its customers since 2000. The 2020 Redwood City Urban Water Management Plan reports that over the last five years, the City's recycled water demand increased from 647 acre-feet per year (AFY) in 2016 to 856 AFY in 2020. Almost all recycled water is currently used for landscape irrigation with some indoor uses for toilet and urinal flushing, and a small portion dedicated to industrial and construction uses. Detailed discussion of the City's recycled water program and recycled water use is presented in the 2020 Redwood City Urban Water Management Plan.

Phase I of the City's recycled water project was implemented by 2010 and is currently serving more than 450 points of connection along the area east of Highway 101 in Redwood Shores, the Greater Bayfront Area, and the Seaport Area. Phase II of the City's recycled water project is underway and will serve customers located west of Highway 101, including in the Downtown area. As of 2021, Phase II.A of the recycled water system was completed, extending the City's service along Walnut Street from Highway 101 to Marshall Street. Also, as part of Phase II, the recycled water system was extended along East Bayshore Road from Seaport Avenue to Douglas Avenue, and along Broadway to the Stanford in Redwood City project. Phase II.B of the recycled water project, which is ongoing, would further extend the existing recycled water system.

The 2020 Redwood City Urban Water Management Plan (UWMP) evaluates the City's water service reliability under future drought conditions. The 2020 UWMP indicates the City would be able to meet projected water demands under normal conditions but would experience supply shortages in short-term and long-term drought periods. As such, the City has developed a drought allocation methodology and plan to account for future drought conditions. The City's evaluation of its water supply reliability under drought conditions factors in projected climate change impacts. The City will continue to consider future climate change impacts as part of its ongoing supply and operations planning.



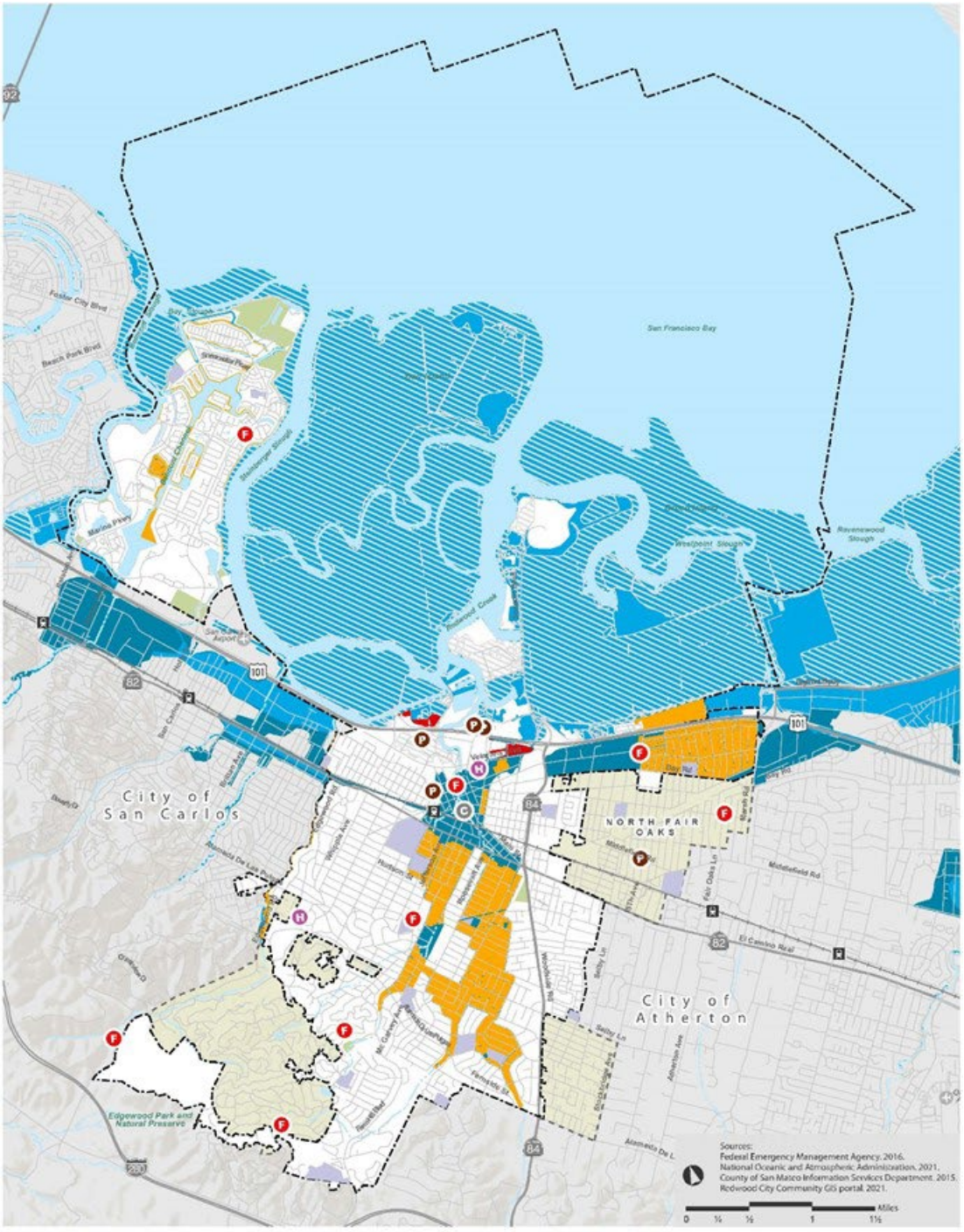
Sea Level Rise Scenarios (2100)

- 1 foot (Low-End Scenario)
- 3 feet
- 5 feet (Mid-Level Scenario)
- 7 feet
- 9 feet (High-End Scenario)

Base Map Features

- Redwood City Boundary
- Sphere of Influence Boundary
- Railway and Stations
- San Mateo County Streets
- US Highway 101
- Channel, Rivers, and Streams
- Bay, Harbor, and Sloughs
- Open Space and Parks
- Schools

Figure PS-1: Sea Level Rise



Flooding Hazards
- 1% Annual Chance (100-year flood)
- 0.2% Annual Chance (500-year flood)
- 24" Sea Level Rise +5-year Storm

Buildings and Facilities
- City Hall
- Hospitals
- Local Law Enforcement Locations
- Fire Stations
- Regional Commercial Uses
- Residential Uses
- Schools

Base Map Features
- Redwood City Boundary
- Sphere of Influence Boundary
- Railway and Stations
- San Mateo County Streets US
- Highway 101
- Channel, Rivers, and Streams
- Bay, Harbor, and Sloughs Open
- Space and Parks

Figure PS-2: Sea Level Rise and Flooding At Risk Buildings

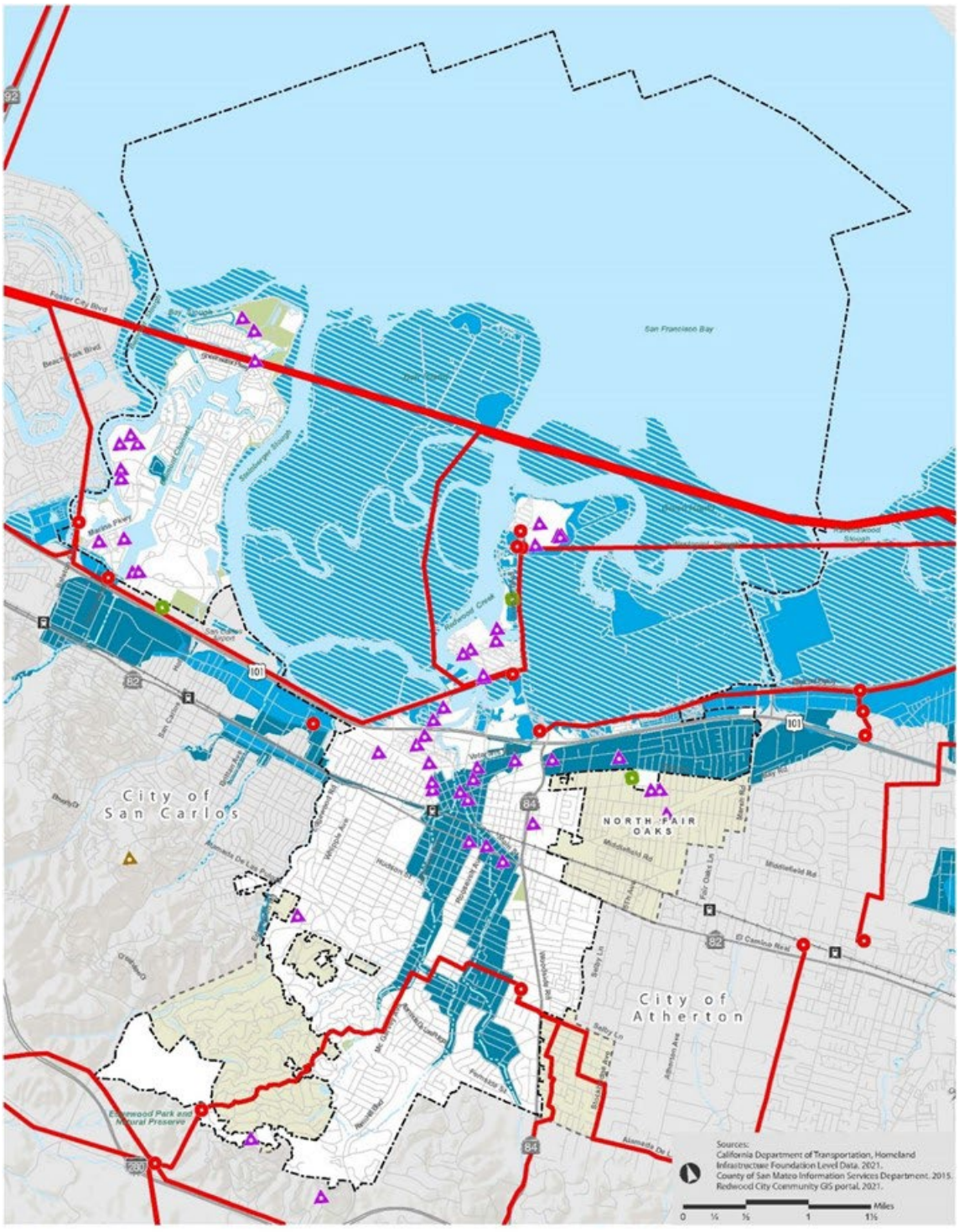


Figure PS-3: Sea Level Rise and Flooding At Risk Infrastructure

Key Atmosphere and Climate Change Resiliency Considerations

Key considerations relative to local air quality conditions, reductions in carbon emissions, and resiliency planning are:

- Good air quality in Redwood City contributes to good health, which benefits families and businesses (in terms of fewer sick days). While air quality is a regional issue addressed by State and regional regulatory agencies, Redwood City has an obligation to contribute to regional efforts to improve air quality.
- Since the adoption of its first Climate Action Plan in 2013, the City has made significant progress in its climate change mitigation efforts. To achieve the 2020 Climate Action Plan goals of reducing per capita and total municipal GHG emissions to 50 percent below 2005 levels by 2030 and to achieve carbon neutrality by 2045. Both climate change mitigation and adaptation are essential to reducing the risks of poor air quality and climate change-related hazards on Redwood City residents. The City should continue to implement a comprehensive climate change mitigation strategy through its Climate Action Plan, and the City should develop a complementary Climate Adaptation Plan to tie its GHG emissions reductions and resilience building strategies together. The City's Climate Action Plan complies with the provisions of the Global Warming Solutions Act of 2006, including its link with the Metropolitan Transportation Commission (MTC) Transportation 2035 Plan, to reduce carbon emissions, per the implementation strategies, targets, and programs developed by the California Air Resources Board.
- To ensure climate mitigation and adaptation efforts follow an environmental justice approach, vulnerable communities should be meaningfully involved throughout the lifespan of an adaptation project or program, from planning through implementation.
- Effective resilience planning will involve continual coordination with utility providers, transportation agencies, emergency services providers, flood districts, neighboring cities, and the County.
- Resilience plans and programs must be evaluated and updated, regularly to ensure up-to-date climate science and projections are considered in the design of new development.

Atmosphere and Climate Change Resilience Goals, Policies, and Programs

Redwood City supports improved air quality through the reduction of impacts caused by human activity. Also, adverse consequences of poor localized air quality conditions may be reduced by avoiding the placement of sensitive receptors near high-emission uses. With regard to potential impacts associated with carbon emissions and climate change, land use planning (including planning for housing to be located in specific transit-oriented sites) and transportation strategies and decisions will work to minimize emission of GHGs and reduce Redwood City's contribution to global warming. Redwood City is committed to both mitigating the causes of and adapting to the effects of climate change. The following goals, policies, and programs focus on building the resilience of the community and the built environment against the climate change effects described in this section.

The following Guiding Principles are addressed by the Atmosphere and Climate Change Resilience goals, polices, and programs:

- Plan for sustainable open space, water, energy, and air quality within our finite resources.
- Work to develop attractive, convenient transportation alternatives, including a transportation hub and ferry system.
- Design for active pedestrian and bicycle-friendly streets and public spaces.
- Partner with our neighborhoods, particularly vulnerable communities and environmental justice communities, to improve the health, safety, and wellbeing for all in our community.

GOAL PS-1: Maintain good local air quality, and reduce the local contributions of airborne pollutants to the air basin.

Policy PS-1.1: Work with neighboring jurisdictions and regional agencies—including the Association of Bay Area Governments (ABAG), the Bay Area Air Quality Management District (BAAQMD), and the Metropolitan Transportation Commission (MTC)—to reduce motor vehicle emissions.

Policy PS-1.2: Minimize vehicle emissions by reducing automobile use and encouraging alternative means of transportation by:

- Planning patterns of land use and development to create complete neighborhoods where residents of environmental justice communities can meet their daily needs through active transportation.
- Prioritizing capital improvement projects that support increased non-motorized and sustainable modes of transportation in environmental justice communities.
- Investing in and designing transportation infrastructure to improve safety in environmental justice communities, especially for vulnerable road users such as pedestrians, bicyclists, children, seniors, and people with disabilities.

Policy PS-1.3: Pursue efforts to reduce air pollution and GHG emissions by promoting the use of renewable energy (e.g., solar, wind, and hydroelectric power), and implement effective energy conservation and efficiency measures.

Policy PS-1.4: Integrate air quality planning with land use, economic development, and transportation planning.

Policy PS-1.5: Require projects that generate potentially significant levels of air pollutants to incorporate the most effective air quality mitigation into project design, as feasible.

GOAL PS-2: Minimize the potential impacts from land uses that may pollute proximate to sensitive receptors, including Environmental Justice communities.

Policy PS-2.1: Consider surrounding land uses when locating sensitive receptors such as schools, hospitals, and residential uses, particularly in Environmental Justice communities, so they are not unreasonably exposed to uses that generate pollutants considered detrimental to human health.

Policy PS-2.2: Prioritize opportunities for compact housing in Downtown and other areas buffered from designated through truck routes.

Policy PS-2.3: Consider re-routing truck routes and high volumes of non- residential traffic away from residential neighborhoods, particularly high-density residential neighborhoods and Environmental Justice communities.

Policy PS-2.4: Avoid placing sensitive uses within 500 feet–or other distance deemed to be appropriate based on project-specific health risk assessment data–of the Port of Redwood City, related heavy industrial areas, and any roadways serving Port uses.

Policy PS-2.5: Encourage the development and/or implementation of new technologies that address or mitigate pollutant emissions at the Port, in the Environmental Justice communities, transportation facilities, and industrial use locations.

Policy PS-2.6: Minimize potential impacts from air pollution on sensitive uses throughout Redwood City, including the Environmental Justice communities, near freeways, truck routes, high-volume arterials and sources of toxic air contaminants (TACs)[1].

Policy PS-2.7: Require all land uses proposed within 500 feet of U.S. 101, El Camino Real, and Woodside Road that will house, accommodate, or serve sensitive receptors to incorporate appropriate design and construction features (e.g., filters on HVAC systems) that reduce potential exposure of persons to pollutants.

Policy PS-2.8: Discourage the establishment of any new school or housing for senior residents within 500 feet of a freeway.

GOAL PS-3: Protect Environmental Justice community residents from the harmful effects of air pollutants.

[1] TACs can include but are not limited to asbestos, chloroform, vinyl chloride, inorganic arsenic, nickel, formaldehyde, particulate emission from diesel-fuled engines, environmental tobacco smoke per California Air Resources Board (ww2.arb.ca.gov/resources/documents/carb-identified-toxic-air-contaminents)

Policy PS-3.1: Reduce mobile sources of air pollution in and adjacent to the Environmental Justice communities.

Policy PS-8.2: Limit development of new sensitive uses in the Environmental Justice communities near freeways, truck routes, high volume arterials, and sources of toxic air contaminants (TACs). Require any such uses to incorporate measures to minimize the potential impacts from air pollutants.

Limit development of new sources of toxic air contaminants (TACs) in and near EJ communities. Require any such uses to incorporate measures to reduce the concentration of emissions.

[Encourage and support] existing sensitive uses in EJ communities near freeways, truck routes, high-volume arterials, and sources of toxic air contaminants (TACs) to implement measures to minimize potential impacts from air pollution.

[Encourage and support] existing uses that are sources of toxic air contaminants (TACs) in and near EJ communities to implement measures to minimize potential impacts from air pollution.

Implement the strategies in the Transportation Element and the Public Safety Element that reduce vehicle miles traveled or improve air quality including: Goal BE-25, BE-26, BE-30, BE-31, PS-3,PS-4, PS-5.

GOAL PS-3: Reduce the volume of pollutants generated by motorized vehicles.

Policy PS-3.1: Support programs that increase ridesharing, reduce pollutants generated by vehicle use, and meet the transportation control measures recommended by BAAQMD in the most recent Clean Air Plan.

Policy PS-3.2: Support programs that decrease vehicle emissions by increasing the number of housing units located near jobs and transit, and encouraging commuting via transit, walking, and bicycling; thereby decreasing vehicle miles traveled (VMT).

Policy PS-3.3: Implement policies of the Built Environment Element that provide for compact, urban-style forms of development and complete streets and neighborhoods to reduce vehicle emissions by placing residents closer to jobs and services and providing alternative modes of transportation.

Policy PS-3.4: Implement the policies of the Built Environment Element that promote transportation mode shifts away from private automobile travel.

Policy PS-3.5: Work with local schools and school districts to encourage children to walk or bike to school.

GOAL PS-4: Promote efficient management and use of energy resources to help minimize greenhouse gas emissions.

Policy PS-4.1: Continue to implement the City's Reach Codes ordinance. During code adoption cycles, work to enhance Reach Codes by reducing the number of possible exemptions, extending coverage to existing buildings, and introducing the phase-out of natural gas hookups.

Policy PS-4.2: Establish City energy conservation practices that lead by example.

Policy PS-4.3: Encourage and promote the establishment of local renewable energy generation projects, including solar and battery storage projects.

Policy PS-4.4: Promote urban forestation and other ecosystems that offer significant carbon mitigation potential.

GOAL PS-5: Mitigate against climate change.

Policy PS-5.1: Consult with State agencies and ABAG to implement AB 32, the Global Warming Solutions Act of 2006, and SB 375, the Sustainable Communities and Climate Protection Act, and in particular, utilize incentives to facilitate infill and transit-oriented development.

Policy PS-5.2: Strive to reduce per capita GHG emissions and total municipal GHG emissions to 50 percent below 2005 levels by 2030.

Policy PS-5.3: Incorporate consideration of, and measures to mitigate the risks of, sea level rise, increased precipitation, flooding, extreme heat events, severe winds, prolonged drought, and other effects of climate change into the planning process.

GOAL PS-6: Protect built and natural environments from the effects of climate change.

Policy PS-6.1: Consider developing and adopting a standalone Citywide Climate Adaptation Plan.

Policy PS-6.2: Ensure consistency in climate change adaptation planning between the City's General Plan Safety Element and other climate change and adaptation planning efforts, including the City's Climate Action Plan, the San Mateo County Multi-Jurisdictional Local Hazard Mitigation Plan, and Climate Ready San Mateo County, and County of San Mateo's multi-sector adaptation strategy.

Policy PS-6.3: Support research that examines the effects of climate change on Redwood City, including both built and natural environments.

Policy PS-6.4: Improve utility and transportation infrastructure, if needed, to ensure functionality during

and following extreme heat and severe weather events, which may bring extreme precipitation and flooding.

Policy PS-6.5: Continue to plan, design, or require new development and retrofits to plan for and design for increases in extreme heat, extreme precipitation, and severe wind events, and prolonged drought conditions.

Policy PS-6.6: Ensure public facilities and properties continue to function in the face of increasingly frequent and severe hazard events.

Policy PS-6.7: Consider future sea level rise in the planning and design of future development.

Policy PS-6.8: Ensure ongoing regional coordination for resiliency planning and sea level rise protection projects.

Policy PS-6.9: Consider sea level rise in the development of watershed management plans and flood control infrastructure.

Policy PS-6.10: Encourage the use of environmentally sensitive sea level rise adaptation strategies that incorporate natural infrastructure.

Policy PS-6.11: Plan for the protection of the Inner Harbor area against the effects of sea level rise.

Policy PS-6.12: Work to achieve water demand that does not exceed State requirements and strive to further reduce demands by 5% to reduce future constraints on development during droughts and to increase water supply reliability

Policy PS-6.13: Use environmentally sensitive adaptation, including natural infrastructure, to the maximum extent feasible when retrofitting public facilities and properties.

Policy PS-6.14: Consider reconciling existing City standards for storm drain design criteria with precipitation data from the State.

GOAL PS-7: Create a community resilient under changing climate conditions.

Policy PS-7.1: Increase public awareness about climate change, and encourage Redwood City residents and businesses to participate in activities and lifestyle changes that reduce GHG emissions and increase climate change adaptation.

Policy PS-7.2: Ensure rapid and regular communications with residents prior to, during, and after extreme weather events including severe wind and rainstorms, extreme heat days, and unhealthy smoke from wildfires.

Policy PS-7.3: Ensure the provision of emergency shelter or cooling centers/hubs.

Policy PS-7.4: Ensure climate change adaptation planning efforts make specific efforts to include and build the resilience of vulnerable and environmental justice communities.

Policy PS-7.5: Facilitate emergency service providers' and critical facilities' operations to provide adequate response times as hazard events increase in frequency and severity.

Implementation Programs

Procedures, Permits, Agreements, Ordinances

Program PS-1: **Air Quality Standards.** Use methodologies and practices set by the U.S. Environmental Protection Agency, CARB, and the BAAQMD that measure air quality at emission sources.

Timeframe: Ongoing

Responsible Party: Community Development

Funding Sources: General Fund

Program PS-2: **Dust and Emission Abatement.** Adopt and enforce dust and emission abatement measures for construction activities based on the BAAQMD's guidelines and other appropriate regulations.

Timeframe: Long Range

Responsible Party: Community Development; Public Works Services Department

Funding Sources: General Fund

Program PS-3: **Air Pollution Emission Standards.** Require all types of stationary sources of pollution in Redwood City to meet regional, State, and federal air pollution emission standards.

Timeframe: Long Range

Responsible Party: Community Development

Funding Sources: Developer fees

Program PS-4: **Air Pollution Control Plans**. Require developers to implement appropriate air pollution control plans to reduce dust and exhaust emissions from construction equipment.

Timeframe: Long Range

Responsible Party: Community Development

Funding Sources: Developer fees

Program PS-5: **Energy Efficiency Standards.** Require new buildings and building additions to meet green building standards, consistent with the Green Building Ordinance.

Timeframe: Ongoing

Responsible Party: Community Development

Funding Sources: Developer fees, grants

Program PS-6: Allowable Emission Sources. Require that potential air quality impacts from new development projects in the City be evaluated pursuant to the applicable BAAQMD CEQA Guidelines in effect at the time the City commences the air quality evaluation, including, as applicable, the establishment of specific overlay zones around existing and planned sources of toxic air contaminants. Only allow emission sources or odor sources if the minimum screening distances between sources and receptors established in the BAAQMD CEQA Guidelines or other appropriate source can be met, unless detailed project- specific studies demonstrate compatibility with adjacent uses despite separations that do not meet the screening distance requirements.

Timeframe: Ongoing

Responsible Party: Community Development

Funding Sources: General Fund

Program PS-6a: Conditions of development approval. New residential development or new sensitive land uses within [1,000] feet of a major arterial or freeway [must] include project features such as landscaping, ventilation systems, double-paned windows, setbacks, and barriers to reduce exposure to air pollution, [as recommended by the California Air Resources Board (CARB) and/or the Bay Area Air Quality Management District].

Timeframe: Ongoing

Responsible Party: Community Development

Funding Sources: General Fund

Program PS-6b: TAC Point Sources Registration and Assessment. Assess development in and around Environmental Justice communities to confirm all TACs point sources are registered with the BAAQMD, as required. Coordinate with each TAC point source facility to assess the potential for and barriers to upgrades, improvements, or relocations that would reduce the impact of their emissions on adjacent Environmental Justice communities.

Timeframe: Ongoing

Responsible Party: Community Development

Funding Sources: General Fund

Program PS-6c: **New Toxic Air Contaminants Sources**. As BAAQMD's project-level significance thresholds evolve and apply to new TAC generating sources proposed to be located within 1,000 feet of sensitive receptors shall be required to identify and demonstrate that mitigation measures are capable of reducing potential emissions below BAAQMD's project-level significance thresholds.

Timeframe: Ongoing

Responsible Party: Community Development

Funding Sources: General Fund

Program PS-7: Sensitive Receptor Protection. Increase protection of sensitive receptors (facilities where individuals are highly susceptible to the adverse effects of air pollutants, such as housing, child care centers, retirement homes, schools, and hospitals) near high-volume roadways, dry cleaners using perchlorethylene, large gas stations, the Port of Redwood City, and rail yards. Amend the Municipal Code and other regulations to require mitigation measures such as increased indoor air filtration to increase the protection of sensitive receptors near major emission sources.

Timeframe: Ongoing

Responsible Party: Community Development

Funding Sources: General Fund

Program PS-8: Sensitive Receptor Siting Requirements. Require projects proposed within 500 feet of freeways and that house or accommodate sensitive receptors to include an analysis of the potential health risks. Mitigation measures that comply with adopted standards of the BAAQMD for control of odor/toxics for sensitive receptors shall be identified in order to reduce these risks to acceptable levels.

Timeframe: Ongoing

Responsible Party: Community Development

Funding Sources: General Fund

Program PS-6.2b: Create a schedule to regularly update the Climate Action Plan, Climate Adaptation Plan, Local Hazard Mitigation Plan, and Safety Element, and coordinate content, and use information from these related plans to increase efficiency and improve implementation.

Timeframe: Short Range

Responsible Party: Community Development and Transportation

Funding Sources: General Fund

Program PS-6.3c: Coordinate with the San Mateo County OneShoreline program and other relevant programs to conduct a study into the potential impacts of sea level rise on shoreline groundwater levels in the City. Based on the rising groundwater levels study, amend the Redwood City Municipal Code to protect existing and future development from the effects of rising groundwater. This may include measures to protect underground utilities from constant submersion, the construction of building foundations and roadbeds in saturated soils, the protection of underground structures, the protection of groundwater tables from dewatering during construction, and the protection of people and the

environment from toxic or hazardous materials that may travel due to rising groundwater levels.

Timeframe: Long Range

Responsible Party: Community Development and Transportation

Funding Sources: General Fund

Program PS-6.5a: Amend Redwood City building codes and other development documents to ensure new development's site planning, building design, and construction materials accommodate increased precipitation, flooding, extreme heat events, severe winds, and prolonged drought. Periodically update the codes and documents to ensure compliance with best practices. Best practices include but are not limited to:

- Raising floor levels and minimum flood construction levels.
- Incorporating adaptive measures, such as shading, adequate ventilation and green or white roofs.
- Insulating and improving the air tightness of buildings to increase reliance against extreme cold and heat.
- Using passive cooling and energy efficiency design requirements or allowing manual overrides (e.g., openable windows) when mechanical elements are in place will increase resilience, especially in the event of power outages.

Timeframe: Short Range

Responsible Party: Community Development and Transportation

Funding Sources: General Fund

Program PS-6.5b: Amend the Redwood City municipal code and other development documents to require project applicants to identify natural infrastructure that may be used for adaptation purposes to reduce the effects of climate change hazards on the proposed project. Identification of potential climate change adaptation measures should be required as part of the initial plan set review stage of the development review process. Project proposals should include analysis of the feasibility of integrating natural infrastructure before proposing alternative measures.

Timeframe: Short Range

Responsible Party: Community Development and Transportation

Funding Sources: General Fund

Program PS-6.6a: Identify critical facilities and City-owned buildings and infrastructure in hazard-prone areas and develop a program to protect them against the impacts of sea level rise.

Timeframe: Mid and Long Range

Responsible Party: Community Development, Public Works, and Transportation

Funding Sources: General Fund

Program PS-6.7a: Consistent with State recommendations and the San Mateo County One Shoreline program, consider identifying mid-century and end of century sea level rise projections that would be consistently used by the city in planning efforts and to evaluate all private and public development applications to ensure projects in sea level rise inundation zones are protected from inundation over the life of the project.

Timeframe: Short Range

Responsible Party: Community Development

Funding Sources: General Fund

Program PS-6.7b: Seek funding sources and collaborate with local and regional public and private entities that can assist communities and businesses with technical assistance and potential funding for sea level rise resiliency planning. Technical assistance may include supporting business resiliency through preparedness education, trainings, and resources to protect properties from the effects of sea level rise.

Timeframe: Mid Range

Responsible Party: Community Development

Funding Sources: General Fund

Program PS-6.9a: Use the City's selected sea level rise projections in hydraulic/hydrodynamic modeling, as well as climate adaptation strategies. The climate adaptation strategies may include but not be limited to:

- Avoidance/planned retreat,
- Enhanced levees and setback levees accommodating habitat transition and buffer zones,
- Expanded tidal prisms for enhanced natural scouring of channel sediments,
- Raised and flood proofed structures,
- Provision for additional floodwater pumping stations, and
- Inland detention basins to reduce riverine peak discharges.

Timeframe: Ongoing

Responsible Party: Community Development and Transportation/Public Works

Funding Sources: General Fund

Program PS-6.10a: Use existing natural features and ecosystem processes, or the restoration thereof, in sea level rise adaptation projects and strategies. This includes systems and practices that use or mimic natural processes, such as permeable pavements, bioswales, and other engineered systems, such as levees that are combined with restored natural systems, to provide clean water, conserve ecosystem values and functions, and provide a wide array of benefits to people and wildlife. Proposals addressing

adaptation must analyze the feasibility of natural features and ecosystem process before proposing alternative measures.

Timeframe: Ongoing

Responsible Party: Community Development and Transportation/Public Works

Funding Sources: General Fund

Program PS-6.11a: In coordination with San Mateo County's OneShoreline program and other adjacent jurisdictions, create a document that identifies appropriate sea level rise hazard mitigation and adaptation objectives specific to the Inner Harbor area, Redwood Shores, Pacific Shores, and surrounding areas.

Timeframe: Short Range

Responsible Party: Community Development and Transportation

Funding Sources: General Fund

Program PS-6.12a: Assess City waste and wastewater systems to determine they can accommodate drought-induced projected changes in water quality and availability.

Timeframe: Ongoing

Responsible Party: Public Works

Funding Sources: General Fund

Program PS-6.12b: Expand the service area for the recycled water system as outlined in Phase II.B Pipeline Alignment Study to reduce demand on the domestic water system during times of drought.

Timeframe: Ongoing

Responsible Party: Public Works and Engineering

Funding Sources: General Fund

Program PS-6.12c: Expand the existing recycled water system to work towards provide service to additional areas of the City.

Timeframe: Ongoing

Responsible Party: Public Works and Engineering

Funding Sources: General Fund

Program PS-6.12d: Require public and private development projects to design sites, buildings, and structures that minimize water use and increase water recycling.

Timeframe: Ongoing

Responsible Party: Community Development and Transportation/Public Works

Funding Sources: General Fund

Program PS-6.12e: Amend the Redwood City Recycled Water Area to include additional areas and continue to require dual plumbing and use of recycled water for irrigation.

Timeframe: Mid Range

Responsible Party: Community Development and Transportation and Public Works

Funding Sources: General Fund

Program PS-7.5a: Regularly update and supply the latest technical information to emergency service providers and critical facility operators to assist their planning for and provision of services.

Timeframe: Ongoing

Responsible Party: City Manager Office

Funding Sources: General Fund

Program PS-7.5b: Track and monitor first responder calls to hazard events associated with wildfires, extreme wind events, flooding, mudslides, and other extreme weather events to identify increasing trends related to changing climate conditions.

Timeframe: Ongoing

Responsible Party: City Manager Office, Fire Department

Funding Sources: General Fund

Special Programs/Projects

Program PS-11: "**Spare the Air" Program**. Participate in the BAAQMD's "Spare the Air" program.

Timeframe: Long Range

Responsible Party: City Manager Office/Economic Development

Funding Sources: General Fund

Program PS-12: New Technologies. Support new technologies by replacing Redwood City fleet vehicles with vehicles that use technology such as hybrid, electric, biofuel, or other appropriate technology. Support new technologies that address or mitigate Port, transportation, and industrial use pollutant emissions.

Timeframe: Ongoing

Responsible Party: City Manager Office/Economic Development; Public Works Services Department
Funding Sources: General Fund

Program PS-13: Greenhouse Gas Emissions Reduction Targets. Adopt GHG reduction targets and consider adopting interim targets and accelerating the timeframe for achieving carbon neutrality. The targets should support the State's efforts to achieve emissions reductions mandated under

AB 32, the region's efforts to implement its Sustainable Community Strategy under SB 375, targets suggested by Executive Order S-3-05, and the State's 2045 carbon neutrality target

Timeframe: Immediate

Responsible Party: City Manager Office/Economic Development

Funding Sources: General Fund

Program PS-14: Greenhouse Gas Inventories. Complete new municipal and community GHG inventories at least every five years, and ideally every one to two years. Repeated inventories can show progress made toward meeting the city's GHG reduction targets, resulting from implementation of the City's Climate Action Plan GHG reduction policies in the General Plan, and other efforts.

Timeframe: Ongoing

Responsible Party: City Manager Office/Economic Development

Funding Sources: General Fund, grants

Program PS-6.1a: Prepare, implement, and regularly update a Climate Adaptation Plan that complements the Redwood City Climate Action Plan. The Climate Adaptation Plan should:

Identify specific strategies, develop actions, and cost estimates, and prioritize actions to increase local resilience of City infrastructure and critical assets, including community-identified and natural systems like wetlands and urban forests. Look for synergies between natural processes and engineering solutions.

Identify a prioritized list of actions (e.g., projects) with a timeline, capital expenditure plan, and framework for monitoring and adaptive management. Efforts should be made to integrate capital projects, existing infrastructure, emergency planning, and community services. Efforts should be made to include adaptation actions that lessen potential health risks to sensitive and vulnerable populations, including children, older adults, and individuals with heart and lung conditions.

Incorporate social equity issues and make particular efforts to involve vulnerable populations and environmental justice communities. Partner with vulnerable populations and environmental justice communities from the beginning of the Climate Adaptation Plan planning process and maintain partnerships throughout Plan implementation and future updates.

Timeframe: Short Range, then review/update every eight years

Responsible Party: Public Works

Funding Sources: General Fund

Program PS-6.3b: Consider coordination with adjacent jurisdictions to conduct a study into sea level rise's potential impacts including saltwater intrusion into near shore groundwater aquifers. The study could consider the impacts of saltwater intrusion on:

- Overland flooding;

- Water, sanitary sewer and storm drain pipelines;
- Soil liquefaction risk; and
- Old soil contaminants.

Timeframe: Long Range

Responsible Party: Community Development and Transportation

Funding Sources: General Fund

Program PS-6.4a: Design and construct utility infrastructure, including water supply, wastewater, and storm drain lines, and transportation infrastructure, including roadways, trails, bike paths, and rail lines, to withstand projected increases in extreme precipitation and storm events.

Timeframe: Ongoing

Responsible Party: Public Works and Engineering

Funding Sources: General Fund

Program PS-6.4b: Identify, and address as appropriate, deficiencies in existing utility and transportation infrastructure that may fail or suffer severe damage during extreme precipitation, flooding, and storm events.

Timeframe: Ongoing

Responsible Party: Public Works and Engineering

Funding Sources: General Fund

Program PS-6.6a: Identify critical facilities in hazard-prone areas and work to relocate or harden (including retrofitting or other mitigation techniques design to reduce risk or impact) these facilities to reduce risk of damage and loss of service.

Timeframe: Ongoing

Responsible Party: Public Works and Engineering

Funding Sources: General Fund

Program PS-6.6b: Purchase generators and explore solar and battery storage microgrid and islanding opportunities for critical facilities and infrastructure that lack adequate backup power.

Timeframe: Ongoing

Responsible Party: Public Works and Engineering

Funding Sources: General Fund

Program PS-6.7b: Identify sea level rise projections and use the projections for design and review of all private and public projects located in the sea level rise zone. Identify projections that are consistent with

guidance contained within the State Agency Sea-Level Rise Action Plan for California, published by the Ocean Protection Council in 2022.

Timeframe: Short Range

Responsible Party: Community Development and Transportation

Funding Sources: General Fund

Program PS-7.3a: Consider establishing resilience hubs and cooling centers where community members can obtain information on how to prepare for climate change hazards and/or receive services (e.g., water, food, bed, charging stations, and clean air) during extreme heat and severe weather events. This includes:

- Identifying public facilities, such as community centers, libraries, schools where cooling centers and resilience hubs can be co-located to support vulnerable communities;
- Identifying possible partners, including business owners, property owners, religious and civic organizations, emergency service agencies, and others who may be able to contribute privately-owned space to create pop-up cooling centers to cover gaps in coverage of public-owned cooling centers;
- Setting and publishing standardized temperature or air quality triggers for when cooling centers and resilience hubs will open; and
- Track and monitor activation and usage of cooling centers and emergency shelters related to extreme heat, power loss, and public safety power shutoff events.

Timeframe: Short Range, Ongoing

Responsible Party: City Manager Office/Public Works

Funding Sources: General Fund

Program PS-7.4a: Identify and monitor vulnerable populations that could be impacted by reduced air quality, smoke from wildfires, increased extreme heat events, power shortages or shut-offs, and exposure to flooding.

Timeframe: Short Range, Ongoing

Responsible Party: City Manager Office, Public Works, Fire Department

Funding Sources: General Fund

Outreach, Education

Program PS-18: Air Quality and Air Pollution Education. Educate the public regarding best management practices that help to improve air quality and air pollution.

Timeframe: Long Range

Responsible Party: City Manager Office/Economic Development

Funding Sources: General Fund, grants

Program 1: Air pollution education. Disseminate information to residents and property owners living within [500/1,000 feet] of a freeway to inform them about the air pollution risks in those areas and what mitigation measures they can take.

Program PS-19: Green Building Education. Educate the public regarding the City's Green Building Ordinance and Reach Codes Provide information regarding opportunities for renewable energy, battery storage, EV charging, and energy and water conservation retrofits for existing buildings.

Timeframe: Long Range

Responsible Party: City Manager Office/Economic Development

Funding Sources: General Fund, grants

Program PS-7.1a: Develop a climate change-specific outreach program to inform community members how to prepare for, withstand, and recover after climate hazard events. Incorporate methods to overcome language, technological, and other barriers to reaching vulnerable communities. The outreach program should include:

- Public outreach to increase customer participation in water conservation programs and encourage water conservation methods during non-drought times.
- Information about existing energy efficiency and weatherization programs to reduce energy demand, make buildings safer to shelter in, and make buildings more resilient during power outages.
- Information about renewable energy, battery storage, and building and transportation electrification programs, financing, and rebates
- Extreme heat safety precautions to protect public health and extreme heat building retrofit guidance for home and business owners.
- Process to notify owners of property in areas with inundation or flooding potential regarding those hazards when they seek development review or other related County services.

Timeframe: Mid-Range

Responsible Party: Community Development and Transportation

Funding Sources: General Fund

Program PS-7.2a: Establish an environmental reverse calling center or participate in the San Mateo County (SMC) ALERT emergency alert system. If participating in the SMC ALERT system, ensure that the system will provide information to all residents and ensure that the alerts include fire, flooding, temperature (excessive cold or heat), earthquake, and severe weather events. Ensure the SMC ALERT system provides information regarding the locations of emergency shelters, cooling centers, and emergency services.

Timeframe: Short Range

Responsible Party: City Manager Office/ San Mateo County

Funding Sources: General Fund

Program PS-7.2b: Develop an emergency notification system for the most vulnerable community members before, during, and after a climate change-induced hazard event and assist in their evacuation, if needed.

Timeframe: Short Range, Ongoing

Responsible Party: City Manager Office/City Fire Department

Funding Sources: General Fund

Physical Improvements

Program PS-49: Upgraded Levees to Meet End of Century Sea Level Rise Projections. Upgrade existing levees in accordance with state and federal standards to meet end of century sea level rise projections such that the levees can be certified by FEMA for flood protection under sea level rise conditions.

Timeframe: Ongoing

Responsible Party: Public Works Services Department; Community Development

Funding Sources: General Fund

Inter-Agency and Other Organizations Consultation

Program PS-20: Regional Air Quality Consultation. Notify local and regional jurisdictions of proposed projects that may affect regional air quality, as identified by project type and size thresholds in the BAAQMD CEQA Guidelines and other appropriate sources.

Timeframe: Ongoing

Responsible Party: Community Development

Funding Sources: General Fund

Program PS-6.2a: Actively participate in the development and timely implementation of the San Mateo County Multi-Jurisdictional Local Hazard Mitigation Plan, Hazard Mitigation Action Plan specific to Redwood City. Allocate adequate City resources to ensure timely implementation of mitigation actions.

Timeframe: Ongoing

Responsible Party: Community Development and Transportation

Funding Sources: General Fund

Program PS-6.3a: Consult with the U.S. Geological Survey, Bay Conservation and Development

Commission, California Coastal Commission, and other monitoring agencies to study near-term (50 years), mid-term (100 years), and long- term (200+ years) high probability climate change effects.

Timeframe: Ongoing

Responsible Party: City Manager Office/Community Development and Transportation

Funding Sources: General Fund

Program PS-6.8a: Collaborate regularly with sea level rise planning partners, such as the San Mateo County Flood & Sea Level Rise Resiliency District (OneShoreline), that can provide technical assistance for sea level rise resiliency planning.

Timeframe: Ongoing

Responsible Party: Community Development and Transportation

Funding Sources: General Fund

Program PS-22: Local Agency Consultation. Continue to consult with other local governments in addressing climate change. Participate in the countywide Regionally-Integrated Climate Action Planning Suite (RICAPS) initiative programs such as the Cities for Climate Protection Campaign to address local and regional climate change concerns and leverage multi-agency support for countywide climate initiatives.

Timeframe: Ongoing

Responsible Party: Public Works Services Department

Funding Sources: Grants, General Fund

Hazards Management

Events such as the San Francisco earthquake and fire of 1906, the 1989 Loma Prieta earthquake, and the hillside fires that devastated entire neighborhoods in Berkeley and Oakland in 1991 continue to remind Californians that urban areas are not protected from nature's substantial destructive forces. In addition, human criminal actions, such as arson or terrorism can lead to disasters. Both natural and human- caused events such as these have the potential to cause significant damage to critical infrastructure and properties, and above all, can potentially lead to loss of lives. Recognizing and planning for the certain occurrence of these disasters will continue to shape development decisions in Redwood City.

Geologic and Seismic Hazards

Redwood City is located in the seismically active San Francisco Bay Area. Due to its location near the boundary between the North American and Pacific tectonic plates, Redwood City is exposed to geologic and seismic hazards such as earthquake fault ruptures, strong seismic ground shaking, and seismic-related ground failure, including liquefaction and landslides.

Although mapping completed under the Alquist-Priolo Earthquake Fault Zoning Act indicates that no active earthquake fault zones are located in the city, several major regional active fault zones are of concern. The San Andreas Fault zone–a significant tectonic feature–is located approximately 2,000 feet southwest of Redwood City. Other major regional active faults include the Hayward, Rodgers Creek, Calaveras, San Gregorio-Seal Cove, Maacama, West Napa, Green Valley, Concord, and Greenville faults. The active San Gregorio-Seal Cove Fault lies 9.5 miles to the west of Redwood City, and the inactive Pilarcitos fault also is to the west, by about two miles. Figure PS-4 indicates where the active regional fault zones lie relative to Redwood City.

The U.S. Geological Survey estimates that between 2003 and 2032, there is a 62 percent probability that a 6.7 or greater magnitude earthquake will occur in the San Francisco Bay Region, and a 21 percent chance that a 6.7 or greater magnitude earthquake will occur along the San Andreas Fault. An earthquake of such magnitude can generate disasters such as seismic sea waves, known as tsunamis, which can devastate the coastline. However, the potential risk of sea waves or tsunamis is generally considered low for Redwood City, as the city lies approximately 10 miles east of the Pacific Ocean shoreline, outside of the County of San Mateo Tsunami Evacuation Planning Area.

Surface Rupture

Surface rupture occurs when the ground surface is broken due to fault movement during an earthquake. The location of surface rupture generally can be assumed to be along an active major fault trace. The San Andreas Fault is oriented roughly parallel to the western boundary of the city, with a local splay, known as the Cañada Fault, just west of the city. The eastern edge of the Alquist-Priolo Earthquake Fault Zone for this fault is located approximately 2,000 feet west of the city, just west of Cañada College near I-280 (Figure PS-5). Areas within the Alquist-Priolo Earthquake Fault Zone require special studies to evaluate the potential for surface rupture to ensure that no structures intended for human occupancy are constructed across an active fault.

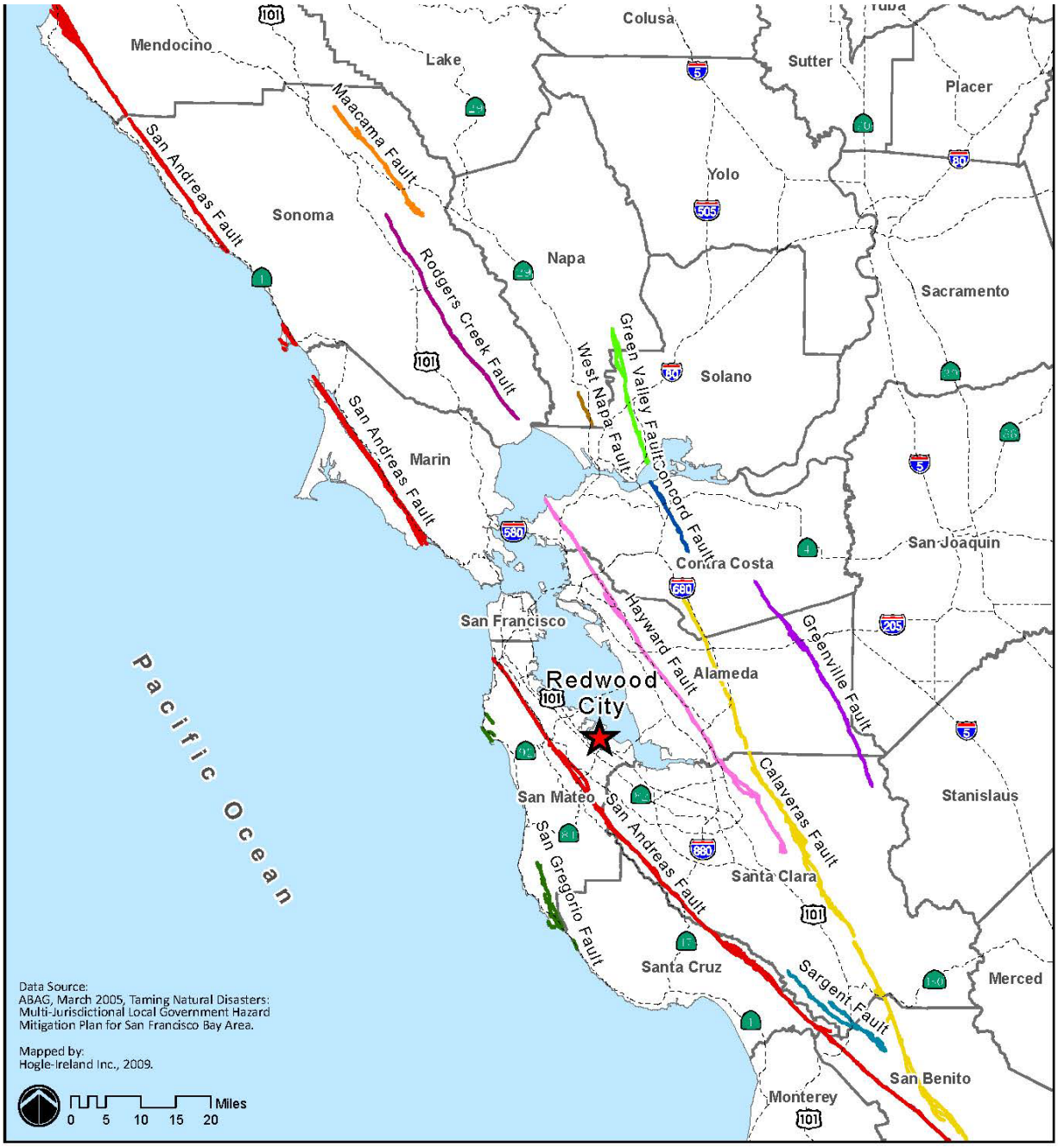
Multiple potentially active Quaternary-era faults cross the city, which are part of the San Andres Fault

system. These faults show evidence of activity between 11,000 years and 1.6 million years ago. The faults are shown as concealed or buried and are not classified under the Alquist- Priolo Earthquake Fault Zone Act to be active. Thus, given the absence of active faults or fault traces crossing Redwood City; the potential for fault rupture is minimal.

Ground Shaking

Ground shaking is a general term referring to all aspects of motion of the Earth's surface resulting from an earthquake; ground shaking is normally the major cause of damage in seismic events. The extent of ground shaking is controlled by the magnitude and intensity of the earthquake, distance from the epicenter, and local geologic conditions.

Magnitude is a measure of the energy released by an earthquake; it is assessed by seismographs. Intensity is a subjective measure of the perceptible effects of seismic energy at a given point, and it varies with distance from the epicenter and local geologic conditions. The Modified Mercalli Intensity Scale (MMI) is the most used scale for measurement of the subjective effects of earthquake intensity (Image PS-2).



Alquist-Priolo Earthquake Fault Zones

- Calaveras Fault
- Concord Fault
- Green Valley Fault
- Greenville Fault
- Hayward Fault
- Maacama Fault
- Rodgers Fault
- San Andreas Fault
- San Gregorio Fault
- Sargent Fault
- West Napa Fault

- County Boundary
- Primary Roads

Notes:
This map is intended for general land use planning only.
Information on this map is not sufficent to serve as a substitue

Figure PS-4: Regional Faults

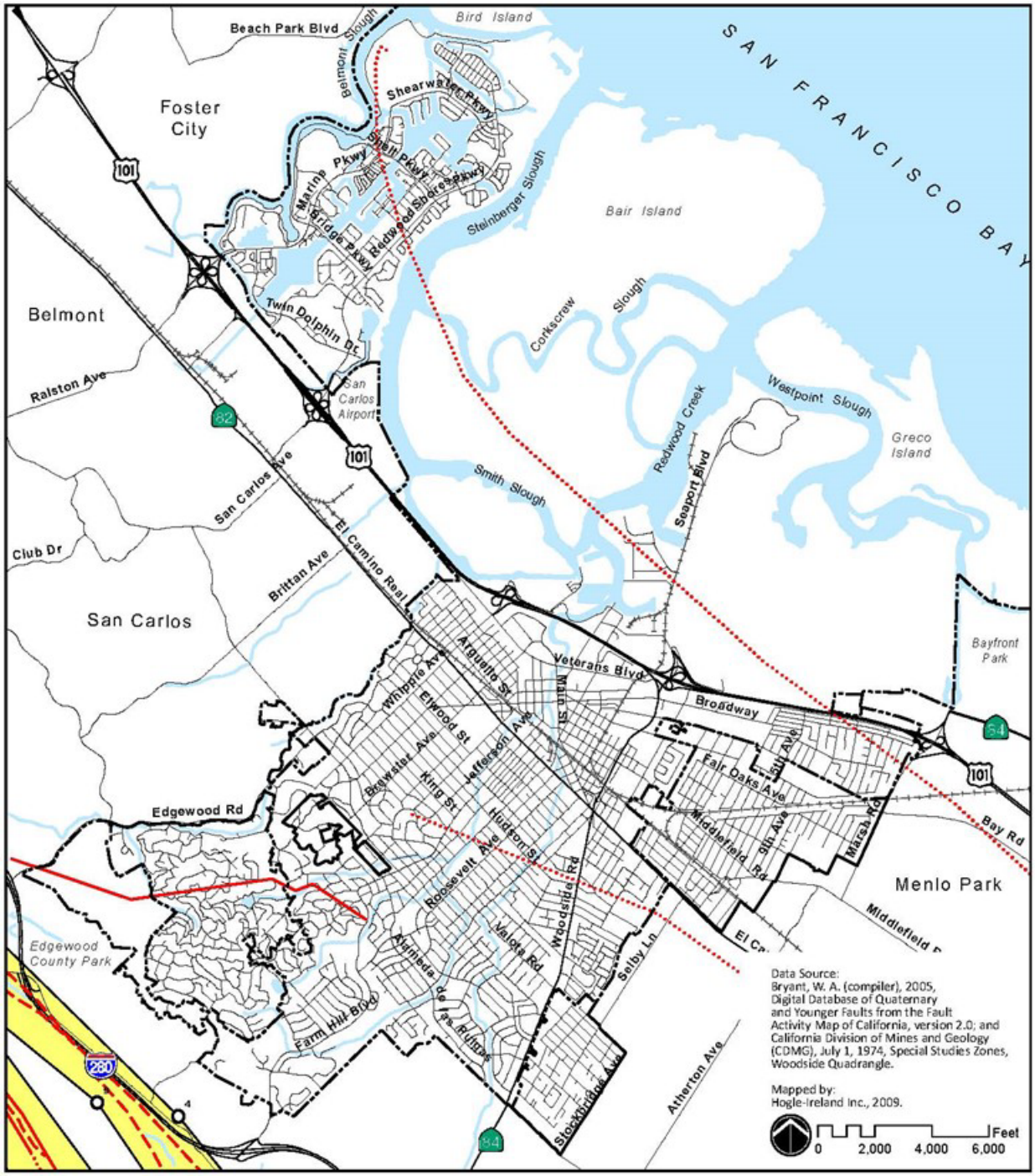
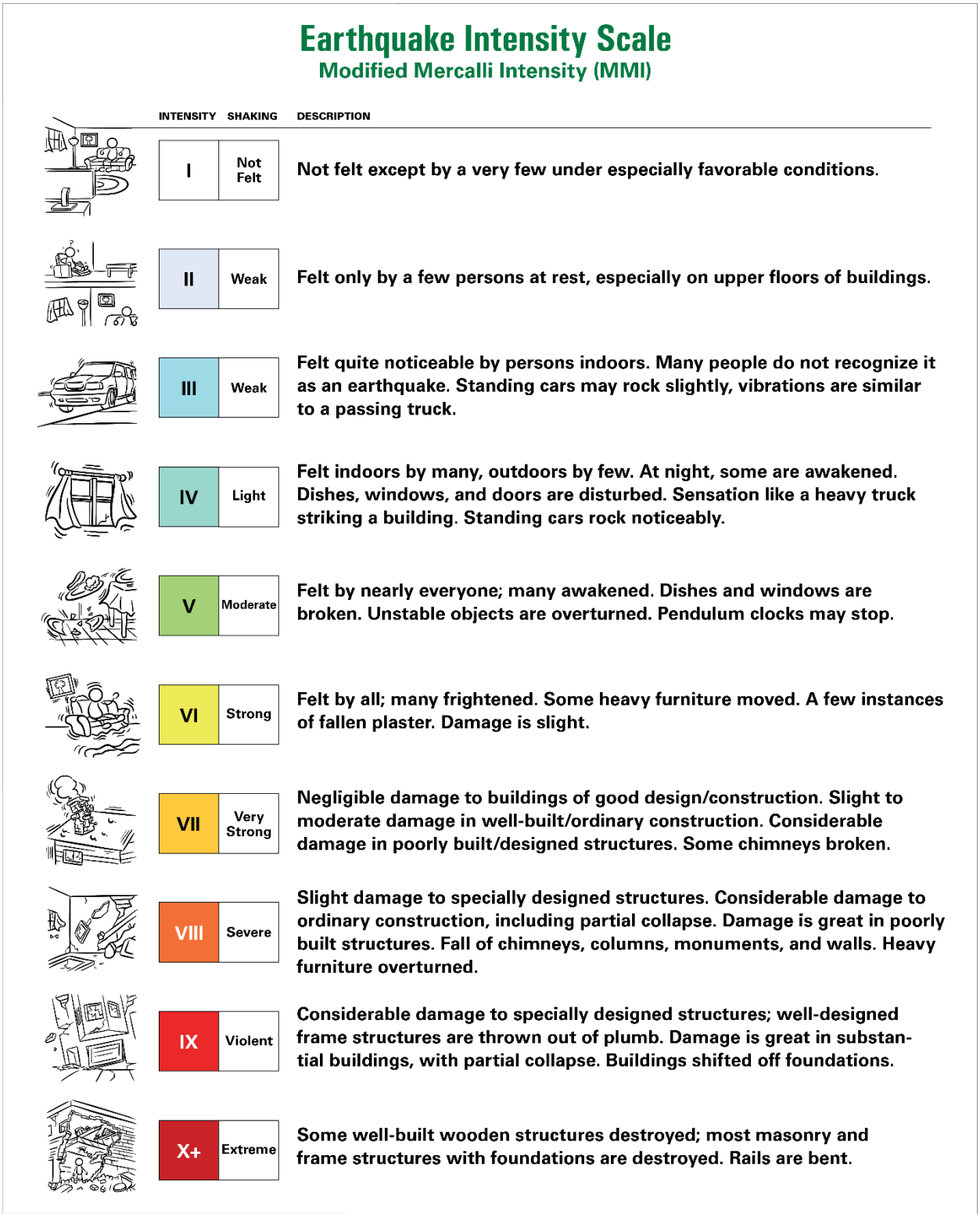


Figure PS-5: Alquist-Priolo and Fault Rupture Hazard Zone Map

Figure PS-2: Modified Mercalli Intensity Scale (MMI)



Source: United States Geological Survey, 2021, Intensity Scale

Intensity can also be quantitatively measured using accelerometers (strong motion seismographs) that

record ground acceleration at a specific location, as a measure of force applied to a structure under seismic shaking. Acceleration is measured as a fraction or percentage of the acceleration under gravity (g).

The San Andreas Fault is considered capable of generating a magnitude 7.9 earthquake, similar to the 1906 San Francisco earthquake. A 7.2 magnitude event on the Peninsula portion of the San Andreas Fault or a 7.9 event on the entire San Andreas Fault could be capable of generating very strong (MMI VIII) to violent (MMI IX) seismic shaking in Redwood City. To the east, the Hayward fault could produce a 6.5 magnitude event that could result in moderate to strong (MMI VI-VIII) local seismic shaking.

Estimates of peak ground acceleration have been made for Redwood City based on probabilistic models that account for multiple seismic sources. Under these models, consideration of the probability of expected seismic events is incorporated into the calculated prediction of the level of ground shaking at a particular location. The expected peak horizontal acceleration (with a 10 percent chance of being exceeded in the next 50 years) generated by any of the seismic sources potentially affecting the city is estimated by the California Geological Survey at 60 to 80 percent of the acceleration of gravity (g), with greater acceleration closer to the San Andreas fault. This level of ground shaking in Redwood City represents a very real and significant hazard during the lifetime of this General Plan.

Liquefaction and Lateral Spreading

Liquefaction is the temporary transformation of loose, saturated granular sediments from a solid state to a liquefied state as a result of seismic ground shaking. In the process, the soil undergoes temporary loss of strength, which commonly causes ground displacement or ground failure to occur. Since saturated soils are a necessary condition for liquefaction, soil layers in areas where the groundwater table is near the surface have higher liquefaction potential than those in which the water table is located at greater depths.

Lowland areas of Redwood City have a moderate to high potential for liquefaction (Figure PS-6). Regional liquefaction hazard mapping indicates that a 7.2 earthquake on the Peninsula portion of the San Andreas Fault or a 7.9 event anywhere on the San Andreas Fault could result in moderate to high liquefaction hazard in lowland portions of Redwood City. High to very high liquefaction susceptibility was mapped in 1998 in the tidal flat areas of Redwood City, where water under pressure welling up through sand was reported in Corkscrew Slough, caused by liquefaction during the 1989 Loma Prieta earthquake. Mapping from the early 2000s shows moderate to very high liquefaction susceptibility in the tidal flat area based on soil type.

Given the soil types underlying the city and high groundwater levels at many locations, the City will continue to require liquefaction investigations for most development projects in low-level areas.

A phenomenon related to liquefaction is lateral spreading, whereby shaking results in the horizontal displacement of soil toward a creek, other open channel, or other “free” face, such as an excavation boundary. The combination of liquefaction-prone soils and creeks in Redwood City means that the risk of lateral spreading exists.

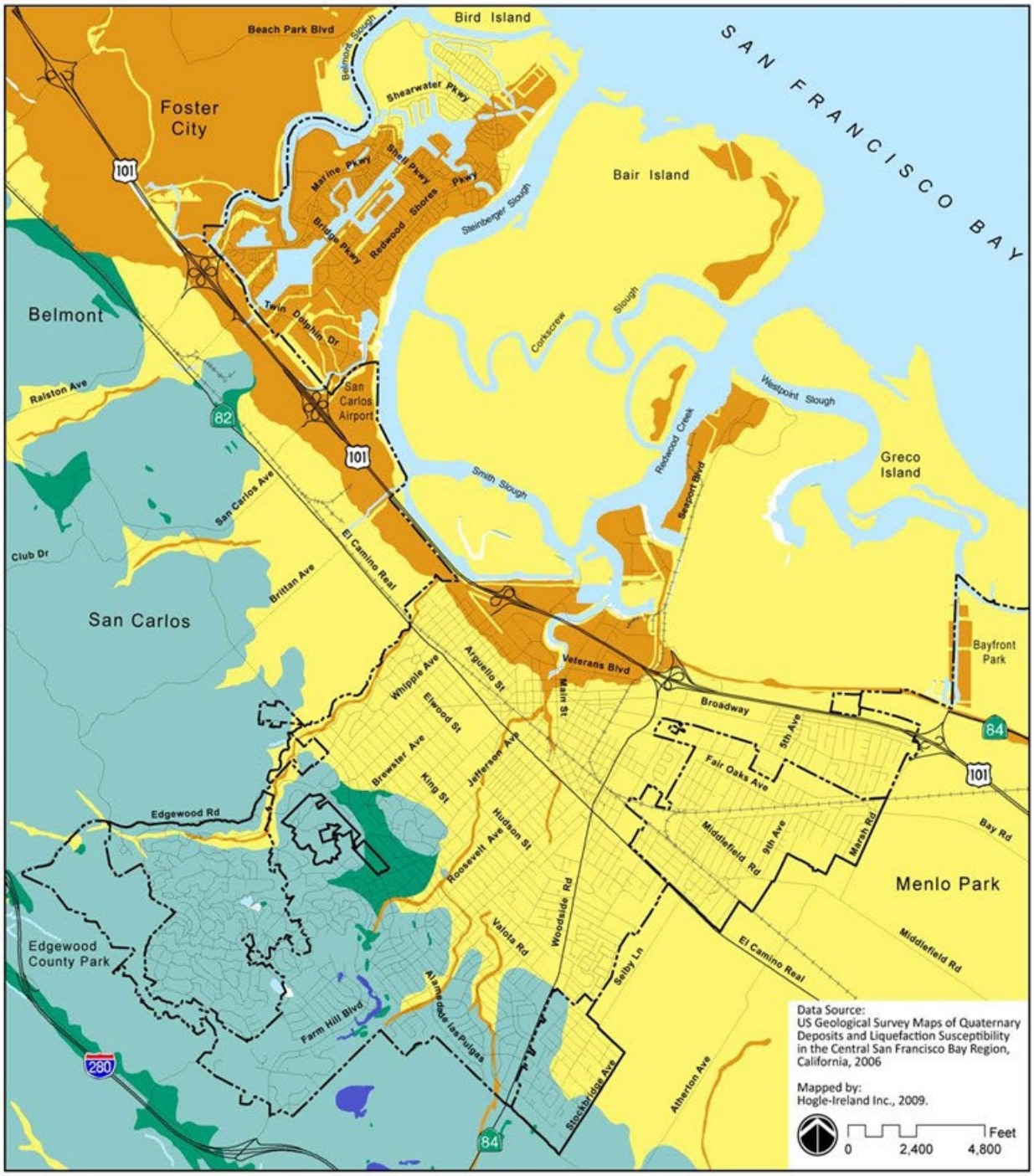
Expansive Soils

Expansion and contraction in volume can occur when expansive soils undergo alternating cycles of wetting (swelling) and drying (shrinking). During these cycles, the volume of the soil changes markedly. As a consequence of such volume changes, structural damage to buildings and infrastructure may occur if the potentially expansive soils were not considered in project design and during construction.

The Novato and Reyes Series soils in the lowland portions of Redwood City are predominately clays and silty clays with high shrink-swell potential. The Fagan Series soils in the upland areas also have a high percentage of clay and moderate to high shrink-swell potential. Clay and associated materials can result in weak, compressible, or expansive soils. These soils are classified as expansive soils.

Slope Stability

Slope failure can occur as either rapid movement of large masses of soil (landslide) or slow, continuous movement (creep). The primary factors influencing the stability of a slope are: 1) the nature of the underlying soil or bedrock; 2) the geometry of the slope (height and steepness); 3) rainfall; and 4) the presence of previous landslide deposits. A few areas with historic slides and earthflows are mapped in the southwest hills of Redwood City.



Liquefaction Susceptibility

- Very High
- High
- Medium
- Low
- Very Low

Landslides

- Earthquake-Induced Landslides

Base Map Features

- City Boundary
- Sphere of Influence
- Railroad
- Waterways

Note:
This map is intended for general land use planning only. Information on this map is not at a level of detail to serve as a substitute for individual site investigation.

Figure PS-6: Seismic Hazards

Settlement and Differential Settlement

Differential settlement or subsidence can occur if buildings or other improvements have been constructed on low-strength foundation materials (including imported fill) or if improvements straddle the boundary between different types of subsurface materials (e.g., a boundary between native material and fill). Although differential settlement generally occurs slowly enough that its effects are not dangerous to building inhabitants, it can cause significant building damage over time. Portions of Redwood City that contain loose or uncontrolled (non-engineered) fill may be susceptible to differential settlement. Locations in former tidal flats are expected to be susceptible to settlement due to low-strength native soils and potential unconsolidated fill. Additionally, former tidal flats are susceptible to differential settlement in areas where fill abuts native soil.

Subsidence and Collapse

Subsidence can occur in areas where subsurface materials such as limestone rock or salt deposits are dissolved by fluid flow, creating subsurface voids that can collapse. Subsidence may be of concern where groundwater or natural gas is extracted, causing the soil grains to compact. In Redwood City, the decomposition of highly organic soils and seasonal drying of expansive clay soils can result in subsidence, which could damage buildings. Organic and expansive soils in the city are subject to subsidence.

Soil Erosion

Soil erosion is a natural process that can be caused by wind or water. Eroded soils can collect in and be transported by stormwater runoff and discharged into surface waters, thereby affecting the quality of receiving waters. Stormwater runoff quality is regulated by the National Pollutant Discharge Elimination System (NPDES) program (established through the Federal Clean Water Act); the NPDES program objective is to control and reduce pollutants discharges to surface water bodies. In California, the NPDES program is administered by the State Water Resources Control Board, with local oversight provided by the Regional Water Quality Control Boards. Redwood City is a co-permittee under the San Mateo Countywide Water Pollution Prevention Program.

Flood Hazards

Simply stated, flooding is defined as the condition resulting when an overwhelming amount of water submerges land. Floods can occur in various ways; some floods develop slowly, when rain continues over a period of days and inundates water systems. Some, like flash floods, occur in a matter of minutes when a levee or dam is breached.

Although flooding in other parts of the country can cause the loss of life in areas prone to dam failures or major river levee breaks, in Redwood City flooding has been historically associated with property damage and inconvenience. Inconvenience occurs when local roads or streets flood. In Redwood City, localized flooding can occur when substantial rainfall overwhelms the capacity of storm drains to convey runoff to creeks or the Bay. Flooding has historically occurred in the Bayfront Canal/Atherton Channel watershed when high tides prevent rainwater from being discharged to the Bay.

The Federal Emergency Management Agency (FEMA) has been studying the system of levees that protect

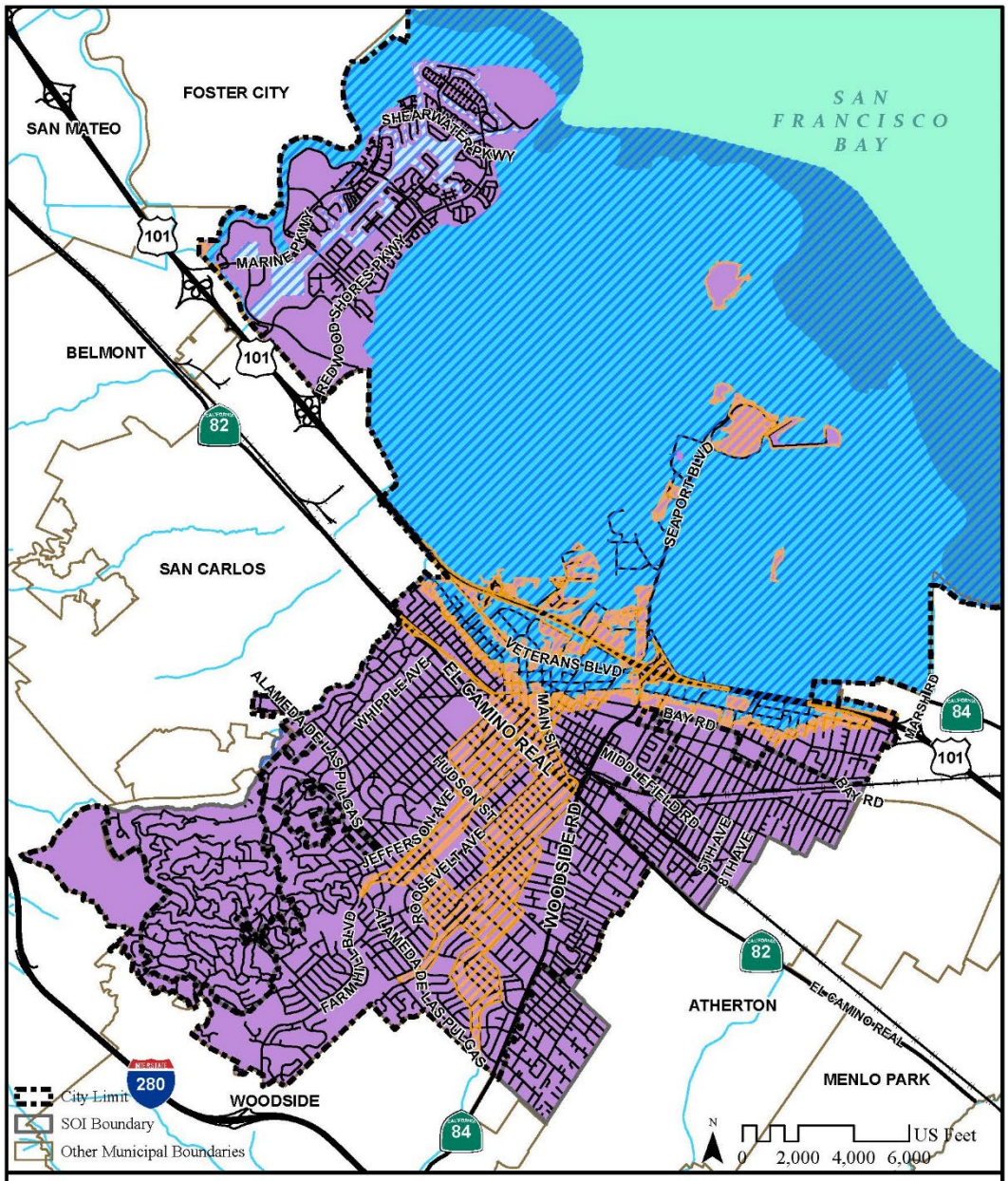
areas in Redwood City from the sea. Redwood City conducted additional construction efforts in 2010. Deficient segments of the levees were raised, and the multi-jurisdictional levee system achieved FEMA accreditation in 2011. Redwood Shores is located on low-lying bayfront land surrounded by a levee system that protects this area from coastal hazards, including 1% still-water elevation, wave run-up and over-topping, and high tides. The crest of some levee reaches are at, or a lower than the 100-year elevation. However, due to the short duration of that crest, flooding would be limited and shallow, provided that the levees themselves do not fail from the overtopping.

Perimeter levees protecting Redwood City

Flood boundaries have been updated under the National Flood Insurance Reauthorization Act of 2019. FEMA flood insurance rate maps (2019) show the areas of the city that are subject to 100-year and 500-year floods. Flood hazard areas are identified on the Flood Insurance Rate Map as a Special Flood Hazard Area (SFHA). SFHA are defined as the area that will be inundated by the flood event having a 1-percent chance of being equaled or exceeded in any given year. The 1-percent annual chance flood is also referred to as the base flood or 100-year flood. SFHAs are labeled as Zone A, Zone AO, Zone AH, Zones A1-A30, Zone AE, Zone A99, Zone AR, Zone AR/AE, Zone AR/AO, Zone AR/A1-A30, Zone AR/A, Zone V, Zone VE, and Zones V1-V30. Moderate flood hazard areas, labeled Zone B or Zone X (shaded) are also shown on the FIRM, and are the areas between the limits of the base flood and the 0.2-percent-annual-chance (or 500-year) flood. The areas of minimal flood hazard, which are the areas outside the SFHA and higher than the elevation of the 0.2-percent-annual-chance flood, are labeled Zone C or Zone X (unshaded).

Figure PS-7 and PS-8 show these flood hazard areas as well as general plan land uses, to indicate locations of existing and planned development. The areas subject to 100-year floods are located nearest to the Bay, northeast of U.S. 101. The city has historically experienced mild flooding in the areas near Cordilleras Creek (descending from the Santa Cruz Mountains) and the Friendly Acres neighborhoods, southeast of Woodside Road, in areas identified in the 100-year floodplain. Redwood Shores is also located in the 100-year floodplain.

Redwood City has a Floodplain Management Ordinance that was approved by FEMA and substantially complies with State law requirements (AB 162). The Floodplain Management Ordinance outlines construction requirements for new development and utilities within areas of special flood hazards, as well as administration requirements related to flood data and interpretations.



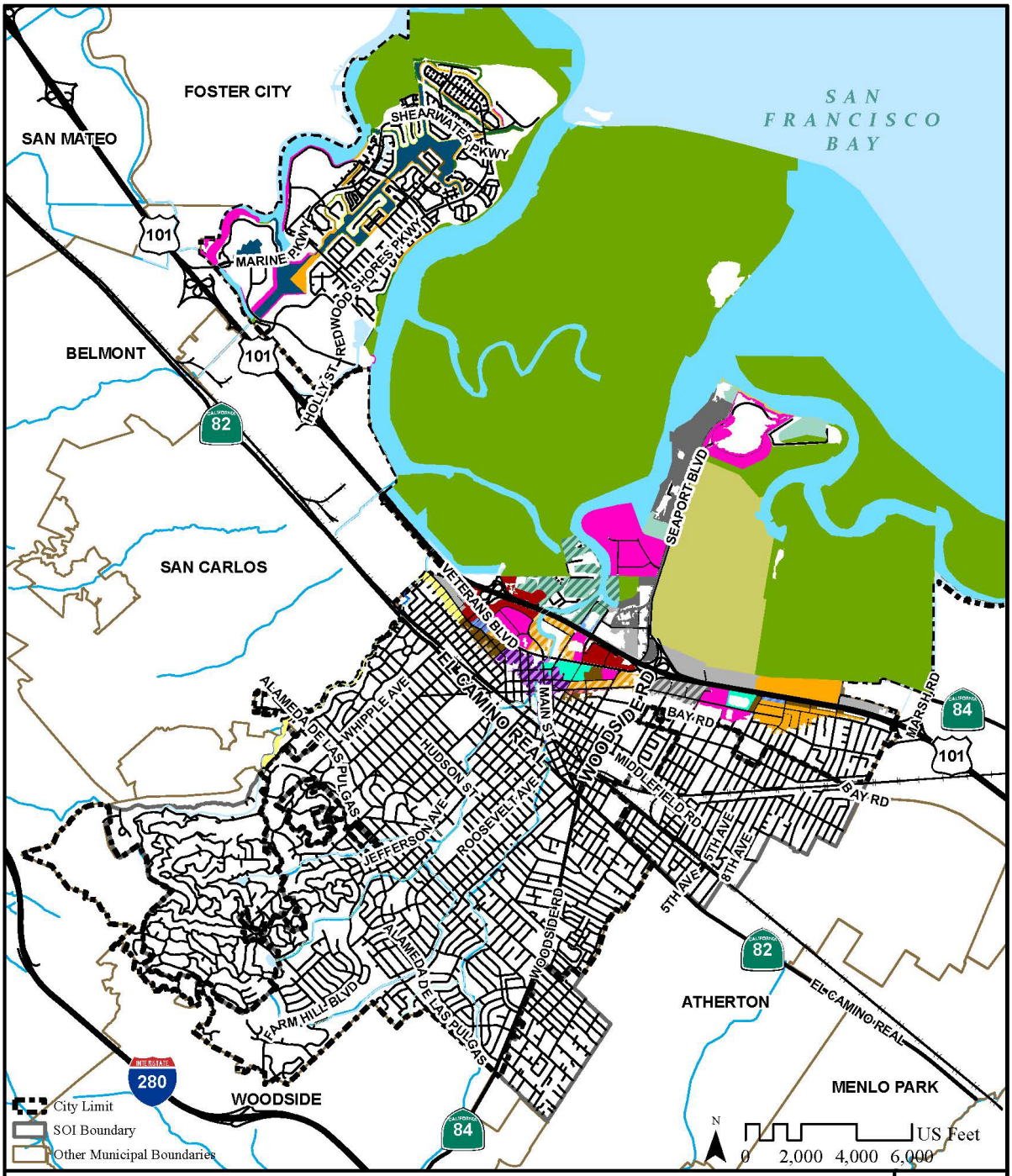
FEMA Flood Insurance Rate Map
City of Redwood City, CA and Sphere of Influence Boundary

Note: FEMA Flood Zone, FEMA Floodplain, and Roads have been clipped to the City of Redwood City's city limits and sphere of influence, with the exception of highways and freeways.

2019 FEMA Flood Zones
- Zone A (High Risk)
- Zone AE (High Risk)
- Zone VE (High Risk)
- Zone X (Low/Moderate Risk)
- Open Water

FEMA Floodplain
- 100-Year Floodplain (1% Annual Chance)
- 500-Year Floodplain (0.2% Annual Chance)

Source: FEMA, City of Redwood City GIS, San Mateo County GIS.
Data downloaded from FEMA on July 1, 2022.
Map created: Redwood City GIS, August 11, 2022.



FEMA Special Flood Hazard Areas & Their General Plan Land Use Designation for the City of Redwood City, CA & Sphere of Influence Boundary

Note: FEMA Flood Zone, FEMA Floodplain, and Roads have been clipped to the City of Redwood City's city limits and sphere of influence, with the exception of highways and freeways. General Plan Land Use information is only shown for FEMA Special Flood Hazard Areas. This map is intended for general land use planning only. Information on the map is not at a level of detail to serve as a substitute for individual site investigation.

Residential
- Low Density
- Medium High Density
- Medium Density
- High Density

Commercial
- Neighborhood
- Regional
- Office/Professional

Mixed Use
- Downtown
- Corridor
- Neighborhood
- Waterfront Neighborhood
- Transitional
- Marina

Industrial
- Industrial - Light
- Industrial - Light (Incubator)
- Industrial - Port Related

Public/Quasi-Public
- Hospital
- Schools
- Public Facility
- Parks

Open Space
- Preservation
- Urban Reserve
- Controlled Waterway
- San Francisco Bay

Source: FEMA, City of Redwood City GIS, San Mateo County GIS. Data downloaded from FEMA on July 1, 2022. Map created: Redwood City GIS, August 11, 2022.

Storm Drainage and Flood Control

Stormwater is rainwater and any other particles and substances that the rain carries along with it. In Redwood City, rain is collected (separate from the wastewater system) and carried through a system of gutters, pipes, and other drainage structures. Runoff from higher elevations in the city and watershed flows downhill to the lower-lying San Francisco Bay. Stormwater is conveyed into creeks, lined channels, storm drainage pipes, and lagoons, where gravity takes the stormwater toward the Bay. In low-lying areas, the stormwater is collected in various stormwater pump stations that discharge into the Bay. The Redwood City storm drainage system consists of 22 pump stations, 140 acres of storm retention basins (Redwood Shores Lagoon), 2,685 storm drain catch basins, 29 dewatering structures (Redwood Shores Lagoon), over 100 miles of storm drain pipe, 82 open culverts, and over 13.65 miles of creeks, drain ditches, and canals. Stormwater in Redwood City is not currently treated before it enters the Bay.

Stormwater runoff and related pollution is discussed in more detail in the Natural Resources Element, Natural Habitat and Open Space Chapter.

The lagoons in Redwood Shores function as stormwater detention basins.

A watershed is an area of land that drains into a body of water. As rainwater runs downhill, it carries sediment and other materials into our streams, creeks, and eventually into the San Francisco Bay. There are 34 primary watersheds within San Mateo County. Portions of the San Francisquito, Redwood, Cordilleras, and Belmont watersheds are located within Redwood City.

Storm drain systems must be designed and maintained to provide adequate capacity to collect and carry stormwater and avoid flooding. Also, jurisdictions must consider measures to reduce pollutant loads in stormwater as part of regional efforts to improve water quality in the San Francisco Bay. The Natural Resources Element's Natural Habitat and Open Space Chapter includes policies supporting alternative approaches to reduce pollution infiltration into our creeks and waters.

Major segments of Redwood City's creeks are composed of concrete- lined channels, storm drainage pipes, and underground box culverts, which tend to increase stormwater runoff capacity and velocity and prevent stream bank erosion and flooding. These channels, pipelines, along with pump stations are inspected and maintained by the Redwood City Public Works Services Department. The Public Works Services Department also works to ensure the streets, curbs, and gutters are clean to facilitate stormwater flow. In Redwood Shores, much of the flow drains into the 140 acres of lagoons, which store stormwater that is eventually discharged to San Francisco Bay.

Regional interest and developing best practices encourage replacement of traditional stormwater engineering solutions with carefully implemented natural alternatives. The term "daylighting" is used to

refer to the re-establishment of a stream that had been previously diverted into a culvert, pipe, or a drainage system into an open, above- ground channel. This is intended to improve the riparian environment for a stream. Daylighted streams can be maintained successfully in concert with restoration and stewardship by local neighborhoods. With impervious surfaces having replaced most of the natural ground cover in urban environments, the sheer volume and flow rate from unmoderated stormwater and the carrying of non-point pollution converge through urban creeks, which can over-burden the system. Effective solutions include the changes in practice for the entire urban watershed, far beyond the riparian channel itself. Redwood City is interested in exploring opportunities to enhance our urban environment through the daylighting of portions of our local creeks and consulting with jurisdictions throughout the watershed to decrease stormwater pollution.

Flooding due to Infrastructure Capacity

Historically, the Friendly Acres/East Bayshore and the Centennial neighborhoods have experienced some degrees of flooding during storms, mostly due to overwhelming drainage infrastructure. The Friendly Acres/East Bayshore neighborhood near U.S. 101 and the northwestern portion of the Centennial neighborhood adjacent to Cordilleras Creek are prone to flooding. Flooding usually occurs when heavy rainfall coincides with high Bay tides, thereby impeding runoff flow into the Bay and storm flows in excess of design capacity. Storm drains that are clogged with leaves and debris can also increase the chances of flooding during storms.

During the winter of 1998, unusually intense El Niño storms caused severe flooding of streets and homes in the Friendly Acres/East Bayshore neighborhood, prompting emergency evacuations of some area residents. In the Centennial neighborhood, Cordilleras Creek topped its banks causing flooding of residences in the lower creek reaches and extensive creek bank erosion throughout its length. In response, Redwood City developed a long-term strategic plan to address the problems of inadequate drainage and flooding in these areas.

In general, stormwater flows into the storm drainage system by gravity to various storm drain pump stations. The flooding in the Friendly Acres/East Bayshore neighborhood is due to increased runoff amounts throughout the watershed and an aging storm drainage system that does not have enough capacity to handle the increased runoff at this low-lying point of the city. The current storm drain system in this area includes a sub-drainage basin located beneath the Fifth Avenue/Hoover Street intersection where stormwater is temporarily stored. From there, the water flows through a pipeline beneath U.S. 101 to the Fifth Avenue Pump Station draining into the Bayfront Canal. The Bayfront Canal discharges the stormwater into San Francisco Bay, but has limited storage capacity. The discharge from the Bayfront Canal is through a single point controlled through a tide gate structure located near Marsh Creek/Atherton Channel in Menlo Park. Discharge occurs during low tides. Redwood City is addressing flooding conditions in the Friendly Acres/Fifth Avenue neighborhood. The City is increasing the capacity of stormwater transmission and distribution pipes in the Friendly Acres neighborhood. In addition, the Fifth Avenue Pump Station will be upgraded to increase capacity.

In the Centennial neighborhood, flood-prone areas are adjacent to Cordilleras Creek. A practical approach to alleviating flooding in this area is to educate creekside property owners in low-cost, ecologically enhancing methods to maintain and improve creek bank stability and prevent bank erosion. These efforts help reduce sedimentation that can block creek flow and obstruct culverts and contribute to flooding.

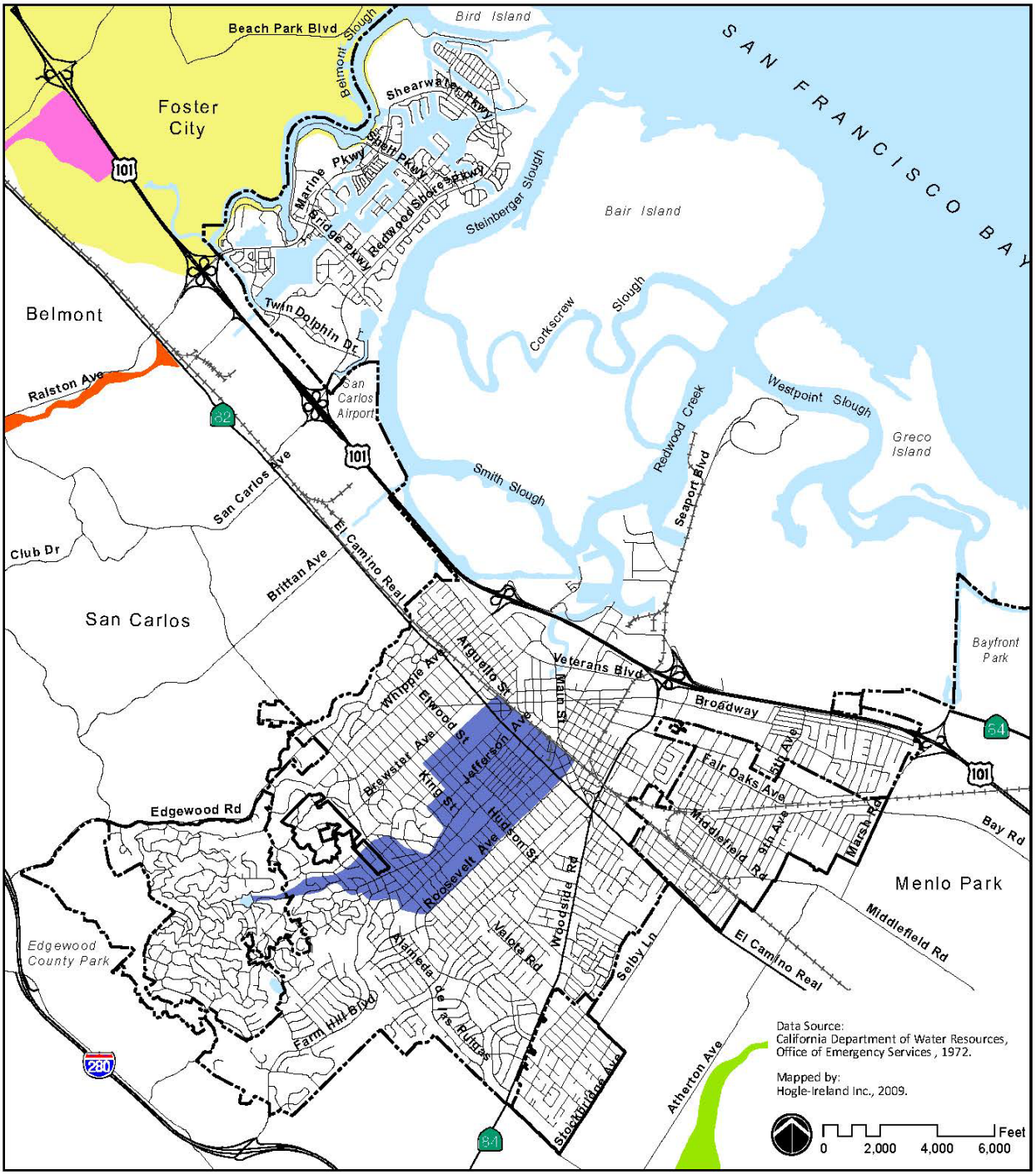
Redwood City has also established setback limits from the center lines of creeks and tops of creek banks where new building is discouraged.

Much of the watershed areas where stormwater runoff originates are located in jurisdictions outside of Redwood City or in San Mateo County. For this reason the cost of financing flood-control improvements should not be borne entirely by Redwood City. Other jurisdictions, including San Mateo County, San Carlos, Atherton, Menlo Park and Woodside should also be required to contribute.

Flooding due to Dam Inundation

Dams or reservoirs may fail for seismic or geologic reasons, which could potentially lead to damage of infrastructure and property located immediately and downstream from these dams and reservoirs. Inundation areas, as provided by Governor's Office of Emergency Services, show the extent of damage to life and property that would occur, given a complete and sudden dam failure at full capacity (Figure PS-8).

The largest inundation area affecting the city is the potential inundation area from a sudden failure of the Lower Emerald Lake dam. If the Lower Emerald Lake dam failed catastrophically, water would travel downwards along natural drainage courses in a northeast direction, eventually ending at El Camino Real. It is likely that the most extensive damage would be expected for structures and facilities located in close proximity below the lake. Farther from the dam, flood damage would be expected as water would spread across the city.



Inundation Areas

- Lower Crystal Springs
- Laurel Creek Poly
- Notre Dame
- Emerald Lake
- Bear Gulch

- City Boundary
- Sphere of Influence
- Railroad
- Waterways

Notes:
This map is intended for general land use planning only. Information on this map is not at a level of detail to serve as a substitute for individual site investigation.

Figure PS-8: Dam Inundation Flood Hazards

Wildland Fire Hazards

The brush-covered hills in southwest Redwood City pose potential wildland fire hazards to the residential neighborhoods there. Long and dry summers, combined with highly flammable vegetation, can increase the possibility of wildfires. Understanding the risks associated with development in and near fire-prone areas can help advance planning to reduce the risks associated with major wildland fires.

As a result of climate change, higher temperatures, and drier environments, wildfire events and associated risks could be more prominent. Wildfires can place stress on critical assets within the city. Roadways are at risk of physical damage and/or closure, which could impact the effectiveness of evacuation routes and emergency service access. Water supply is a vulnerable asset as there is likely to be an increase in demand for water for wildfire fire suppression and resident needs.

Wildfire smoke is another hazard associated with wildfires. Smoke releases high concentrations of particulate matter and carbon monoxide. Other air pollutants in smoke may be more toxic and hazardous than particulate matter and carbon monoxide; however, they are found in much lower concentrations. The effects of smoke range from eye and respiratory tract irritation to more serious disorders, including reduced lung function, bronchitis, exacerbation of asthma, and premature death. These effects can be more severe for sensitive populations, such as those with respiratory illnesses and other chronic diseases, the elderly, and children.

Other populations at risk of experiencing the impacts of wildfire, specifically wildfire smoke, include low-income communities and/or communities of color who have historically lived or worked in areas with greater exposure to pollution burdens. Redwood City's environmental justice communities already experiences high rates diesel particulate matter and air pollution caused by heavy traffic from nearby major roads and highways. Toxins released from wildfire smoke could exacerbate existing pollution burdens in these communities.

History of Wildfire Occurrences

Redwood City has not experienced a significant wildfire event in decades but several communities in the Bay Area and broader Northern California have a history of significant wildfire incidents. The CZU Lightning Complex fires occurred in August 2020 and consisted of several wildfires in San Mateo and Santa Cruz counties. The fires burned 86,509 acres causing the destruction of 1,1490 buildings and significant damages to Butano and Big Based Redwoods state parks.

Wildfire risk throughout the State is increasing due to climate change, because of higher temperatures and longer dry periods. According to Cal-Adapt, the State's climate projection tool, temperatures, drought, and wildfire occurrence are expected to increase significantly by the middle of the 21st century. Planning for fire adapted communities can ensure they are more resistant to future wildfire threats and have the capacity to respond to wildfire emergencies.

Very High Fire Hazard Areas

Due to the wildland fires that have plagued California, the California Department of Forestry and Fire Protection is required to review, map, and update Fire Hazard Severity Zones for State Responsibility Areas (SRAs–areas outside of City limits where the State has responsibility for wildland fire protection) and Very

High Fire Hazard Severity Zones (VHFHSZ) for Local Responsibility Areas (LRAs–areas where local government has responsibility for wildland fire protection). Redwood City foothill neighborhoods located west of Alameda de las Pulgas are designated Very High Fire Hazard Severity Zone. Approximately 1,200 properties lie within the VHRHSZ in Redwood City. All areas within Redwood City are served by Redwood City Fire Department and Redwood City Police Department. The emergency facilities (fire stations, police stations, and hospitals) and the wildfire hazard areas are shown on Figure PS-9 or as provided by the most current Fire Hazard Severity Zone map published by California Department of forestry and Fire Protection's Fire And Resources Assessment Program (FRAP).

Land uses, roads, utilities, and essential public facilities located within the VHFHSZ and SRA zones are shown in Figure PS-10.

New construction within the VHRHSZ is required to comply with California Building Code Chapter 7A, including requirements for fire retardant or ignition resistant construction materials at roofs, eaves, vents, exterior walls, exterior windows and doors, decks, and areas below decks. California Government Code §51182 also requires buildings within these areas to provide defensible space. Defensible space must be maintained up to 100 feet (or the property line, whichever is less) from the building. The Redwood City Building Code also requires fire retardant roofing and interior fire sprinklers.

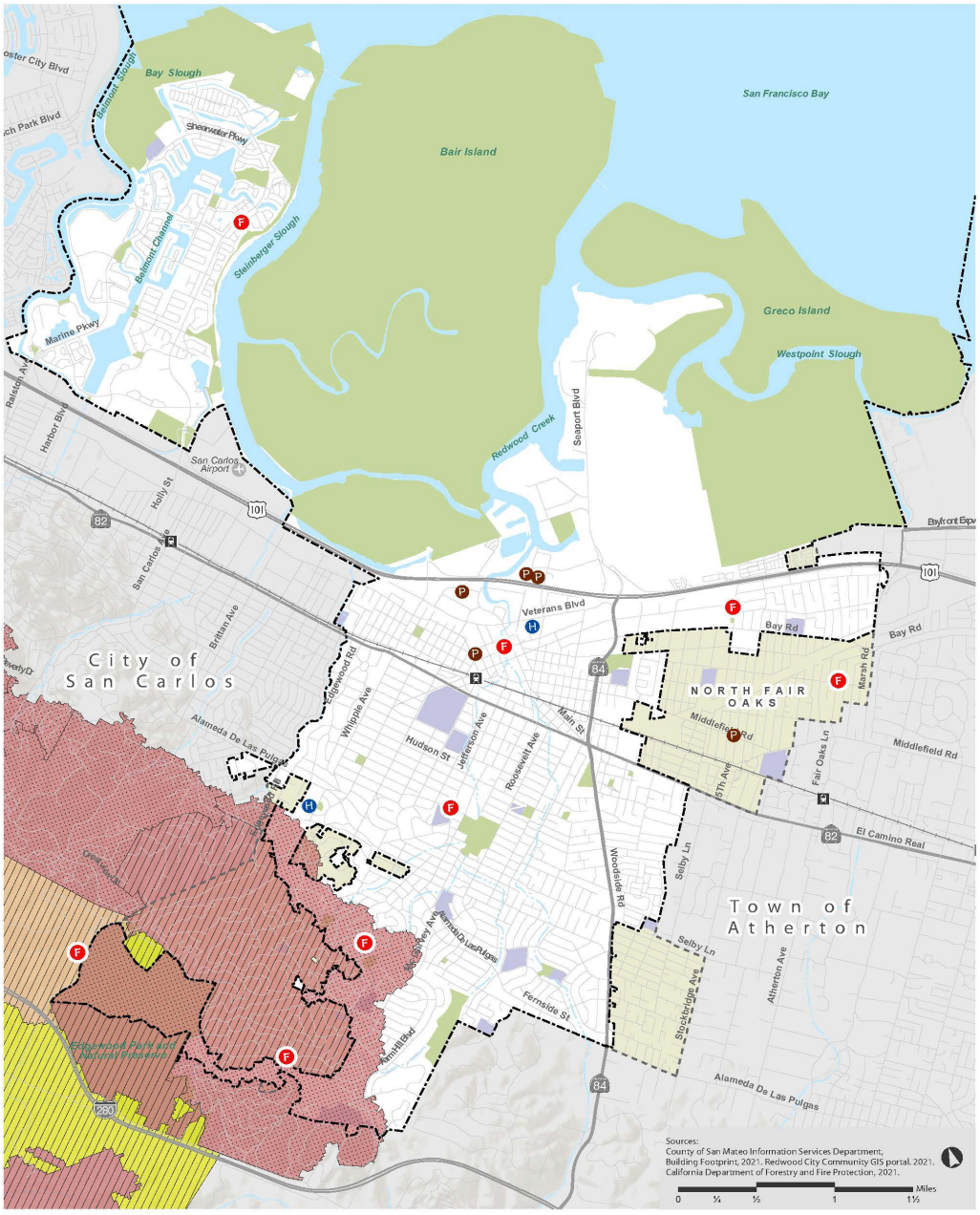
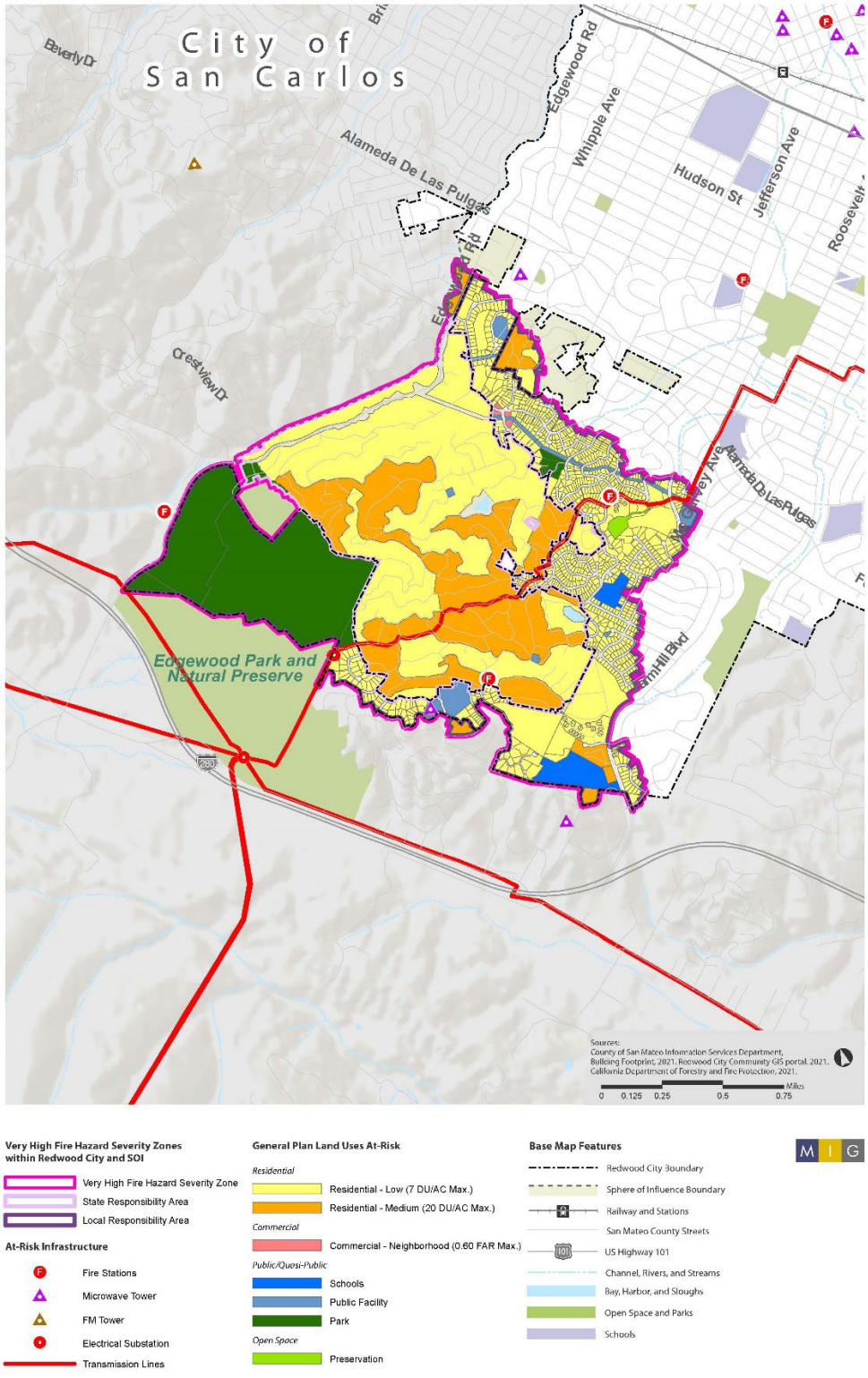


Figure 9:
Wildfire Hazard Area and Emergency Facilities

FIGURE PS-10: Land Uses, Roads, Utilities, and Essential Public Facilities within VHFHSZ and SRA

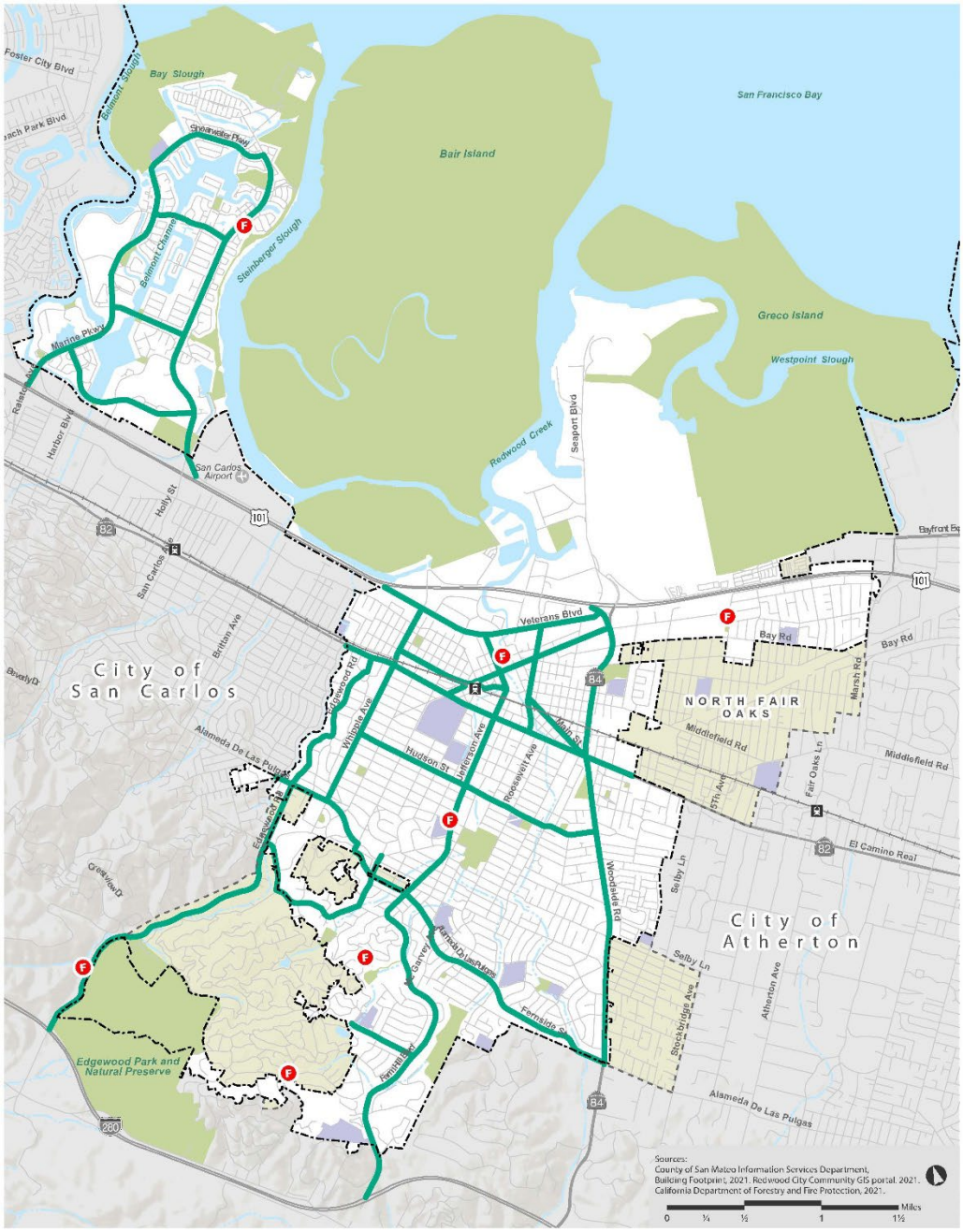


Evacuation Routes and Streets with Single Access

Redwood City Police and Fire Departments implemented the San Mateo County's Zonehaven evacuation system. Zonehaven determines the most efficient and effective evacuation routes based on the emergency type and location. Evacuation routes will vary; however, Figure PS-11 identifies the roadways most frequently used for evacuations. Single access roads located within the VHFHSZ are shown in Figure PS-12.

Additional Wildfire Information and References

The City of Redwood City Focused General Plan's Vulnerability Assessment, November 21, 2021 and the County of San Mateo 2021 Multi-Jurisdictional Local Hazard Mitigation Plan, October, 2021 provide additional technical information, review, and analysis for issues pertaining to wildfire, climate change, resilience, and other hazard issues. These documents are incorporated by reference.



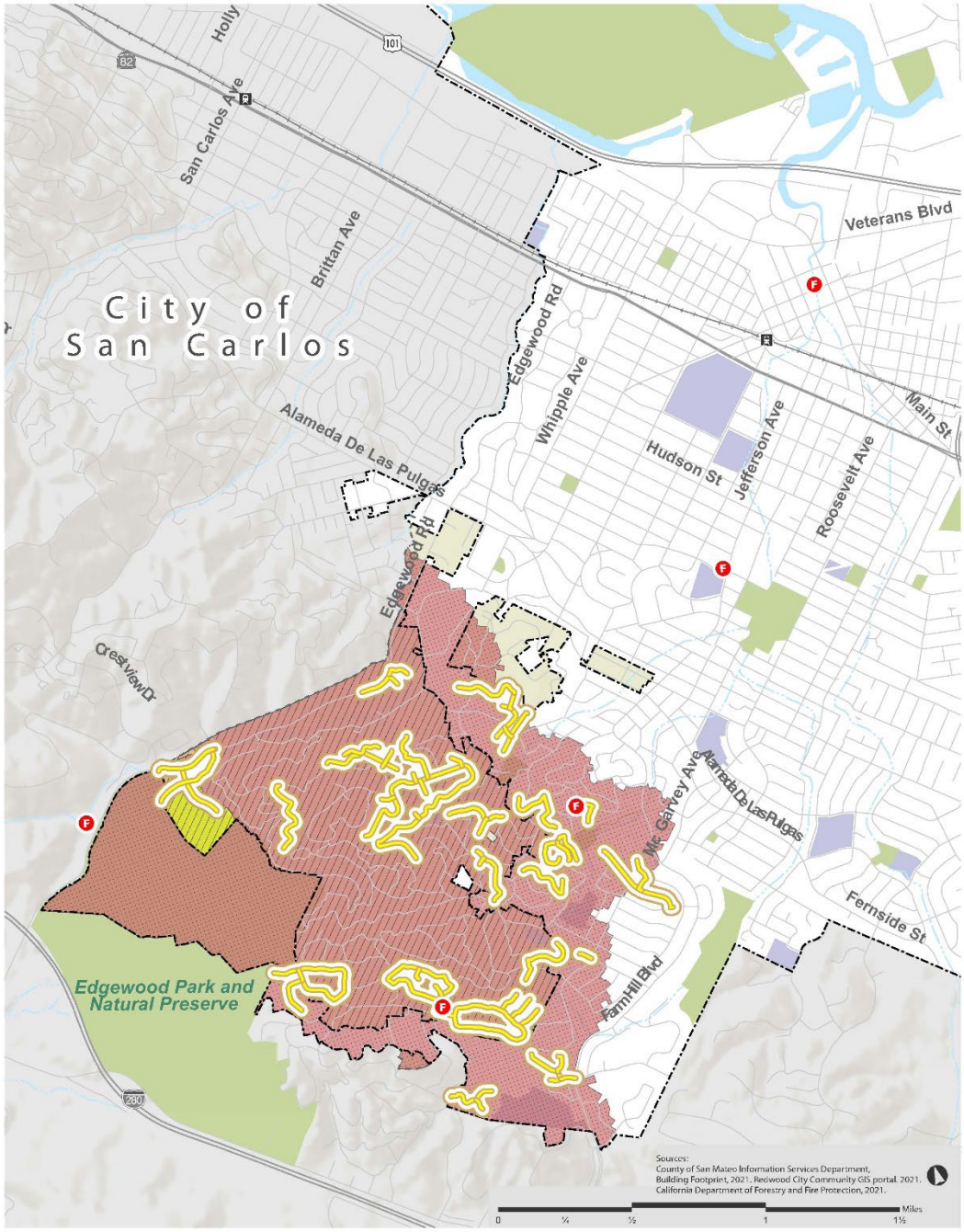
Evacuation Routes

Evacuation Routes

Base Map Features

- Redwood City Boundary
- Sphere of influence Boundary
- Railway and Stations
- San Mateo County Streets
- US Highway 101
- Channel, Rivers, and Streams
- Bay, Harbor, and Sloughs
- Open Space and Parks
- Schools

Figure PS-11: Evacuation Routes



Wildfire Hazards
- Very High
- High
- Moderate
- Local Responsibility Area
- State Responsibility Area
- Fire Stations
- Single Access Road

Base Map Features
- Redwood City Boundary
- Sphere of Influence Boundary
- Railway and Stations
- San Mateo County Streets
- US Highway 101
- Channel, Rivers, and Streams
- Bay, Harbor, and Sloughs
- Open Space and Parks
- Schools

Figure PS-12: Single Access Roads in Wildfire Hazard Areas

Hazardous Materials

Heavy industrial uses at the Port of Redwood City

Businesses throughout Redwood City use and generate hazardous materials and chemicals. Hazardous materials can originate from seemingly innocuous places such as service stations, hospitals, dry-cleaners, and almost any industrial business. Hazardous materials can also be generated in households. Commonly used products such as paints, cleaners, oils, batteries, and pesticides contain potentially hazardous ingredients. These materials present a potential hazard to the environment and to human health.

A myriad of federal, State, and county-level regulations and programs help provide a high level of protection and minimize risk from the hazardous materials generated within, transported to/through, and stored in Redwood City.

Hazardous Material Sites

Historically, significant quantities of hazardous materials have been used by local industrial businesses. The associated concerns are site contamination that can adversely impact soils and groundwater, exposure during earthmoving and other construction activities, and exposure of workers and the general public to hazardous materials.

Almost 300 hazardous material sites have been identified within Redwood City, although many have been remediated. These sites are concentrated in the historically industrial areas at the Port and along U.S. 101.

The majority of hazardous materials release sites in Redwood City are related to leaking underground storage tanks. Although current regulations requiring double-wall construction and leak monitoring equipment for underground storage tanks should reduce the number of releases in the future, many underground tanks installed in previous decades have failed, causing petroleum contamination in soils and groundwater. These releases are often discovered during tank removal or upgrade activities.

Aerially Deposited Lead near Major Roadways

Aerially deposited lead is a common hazardous materials issue in urban areas. Soils adjacent to major roadways often contain elevated concentrations of lead. The lead deposition is the result of airborne particulates and surface water runoff associated with tailpipe emissions before lead was phased out of vehicle fuels. Studies by Caltrans suggest that hazardous waste levels of lead, if present, are generally found in soils within 30 feet of the edge of roadway pavement.

Redwood City contains a number of roadways that experience heavy traffic, including U.S. 101 and State Highways 82 (El Camino Real) and 84 (Woodside Road). Properties along the roadways may contain elevated concentrations of lead in exposed surface soils, which could pose a health hazard to construction workers and users of the properties. Lead is a State-recognized carcinogen (causes cancer) and reproductive toxicant (causes birth defects or other reproductive harm). Exposure of construction workers or future site occupants to lead in soil could result in adverse health effects, depending on the duration

and extent of exposure.

Schools and Other Sensitive Receptors

Some populations, such as children, the elderly, and the infirm, are more susceptible to health effects of hazardous materials than the general population. Hazardous materials users near schools, day care centers, senior housing, and hospitals must consider potential health effects to these sensitive receptor populations. Construction or redevelopment on contaminated properties that could potentially generate vapors or fugitive dust containing contaminants may also potentially pose a health risk to these populations. In addition, commercial businesses in proximity to sensitive receptors may generate hazardous emissions or involve the handling of hazardous or acutely hazardous materials or wastes that could pose a health risk to sensitive receptors.

Lead, Asbestos, and Other Hazardous Materials in Buildings

Hazardous materials are commonly found in building materials, and especially in older building materials. During demolition and renovation activities associated with redevelopment, these materials may be disturbed or released. Prior to 1978, lead compounds were commonly used in interior and exterior paints. Prior to the 1980s, building materials often contained asbestos fibers, which were used to provide strength and fire resistance. In addition, other common items present in buildings, such as electrical transformers, fluorescent lighting, electrical switches, heating/cooling equipment, and thermostats, often contain hazardous materials, which may pose a health risk if not handled and disposed of properly.

Hazardous Materials Management and Reporting

Businesses that store hazardous materials in excess of specified quantities must report their chemical inventories in a Hazardous Materials Management Plan to the Redwood City Fire Department and/or San Mateo County. This reporting informs the community about chemical use, storage, handling, and disposal practices by the businesses. It is also intended to provide essential information to fire fighters, health officials, planners, elected officials, workers, and their representatives so that they can plan for and respond to potential exposures to hazardous materials.

Under the California Accidental Release Prevention Program, businesses that use large quantities of acutely hazardous materials must prepare a detailed engineering analysis of the potential accident factors present at a business and the mitigation measures that can be implemented to reduce this accident potential.

Hazardous Waste Generation and Disposal

Private hazardous waste disposal services operating in Redwood City

Once a hazardous material has been used or processed, what remains may be considered a hazardous waste. Many items routinely used by residents and businesses, such as paints and paint thinners, cleaning products, and motor oil, are considered hazardous waste once they are ready for disposal. Nearly all businesses and residences in Redwood City are expected to generate some amount of hazardous wastes (including household hazardous wastes). Hazardous waste generation and disposal regulations for businesses and households are administered and enforced by County

agencies. San Mateo County conducts regular household hazardous waste collection events in Redwood City to guard against proliferation of household waste in local sanitary landfills.

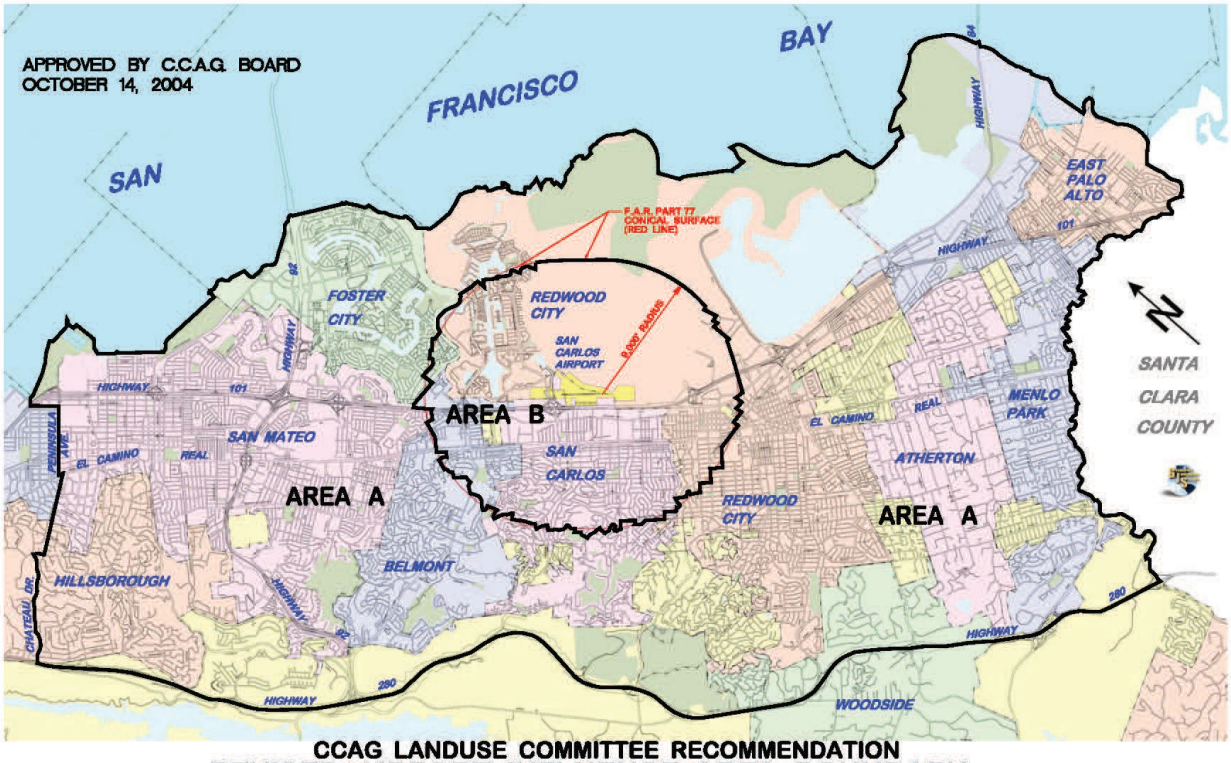
Aviation Hazards

The constant flow of air traffic in and around airports poses a safety hazard for surrounding land uses. Aircraft accidents are more likely to occur in those areas immediately around the airport. Harm to life or damages to property can result from crashes and collisions during the take-off and landing of airplanes.

San Carlos Airport is a general aviation facility located in the city of San Carlos, along the northwest border of Redwood City (Figure PS-10). The airport is owned and operated by the County of San Mateo. Airport/land use compatibility issues are addressed by the City/County Association of Governments San Mateo County Airport Land Use Committee (ALUC). The ALUC maintains and implements the Comprehensive Airport Land Use Plan (CLUP) for San Carlos Airport. The CLUP identifies zones around the airport where land use restrictions are in place to guard against conflicts. Generally, the CLUP places restrictions on building heights, types of land uses, and density of uses around the environs. The CLUP also identifies an area around the airport for which the ALUC requests an avigation easement which provides rights to the airport for use of air-space above non-airport property.

Refer to the Built Environment Element for more information on land use compatibility around the San Carlos Airport.

California Government Code §65302.3 requires that a local general plan be consistent with the applicable airport/land use compatibility criteria in the relevant adopted airport land use plan. This General Plan strives to ensure that all the goals, guidelines, and plan implementation programs contained herein are consistent with the relevant airport/land use compatibility criteria contained in the 1996 San Mateo County Comprehensive Airport Land Use Plan, as amended, for San Carlos Airport. Per the CLUP, all of Redwood City lies within Influence Area A, and requires disclosure of certain information in connection with all real estate transactions per State law. Areas within 9,000 feet of San Carlos Airport, including portions of northern Redwood City are in Airport Influence Area B (Figure PS-10). Sales of real property within Area B also require real estate disclosure. Furthermore, Area B defines a geographic area within which affected jurisdictions must refer their proposed land use policy actions (such as General Plan and Zoning Map Amendments, Precise Plans, etc.) to the ALUC/C/CAG for a formal airport/land use review.



SOURCE: City/County Association of Governments of San Mateo County (C/CAG), April 2015

Figure PS-13: Airport Influence Area for San Carlos Airport

Terrorism

Since the world-changing events of September 11, 2001, the United States' vulnerability to terrorism has become a harsh reality. Terrorism—violence directed against civilians with the goal of spreading fear to further political, religious, or social objectives—is now an omnipresent issue in America, and has altered the way we think about travel procedures, ports of entries, utilities, infrastructure, and facility security. Terrorist acts can be committed by both domestic and foreign individuals, groups, and nation states. Terrorism can inflict injury and harm to people and damage to property, and can come in countless forms, from bioterrorism and improvised explosive devices to weapons of mass destruction.

Redwood City's efforts to anticipate and guard against terrorism include the countywide training of emergency personnel by the San Mateo Office of Emergency Services to deal with terrorist incidents and suspicious packages. The Police Department works in concert with the County Office of Emergency Services to receive updates on possible security threats and is in communication with the Federal Bureau of Investigation (FBI) on a weekly basis. Redwood City's Fire Department has participated in the County's Office of Emergency Services coordinated planning, preparation, and training efforts, and all Redwood City firefighters are recognized as first responders to hazardous materials calls. The City has also prepared its communication networks to participate in a countywide coordinated effort in the case of a terrorism incident; all 20 cities in San Mateo County are linked by phone and with hospitals for immediate data exchange.

Redwood City coordinates with State and federal agencies to defend against terrorism. The California Anti-Terrorism Information Center was formed in the wake of the September 11, 2001 attacks on the World Trade Center and the Pentagon to provide law enforcement with statewide intelligence support to combat terrorism. Through the Center, law enforcement agencies in California can obtain information on terrorist threats and activities anywhere in the State through a secure, central database. The Center was established by the California Attorney General and Governor in partnership with local, State, and federal law enforcement agencies. Reliable information from the Center that meets the stringent guidelines for intelligence gathering and civil rights protections are made available only to authorized local, State, and federal law enforcement personnel as necessary to protect the health and safety of Californians and others at risk from criminal terrorist activity.

Emergency Preparedness

The safety and well-being of its residents, neighborhoods, and businesses is one of Redwood City's highest priorities. Redwood City provides high quality, effective police and fire services, and its personnel and volunteers are committed to safety, working tirelessly to plan and prepare for all types of emergencies and disasters.

Local Response

During emergencies the Redwood City Emergency Operations Center is staffed with members from all city departments to coordinate the city response. The city response is communicated and coordinated with the San Mateo County Department of Emergency Management as needed.

In the event of a large-scale emergency or area-wide disaster, the joint efforts of these groups are used for front-line responses, direct intervention, and infrastructure repair assistance.

CERT

Funded by Congress through Citizen Corps program to the States and Territories grants, the Community Emergency Response Team (CERT) program educates people about preparedness in case of an emergency or disaster. The program serves to train people in basic disaster response skills such as light search and rescue, organization, and medical operations. CERT is designed to give participants the ability to assist others in the community following an emergency or disaster when professional responders are not immediately available to help. Trained CERT members have the ability to provide useful information to responders and support responder efforts, as directed, at the disaster site. CERT members can also assist with non-emergency projects that improve the safety of the community. CERT members can be used to distribute and/or install smoke alarms, replace smoke alarm batteries in the homes of elderly or disabled residents, distribute disaster education material, provide services at special events, such as parades, sporting events, concerts, and more.

FEMA/USAR Team

FEMA has established regional Urban Search and Rescue (USAR) teams that include several Redwood City Fire Department members. The USAR teams are involved in constant specialized training in the areas of search and rescue following structural collapse, technical above-ground rescue, confined space entry and rescue, and biological hazard response. USAR teams have responded to National Disasters such as Hurricane Iniki, the Northridge Earthquake, the Murrah Federal Building bombing in Oklahoma, the World Trade Center Collapse, and Hurricane Katrina.

Police

The mission of the Redwood City Police Department is to protect life and property, improve the quality of life, reduce crime and the fear of crime, and to maintain a safe community while doing so with integrity and respect. Progressive in nature, the Redwood City Police Department accomplishes its mission through working in a partnership with the community. This partnership helps to educate the community regarding crime and gang problems, and keeps residents informed of community safety issues.

Redwood City Police vehicle patrolling the City

Police Resources

Police protection services for all of Redwood City are provided by the Redwood City Police Department, which is headquartered at 1301 Maple Street. The Police Department is separated into three divisions: 1) Administrative Division, 2) Investigations Division, and 3) Patrol Division. Each of the three divisions supports its own initiatives and programs.

The Administrative Division manages the training and recruiting of all current and future police officers. Records and communications are also managed by this Division, with support staff to handle inquiries. The Investigations Division is comprised of Detectives tasked with investigating cases reported through

the Patrol Division. Detectives are divided to one of three units within the Division and are assigned to investigate property crimes, crimes against persons, or to serve as a part of the Street Crime Suppression Team. The Investigations Division also manages the Juvenile Unit, which focuses exclusively on juvenile-related issues and crimes. This Division also coordinates its efforts with the San Mateo County Sheriff's Department to prevent street-level gang and drug activity. The Patrol Division is the largest division within the Police Department. The Patrol Division manages the Department's canine units, special weapons and tactics, community service officers, marine unit, reserve unit, community policing, and youth services unit.

Local response times for the Police Department are currently exceeding internal standards. The Police Department sets a standard of responding to emergency calls and arriving on scene within 5 minutes.

Community Involvement and Public Education

Community involvement and public education are integral to the Police Department's goal of protecting life and property and improving Redwood City's quality of life. The Redwood City Police Department embraces a broad community involvement and public education approach and currently maintains a wide variety of programs, such as:

Community Coordinating Activities Team (CCAT) Community Action

The Community Coordinating Activities Team (CCAT) works closely with the community to address the problems of crime and quality of life issues. CCAT officers coordinate Neighborhood Watch meetings and neighborhood association meetings, and speak at schools and service organizations.

The Citizen's Police Academy

The Citizen's Police Academy serves to help the public better understand the field of law enforcement. The Academy allows residents to learn a variety of police-related topics taught through a classroom lecture and hands-on experience. Police officers teach all of the classes, and the topics range from police tactics and patrol procedures to pursuit driving and firearms training.

Police Activities League (PAL)

The Redwood City Police Activities League (PAL) is a nonprofit community-based organization that provides intervention, prevention, and alternative programs to all youth, including at-risk and economically challenged youth, in Redwood City. PAL provides programs that strive to help youth by teaching honest values, assets, and skills, which is critical for preventing youth delinquency.

Drug Abuse Resistance Education (DARE)

The DARE (Drug Abuse Resistance Education) program's main focus is to provide a curriculum to elementary school youth that educates them on the dangers of drug use and importance of drug resistance. The curriculum is presented by a uniformed police officer and is shown to 5th grade students in Redwood City, in both public and private schools.

Gang Resistance Education and Training (GREAT)

The GREAT (Gang Resistance Education and Training) program serves to address the rising gang problem in middle schools. The 13-week GREAT program is taught to 6th grade students at schools across

Redwood City.

Fire Preparedness and Response

The mission of the Redwood City Fire Department is to protect life, property, and the environment from fire, medical, disaster, and hazardous materials-related incidents through emergency mitigation, public education, and code enforcement.

Fire Department Resources

The Redwood City Fire Department, headquartered at 755 Marshall Street, provides fire protection and response services in the city. In addition to the Marshall Street station, there are four other stations in the city. All Fire Department staff are full-time employees.

The Fire Department is responsible for the safety of all people within the City's borders. This area totals 34.6 square miles, including 19.5 square miles on land and 15.1 square miles in the water. Automatic mutual aid is provided by the California Department of Forestry and Fire Protection and adjacent cities such as Menlo Park, Woodside, Belmont, and San Carlos.

Redwood Shores fire station

The Fire Department is responsible for fire prevention and suppression, medical response, and property protection. The Fire Department's Fire Prevention Bureau works to educate the public and businesses about fire prevention by conducting fire inspections, processing fire permits, conducting fire investigations, and conducting community outreach regarding fire safety education.

Local response times to emergency situations for the Fire Department are currently exceeding internal standards. The Department places a high priority on quick response, with the goal of responding to emergency calls within five to seven minutes.

Key Hazards Management Considerations

Key considerations relative to Hazards Management are:

- Although no active faults have been identified traversing Redwood City, significant ground shaking can be expected to occur as a result of a major earthquake, resulting in potentially substantial damage.
- Development or redevelopment of properties in lowland areas have a moderate to high potential for liquefaction, and a potential for settlement due to expansive soils. Areas in the former tidal flats have a very high potential for liquefaction, and a potential for settlement due to unconsolidated fill and low strength native soils.
- Properties in the southwest hills of Redwood City may be at risk of slope failure, and all hillside areas lie within high fire hazard zones.
- Large areas of the city lie within 100- or 500-year floodplains.
- Former and ongoing industrial activities create hazardous conditions, including contaminated

sites and the risk of hazardous materials release.

- Properties along U.S. 101, El Camino Real, and Woodside Road have the potential for high levels of lead in the soils.
- Operations at San Carlos Airport impact how land can be used within certain airport-influence zones in Redwood City.
- As the city's population grows over time, the need for more police and fire resources is likely; without increasing resources, an increase in population may strain local response times.
- All of these issues make emergency preparedness very important in Redwood City.

Hazards Management Goals, Policies, and Programs

By identifying and understanding possible hazards, the City can work to create safeguards to prevent accidents and work to ensure a higher level of safety for Redwood City residents and the community at large.

These goals and policies emphasize the importance of developing emergency preparedness and response programs that can minimize the impact of local hazards. The following Guiding Principles are addressed by the Hazards Management goals, polices, and programs:

- Partner with and embrace neighborhoods to improve health, safety, and well being for all.
- Continue to make community participation an important part of achieving a great city.

GOAL PS-8 **Minimize the potential damage to structures and loss of life that result from earthquakes and other geological hazards.**

Policy PS-6.1: Identify structural types, land uses, and sites that are highly sensitive to earthquake activity and other geological hazards; seek to abate or modify them to achieve acceptable levels of risk.

Policy PS-6.2: Inform the public through schools, community centers, and other agencies and media channels what can be done to reduce risks from seismic events to persons and property.

Policy PS-6.3: Work to ensure that structures and the public in Redwood City are exposed to reduced risks from seismic and geological events.

GOAL PS-7a: **Provide adequate and appropriately-designed storm drainage and flood control facilities to meet current and future needs and minimize the risk of flooding.**

Policy PS-7a.1: Avoid or minimize the risks of flooding to new development. Carefully evaluate whether new development should be located in flood hazard zones, and identify construction methods or other methods to minimize damage if new development is located in flood hazard zones.

Policy PS-7a.2: Improve the drainage system's level of service to minimize storm flooding.

Policy PS-7a.3: Strive to maintain the structural and operational integrity of essential public facilities during flooding. Locate, when feasible, new essential public facilities outside of flood hazard zones; identify construction methods or other methods to minimize damage if these facilities are located in flood hazard zones. Essential public facilities include City government operations facilities, police and fire facilities, and hospitals.

Policy PS-7a.4: Prioritize improvements to Redwood City's storm drain system in areas that are prone to flooding. Encourage the use of preventive and low-impact measures as well as maintaining, upgrading, and constructing new flood prevention infrastructure to reduce the risk of flooding.

Policy PS-7a.5: Consult with public agencies responsible for flood protection, including the U.S. Army Corps of Engineers, FEMA, and the California Department of Water Resources to maintain the most current flood hazard and floodplain information and use it as a basis for project review of flood protection systems such as levees and to guide development in accordance with federal, State, and local standards.

Policy PS-7a.6: Minimize impervious surfaces to reduce stormwater runoff and increase flood protection.

Policy PS-7a.7: Consult with "up-stream" jurisdictions to:

- Minimize the runoff from these areas into Redwood City's drainage system. Work with the jurisdictions located within the Redwood City watershed area, including San Carlos, Woodside, Menlo Park, Atherton, and San Mateo County
- Pursue policies and measures to minimize runoff and reduce flooding while sharing the costs of major capital improvements.

GOAL PS-8a:

Protect city residents, and businesses and employees from potential hazards associated with the use, storage, transport, and disposal of hazardous materials in and through Redwood City.

Policy PS-8a.1: Establish policies to regulate and reduce hazardous waste within Redwood City that are consistent with the County's Hazardous Waste Management Plan and other County regulatory programs.

Policy PS-8a.2: Educate residents and businesses about household hazardous wastes, less toxic materials that can be used in place of toxic materials, and proper household hazardous waste disposal methods.

Policy PS-8a.3: Work to ensure that land previously used as agriculture, commercial, and industrial is safe and contains no environmental hazards.

Policy PS-8a.4: Encourage the use of green building practices to reduce potentially hazardous materials in construction materials.

GOAL PS-9: Minimize public health and environmental impacts of hazardous waste and/or solid waste and groundwater threats in Environmental Justice communities.

Policy PS-9.1: Prohibit the development of new hazardous waste and/or solid waste facilities in Environmental Justice communities.

Policy PS-9.2: Reduce the impact of existing hazardous waste and/or solid waste facilities and groundwater threats in Environmental Justice communities.

Policy PS- 9.3: Reduce new groundwater threats in Environmental Justice communities.

GOAL PS-9a: Maintain the ability of the Redwood City community to respond promptly, efficiently, and effectively in the event of a major earthquake or other natural or human-caused disaster.

Policy PS-9a.1: Promote improved inter-jurisdictional consultation and communication regarding disaster or emergency plans of San Mateo County, and for seismic safety upgrades of public facilities and infrastructure such as dams, reservoirs, bayfront levees, and highway structures. Continue to identify local hazards in Redwood City and plan for hazard mitigation and recovery.

Policy PS-9a.2: Identify alternative water sources for fire-fighting use during a disaster.

Policy PS-9a.3: Conduct ongoing public outreach regarding procedures and plans to be followed in the event of an emergency.

GOAL PS-10: Minimize risks of potential hazards in the vicinity of San Carlos Airport.

Policy PS-10.1: Work to achieve consistency between General Plan land use and related policies and the San Carlos Airport Comprehensive Land Use Plan, as is appropriate for Redwood City. Measures may include restrictions on permitted land uses and development criteria, including height restrictions.

GOAL PS-11: Provide a high level of public safety services.

Policy PS-11.1: Work with the Police Department to determine and meet community needs for law enforcement services.

Policy PS-11.2: Work with the Fire Department to determine and meet community needs for fire protection and related emergency services.

Policy PS-11.3: Continue to monitor gang activities in the community; consult with surrounding jurisdictions and outside groups and organizations to prevent criminal activities and gang violence. Continue to provide youth programs. Aggressively respond to criminal and gang activity in the community, and work collaboratively on local and countywide programs to reduce crime and prevent gang violence.

The Housing Element includes a policy about providing home- buying incentives for Redwood City's emergency personnel, to ensure first responders can locate close to emergencies in the City.

GOAL PS-12: Provide a safe pedestrian and bicycle environment citywide.

Policy PS-12.1: Enhance pedestrian and bicycle safety through the inclusion of well-designed streets, sidewalks, crosswalks, bike lanes, traffic control devices, and school routes.

GOAL PS-13 Prevent the loss of life and mitigate the potential damage to structures by creating fire adaptive communities.

Policy PS-13.1: Continue to plan for new construction and redevelopment that decreases the likelihood of fire and decreases the impacts of fire damage.

Policy PS-13.2: Continue to allow structures and infrastructure located in the Very High Fire Hazard Severity Zone (VHFSZ) to be rebuilt or redeveloped after a large fire, in accordance with the Building and Fire Codes in place at the time of the rebuilding.

Policy PS-13.3: Ensure that local infrastructure (including water supply and emergency services have adequate capacity to support wildfire emergencies.

Policy PS-13.4: Continue to support and implement fuel management programs

Policy PS-13.5: Periodically reevaluate land use policy allowing for new development in the Very High Fire Hazard Severity Zone.

Implementation Programs

Procedures, Permits, Agreements, Ordinances

Program PS-23: Seismic Safety Addressed in CEQA. Require environmental documents prepared in connection with CEQA to address seismic safety issues; provide adequate mitigation for existing and potential hazards.

Timeframe: Ongoing
Responsible Party: Community Development
Funding Sources: Development fees

Program PS-24: Geotechnical Analysis. Require a geotechnical analysis for construction in areas with potential geological hazards; implement appropriate mitigation recommendations.

Timeframe: Ongoing
Responsible Party: Community Development
Funding Sources: Development fees

Program PS-25: International Building Code. Continue to implement the International Building Code seismic safety standards for construction of new buildings; update the City's codes as needed to respond to new information, standards, and technology.

Timeframe: Ongoing
Responsible Party: Community Development
Funding Sources: None Required

Program PS-26: Geological Hazard Mapping. Use appropriate geological hazard mapping techniques to evaluate potential seismic and slope stability hazards associated with proposed new development.

Timeframe: Ongoing
Responsible Party: Community Development
Funding Sources: General Fund

Program PS-27: New Development Protected from Flooding. Require new development to be designed to provide protection from potential impacts of flooding resulting from significant flood events, consistent with evolving State and federal guidelines and as directed by the City Engineer, and to consider possible sea level rises.

Timeframe: Ongoing
Responsible Party: Community Development
Funding Sources: General Fund

Program PS-28: Stormwater System Maintenance and Upgrade Funding. As appropriate, allocate increased funding in Redwood City's Capital Improvement Program to upgrade and/or replace stormwater drainage facilities.

Timeframe: Ongoing
Responsible Party: Community Development
Funding Sources: General Fund

Program PS-29: Update Flooding Information and Maps. As new and updated flooding information is provided by FEMA and other regional agencies, update the maps and information in the General Plan and maintained by the City to reflect current conditions.

Timeframe: Ongoing
Responsible Party: Community Development
Funding Sources: General Fund

Program PS-30: Hazardous Waste Ordinance. Adopt a Hazardous Waste Ordinance that is compatible with the County Hazardous Waste Management Plan.

Timeframe: Ongoing
Responsible Party: Community Development; Public Works Services Department
Funding Sources: General Fund

Program PS-31: Hazardous Materials Buffer. Require a buffer zone between areas where significant quantities of hazardous materials are present and sensitive receptors, such as residences, hospitals and nursing/convalescent homes, hotels and lodging, schools, and day care centers.

Timeframe: Ongoing
Responsible Party: Community Development; Fire Department
Funding Sources: General Fund

Program PS-32: Emergency Operations Plan. Review and update, as needed, the City's emergency operations plan in coordination with the County's Local Hazard Mitigation Plan to address disasters such as earthquakes, flooding, dam or levee failure, hazardous materials spills, epidemics, fires, extreme weather, major transportation accidents, and terrorism.

Timeframe: Ongoing
Responsible Party: City Manager Office; Police Department; Fire Department
Funding Sources: General Fund

Program PS-33: Emergency Vehicle Access and Secure Evacuation Routes. Require new development

to provide adequate access for emergency vehicles, particularly fire-fighting equipment, as well as secure evacuation routes for inhabitants.

Timeframe: Ongoing
Responsible Party: Police Department; Fire Department
Funding Sources: General Fund

Program PS-34: Emergency Aid Standing Agreements. Maintain standing agreements with other public and private agencies to furnish specified aid upon demand in the event of a major emergency, as appropriate.

Timeframe: Ongoing
Responsible Party: Police Department; Fire Department
Funding Sources: General Fund

Program PS-35: Emergency Response Preparedness Programs. Maintain and update, as appropriate, the City's emergency response preparedness programs, plans, and procedures to protect the health and safety of the community, and to provide effective and quick recovery of affected areas in the event of a major disaster. In particular, incorporate into such plans and programs strategies to provide continuous access to and from the Police Station via the Redwood Creek undercrossing of U.S. 101.

Timeframe: Ongoing
Responsible Party: Police Department; Fire Department
Funding Sources: General Fund

Program PS-36: Community Emergency Response Team. Maintain funding for programs such as CERT (Community Emergency Response Team) to conduct public education of emergency preparedness for all types of emergencies.

Timeframe: Ongoing
Responsible Party: Fire Department
Funding Sources: Grants, General Fund

Program PS-37: County Airport Land Use Plan. Refer all General Plan and Zoning Map amendments/updates, Precise Plans, and other amendments affecting property within Area B of the Airport Influence Area (AIA) Boundary for San Carlos Airport to the C/CAG Airport Land Use Commission for a determination of consistency with the County Airport Land Use Plan for the environs of San Carlos Airport.

Timeframe: Ongoing
Responsible Party: Community Development

Funding Sources: Development fees

Program PS-38: Crime and Drug Prevention Programs. Continue to implement existing volunteer programs, after-school activities such as DARE, police activities within local schools, Neighborhood Watch programs, the Police Activities League, and school resource and outreach programs for crime and drug prevention.

Timeframe: Ongoing
Responsible Party: Police Department
Funding Sources: Grants, General Fund

Program PS-39: Adequate Police and Fire Departments Service Requirements. Provide funding for the Police Department and Fire Department to maintain sufficient personnel and the highest level of training, technology, and equipment to meet service requirements of new growth and other specific needs, as appropriate.

Timeframe: Ongoing
Responsible Party: Police Department; Fire Department; City Manager Office/Economic Development
Funding Sources: General Fund

Program PS-40: Adequate Lighting. Require new development to provide adequate safety lighting in pedestrian areas and parking lots.

Timeframe: Ongoing
Responsible Party: Community Development
Funding Sources: General Fund

Program PS-41: Stormwater and Creek Protection. Adopt a Creek Enhancement Ordinance. Address the following in the ordinance: flood control issues, biological resource opportunities, aesthetics, recreational/trail opportunities, public safety issues, property owners' responsibilities to correct/improve creek banks (including offering incentives such as rebates, classes/seminars, technical assistance, etc.)

Timeframe: Ongoing
Responsible Party: Community Development
Funding Sources: General Fund

Program PS-13.1: New and Re-development Siting Requirements

- Continue to require new development (including new subdivisions) and re-development to provide adequate defensible space to minimize the risk of structural damage associated with wildland fires.

- Require new development be in areas with adequate water supply and water supply infrastructure, where possible.
- Require new development be in areas with adequate fire fighting protection.
- Continue to implement the California Building and California Fire Codes.
- Require new essential public facilities be sited outside of the Very High Fire Hazard Severity Zone, when feasible.
- Require new development located in the Very High Fire Hazard Severity Zone to:
    - prepare fire protection plans
    - have more than one ingress/egress point

Timeframe: Ongoing

Responsible Party: Community Development

Funding Sources: General Fund

Program PS-13.2: Re-development Policy. Periodically review and amend, as appropriate, the City's policy allowing structures to be rebuilt in Very High Fire Hazard Severity Zone after a fire.

Timeframe: Every 8 years

Responsible Party: Community Development and Fire

Funding Sources: General Fund

Program PS-13.3: Zoning Code, Building Code Updates.

- Avoid, if possible, or minimize new residential development in the Very High Fire Hazard Severity Zone.
- Update site design and maintenance standards to account for new and emerging technologies and State fire standards.
- Require residential and nonresidential structures to have street numbers (and street name, as appropriate) visible from public and private roadways and alleys.

Timeframe: Ongoing

Responsible Party : Community Development

Funding Sources: General Fund

Program PS-13.4: Statewide Fire Protection Standards. Continue to implement Statewide standards for fire protection for new development and re-development, including evacuation route design and standards. Require all new development and re-development comply with the latest building and fire codes.

Timeframe: Ongoing

Responsible Party: Community Development and Fire

Funding Sources: General Fund

Program PS-13.5: Incorporate Fire Safe Design into New Development and Re-development

- Identify development that does not comply with current fire safety standards, in terms of road standards and vegetative hazards, establish and implement a mitigation plan to remedy the noncompliance, as appropriate.
- Require new development and re-development to incorporate fire safe design by requiring property owners to submit plans showing ingress/egress, evacuation routes, emergency vehicle access, visible home addressing and signage, and fuel modification/fire-retardant zones. This may include but not be limited to defensible space, drought and fire resistant landscaping.
- Require new development and re-development to meet or exceed title 14, CCR, division 1.5, chapter 7, subchapter 2, articles 1-5 (commencing with section 1270) and title 14, CCR, division 1.5, chapter 7, subchapter 3, article 3 (commencing with section 1299.01) for the Very High Fire Hazard Severity Zone.
- Encourage homeowners to incorporate "home hardening" materials and practices in their homes (roofs, windows, walls, vents, chimneys, rain gutters, etc.), outdoor structures (patios, decks, fences etc.), and driveways as recommended California Department of Forestry and Fire Protection (CAL FIRE).

Timeframe: Ongoing
Responsible Party: Community Development
Funding Sources: General Fund

Program PS-13.6: Monitor Future Fire Risk and Assess Service. Periodically review trends and climate change projections affecting future fire risk and fire risk reduction capabilities to ensure that fire services remain adequate; modify service provision and develop mitigation measures, as necessary. Identify development that does not meet local fire code; look to develop mitigation programs.

Timeframe: Ongoing
Responsible Party: Community Development and Fire Department
Funding Sources: General Fund

Program PS-9.1: Hazardous Materials, Hazardous Waste, or Solid Waste Storage and Handling. Use land use regulations and/or ordinances to ensure that new businesses and facilities that use, store, or handle hazardous materials, hazardous waste, or solid waste are permitted in Environmental Justice communities, only if the new businesses and facilities meet current zoning regulations, fire regulations, and other appropriate regulations and provide a safe distance from sensitive uses such as schools, daycare facililities, residences, and public community facilities.

Timeframe: Ongoing
Responsible Party: Community Development and Fire Department
Funding Sources: General Fund

Plans and Studies

Program PS-42: Emergency Evacuation Routes and Plans. Prepare and regularly update emergency evacuation routes and plans.

Timeframe: Ongoing
Responsible Party: Police Department; Fire Department
Funding Sources: General Fund

Program PS-43: Storm Drainage Facility Master Plan. Develop a Storm Drainage Master Plan to address flooding hazards and storm drainage facility needs. The Storm Drainage Master Plan should seek to balance the two primary functions of creeks: flood control and riparian habitat.

Timeframe: Mid Range
Responsible Party: Community Development
Funding Sources: General Fund

Program PS-44: Local Hazard Mitigation Plan. Continue to actively coordinate with San Mateo County on the regular update of the Multi-Jurisdictional Local Hazard Mitigation Plan and the implementation of the City's Action Plan it commits to in the Local Hazard Mitigation Plan, Volume II. Review the Hazard Mitigation Plan in conjunction with the City's General Plan, Climate Action Plan, future Climate Adaptation Plan, and other resiliency planning and emergency response planning documents to ensure consistency of approach across all documents.

Timeframe: Ongoing
Responsible Party: Fire Department, Community Development
Funding Sources: General Fund

Special Programs/Projects

Program PS-45: Geologic Hazard Abatement Districts. Prepare soils map and seismic safety maps as part of establishing Geologic Hazard Abatement Districts to reduce risk levels from slope instability, seismic events, and other geologic hazards.

Timeframe: Ongoing
Responsible Party: Community Development
Funding Sources: General Fund

Program PS-46: Protect Essential Public Facilities from Flooding. Assess the level of impact on existing public facilities if flooding were to occur. Develop strategies to minimize impacts and provide continued operation of essential public facilities.

Timeframe: Ongoing
Responsible Party: Community Development
Funding Sources: General Fund

Program PS-47: Community Facility Improvement Maintenance. Consider establishing a Community Facility Improvement Maintenance District to assist with creek maintenance and Sea Level Rise issues.

Timeframe: Mid Range

Responsible Party: Community Development

Funding Sources: General Fund

Program PS-48: Hazardous Material Releases from Prior Land Uses. Establish development standards for new development and redevelopment in areas previously used for commercial, agricultural, or industrial uses to identify and abate hazardous material releases from prior land uses that have the potential to affect future property owners or users. A Phase I Environmental Site Assessment should be required where appropriate and environmental testing and/or remediation may be required based on the findings of the Phase I.

Timeframe: Ongoing

Responsible Party: Community Development

Funding Sources: Development fees

Program PS-13.7: At-Risk Population Registration Program. Create and implement a registration program identifying and noting the location of Redwood City's at risk populations.

Timeframe: Within 2 years of Safety Element adoption

Responsible Party: Community Development

Funding Sources: General Fund

Program PS – 13.8: Clean Air Quality Resources. Consider programs to provide resources and safe spaces to residents to reduce wildfire smoke exposure, such as establishing clean air shelters.

Timeframe: Ongoing

Responsible Party: Community Development

Funding Sources

Physical Improvements

Program PS-49: Levees Upgraded to FEMA Standards. Upgrade existing levees in accordance with FEMA standards and FEMA direction to protect residential and commercial areas against 100-year flood hazards and sea level rise.

Timeframe: Ongoing

Responsible Party: Public Works Services Department; Community Development

Funding Sources: General Fund

Program PS-50: Implement Comprehensive Flood Prevention Measures. Implement comprehensive flood prevention measures in areas of the City that experience repetitive flooding, including the Friendly Acres/East Bayshore and Centennial neighborhoods. Upgrade the Fifth Avenue Pump Station to increase stormwater capacity in the Friendly Acres neighborhood. Raise the levee of the Bayfront Canal to increase the canal's capacity to store and convey stormwater. Complete improvements to provide a 30- year storm level of flood protection, including sea level rise projections.

Timeframe: Mid Range

Responsible Party: Public Works Services Department; Community Development

Funding Sources: General Fund, Capital Improvement Program

Program PS-13.9: Hazard Reduction Projects. Maintain or require the maintenance of fire hazard reduction projects, including but not limited to community fire breaks, private and public road clearance.

Timeframe: Ongoing

Responsible Party: Community Development (Code Enforcement), Parks, Recreation, and Community Services, Fire (for City owned property), and Transportation

Funding Sources: General Fund

Program PS-13.10: Fire Flow Capacity. Continue to implement improvements identified in the Urban Water Management Plan to achieve a minimum fire flow of 1,000 gallons of water per minute for one and two family dwellings, as specified in Section 507.1.1 of the Municipal Code.

Timeframe: Ongoing

Responsible Party: Community Development and Fire

Funding Sources: General Fund and Grants

Program PS-13.11: Establish Firebreak Areas. Establish and maintain firebreak areas to restrict the spread of wildfire.

Timeframe: Ongoing

Responsible Party: Public Works and Fire

Funding Sources: General Fund

Outreach, Education

Program PS-51: Seismic Events and Hazardous Materials Outreach. Make information regarding seismic events and hazardous materials (provided in Hazardous Materials Business Plans), readily available to City

and County emergency responders. Work with schools, media, and other agencies to inform the public about seismic event risk and planning.

Timeframe: Ongoing

Responsible Party: Community Development; Fire Department; Public Works Services Department

Funding Sources: General Fund

Program PS-52: Creekside Property Owner Education. Educate creekside property owners in low-cost, ecologically enhancing methods to maintain and improve creek bank stability, habitat restoration, and prevent bank erosion.

Timeframe: Ongoing

Responsible Party: Community Development; Public Works Services Department

Funding Sources: General Fund

Program PS-13.12: Emergency Preparedness. Continue to provide public education regarding fire prevention and/or preparedness including but not limited to importance of providing and maintaining defensible space/vegetation clearance and personal evacuation plans, emergency preparedness kits/supplies, City or County fire prevention and response services.

Timeframe: Ongoing

Responsible Party: Community Development; Public Works Services Department

Funding Sources: General Fund

Inter-Agency and Other Organizations Consultation

Program BE-53: Interagency Stormwater Drainage Consultation. Meet and consult with San Mateo County and surrounding jurisdictions to ensure that the other jurisdictions assume responsibility for reducing stormwater flow into Redwood City's drainage system and improve the drainage in their low-lying areas. Include the development community in these discussions to help assess how to best improve potential flooding in low-lying areas.

Timeframe: Ongoing

Responsible Party: Community Development

Funding Sources: General Fund

Program BE-54: Flooding Consultation. Consult with public agencies that have responsibility for flood protection regarding data, flood hazard zones, and emergency response.

Timeframe: Ongoing

Responsible Party: Community Development

Funding Sources: General Fund

Program BE-55: Sea Level Rise Consultation. Consult with relevant state, regional, and local agencies, particularly the San Mateo County One Shoreline program, to coordinate planning for sea level rise and rising groundwater levels.

Timeframe: Ongoing

Responsible Party: Community Development

Funding Sources: General Fund

Program PS-56: County Environmental Health Department Consultation. Consult with the County Environmental Health Department to regularly inspect businesses for compliance with their Hazardous Materials Management Plans.

Timeframe: Ongoing

Responsible Party: Fire Department; Community Development

Funding Sources: General Fund

Program PS-57: Hazardous Waste Consultation. Consult with San Mateo County to:

- Sponsor household hazardous waste disposal programs for residents to bring pesticides, cleaning fluids, paint cans, and other common household toxics to a centralized location for proper disposal.
- Educate users about less toxic materials that can be used in place of hazardous materials.

Timeframe: Ongoing

Responsible Party: City Manager Office/Economic Development; Fire Department

Funding Sources: General Fund

Program 9.1b: Hazardous Waste and Solid Waste Consultation. Consult with the County and other regulatory agencies to ensure that existing hazardous waste and solid waste facilities meet health and safety standards in or near Environmental Justice communities.

Timeframe: Ongoing

Responsible Party: Community Development; Fire Department

Funding Sources: General Fund

Program PS-58: Bay Area Air Quality Management District Asbestos Airborne Toxic Control Measure. Require conformance with Bay Area Air Quality Management District Asbestos Airborne Toxic Control Measure (CCR, Title 17, §93105) for all discretionary projects and all projects requiring a grading permit that are located in areas likely to contain naturally occurring asbestos (serpentine or ultramafic rock).

Timeframe: Ongoing

Responsible Party: Community Development

Funding Sources: General Fund

Program PS-59: Watershed Multi-Jurisdictional Consultation. Pursue consultation with jurisdictions that share watersheds with Redwood City to limit stormwater runoff volume and contribute to flood-control improvements.

Timeframe: Mid Range

Responsible Party: Public Works Services Department; Community Development

Funding Sources: General Fund

Program PS-59: Flood Insurance Rate Map Revisions. Initiate flood insurance rate map revisions for city projects, when appropriate.

Timeframe: Ongoing

Responsible Party: Public Works Services Department; Community Development

Funding Sources: General Fund

Program PS-60: Inter-Agency Emergency Preparedness/Mutual Aid. Continue to work with other local cities, San Mateo County, regional organizations, and State agencies to ensure emergency preparedness and fire suppression services are provided in an efficient and coordinated manner. Continue to participate in mutual aid multi-agency agreements.

Timeframe: Ongoing

Responsible Party: Fire Department

Funding Sources: General Fund

Noise

Noise is usually defined as any "unwanted sound." Excessive and unwanted noise may interfere with communication, work, rest, recreation, and sleep, and can impact residents' quality of life. In extreme cases, excessive noise may produce physiological or psychological damage to persons. For all of these reasons, the City includes consideration of new, noise-generating sources and ambient noise conditions in land use planning and decision-making activities.

Understanding Noise

Sound is caused by a vibrating surface that causes the air pressure to fluctuate sympathetically. Our ears receive these air waves and translate the vibrations–via the brain–to speech; a dog barking, the thrum of traffic, music, or any of the myriad of sounds we hear in the urban environment. The objectionable nature of certain sounds can be related to their pitch, loudness, or duration. Loudness is the intensity of sound waves combined with the reception characteristics of the ear. Intensity is a measure of the amplitude, or height, of the sound wave. Duration is the length of time that a particular sound occurs.

Higher-pitched signals sound louder to humans than sounds with a lower pitch. To account for the concepts of pitch and loudness, there are several noise measurement scales that are used to describe noise in a particular location.

The decibel (dB) is a logarithmic unit of measurement indicating the relative amplitude of a sound. As decibels are logarithmic units, sound pressure levels cannot be added or subtracted by ordinary arithmetic means. For example, if one automobile produces a sound pressure level of 70 dB when it passes an observer, two cars passing simultaneously would not produce 140 dB; they would, in fact, combine to produce 73 dB.

The decibel alone is not a reliable indicator of loudness of a sound because the human ear does not respond uniformly to sounds at all frequencies. For example, the human ear is less sensitive to low and high frequencies than to medium frequencies that more closely correspond with human speech. In response to the human ear sensitivity, the A-weighted noise level, referenced in units of dBA, was developed to better correspond with people's subjective judgment of sound levels. Representative outdoor and indoor sound levels in units of dBA are shown in Table PS-3.

Table PS-3: Typical Noise Levels in the Environment

Common Outdoor Noise Source	Noise Level (dBA)	Common Indoor Activity
	120 dBA	
Jet fly-over at 300 meters		Rock concert
	110 dBA	
Pile driver at 20 meters	100 dBA	
		Night club with live music
	90 dBA	
Large truck pass by at 15 meters		
	80 dBA	Noisy restaurant
		Garbage disposal at 1 meter
Gas lawn mower at 30 meters	70 dBA	Vacuum cleaner at 3 meters
Commercial/Urban area daytime		
Suburban expressway at 90 meters	60 dBA	
Suburban daytime		Active office environment
	50 dBA	
Urban area nighttime		Quiet office environment
	40 dBA	
Quiet rural areas	30 dBA	Library
		Quiet bedroom at night
Wilderness area	20 dBA	
	10 dBA	Quiet recording studio
	0 dBA	Threshold of human hearing

Due to human sensitivity to noise increases during the evening and at night (as excessive noise interferes with the ability to sleep), 24-hour average noise level descriptors have been developed that incorporate artificial noise weighting factors. The Community Noise Equivalent Level (CNEL) is the average dBA noise level during a 24-hour day. To allow for the increased sensitivity that occurs at night, the noise levels obtained between 7:00 P.M. to 10:00 P.M. have an additional five dB added to them, and noise levels obtained between 10:00 P.M. to 7:00 A.M. have an additional 10 dB added to them. The different weighting factors added to the noise levels apply to day, evening, and nighttime periods. The weighted CNELs take into account that individuals are more sensitive to noise in the late hours than in daytime hours.

As is the case in most urban settings, ground transportation (roadway traffic and trains) is the dominant source of noise in Redwood City. Local traffic is the most significant source of community noise because it occurs virtually everywhere, and the sources are close to sensitive receptors such as people's homes, schools, hospitals, and parks. Commuter trains are the source of the highest regularly occurring instantaneous maximum noise levels in the community. Aircraft operations from San Carlos Airport are a significant noise source within Redwood Shores. Other noise sources such as industry, mechanical equipment on buildings, and recreational activities contribute to a lesser degree at particular locations

throughout the city.

Noise Conditions - 2008

A comprehensive community noise monitoring survey was undertaken during July of 2008. Noise measurement locations were selected to provide information on the distribution of noise levels along streets and highways, and to determine the level of baseline ambient noise levels in quiet residential neighborhoods. Noise measurement locations were also selected to measure noise levels generated by railroad trains and to measure noise generated by stationary sources. Both long-term (48 hours or more) and short-term (10 minutes duration) measurements were made.

The results of the noise survey are as follows:

Freeway and Highway Noise

In 2008, noise levels adjacent to U.S. 101 were approximately 67 to 76 dBA CNEL, and along the I-280 corridor, levels were recorded at approximately 62 to 64 dBA CNEL. Noise measurements taken on the southwest side of El Camino Real were calculated to be between 67 and 70 dBA CNEL. Southeast of Woodside Road, noise levels approximated 70 to 73 dBA CNEL.

Local Arterial Roadways

Whipple Avenue, Alameda de las Pulgas, Jefferson Avenue, Redwood Shore Parkway, Marine Parkway, and Seaport Boulevard are the city's major arterial roadways. Measurements taken in residential neighborhoods near these facilities indicated that noise levels typically range from 60 to 70 dBA CNEL.

Railroads

Trains produce both noise and vibrations (see vibration discussion below), and train horns represent a frequent noise occurrence in Redwood City. Based on 2008 train activity levels, average daily noise levels along the railroad lines can be calculated to range from 61 to 70 dBA CNEL. Maximum noise levels from train passbys are more significant, from 85 to 95 dBA. Near at-grade crossings, where train- warning whistles are sounded to warn pedestrians and motorists of oncoming trains, maximum noise levels can be as high as 90 to 100 dBA at 40 feet from the tracks.

Aircraft

Aircraft operations at San Carlos Airport primarily impact properties along U.S. 101 and in Redwood Shores. The 1996 *San Mateo County Comprehensive Airport Land Use Plan* provides projected noise contour information for airport operations, shown in Figure PS-14. Where aircraft noise exceeds or is projected to exceed 55 dBA CNEL, the Airport Land Use Commission requests that the City require affected property owners to grant an aviation easement to the County of San Mateo when noise-sensitive developments are proposed within the airport's 55 dBA CNEL noise contour and higher noise levels.

Other Noise Sources

Other noise sources of concern include industrial and commercial businesses, outdoor activities, and construction. Residents often cite car washes, fire stations, air conditioning units, swimming pool pumps, school playgrounds, amplified music and/or voices, and public parks as sources of sometimes irksome

noise.

Vibration

Vibration is of concern relative to train operations. Levels are site specific and depend on several variables, including soil conditions; the type, load, and speed of trains; track construction; and the conditions of tracks/train wheels. Vibration effects will increase with soils that are weak or soft, such as those of the "Bay mud" in north and east Redwood City. Vibration is most effectively mitigated through land use planning. A setback of 100 feet is generally sufficient for vibration- sensitive development in the Bay Area. Other vibration reduction techniques, including the development of trenches, heavier foundations for buildings, and stiffer flooring materials, have been used in other regions and outside the U.S. to control train vibration, but setbacks are much more commonly utilized in California and the rest of the country.

With the possible establishment of high-speed rail service between San Francisco and the Central Valley, properties along the rail tracks through Redwood City can anticipate moderate to high vibration impacts, similar to those associated with Caltrain commuter rail service.

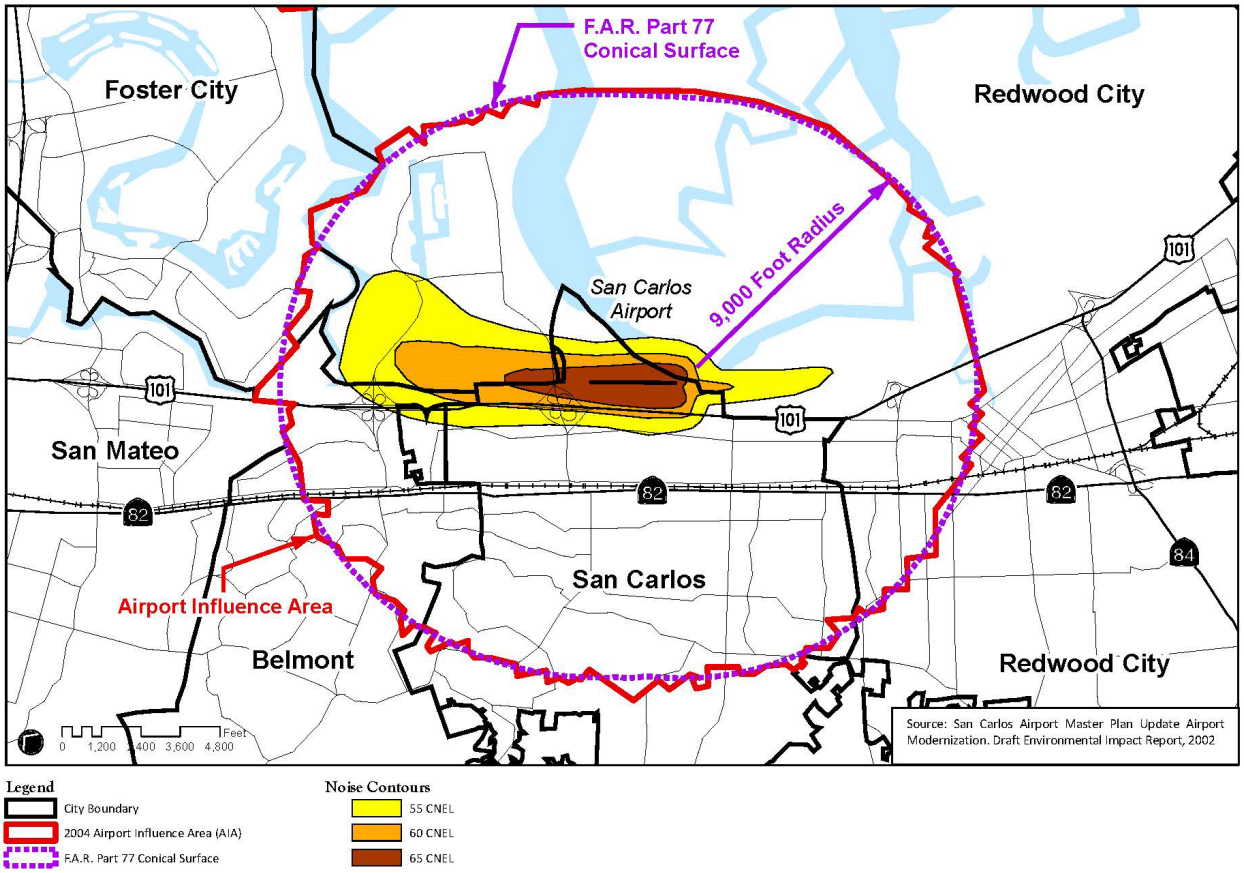


Figure PS-14: San Carlos Airport Noise Contours (June 2002)

Noise/Land Use Compatibility

Most cities and counties in California have adopted noise/land use compatibility criteria based on the general assumption that lower noise levels should be achieved in residential areas, with higher noise levels acceptable in business districts, and industrial areas considered appropriate for noise levels up to or exceeding 70 dBA CNEL. However, the introduction of mixed-use development principles into traditionally suburban environments has adjusted professional thinking and best practice recommendations with regard to acceptable noise levels. People who choose to live in vibrant mixed-use districts know that the excitement and activity levels bring with them a noise environment distinctly different from the traditional residential-only neighborhood. For example, outdoor music played at outdoor dining areas or bars can extend into late-night hours. Garbage collection early in the morning and the noise from heating, ventilation, and air conditioning equipment occur with greater frequency and intensity in an urban setting.

In addition, at locations along major roadways, greater traffic volumes contribute to ambient noise conditions. Projected noise levels along El Camino Real and Woodside Road–two areas that will allow new mixed- use development–are expected to exceed traditionally accepted noise/land use compatibility guidelines for residential uses, which indicate that in areas where average exterior noise levels exceed 60 dBA CNEL, new residential uses should not occur without site and building design mitigation.

This General Plan encourages mixed-use development to achieve several objectives: to work toward more sustainable development approaches, to increase access to affordable housing for more people, to create a lively Downtown, and to allow people to live closer to their jobs. These objectives necessarily require that Redwood City adopt more flexible noise guidelines for mixed-use districts, and these guidelines are set forth in Figure PS-15.

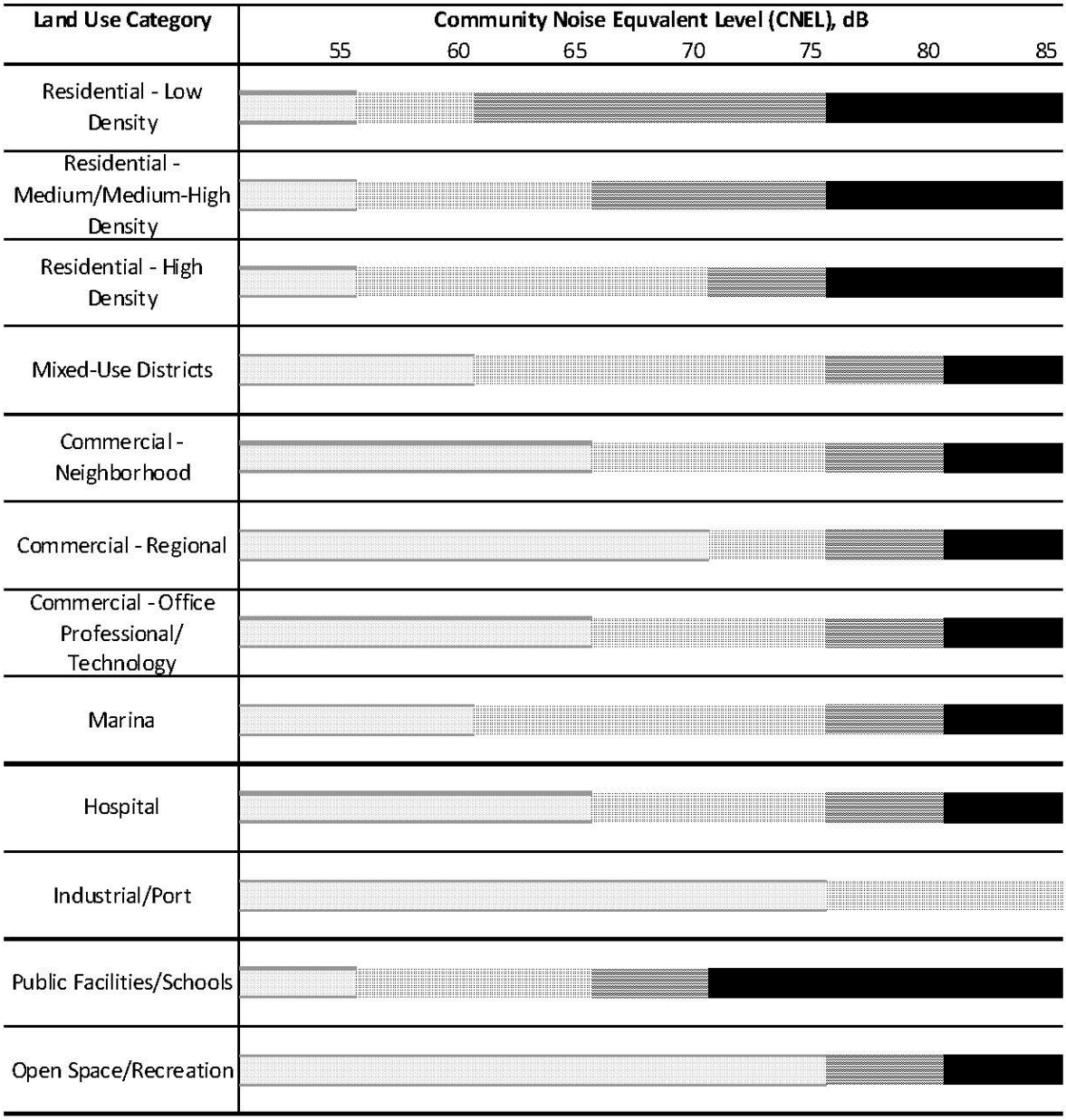


Figure PS-15: Redwood City Noise Guidelines for Land Use Planning

These guidelines simplify land uses and reduce the acceptability categories to four: normally acceptable, conditionally acceptable, normally unacceptable, and clearly unacceptable. These categories translate to a noise environment for a particular use that would be acceptable without additional mitigation measures, an intermediate category where the application of available mitigation measures would normally result in an acceptable noise environment, a noise environment that could potentially be unacceptable even after the application of available mitigation measures, and a noise environment that is never acceptable.

Coupled with these guidelines are regulations for noise control contained in Chapter 24 (Noise Regulations) of the Municipal Code and State standards for interior noise control for residential uses. Specifically, Title 24 of the California Health and Safety Code stipulates a maximum of 45 dBA CNEL for interior residential noise levels. In loud environments, insulation, double or triple pane windows, and special ventilation systems are among the tools used to achieve acceptable interior noise levels.

Noise Mitigation

This General Plan includes measures and possible solutions that address existing and foreseeable noise problems. Traffic noise is the most significant source of community noise in Redwood City. The noise generated by individual vehicles is pre-empted by the State, so noise limits cannot be set for individual vehicles. Noise generated by tire pavement interaction is the predominant source of noise and can be affected by local actions. During the last six years, extensive research has been completed related to tire pavement noise. Quieter pavements have been identified. These include pavements commonly used in California, such as open-grade asphalt concrete and rubberized asphalt. The other irritating noise sources associated with traffic are poorly muffled vehicles and loud stereo systems. Both of these are regulated by the Motor Vehicle Code but enforced by local police officers.

The fundamental principle of the California Environmental Quality Act (CEQA) as it relates to community noise is to keep new projects from causing a substantial increase in noise that would impact residents and other sensitive receptors. This can be accomplished if impacts are identified as a part of normal project review or through the CEQA process and mitigation measures are incorporated into projects.

Other sources of noise that contribute to the noise environment include aircraft flights, and various neighborhood sources including barking dogs, yard maintenance, garbage trucks, noise generated by other home equipment such as swimming pool pumps and air-conditioners, early morning deliveries, and parties. The City has little direct control of aircraft operations that may constitute a noise burden to its residents. However, this General Plan provides policies and programs that encourage aircraft noise mitigation measures through cooperation with relevant agencies.

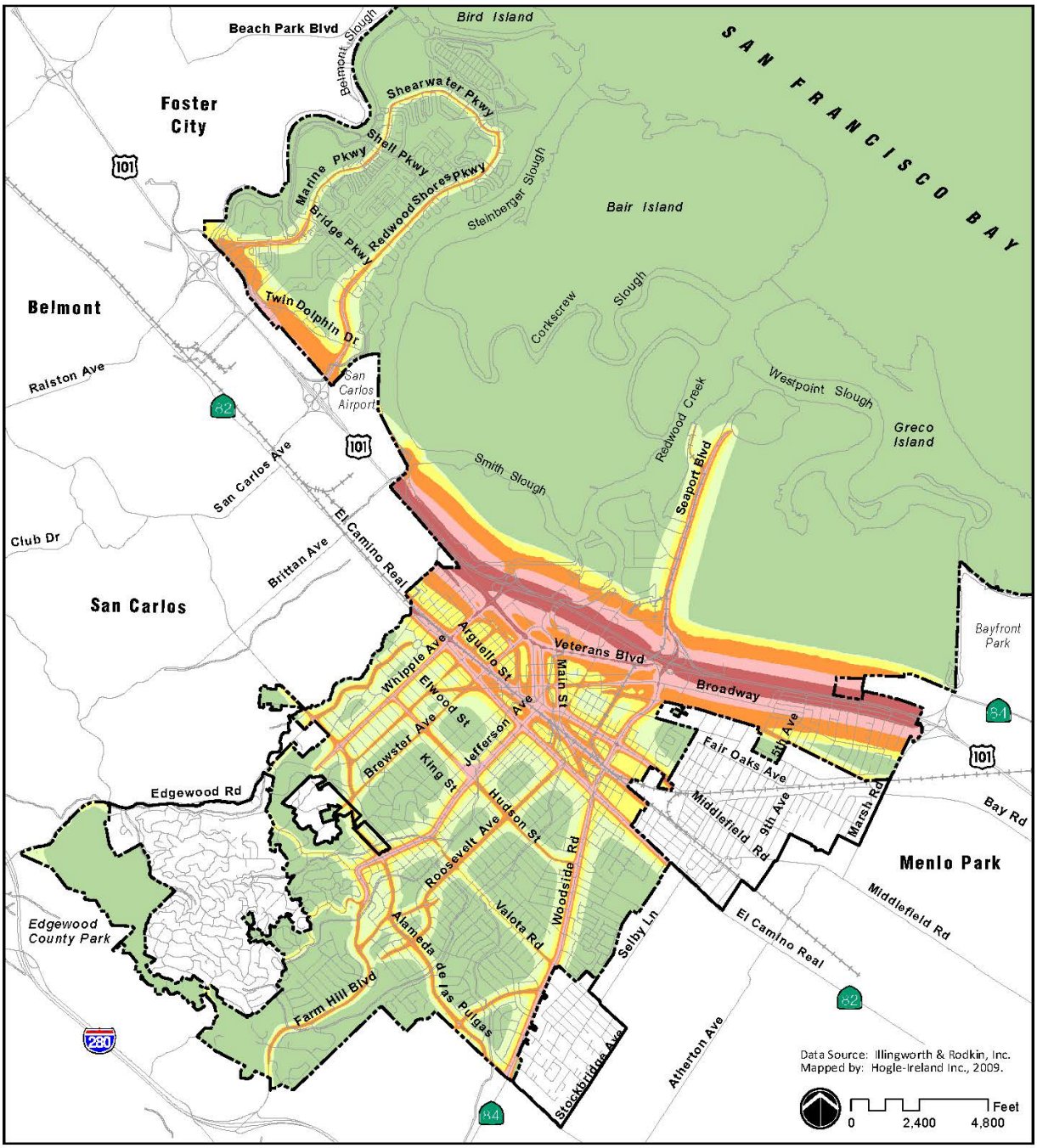
Noise Contours

Using measurement sites along Redwood City's streets and highways, noise contours have been generated based on current conditions. Future condition noise contours have also been generated, accounting for presumed major transportation sources in Redwood City.

The noise contours represent the average measurements of noise exposure and are used to provide a general visualization of sound levels in Redwood City. As an example, a person within an area located within a 60 dBA noise contour would hear a constant noise level roughly equivalent to 60 dBA, although

unique events would generate noise levels both below and above 60 dBA. The noise contours do not reflect possible noise attenuation that could occur from structural or geographical barriers, and acoustical analysis should be conducted for each unique and individual site in the case of a specific project.

Noise contours for the existing (2010) noise sources are shown in Figure PS-16, and projected contours for the year 2030 are shown in Figure PS-17.

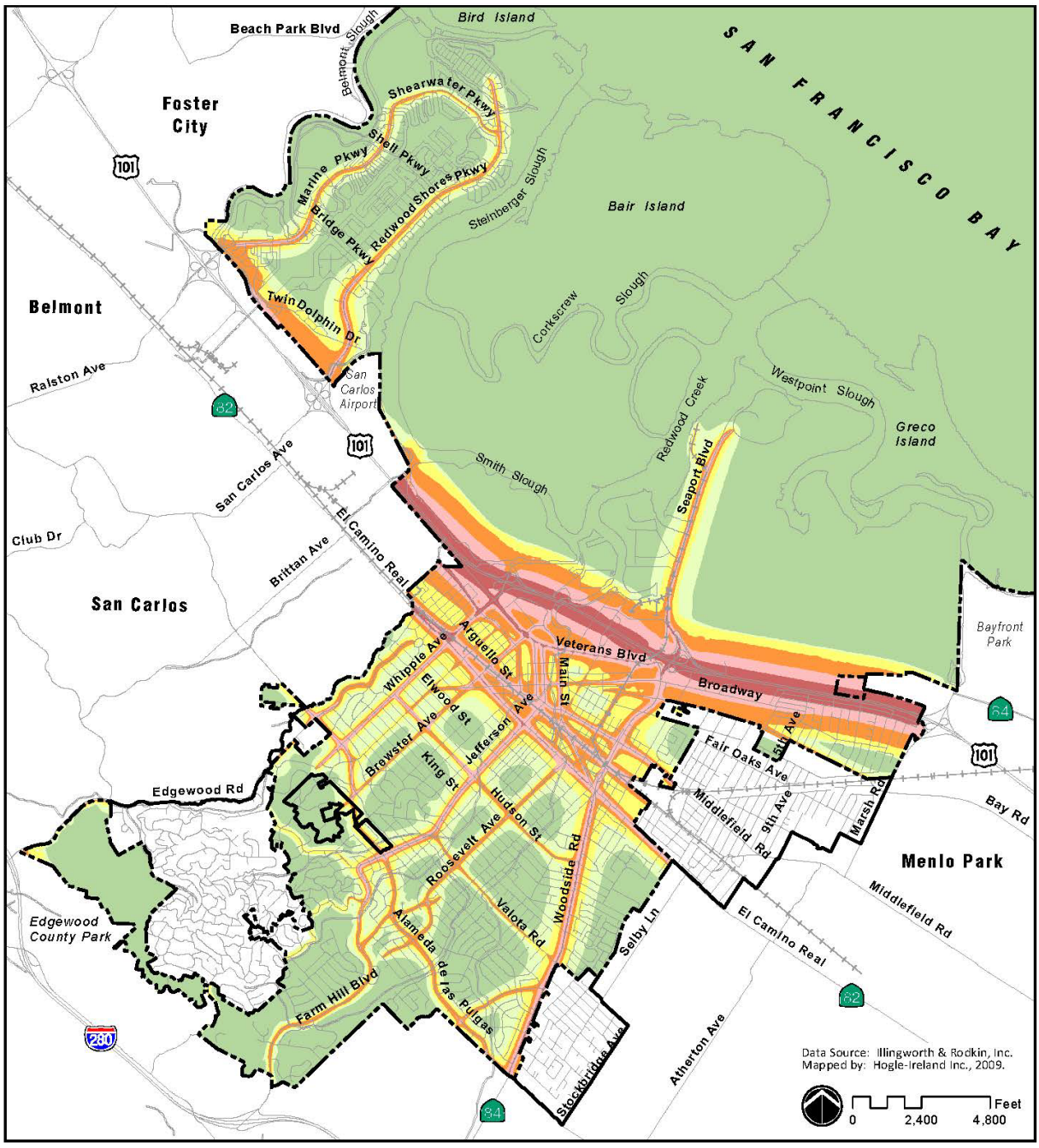


Existing Traffic Noise Level

- <55 db(A)
- 55-60 db(A)
- 60-65 db(A)
- 65-70 db(A)
- 70-75 db(A)
- >75 db(A)

- City Boundary
- Sphere of Influence
- Freeway/Highway
- Major Roads
- Railroad
- Waterways

Figure PS-16: 2010 Existing Noise Contours



Future Traffic Noise Level

- <55 db(A)
- 55-60 db(A)
- 60-65 db(A)
- 65-70 db(A)
- 70-75 db(A)
- >75 db(A)

- City Boundary
- Sphere of Influence
- Freeway/Highway
- Major Roads
- Railroad
- Waterways

Figure PS-17: 2030 Projected Noise Contours

Key Noise Considerations

Key considerations relative to noise in Redwood City are:

- The most significant noise sources in Redwood City–cars, trucks, trains, and airplanes–are beyond the City's regulatory control. However, the City can use land use planning strategies to minimize the effects of transportation-related noise.
- Train horns continue to be a source of community noise complaints.
- Housing, mixed-use districts, and residential neighborhoods have distinctly different noise conditions, which the respective residents generally understand and accept. The City must adopt reasonable and appropriate noise regulations that reflect the characteristics of the different areas in which residential uses are allowed.
- Heavier industrial business activities, and specifically those associated with the Port of Redwood City, have associated noise levels that generally are incompatible with residential uses. Land use policies emphasize separation of such uses as feasible, and local regulatory controls can be used to minimize conflicts.

Noise Goals, Policies, and Programs

The Redwood City General Plan Noise Chapter emphasizes careful planning to avoid locating sensitive receptors adjacent to or near significant noise sources, as well as addressing and minimizing noise at the source. The following goals, policies, and implementation programs reflect the City's commitment to adopting new and creative regulations to noise issues unique to Redwood City.

The following Guiding Principle is addressed by the Noise goals, polices, and programs:

- ***Partner with and embrace neighborhoods to improve health, safety, and well being for all.***

GOAL PS-13a **Minimize the impact of point source noise and ambient noise levels throughout**

Policy PS-13.1: Modify noise level standards as appropriate for all land uses.

Policy PS-13.2: Revise the City's Noise Ordinance to address ongoing noise issues by using quantitative noise limits where appropriate and establishing comprehensive noise control measures.

Policy PS-13.3: Consider noise impacts as part of the development review process, particularly the location of parking, ingress/egress/loading, and refuse collection areas relative to surrounding residential development and other noise-sensitive land uses.

Policy PS-13.4: In accordance with the Municipal Code and noise standards contained in the General Plan, strive to provide a noise environment that is at an acceptable noise level near schools, hospitals, and other noise sensitive areas.

Policy PS-13.5: Limit the hours of operation at all noise generation sources that are adjacent to noise sensitive areas, wherever practical.

Policy PS-13.6: Require all exterior noise sources (construction operations, air compressors, pumps, fans, and leaf blowers) to use available noise suppressions devices and techniques to bring exterior noise down to acceptable levels that are compatible with adjacent land uses.

Policy PS-13.7: Require that mixed-use structures be designed to account for noise from adjacent uses, and minimize transfer of noise and vibration from commercial/retail to residential use.

Policy PS-13.8: Implement appropriate standard construction noise controls for all construction projects.

Policy PS-13.9: Require noise created by new non-transportation noise sources to be mitigated so as not to exceed acceptable interior and exterior noise level standards.

Policy PS-13.10: Do not allow new residential or other noise sensitive land use development in noise impacted areas unless effective mitigation measures are incorporated into the project design to reduce outdoor activity area noise levels.

GOAL PS-14 Minimize the impacts of transportation-related noise.

Policy PS-14.1: Consult with responsible federal and State agencies to minimize the impact of transportation-related noise, including noise associated with freeways, major arterials, rail lines, and airports.

Policy PS-14.2: Require that proposed land use policy actions (such as a General Plan amendment, Zoning amendment, or a Precise Plan) within the identified aircraft noise contours for San Carlos Airport are:

- Reviewed by the Airport Land Use Commission (C/CAG Board)
- Mitigated for potential noise impacts, as appropriate to applicable City noise standards, by the developer
- Consistent with the Aircraft Noise/Land Use Compatibility Standards in the San Mateo County Airport Land Use Plan.

Policy PS-14.3: Continue to consult with San Mateo County Department of Public Works Airport Division, the Federal Aviation Administration (FAA), and Pilots Association to promote “fly neighborly” programs that minimize noise impacts from aircraft take-offs and other low-altitude aircraft operations associated with San Carlos Airport.

Policy PS-14.4: Require development that is, or will be, affected by railroad noise and/or vibration to include appropriate measures to minimize adverse noise effects on residents and business persons.

Policy PS-14.5: Provide, as appropriate, funding to monitor noise levels and investigate noise complaints.

Policy PS-14.6: Provide education to the community at large about the importance of maintaining a healthy noise environment, and identify ways residents can assist in noise abatement efforts.

Implementation Programs

Procedures, Permit, Agreements, Ordinances

Program PS-60: Noise Regulation Enforcement.

- Continue to enforce City and State noise regulations to protect residents from excessive noise levels. Periodically update City regulations for adequacy and revise, as needed, to address community needs and changes in legislation and technology.
- Allow for appropriate enforcement of all noise regulations, including fines for violations.
- Consider requiring that all building permit applicants sign a form acknowledging requirements of the City's Noise Ordinance.

Timeframe: Short Range and Ongoing
Responsible Party: Community Development; Public Works Services Department, Police Department
Funding Sources: General Fund

Program PS-61: Acoustical Analyses. Require acoustical analyses, as appropriate, for proposed stand-alone residential development within the 60 dB CNEL or higher contour, as shown in Figure PS- 12. Require incorporation of mitigation measures as necessary to reduce noise levels to levels deemed appropriate by the City.

Timeframe: Ongoing
Responsible Party: Community Development
Funding Sources: Developer funding

Program PS-62: Commercial Drive-Through Compatibility. Require commercial drive-through uses to demonstrate compatibility with adjacent land uses.

Timeframe: Ongoing
Responsible Party: Community Development
Funding Sources: Developer funding

Program PS-63: Enforcing Construction and Maintenance Noise Regulations. Minimize noise from property maintenance equipment, construction activities, and other non-transportation noise sources by enforcing construction and maintenance hours, including vehicle start-up and preparation. Enforce standard construction noise controls such as:

- Limit construction to the hours of 8:00 A.M. to 5:00 P.M. on weekdays, and 9:00 A.M. to 5:00 P.M. on Saturdays, with no noise-generating construction on Sundays or holidays.
- Control noise from construction workers' radios to the point where they are not audible at existing residences that border the project site.

- Equip all internal combustion engine-driven equipment with mufflers that are in good condition and appropriate for the equipment.
- Utilize quiet models of air compressors and other stationary noise sources where technology exists.
- Locate stationary noise-generating equipment as far as possible from sensitive receptors when sensitive receptors adjoin or are near a construction project area.
- Prohibit unnecessary idling of internal combustion engines.
- Notify residents adjacent to the project site of the construction schedule in writing.

Timeframe: Short Range and Ongoing
Responsible Party: Community Development
Funding Sources: General Fund

Program PS-64: Noise Element and Amendment Comprehensive Airport Land Use Plan Consistency. Refer all amendments to the Noise Element to the Airport Land Use Commission (C/CAG) for a determination of consistency with the relevant airport/land use compatibility criteria and guidelines contained in the San Mateo County Comprehensive Airport Land Use Plan for the environs of San Carlos Airport.

Timeframe: Ongoing
Responsible Party: Community Development
Funding Sources: Development application fees

Program PS-65: New Project and Comprehensive Airport Land Use Plan Consistency. Voluntarily refer development projects within the planning boundary of San Carlos Airport to the Airport Land Use Commission (C/CAG) for a determination of consistency with the relevant airport/land use compatibility criteria and guidelines contained in the San Mateo County Comprehensive Airport Land Use Plan for the environs of San Carlos Airport.

Timeframe: Ongoing
Responsible Party: Community Development
Funding Sources: Development application fees

Program PS-66: Vibration Standards. Consider adoption of vibration standards, and codify acceptable levels within the city.

Timeframe: Short Range
Responsible Party: Community Development
Funding Sources: General Fund

Program PS-67: Railroad Vibration. Require vibration-sensitive buildings (including but not limited to residential buildings) to be sited at least 100 feet from the centerline of railroad tracks, whenever feasible. Require the preparation of a site-specific vibration study for any residential or vibration-sensitive development proposed within 100 feet of the centerline of railroad tracks in Redwood City. The study shall include recommended measures to reduce vibration to meet citywide vibration standards, as defined per Program PS-66 of the General Plan. Potential measures to reduce vibration include, but are not limited to, modifications in site planning or building construction. The City shall

include the recommendation(s) of site-specific vibration studies as conditions of any subsequent project approvals involving potentially significant vibration impacts.

Timeframe: Ongoing
Responsible Party: Community Development
Funding Sources: General Fund

Program PS-68: Maintenance Equipment Restrictions. Consider the possible restriction of certain types of heating, ventilating, and air conditioning systems (HVAC) and/or maintenance equipment (such as leaf blowers) within the city.

Timeframe: Short Range
Responsible Party: Community Development
Funding Sources: None required

Program PS-69: **Motor Vehicle Noise Standards.** Encourage the enforcement of State of California motor vehicle noise standards for cars, trucks, and motorcycles by the California Highway Patrol and the City's Police Department.

Timeframe: Ongoing
Responsible Party: Police Department
Funding Sources: General Fund

Special Programs/Projects

Program PS-70: Noise Complaints Monitoring System. Develop and/or refine a tracking/monitoring system of noise complaints within the city such that repeat offenders might be more easily identified.

Timeframe: Short Range and Ongoing
Responsible Party: Community Development
Funding Sources: General Fund

Program PS-71: Quiet Pavement Surfaces. Consider quiet pavement surfaces in the City's repaving plans as an opportunity to make a noticeable reduction in traffic noise along city streets.

Timeframe: Short Range and Ongoing
Responsible Party: Public Works Services Department
Funding Sources: General Fund

Program PS-72: Noise/Land Use Compatibility Guidelines. Create flexibility in the City's noise/land use compatibility guidelines to recognize the special conditions of mixed-use development, including such development along arterials and near rail lines.

Timeframe: Short Range and Ongoing
Responsible Party: Community Development
Funding Sources: General Fund

Outreach, Education

Program PS-73: Noise Education. Help to educate the construction and development community about noise insulation/attenuation techniques in new residential construction.

Timeframe: Ongoing
Responsible Party: Community Development
Funding Sources: General Fund

Inter-Agency and Other Organizations Consultation

Program PS-74: Noise Consultation. Consult with other governmental agencies to minimize transportation-related noise including noise from freeways, major arterials, rail lines, and airports.

Timeframe: Ongoing
Responsible Party: City Manager Office/Economic Development
Funding Sources: General Fund