

The image features a dark green hedge on the left side, partially obscured by a thick, solid blue diagonal stripe that runs from the top-left towards the bottom-right. The background is white. The text '07.' is positioned in the upper right quadrant, and 'NOISE' is centered below it.

07.

NOISE



YOU ARE HERE...

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7.1 PURPOSE OF THE CHAPTER

This chapter identifies sources of noise and existing and future noise levels in Tiburon and provides standards to address exposure to current and projected noise sources. The primary source of existing noise in Tiburon is vehicle traffic from Tiburon Boulevard. Commercial activity, outdoor music, recreation, construction, landscape maintenance, and truck loading and unloading are among the stationary sources that contribute to the noise environment. The purpose of the Noise chapter is to limit the community's exposure to excessive noise levels in noise-sensitive areas and at noise-sensitive times of day.

The Noise chapter includes the following sections.

7.2 Fundamentals of Noise.

Describes the fundamentals of sound and noise-related terms.

7.3 Existing Noise Conditions.

Discusses the most significant sources of noise in Tiburon, including roadways and stationary sources.

7.4 Noise and Land Use Compatibility Standards. Presents standards that should be used to evaluate compatibility between new land uses and infrastructure projects and noise levels in Tiburon.

7.5 Future Noise Environment.

Describes future noise conditions expected with development projected under the General Plan.

7.6 Goals, Policies, and Programs.

Identifies goals, policies, and programs to limit the community's exposure to noise and vibration.

7.2 FUNDAMENTALS OF NOISE

Noise is a subjective reaction to different types of sound. Noise is typically defined as sound that is loud, unpleasant, unexpected, or undesired.

The effects of noise on people can be placed in three categories:

- Subjective effects of annoyance, nuisance, and dissatisfaction;
- Interference with activities such as speech, sleep, and learning; and
- Physiological effects such as hearing loss or sudden startling.

Environmental noise typically produces effects in the first two categories.

Workers can experience noise in the last category. A wide variation in individual thresholds of annoyance exists and different tolerances to

noise tend to develop based on an individual's past experiences with noise.

A decibel (dB) is the fundamental unit of sound, and sound is measured on a decibel scale. The decibel scale is logarithmic, not linear, which means that an increase in 10 dB is 10 times greater than the base number. The perceived loudness of sound is dependent upon many factors, including sound pressure and frequency content. The A-weighted decibel scale is used to give greater weight to the frequencies of sound to which the human ear is most sensitive by de-emphasizing the very low and very high frequencies. The A-weighted sound level is expressed as dBA and is the most common method to characterize sound in California. Representative outdoor and indoor noise levels in units of dBA are shown in Figure N-1.

Table N-1

TYPICAL A-WEIGHTED SOUND LEVELS

COMMON OUTDOOR ACTIVITIES	NOISE LEVEL (dBA)	COMMON INDOOR ACTIVITIES
	110	Rock Band
Jet fly-over at 1,000 ft	100	
Gas lawn mower at 3 ft	90	
Diesel truck at 50 ft. and 50 mph	80	Food blender at 3 ft
Heavy traffic at 300 ft	60	Normal speech at 3 ft
	50	Dishwasher in next room
Quiet urban nighttime	40	
	30	Library
Quiet rural nighttime	20	Bedroom at night

Source: Caltrans, Technical Noise Supplement, Traffic Noise Analysis Protocol 2013.

The zero on the decibel scale is based on the lowest sound level that the healthy, unimpaired human ear can detect. Except in carefully controlled laboratory experiments, a change of 1 dBA cannot be perceived. Outside the laboratory, a 3 dBA change is a just-perceivable difference. Generally, a change in level of at least 5 dBA is required before any noticeable change in human response would be expected. A 10 dBA change sounds like the noise has approximately doubled.

Community noise is commonly described in terms of the ambient noise level, which is defined as the all-encompassing noise level of a given environment consisting of all noise sources audible at that location. A common statistical tool to measure ambient noise is average, or equivalent, sound level. The day/night average level (Ldn) is based on the average noise level over a 24-hour day, with a 10-decibel weighting applied to noise occurring during nighttime (10 p.m. to 7 a.m.) hours. The nighttime penalty is based upon the assumption that people

react to nighttime noise exposures as though they were twice as loud as daytime exposures. Because Ldn represents a 24-hour average, it tends to disguise short-term variations in the noise environment.

Varying levels of noise can impact sleep and speech and cause annoyance. An important way of predicting a human reaction to a new noise environment is the way it compares to the existing environment to which one has adapted. In general, the more a noise exceeds the previously existing ambient noise level, the less acceptable the new noise will be judged by those hearing it.

7.3 EXISTING NOISE CONDITIONS

Existing traffic volumes and generally accepted noise modeling techniques were used to develop noise contours for the major roadways in the planning area. Figure N-2 shows noise contours for the 60 and 65 dBA levels along Tiburon and Trestle Glen Boulevards. The contours indicate maximum noise exposure assuming line-of-sight to the noise source and fall rapidly a short distance from the roadways since noise decreases exponentially with distance. These contours are intended for screening purposes to identify locations where site-specific noise studies may be required. Predicted noise levels along major roadways at the nearest receptors were prepared for the General Plan Existing Conditions Report. Roadway segments where noise levels are at least 65 dBA Ldn at the closest receptor include locations between US 101 and Rock Hill Drive. Noise levels along Tiburon Boulevard in the Downtown are

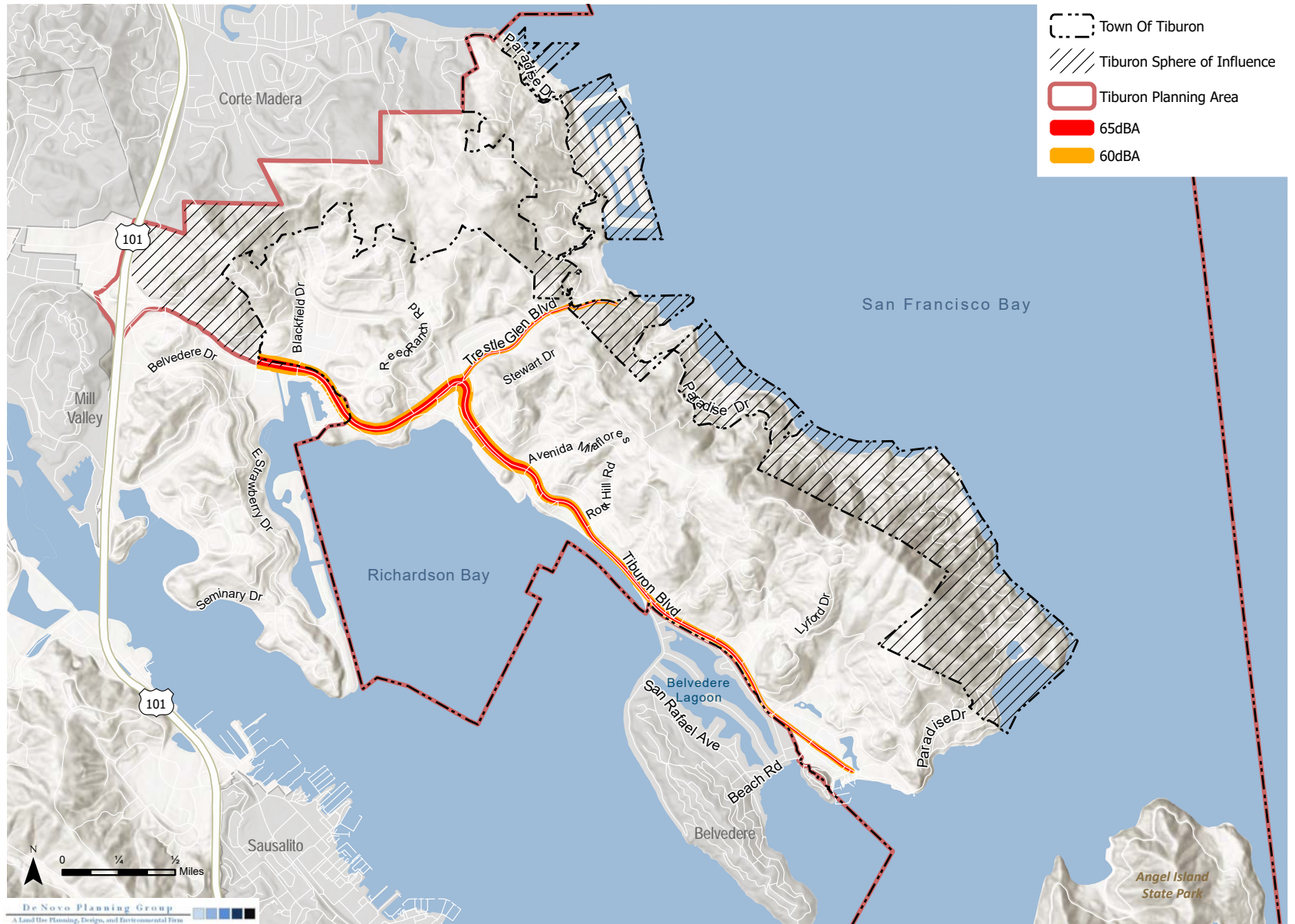
generally predicted between 60 and 65 dBA Ldn. The nearest receptors on these roadway segments include both residential and commercial uses.

STATIONARY NOISE SOURCES

Commercial activity, construction, landscape maintenance, parking lots, loading docks, parks, and schools are among the stationary noise sources in Tiburon. Construction noise includes demolition, excavation, grading, delivery of materials, and building on a project site or staging area. Stationary noise sources also include recreation activities and outdoor music; service and delivery trucks idling, loading, and unloading; and mechanical systems for heating, ventilation, and air conditioning. Town policy provides noise standards for heating, ventilation, air conditioning units and similar noise-generating mechanical equipment. The Town also regulates the hours of use of leaf blowers and hedge trimmers.

Figure N-1

EXISTING NOISE CONTOURS



De Novo Planning Group
A Land Use Planning, Design, and Environmental Firm

Sources: ArcGIS Online World Hillshade Map Service; Marin County GIS; Saxelby Acoustics. Map date: March 6, 2023.

7.4 NOISE & LAND USE COMPATIBILITY STANDARDS

The standards listed in Figure N-3 should be used to evaluate the compatibility between new land uses and future noise in Tiburon. The land use compatibility standards should be used in combination with Figures N-2 and N-4 to determine whether a proposed development or land use is located in an area that exceeds the normally acceptable noise exposure for that type of development or land use and therefore requires an acoustical analysis and/or special noise mitigating measures. The land use compatibility standards are also used as a guide to determine if noise from stationary sources is acceptable.

7.5 FUTURE NOISE LEVELS

Future noise levels will be largely attributable to vehicular traffic. Projected noise contours are shown in Figure N-4. This figure identifies areas that may be exposed to excessive noise levels, defined as those above

60 dBA Ldn. Policies and programs in this chapter address these noise issues through implementation of a variety of noise-mitigating measures and, where possible, conditioning future development to limit future noise exposure.

Figure N-2

PROJECTED FUTURE NOISE CONTOURS

Land Use Category	Community Noise Exposure Ldn or CNEL, in dB					
	55	60	65	70	75	80
Residential (interior noise levels not to exceed 45 dBA Ldn)	Light	Light	Light	Light	Light	Light
Transient Lodging, Motels, Hotels	Light	Light	Light	Light	Light	Light
Schools, Libraries, Churches, Hospitals, Nursing Homes	Light	Light	Light	Light	Light	Light
Auditoriums, Concert Halls, Amphitheaters	Light	Light	Light	Light	Light	Light
Sports Arenas, Outdoor Spectator Sports	Light	Light	Light	Light	Light	Light
Playgrounds, Neighborhood Parks, Tennis Courts, Outdoor Recreation	Light	Light	Light	Light	Light	Light
Water Recreation, Riding Stables, Golf Courses, Cemeteries	Light	Light	Light	Light	Light	Light
Office buildings, Business, Commercial & Professional	Light	Light	Light	Light	Light	Light
Industrial, Manufacturing, Utilities, Agriculture	Light	Light	Light	Light	Light	Light





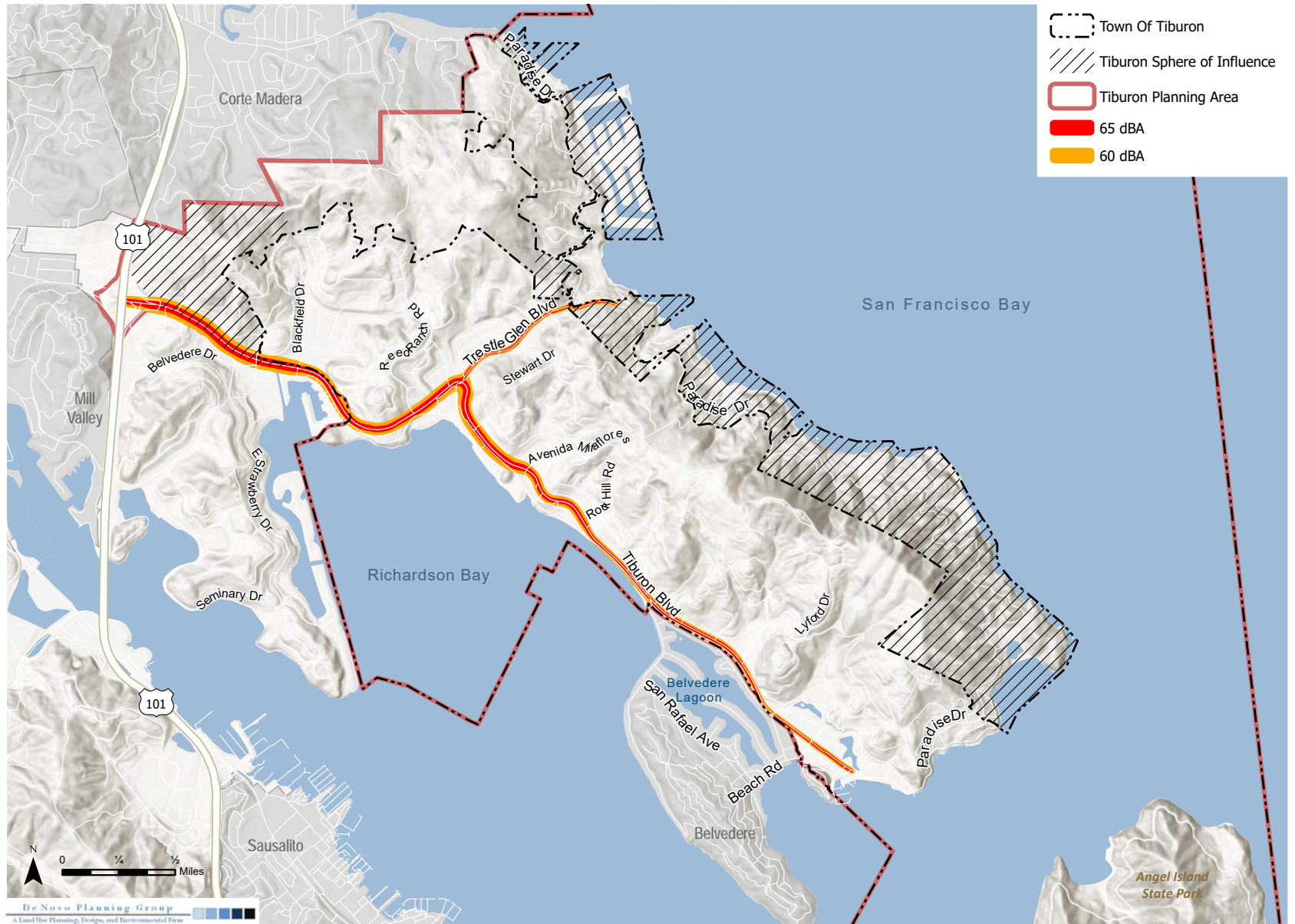
- 
Normally Acceptable
 Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.
- 
Conditionally Acceptable
 New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design.
- 
Normally Unacceptable
 New construction or development should be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.
- 
Clearly Unacceptable
 New construction or development clearly should not be undertaken.

Figure N-3

PROJECTED FUTURE NOISE CONTOURS



Sources: ArcGIS Online World Hillshade Map Service; Marin County GIS; Saxelby Acoustics. Map date: March 6, 2023.

7.6 GOALS, POLICIES, AND PROGRAMS

GOAL N-A

Ensure that residential areas are quiet and that noise levels in public and commercial areas remain within acceptable limits.

GOAL N-B

Eliminate or reduce unnecessary, excessive, and offensive noises from all sources

POLICY N-1 NOISE IMPACTS OF NEW DEVELOPMENT.

Use the Noise and Land Use Compatibility Guidelines in Figure N-3 in land use decisions to determine what noise levels in the community are acceptable or unacceptable and to require noise attenuation methods as warranted in noise-impacted areas.

POLICY N-2 COMPATIBILITY OF NEW LAND USES.

Use the Noise and Land Use Compatibility Guidelines in Figure N-3 to determine acceptable new land uses, and to require noise attenuation methods as warranted in noise-impacted areas.

Program N-a Acoustical Study Requirements.

Require acoustical studies for projects that may be exposed to or create noise levels that exceed the Noise and Land Use Compatibility Guidelines in Figure N-3. Mitigation measures should be identified to ensure that noise levels remain at acceptable levels.

Program N-b Conditions of Approval.

Establish conditions of approval through the development review process for activities with the potential to create noise conflicts and enforce these conditions once projects become operational.

Program N-c Construction Noise.

Use the environmental review process to identify measures to minimize exposure of neighboring properties to excessive noise levels from construction activity.

Program N-d Recreational Facilities.

Consider potential noise impacts from new or expanded recreational facilities on surrounding residential properties, requiring preparation of an acoustical report for projects which may create noise levels which exceed the Noise and Land Use Compatibility Guidelines in Figure N-3.

POLICY N-3 TRAFFIC NOISE

Minimize exposure of residents to traffic noise through land use policies, law enforcement, street design and improvements and landscaping.

Program N-e Caltrans Noise Mitigation.

Work with Caltrans to ensure that adequate noise studies are prepared, and noise mitigation measures are considered for modifications to Tiburon Boulevard.

POLICY N-4 SOUND WALLS.

Discourage the use of sound walls if other noise reduction measures such as berms or landscaping are available. Any sound walls or solid barriers should be aesthetically compatible with the surrounding neighborhood, regularly maintained, and minimize the potential for reflected sound.

POLICY N-5 AIRCRAFT NOISE.

Attempt to reduce aircraft noise over the Tiburon Planning Area by working with the County of Marin, other cities and towns, and appropriate regulatory agencies.

POLICY N-6 VIBRATION IMPACTS.

Ensure that the potential for vibration from demolition and construction projects is considered and measures are taken to mitigate potential impacts.



BUFFERS

Discourage the use of sound walls if other noise reduction measures such as berms or landscaping are available.





08.

SUSTAINABILITY



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8.1 PURPOSE OF THE CHAPTER

Tiburon recognizes its responsibility to live sustainability and ensure that the earth's finite resources are used conservatively and, to the extent possible, are preserved for future generations. Tiburon seeks to create and maintain the conditions which humans and nature can co-exist in productive harmony while continuing to prosper and maintain a high quality of life. Planning is crucial to ensure new development uses renewable energy sources and sustainable building materials and has the smallest impact possible on the climate. This chapter presents a framework for governing future decisions about how the Town will provide a sustainable community. The Sustainability chapter includes the following sections.

8.2 Sustainability. Describes the concept of sustainability and the ecological footprint.

8.3 Climate Change Impacts. Provides an overview of existing and projected climate change impacts in California and Tiburon, including rising temperatures, extreme heat events, wildfire, drought, and storms.

8.4 Greenhouse Gas Emissions and the Climate Action Plan. Describes greenhouse gas emissions and the Town's actions to quantify and reduce community-wide greenhouse gas emissions.

8.5 Goals, Policies, and Programs. Identifies goals, policies, and programs to create a sustainable community.

8.2

SUSTAINABILITY

In 1987, the United Nations Brundtland Commission defined sustainability as “meeting the needs of the present without compromising the ability of future generations to meet their own needs.” Today, we often think of sustainability as the integration of environmental, social, and economic health and vitality to create thriving, diverse, and resilient communities for this generation and generations to come. The practice of sustainability recognizes how these issues are interconnected and requires a systems approach to addressing complex problems. Similarly, issues related to sustainability are addressed throughout the General Plan. Nonetheless, Chapter 5 Equity, Diversity and Inclusion provides a special focus on social equity, while Chapter 2 Land Use addresses economic development. This chapter

focuses on climate change, while Chapter 9 addresses other dominant environmental issues such as loss of biodiversity, land degradation, and air and water pollution.

One way to measure sustainability is through the “ecological footprint” which measures the demand on and supply of nature. The ecological footprint measures how fast populations consume resources and generate waste and compares that to how fast nature can absorb the waste and generate new resources.¹ If a population’s ecological footprint exceeds the region’s biocapacity, that region runs a biocapacity deficit. Today, more than 80% of the world’s population live in countries that are running ecological deficits. To live within the means of our planet’s resources, the world’s

Ecological Footprint would have to equal the available biocapacity per person on our planet, which is currently 1.6 global hectares. The average American’s ecological footprint is 8.1 global hectares, while the United States’ biocapacity is 3.4 global hectares per person. That means Americans use more than five times the productive capacity of the planet and more than twice what the United States can sustainably provide for its citizens.

¹ For a more thorough discussion see the Global Footprint Network at www.footprintnetwork.org.

8.3 CLIMATE CHANGE IMPACTS

California is already experiencing climate change impacts. Sea levels along the coast of southern and central California have risen about 6 inches over the past century and even moderate tides and storms are now producing extremely high sea levels.² Since 1950, the areas burned by wildfire each year has been increasing, as warming temperatures extend the fire season and low precipitation and snowpack create conditions for extreme, high severity wildfires to spread rapidly. Eighteen of the state's twenty largest fires have occurred since 2003, and the eight largest fires have occurred since 2017.³ The megafires of 2020, sparked in many cases by lightning strikes, burned over 4 million acres across California.

As temperatures continue to rise, California faces serious climate impacts, including:

- More intense and frequent heat waves
- More intense and frequent drought
- More severe and frequent wildfires
- More severe storms and extreme weather events
- Greater riverine flows
- Shrinking snowpack and less overall precipitation
- Accelerating sea level rise
- Ocean acidification, hypoxia, and warming
- Increase in vector-borne diseases and heat-related deaths and illnesses
- Increase in harmful impacts to vegetation and wildlife, including algal blooms in marine and freshwater environments, spread

of disease-causing pathogens and insects in forests, and invasive agricultural pests.

Overall temperatures are projected to rise substantially throughout this century. In Tiburon, temperatures are expected to rise about 4°F by 2100 if global emissions peak around 2040 and then decline, the so-called “low emissions” scenario. If the world fails to act and we continue the path we are on, temperatures are projected to rise 7°F by the end of the century (the “high emissions” scenario) (Cal-Adapt).

As the climate changes, some of the more serious threats to public health will stem from more frequent and intense extreme heat days and longer heat waves. Extreme heat events are likely to increase the risk of heat-related illness, such as heat stroke and dehydration, and exacerbate existing chronic health conditions. Extreme heat days in Tiburon are expected to increase from 4 days to 11 days under the low

emissions scenario and to as many as 19 days under the high emissions scenario.

Higher temperatures will make Marin more vulnerable to wildfire and sea level rise. By the end of the century, sea level is projected to rise 2.4 to 3.4 feet, and possibly as much as 10 feet. At 5 feet of sea level rise, flooding may inundate downtown Tiburon, Blackie's Pasture and Greenwood Cove, the Cove Shopping Center, and Paradise Cay. Flooding will be even worse during storms, which are expected to increase in frequency and intensity.

As described in Section 11.2 of the Safety + Resilience chapter, the Town's Local Hazard Mitigation Plan and the Marin County Vulnerability Assessment (2022) adaptation and resilience requirements of Gov't. Code §65302(g)(4)(A). Section 11.5 discusses sea level rise impacts and adaptation strategies in Tiburon.

² Louise Bedsworth, Dan Cayan, Guido Franco, Leah Fisher, Sonya Ziaja, “Statewide Summary Report,” in *California's Fourth Climate Change Assessment*, publication number: SUMCCCA4-2018-013, 2018, p. 31.

³ Cal Fire, “Top 20 Largest Wildfires,” https://www.fire.ca.gov/media/4jandlhh/top20_acres.pdf, accessed 7/29/22.

8.4 GREENHOUSE GAS EMISSIONS AND CLIMATE ACTION PLAN

The earth's atmosphere contains a group of naturally occurring gases that maintain a habitable climate. These gases allow sunlight to enter the earth's atmosphere freely and prevent some of the sun's heat from exiting the atmosphere. Because of their ability to contain heat, the gases are known as greenhouse gases, or GHGs. Natural levels of GHGs exist in balanced proportion, resulting in steady maintenance of the temperature within earth's atmosphere. However, emissions of GHGs from human activities, such as electrical production and motor vehicle use, continue to elevate the concentrations of GHGs, upsetting their natural balance. When

GHG concentrations exceed natural concentrations in the atmosphere, the "greenhouse effect" of trapped heat is enhanced, and the phenomenon known as global warming occurs.

The United Nations' Intergovernmental Panel on Climate Change (IPCC) is responsible for advancing knowledge on human-induced climate change. Its reports play a key role in establishing GHG reduction targets and international agreements to reduce emissions. In 2015, all the members of the United Nations Framework Convention on Climate Change – including the United States, China, India, and the European Union – signed on to the historic "Paris Agreement". The central aim of the agreement was to strengthen the global response to the threat of climate change by keeping a global temperature rise this century well below 2 degrees Celsius above preindustrial levels and



Town of Tiburon

CLIMATE ACTION PLAN 2030

Adopted

September 21, 2022



CLIMATE ACTION PLAN 2030

to pursue efforts to limit the temperature increase even further to 1.5 degrees.

Global temperatures have already increased by an average of 1.1 degrees Celsius, or 2 degrees Fahrenheit, since the 19th century as humans have emitted heat-trapping gases into the atmosphere by burning coal, oil, and gas for energy, and cutting down forests. The goal of limiting global temperature increase to no more than 1.5 degrees Celsius above preindustrial levels would require nations to all but eliminate their fossil-fuel emissions by 2050, and most are far off-track. The world is currently on pace to warm somewhere between 2 degrees and 3 degrees Celsius this century, experts have estimated.

Since 2005, the State of California has responded to growing concerns over the effects of climate change by passing

a series of target-setting legislation and adopting a comprehensive approach to addressing GHG emissions in the public and private sectors. In 2006, the state adopted Assembly Bill 32, which established long-term targets to reduce GHG emissions to 1990 levels by 2020. In 2016, Senate Bill 32 established a goal to reduce statewide emissions 40 percent below 1990 levels by 2030. In 2022, Assembly Bill 1279 set a statewide target to reduce emissions 85 percent below 1990 levels by 2045 and achieve carbon neutrality in that year.

The Town of Tiburon recognizes its vital role in reducing greenhouse gas emissions and adapting to climate change. In 2022, the Town adopted Climate Action Plan 2030 that establishes actions the Town's government and community can take

to reduce emissions 50 percent below 1990 levels by the year 2030 and put the town on a trajectory to achieve carbon neutrality by 2045.

The Town conducts annual inventories of community-wide greenhouse gas emissions to identify baseline emissions and track progress in meeting reduction targets. The inventories estimate the amount of carbon dioxide, methane, and nitrous oxide that are generated by activities within the Tiburon town limits. These greenhouse gas emissions are weighted according to their global warming potential and totaled as "carbon dioxide equivalents" or CO₂e. Emissions at the local government level are typically reported in metric tons, or MTCO₂e.

Community emissions are quantified according to these seven sectors:

- The **Built Environment – Electricity** sector represents emissions generated from the use of electricity in Tiburon homes and commercial, industrial, and governmental buildings and facilities.
- The **Built Environment – Natural Gas** sector represents emissions generated from the use of natural gas in Tiburon homes and commercial, industrial, and governmental buildings and facilities. Propane used as a primary heating source is also included, although it represents less than 1% of emissions in this sector.
- The **Transportation** sector includes tailpipe emissions from passenger

vehicle trips originating and ending in Tiburon, as well as a share of tailpipe emissions generated by medium and heavy-duty vehicles and buses traveling on Marin County roads. The sector also includes emissions from Marin Transit and Golden Gate Transit buses as these vehicles travel within Tiburon's boundaries. Electricity used to power electric vehicles is embedded in electricity consumption reported in the Built Environment - Electricity sectors.

- The **Waste** sector represents fugitive methane emissions that are generated over time as organic material decomposes in the landfill. Although most methane is captured or flared off at the landfill, approximately 25% escapes into the atmosphere.

- The **Off-Road** sector represents emissions from the combustion of gasoline and diesel fuel from the operation of off-road vehicles and equipment used for construction and landscape maintenance.
- The **Water** sector represents emissions from energy used to pump, treat, and convey potable water from the water source to Tiburon water users.
- The **Wastewater** sector represents stationary, process and fugitive greenhouse gases that are created during the treatment of wastewater generated by the community, as well as emissions created from electricity used to convey and treat wastewater.

The most recent inventory was conducted for the year 2020.

Table S-1

COMMUNITY-WIDE GHG EMISSIONS BY SECTOR, 2020

SECTOR	GHG EMISSIONS (metric tons CO ₂ e)
Built Environment - Electricity	1,838
Built Environment - Natural Gas	15,045
Transportation	23,789
Waste	1,889
Off-Road	516
Water	14
Wastewater	216
TOTAL	43,307

Community-wide GHG emissions totaled 43,307 MTCO₂e in 2020, which is 19 percent below estimated 1990 levels. Emissions by sector are shown in Table S-1. It is important to note that the Town's GHG emissions inventories are not "consumption-based" inventories and do not take into account lifecycle emissions that are generated by mining, production, manufacturing, or transport of food and products outside the Town limits, nor do they include certain emissions generated outside the community's borders, such as airplane travel by residents.

Emissions are projected to increase 7.1 percent between the 2020 and 2030 and to drop slightly by 2040, settling at 46,240 MTCO₂e, in the absence of any policies or actions that would

occur to reduce emissions. The forecast is derived by "growing" baseline emissions by forecasted changes in population, number of households, jobs and vehicle miles traveled according to projections developed by the Association of Bay Area Governments and the Metropolitan Transportation Commission.

The Town's Climate Action Plan 2030 identifies state and local actions and performance targets that, if fully implemented and achieved, will meet the Town's goal to reduce emissions 50 percent below 1990 levels. The top local actions are as follows:

Electric Vehicles. The plan targets 45 percent of passenger vehicles registered in Marin County to be plug-in electric vehicles by 2030. (6,340 MTCO₂e)

Electrification of Buildings. The plan includes adoption of ordinances that will require new homes and commercial buildings to be all-electric and replacement of natural gas appliances and heating systems with high-efficient electric versions, including heat pump technology, upon burnout. (2,030 MTCO₂e)

Energy Efficiency. The plan includes continued promotion and participation in energy efficiency and conservation programs to reduce energy consumption in the built environment. (1,170 MTCO₂e)

Waste Reduction. The plan includes actions to significantly reduce organic waste from landfills. (1,830 MTCO₂e)

Community Education. The plan includes actions to educate and motivate residents to reduce their carbon

input by participating in the Resilient Neighborhoods program. (960 MTCO₂e)

Carbon Offsets. To ensure emissions are reduced 50 percent below 1990 levels by 2030, the Town will consider annually purchasing carbon offsets – preferably in a local program that sequesters carbon in Marin County – in the amount needed to bridge the gap between the GHG reduction achieved in 2030 and the target. (2,260 MTCO₂e)

8.5 GOALS, POLICIES, AND PROGRAMS

GOAL S-A

Create a sustainable community that ensures residents may meet their own needs without compromising the needs of future generations.

GOAL S-B

Reduce greenhouse gas emissions in the community and within government operations to mitigate the effects of climate change.

POLICY S-1 GREENHOUSE GAS EMISSION REDUCTIONS.

Mitigate the impacts of climate change by reducing community greenhouse gas emissions.

Program S-a Emissions Reduction Targets.

Implement strategies to achieve reductions in greenhouse gas emissions at least 50 percent below 1990 levels by 2030, and to support the State's goal to achieve zero net emissions statewide by 2045.

Program S-b Climate Action Plan.

Implement the Town's Climate Action Plan and periodically update the plan to incorporate new emission reduction targets, strategies, and best practices.

Program S-c Monitoring Emissions.

Periodically update the greenhouse gas emissions inventory for community and government operations emissions to track progress in reducing emissions & implementing the Climate Action Plan.

Program S-d Carbon Offsets.

Explore the purchase of verifiable carbon offsets to help achieve the Town's greenhouse gas reduction goal.

Program S-e Public Education.

Educate the community on the impacts of climate change and actions individuals and businesses can take to reduce greenhouse gas emissions, shift to renewable energy and zero emission vehicles, reduce waste and water use, and adapt to climate change.

POLICY S-2 RENEWABLE ENERGY.

Accelerate the conversion to renewable energy sources.

Program S-f Building and Appliance Electrification.

Consider building regulations which preclude gas appliances and infrastructure in new buildings and regulations and require gas appliances to be replaced with high-efficiency electric at burnout.

Program S-g Municipal Energy Use.

Evaluate solar energy production and storage systems at all municipal buildings and facilities and plan for replacement of natural gas appliances and equipment. Continue to purchase 100% renewable energy for Town buildings and facilities.

Program S-h Community Energy Use.

Encourage residents and businesses to install solar energy production and storage systems by streamlining regulations and permit processes, or to purchase 100% renewable energy through energy providers.

POLICY S-3 BUILDING ENERGY EFFICIENCY.

Encourage energy efficiency improvements in existing residential and commercial buildings to reduce energy use.

Program S-i Green Building Regulations.

Consider adopting green building regulations for new construction and building remodels and additions that exceed minimum State building and energy code requirements.

Program S-j Energy Efficiency Programs.

Promote programs and incentives to property owners to improve energy efficiency. Consider requiring energy audits at time of building sale or major remodel.

POLICY S-4 LOW CARBON TRANSPORTATION.

Minimize transportation-related greenhouse gas emissions.

Program S-k Zero Emission Vehicles.

Implement a comprehensive program to significantly increase the use of zero emission vehicles through public education and promotion, adoption of building code requirements for electric vehicle charging facilities in new construction, and installation of Level 2 and 3 public charging facilities.

Program S-l Fleet Vehicle Replacements.

Give priority to electric and zero emissions vehicles, as feasible, when replacing vehicles in the Town's fleet with the goal of achieving a zero-emissions fleet by 2030.

POLICY S-5 WASTE DIVERSION TARGETS.

Strive to meet or exceed waste diversion and food recovery targets set by the state.

Program S-m Business Waste Management Plans.

Require that businesses prepare and implement waste management plans to maximize recycling and food recovery and minimize disposal of organic waste where appropriate as a condition of approval of use permits.

Program S-n Organic Waste Reduction.

Work with the Town's waste hauler and Zero Waste Marin to develop and implement programs to educate and motivate residents and business owners to increase recycling of materials and food recovery and reduce disposal of organic waste.

Program S-o Construction and Demolition Debris.

Modify the solid waste disposal ordinance to maximize the recovery and recycling of construction debris consistent with the Marin Zero Waste model ordinance.

POLICY S-6 MUNICIPAL WASTE REDUCTION.

Maximize recycling, composting, reuse, waste reduction, and food recovery within municipal operations and at public parks and facilities.

Program S-p Recycling Facilities.

Provide sufficient recycling and composting bins for public and staff use.

Program S-q Environmentally Preferable Purchasing.

Adopt municipal purchasing procedures to give preference to purchasing products that are recyclable, made from recycled materials, and minimize packaging.

POLICY S-7 TOWN FACILITIES AND OPERATIONS.

Continue to pursue opportunities to improve energy efficiency and reduce resource consumption in Town-owned facilities and operations.

POLICY S-8 GREEN BUILDING IN TOWN FACILITIES

Apply green building principles to the design, construction, and operation of new Town and Town-sponsored facilities to provide long-term cost savings and to serve as an example for the community.

POLICY S-9 GREEN BUILDING.

Integrate energy efficiency, conservation, and other green building incentives into the zoning permit and building permit processes.



LOW CARBON TRANSPORTATION AND TOWN FACILITIES AND OPERATIONS





09.

CONSERVATION



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9.1 PURPOSE OF THE CHAPTER

This chapter presents a framework for governing future decisions about how Tiburon will protect, conserve, and maintain natural and cultural resources for today's residents, as well as future generations. Natural resources are the lands, habitat, wildlife, plants and trees, air, water, and other resources that occur naturally in the environment, undisturbed by humanity. These natural resources can provide biodiversity, agricultural and managed natural resources production, flood risk reduction, protection from hazardous conditions, and climate change mitigation and adaptation. Cultural resources are buildings, sites, structures, or objects that may have historical, architectural, archeological, cultural, tribal, or scientific importance. This chapter addresses the state requirements for the conservation elements of the general plan.

The Conservation chapter includes the following sections.

9.2 Natural Communities and Ecological Resources. Describes the diverse array of natural habitats in Tiburon, including grasslands, woodlands, wetlands, and developed lands, and the wildlife and plants that occur in the Tiburon vicinity.

9.3 Watersheds and Waterways. Provides an overview of Tiburon's watersheds and creeks.

9.4 Water Resources. Presents an overview of water resources, supplies, and demand.

9.5 Water Quality. Describes pollutants impacting streams, wetlands and the Richardson and San Francisco Bays and measures to protect water quality for wildlife and natural habitats.

9.6 Air Quality. Describes air quality and pollutants in the Tiburon area.

9.7 Cultural and Historical Resources. Provides an overview of Tiburon's history and describes archaeological, cultural, and historical resources.

9.8 Goals, Policies, and Programs. Identifies goals, policies, and programs to protect and conserve natural, cultural, and historical resources.

9.2 NATURAL COMMUNITIES & ECOLOGICAL RESOURCES

Tiburon is located in the San Francisco Bay bioregion, one of at least ten bioregions in California. The bioregion is one of the most populous areas of the state, stretching from Point Arena to the Santa Cruz Mountains and extending from the continental shelf to the delta of the Sacramento and San Joaquin Rivers. The habitats and vegetation of the bioregion are as varied as the geography. San Francisco Bay is the largest estuary on the Pacific coast and includes marshlands and mudflats that provide food and shelter for over 1,000 species of animals, including threatened and endangered species. The water that flows through the Delta sustains fish and wildlife, irrigates farmland, and provides fresh water to two-thirds of the state's population.

Population growth and urban development have resulted in habitat

loss and fragmentation and the loss of biological diversity in the estuary. Reduced flows of freshwater from the Sierra and water diversions for agriculture have affected fish and waterfowl habitat. Pollution from wastewater treatment plants, oil refineries, and agriculture also impacts biological resources. Urban development continues to threaten the remaining wildlands and habitat of the bioregion and exacerbate air and water quality problems.

Vegetation occurring within the Tiburon planning area primarily consists of ruderal (a plant species that is the first to colonize disturbed lands), riparian, landscaping, and agricultural vegetation. Because of the urban nature of the developed areas within Tiburon, there is limited undisturbed natural vegetation.

Agricultural and ruderal vegetation in the planning area provides habitat for both common and special-status wildlife populations. Some commonly

observed wildlife species in the region include California ground squirrel, California vole, black-tailed deer, coyote, raccoon, opossum, striped skunk, red-tailed hawk, northern harrier, American kestrel, white-tailed kite, American killdeer, gopher snake, garter snake, and western fence lizard, as well as several bat species and many native insect species.

Locally common and abundant wildlife species are important components of the ecosystem. Due to habitat loss, many of these species must continually adapt to using agricultural, ruderal, and ornamental vegetation for cover, foraging, dispersal, and nesting. Wildlife movement corridors, which connect populations of wildlife otherwise fragmented by urbanization, are essential to the survival of many species. In Tiburon, riparian habitat, streams, and foothill access serve as important wildlife movement corridors.

The Richardson Bay Audubon Center & Sanctuary is a wildlife refuge located

in the Planning Area along Richardson Bay and is comprised of 10.5 acres of uplands and 900 acres of subtidal bay. The sanctuary provides vital habitat for migratory waterbirds and other wildlife.

PLANT COMMUNITIES

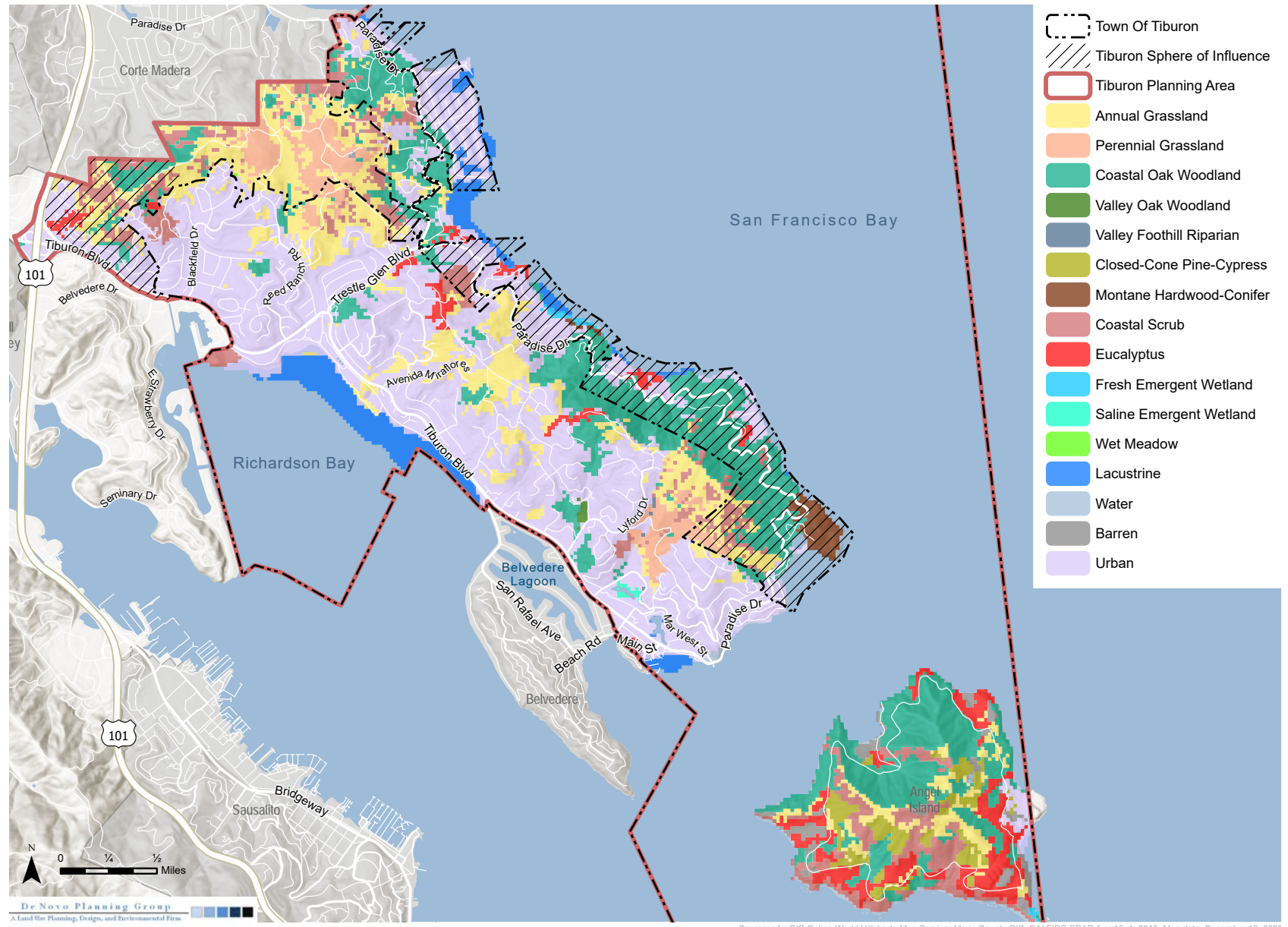
The majority of the land within the Tiburon town limits is developed with urban land uses, as shown in Figure C-1. Annual and perennial grasslands and coastal scrub dominate Ring Mountain Preserve, Old St. Hilary's Preserve, and the uplands and ridge of the peninsula. Coastal Oak woodlands are found primarily on the north side of the ridge along Paradise Drive and the north side of Angel Island, while stands of eucalyptus exist throughout the peninsula and on Angel Island.

SPECIAL STATUS SPECIES

Special-status species are those plants and animals that, because of their recognized rarity or vulnerability to various causes of habitat loss or

Figure C-1

LAND COVER TYPES



Sources: ArcGIS Online World Hillshade Map Service; Marin County GIS; CALFIRE-FRAP, fveg15_1, 2015. Map date: December 19, 2022

population decline, are recognized by federal, state, or other agencies. Some of these species receive specific protection that is defined by federal or State endangered species legislation. Others have been designated as “sensitive” on the basis of adopted policies and expertise of State resource agencies or organizations with acknowledged expertise. The California Natural Diversity Database identifies 64 plant and 45 animal special status species within five miles of the Tiburon planning area.

Plant and animal species identified as endangered under the Federal Endangered Species Act are in danger of extinction within the foreseeable future throughout all or a significant portion of its range. Threatened species are likely to become endangered species in the foreseeable future throughout all or a significant portion of its range. Both endangered and threatened species are fully protected from a “take” unless a take permit is issued by the United States Fish and

Wildlife Service. A take is defined as the harassing, harming, pursuing, hunting, shooting, wounding, killing, trapping, capturing, or collecting of a wildlife species or any attempt to engage in such conduct, including modification of its habitat. Proposed endangered or threatened species are those species for which a proposed regulation, but not a final rule, has been published in the Federal Register. Federal laws also protect migratory birds, including their nests and eggs, and bald and golden eagles.

The California Endangered Species Act protects certain plant and animal species when they are of special ecological, educational, historical, recreational, aesthetic, economic, and scientific value to the people of the state. There are three listing categories for species under the Act: endangered, threatened, and rare. The rare classification is provided to native plant species when, although not presently threatened with extinction, it is in such small numbers throughout its range that

it may become endangered if its present environment worsens.

Table C-1 identifies special status species known or suspected within five miles of the Tiburon planning area. Endangered species include the foothill yellow-legged frog, the California Ridgway’s rail, the tidewater goby, the salt-water harvest mouse, and a number of plant species including the Tiburon jewelflower. A full list of all special status species is available in the General Plan Existing Conditions Report.

SENSITIVE NATURAL COMMUNITIES AND WETLANDS

The California Department of Fish and Wildlife (CDFW) considers sensitive natural communities to have significant biotic value, with species of plants and animals unique to each community. There are four sensitive natural communities within 15 miles of Tiburon, as shown on Figure C-2. These

include coastal brackish marsh, salt marshes where a significant freshwater influx dilutes the seawater to brackish levels of salinity; coastal terrace prairie, a grassland plant community found along the Pacific Coast; and northern coastal salt marsh, a non-tidal, non-forested wetland that is continuously or frequently flooded and contains saltwater; and serpentine bunchgrass.

All of these community types were once more widely distributed throughout California, but have been modified or destroyed by grazing, cultivation, and urban development. Since the remaining examples of these sensitive natural communities are under continuing threat from future development, CDFW considers them “highest inventory priorities” for future conservation.

Figure C-2

SENSITIVE NATURAL COMMUNITIES AND WETLANDS

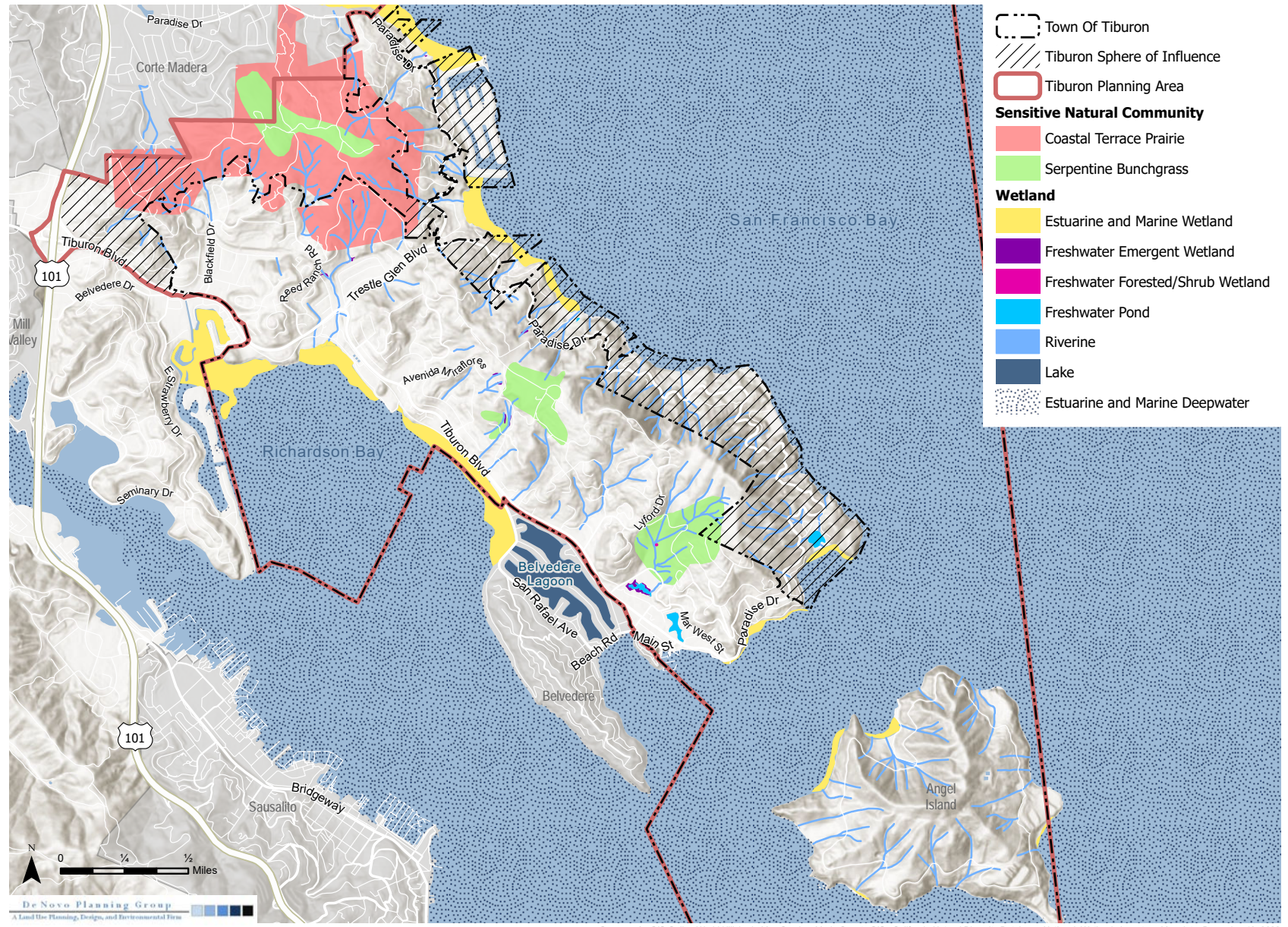


Table C-1

SPECIAL-STATUS ANIMAL AND PLANT SPECIES PRESENT OR POTENTIALLY PRESENT IN THE TIBURON VICINITY

SPECIES		STATUS	
COMMON NAME	SCIENTIFIC NAME	FEDERAL LISTING CATEGORY (USFWS)	STATE LISTING CATEGORY (CDFW)
AMPHIBIANS			
California red-legged frog	<i>Rana draytonii</i>	T	–
Foothill yellow-legged frog	<i>Rana boylei</i>	–	E
BIRDS			
California black rail	<i>Laterallus jamaicensis coturniculus</i>	–	T
California Ridgway's rail	<i>Rallus obsoletus</i>	E	E
FISH			
Euchalon	<i>Thaleichthys pacificus</i>	T	–
Longfin smelt	<i>Spirinchus thaleichthys</i>	C	T
Tidewater goby	<i>Eucyclogobius newberryi</i>	E	–
INSECT			
Western bumble bee	<i>Bombus occidentalis</i>	–	CE
MAMMALS			
Salt-marsh harvest mouse	<i>Reithrodontomys raviventris</i>	E	E
Southern sea otter	<i>Enhydra lutris nereis</i>	T	–
PLANTS <i>Calochortus tiburonensis</i>			
Beach lavia	<i>Lavia carnosia</i>	E	E
Franciscan manzanita	<i>Arctostaphylos franciscana</i>	E	–
Marin western flax	<i>Hesperolinon congestum</i>	T	T
Marsh sandwort	<i>Arenaria paludicola</i>	E	E
North Coast semaphore grass	<i>Pleuropogon hooverianus</i>	–	T

SPECIES		STATUS	
COMMON NAME	SCIENTIFIC NAME	FEDERAL LISTING CATEGORY (USFWS)	STATE LISTING CATEGORY (CDFW)
PLANTS <i>Calochortus tiburonensis</i>			
Presidio clarkia	<i>Clarkia franciscana</i>	E	E
Presidio manzanita	<i>Arctostaphylos montana ssp. ravenii</i>	E	E
San Francisco lessingia	<i>Lessingia germanorum</i>	E	E
San Francisco popcornflower	<i>Plagiobothrys diffusus</i>	–	E
Santa Cruz tarplant	<i>Holocarpha macradenia</i>	T	E
Tiburon mariposa lily	<i>Calochortus tiburonensis</i>	T	T
Tiburon jewelflower	<i>Streptanthus glandulosus ssp. niger</i>	E	E
Tiburon paintbrush	<i>Castilleja affinis var. neglecta</i>	E	T
Two-fork clover	<i>Trifolium amoenum</i>	E	–
White-rayed pentachaeta	<i>Pentachaeta bellidiflora</i>	E	E

Listed species are reported by the California Natural Diversity Database (CNDDDB) species to occur or suspected to occur within five miles of the Tiburon planning area, 2022.

USFWS = U.S Fish and Wildlife Service; CDFW = California Department of Fish and Wildlife

Status Designations

E = Listed as “endangered” under the federal Endangered Species Act

T = Listed as “threatened” under the federal Endangered Species Act

C = A species that has been studied by the USFWS, and the Service has concluded that it should be proposed for addition to the federal endangered or threatened species list.

CE = Proposed for State listing as “endangered”

CT = Proposed for State listing as “threatened”



FOOTHILL YELLOW-LEGGED FROG

It may be found in the Tiburon area and is an endangered species in California. U.S. Fish and Wildlife Service photo by Rebecca Fabbri.



TIBURON MARIPOSA LILY

Tiburon mariposa lily is a threatened plant species only known to occur at the Ring Mountain Preserve. Source: CNPS Rare Plant Image Collection © Rick York and CNPS



TIBURON JEWELFLOWER

Tiburon jewelflower is an endangered plant that grows on the shallow, rocky serpentine soils on southwest facing slopes of the Tiburon Peninsula. Source: CNPS Rare Plant Image Collection © Rick York and CNPS

9.3 WATERSHEDS & WATERWAYS

A watershed is a region that is bounded by a divide that drains to a common watercourse or body of water. Watersheds serve an important biological function, often supporting an abundance of aquatic and terrestrial wildlife including special-status species and anadromous and native local fisheries. Watersheds also provide fresh water for domestic and agricultural use and enjoyment of natural resources

Tiburon is located within three major watersheds as shown in Figure C-3: Angel Island-San Francisco Bay Estuaries, Arroyo Corte Madera Del Presidio-Frontal San Francisco Bay Estuaries, and Larkspur Creek-Frontal San Francisco Bay Estuaries. The Town is drained by multiple small watersheds on the north and south sides of the peninsula. Primarily water drains to the Town stormwater drainage system that runs under Tiburon Boulevard and outlets to Raccoon Strait near the Ferry

Terminal, or the secondary outlet which drains south to Belvedere Lagoon.

Other portions of Tiburon drain to Railroad Marsh, a pond/marsh feature that serves as a flood control feature.

Tiburon's creeks are also a key part of the Town's open space network. They are valuable physical, aesthetic, recreational, and ecological assets. Protection of creeks not only preserves surface water quality, but also reduces flood risks, preserves biodiversity and habitat, minimizes erosion of stream banks, and prevents downstream siltation.

9.4 WATER RESOURCES

The Marin Municipal Water District (Marin Water) provides water to the Town of Tiburon as well as the incorporated cities and towns of San Rafael, Mill Valley, Fairfax, San Anselmo, Ross, Larkspur, Corte Madera, Belvedere and Sausalito and communities in unincorporated areas of Marin County. Marin Water's primary water supply is local surface water obtained from rainfall collected from a watershed with six reservoirs. The Marin Water receives a supplemental water supply from the Sonoma County Water Agency, which comes primarily from Lake Sonoma via the Russian River.

Every five years Marin Water prepares an Urban Water Management Plan (UWMP) to ensure the efficient use of available water supplies. The 2020 UWMP determines the existing baseline water consumption; establishes water use targets; describes and evaluates historical and projected water use; evaluates current and projected water supply and reliability; describes and

evaluates demand management measures; and provides a water shortage contingency plan. According to Marin Water's 2020 UWMP, projected water supplies are sufficient to meet projected water demand through 2045 in a normal year as well as in multiple dry years.

However, the 2020 UWMP does not take into account increases in population that would result if all jurisdictions within Marin Water's service area meet the Regional Housing Need Allocation assigned to them for the 2023-2031 planning period. The next update of the UWMP will address this issue.

Marin Water also prepared the Water Resources 2040 plan to evaluate resiliency in the face of a variety of threats to water resources in its service area, including earthquakes, drought, climate change, wildfire, landslides, and water quality issues, and to identify options to enhance resiliency for its customers. Based on the results of the

9.5 WATER QUALITY

simulated reliability threats, the Water Resources Plan 2040 recommends actions that Marin Water should take to increase the water supply resiliency, including increased water conservation, investing in watershed management, and exploring groundwater partnering opportunities. No groundwater basins are identified within the Tiburon planning area.

Water is also an environmental resource because of its effects on wildlife and habitat. Two general types of pollutant discharges affect the quality of surface water in the Tiburon area:

- Discharge from a pipe or other device directly into the receiving waters, such as treated wastewater from a sewer plant or an industrial building. These sources can be managed through periodic monitoring and treatment methods.
- Stormwater runoff that has drained from streets, parking lots, roofed structures, farms, and minor watercourses before it reaches a major creek, river, or other water body. This runoff can contain debris, litter, soil, and other natural and man-made pollutants. Typical pollutants include organic materials that contribute to biochemical oxygen demand, suspended solids, pathogens, sediment from construction and erosion, air pollution fall-out, gasoline

additives, oil and grease, nitrogen and phosphorus from chemical fertilizers, animal waste, leached acids from leaves, and pesticides. These pollutants come from a variety of sources, including pet waste, lawn fertilization, cars, construction sites, illegal dumping and spills, and pesticide application. Once pollutants from surface runoff reach the receiving waters, they can cause water quality problems similar to those found in municipal and industrial point source discharges.

Where rain falls on paved surfaces, a much greater amount of runoff is generated compared to runoff from the same storm falling over a vegetated area. These large volumes of water are swiftly carried to local streams and wetlands, can cause flooding and erosion, and wash away important habitat for wildlife that live in the stream.

The most critical period for surface water quality is following a rainstorm

which produces significant amounts of drainage runoff into streams at low flow, resulting in poor dilution of contaminants in the low flowing stream. Such conditions are most frequent during the fall at the beginning of the rainy season when stream flows are near their lowest annual levels.

Surface water pollution is also caused by erosion. Excessive and improperly managed grading, vegetation removal, quarrying, logging, and agricultural practices all lead to increased erosion of exposed earth and sedimentation of watercourses during rainy periods. In slower moving water bodies these same factors often cause a buildup of siltation, which ultimately reduces the capacity of the water system to percolate and recharge groundwater basins, as well as adversely affecting both aquatic resources and flood control efforts.

To counteract the impacts of stormwater runoff, Tiburon has adopted regulations that require management of stormwater

for all new development. Stormwater management is the use of specific practices, constructed or natural, to reduce, slow down and/or remove pollutants from stormwater runoff. Stormwater management practices are essentially designed to restore or mimic some of the natural processes provided by the vegetative cover that existed prior to land disturbance. Replacing impervious surfaces with vegetation allows the soil to naturally filter or biodegrade contaminants that would otherwise flow into streams, and wetlands, and the Bay.

State and federal regulations work to protect watershed and recharge areas. In particular, the National Pollutant Discharge Elimination System (NPDES) program and the State Regional Water Quality Control Board

mandate control of urban runoff to eliminate the percolation of pollutants from surface runoff into underground water supplies and open bodies of water. The NPDES program requires the Town to inspect, identify, and prevent illicit discharges such as silt, road debris, oil, or discharges from any residential, commercial or construction area into drains, waterways, and wetlands. Discharges of materials must be processed or eliminated where practical.

San Francisco Bay and Richardson Bay are listed by the San Francisco Bay Regional Water Quality Board as having limited water quality. Pollutants include chlordane, DDT, dieldrin, mercury, selenium, dioxin compounds, furan compounds, PCBs, and invasive species.

9.6 AIR QUALITY

Tiburon typically experiences good air quality due to the almost persistent westerly flow of air from the ocean. There are little or no pollution sources to the west of Tiburon. Episodes of high particulate levels can occur in late fall and winter when high pressure over the interior of the western United States (known as the Great Basin High) produces extended periods of light winds and low-level temperature inversions. This condition frequently produces poor atmospheric mixing that results in degraded regional air quality. Air quality may also be compromised by wildfire smoke from around the region, particularly during the dry months.

Tiburon is located within the Bay Area Air Quality Management District (BAAQMD), which is primarily responsible for assuring that national and state standards for air pollutants are attained in the San Francisco Bay Area. BAAQMD is also responsible for adopting and enforcing rules and regulations concerning air

pollutant sources, issuing permits for stationary sources of air pollutants, and monitoring ambient air quality.

Areas that do not violate ambient air quality standards are considered to have attained the standard. Violations of ambient air quality standards are based on air pollutant monitoring data and are judged for each air pollutant. The Bay Area does not generally meet national or California standards for ozone and particulate matter. BAAQMD's Bay Area 2017 Clean Air Plan contains districtwide control measures to reduce ozone, particulate matter, air toxics, and greenhouse gasses. The Plan notes that Bay Area air quality has improved significantly in recent decades, greatly reducing health effects related to air pollution. Nonetheless, exposure to fine particulate matter (PM_{2.5}) is by far the leading public health risk from air pollution in the Bay Area although communities are disproportionately impacted and there are disparities in health risks.

The closest monitoring station to Tiburon is located in downtown San Rafael, which is the only station in Marin County. Pollutant monitoring results for the years 2017-2019 in San Rafael indicate that air quality standards for particulate matter and ozone have been exceeded in some years. The State standard for respirable particulate matter (PM₁₀) was exceeded four times over the three-year period (vs. 17 times for the Bay Area region) and the federal standard for fine particulate matter (PM_{2.5}) was exceeded 21 times (vs. 37 for the Bay Area). Ozone levels exceeded the State 1-hour and 8-hour standards and the federal 8-hour standard once. The primary sources of these pollutants are wood smoke and local traffic, and their buildup is greatest during the evenings and early morning periods and on cold, stagnant winter evenings when temperature inversions prevent the rise and dispersal of pollutants.

9.7 CULTURAL AND HISTORICAL RESOURCES



OLD ST. HILARY'S CHURCH

Built in 1888 in the Carpenter Gothic style, it is listed in the National Register of Historic Places.

The term “cultural resources” applies to a variety of natural and humanmade items, including paleontological resources (the fossilized remains of plants and animals), traditional cultural properties (sites with value to Native American communities), and archaeological sites and buildings with historic or architectural significance.

Humans are believed to have resided in southern Marin County for the past 13,000 years. According to U.S. Department of Interior, the Coast Miwok first settled the Tomales Bay area between 2,000 and 4,000 years ago. The Coast Miwok occupied what is now Marin County and part of Sonoma County, as far north as the vicinity of Sebastopol. Southern Popo people are also known to have inhabited Marin before colonization.

Spanish colonization and the development of missionaries

dramatically changed the Coast Miwok’s ancestral lands and their way of life. In the late 1700s, Coast Miwok were interned in four San Francisco Bay area missions. Forced movement of Coast Miwok to the missions and the determination of the friars to convert the natives to Christianity and destroy all vestiges of their former life, along with epidemic diseases of the whites, dramatically reduced Coast Miwok numbers. By the end of the Spanish occupation, the Coast Miwok population had fallen from 3,000 to between 300 and 500.

The land of the Tiburon Peninsula was first awarded by the Mexican government to John Thomas Reed in 1834 as the Rancho Corte de Madera del Presidio. An Irish sailor, Read had arrived in the area in 1826, and became a Mexican citizen in 1834. His widow and four children applied

Avery, C. (2009). Tomales Bay environmental history and historic resource study- Point Reyes National Seashore. Pacific West Region National Park Service, U.S. Department of the Interior.

for confirmation of the grant of 7,845 acres; it was finally awarded to the family in 1884. Dairying and cod fishing were two major industries in the area.

In 1882, the Reed family made a deal with Peter Donahue for a right-of-way for the North Pacific Railroad (name later changed to Northwestern Pacific). The railroad company built a railroad yard and ferry terminal, with ferries taking commuters and vehicles to San Francisco and Sausalito. Barges hauled loaded freight cars to San Francisco and Richmond. In the 1970s, the abandoned railroad was removed, and the right-of-way purchased by Tiburon for the waterfront path. The railyards were used for housing and commercial projects.

For many years, most of the land of the peninsula was controlled by descendants of the Reed family and used for cattle ranching. Development began after the World War II on smaller tracts. Eventually, the primary

landowners finalized a master plan in 1956.

In 1961, Richardson Bay Audubon Center became established, representing a culmination of a seven-year local campaign to protect the bay and shoreland from real estate development. This was followed by the dedication of Old St. Hillary's Historic Preserve, the first hillside open space conserved with wildflower acreage as part of Marin County parks system.

In 1964, the Town of Tiburon was incorporated, and a major preservation effort was launched to revitalize Main Street and Downtown Tiburon.

CULTURAL RESOURCES

Surveys have found and recorded a total of 142 cultural resources in the Tiburon planning area, including both prehistoric and historic sites.

Most of the prehistoric period resources were identified in the early part of the 20th century by archeologist Nels Nelson who recorded over 400 shell



LYFORD HOUSE

Lyford House was the home of Dr. Benjamin Lyford and Hilarita née Reed, the daughter of John Reed. Built in 1876 on Strawberry Point, the house was moved by barge to its present location in 1957. It is now home to the Richardson Bay Audubon Center and Sanctuary. Top photo source: Belvedere-Tiburon Landmarks Society. Bottom photo by @bayareaspaces



PETER DONAHUE BUILDING

The Peter Donahue Building is the old stationhouse of the ferry-railroad terminus of the San Francisco & North Pacific Railroad Depot and was built in 1884. Today the building is home to the Railroad & Ferry Depot Museum. Top photo by Belvedere-Tiburon Landmarks Society.

mound midden sites along the Bay Area’s shorelines during this period. Many of these shell mound middens were the result of simple shellfish processing and do not possess artifacts or features that indicate habitation, while others are connected with more permanently inhabited prehistoric village sites, some of which continued to be occupied well into the early Spanish Period. In addition to the prehistoric resources identified by Nelson, 11 other prehistoric sites, including prehistoric rock art, habitation, and lithic scatter have been identified in the planning area.

Historic resources include a preponderance of historic period resources relates to Angel Island’s military installations and immigration station, as well as assorted historic foundations, walls, and buildings in the planning area.

The National Register of Historic Places evaluates a historic place based on its connection to an event or person of historic significance; distinctive characteristics of its design or construction; or the information it may yield about our past. Historic listing does not guarantee that a site will be preserved, but is a factor in

environmental review, and can inform local regulations. The National Register lists five properties for the Tiburon planning area. These include:

- Angel Island, U.S. Immigration Station;
- San Francisco and North Pacific Railroad Station House-Depot (Peter Donahue Building);
- Lyford’s Stone Tower;
- Benjamin and Hilarita Lyford House (Lyford House); and
- St. Hilary’s Mission Church (Old St. Hilary’s Church).

Two historic districts, the Camp Reynolds District and the Angel Island District, are also on record.

In 1999, forty buildings were evaluated for the Downtown Tiburon Historic Resources Study and in 2001 the Town adopted a Local Historic Inventory for Downtown Tiburon including 23 buildings. In 2010, the Town updated the inventory by resolution and removed the Harbor Light Building, 20 Main Street, from the inventory. In 2011, an initial historic evaluation was conducted for the building at 1694-1696 and found the structure did not possess any characteristics to qualify as a historic resource and the building



LYFORD'S STONE TOWER

Lyford's Stone Tower was originally attached to an arch that spanned Paradise Drive. Photo by Belvedere-Tiburon Landmarks Society.

was subsequently removed from the inventory. The remaining resources listed in the local historic inventory are identified in Table C-2 and shown in Figure DT-3 in the Downtown chapter.



Table C-2

LOCAL HISTORIC INVENTORY FOR DOWNTOWN TIBURON

ADDRESS	YEAR BUILT
13, 15, 17, 19 Main Street	1886
16, 18 Main Street	After 1928
21A Main Street (Ark)	1880
24, 26 Main Street	1912
27, 29 Main Street	1925
30 Main Street	1916
31, 33 Main Street	1928
32 Main Street	1921
34, 36 Main Street	1921
35 Main Street	1925
38 Main Street	1900
55 Main Street	1925
72 Main Street	1925
104 Main Street	1895
106 Main Street	1920
108 Main Street	1920
110 Main Street	1920
112 Main Street	1890
116 Main Street	1906
118, 120 Main Street	1896
122 Main Street	1870

9.8 GOALS, POLICIES, AND PROGRAMS

GOAL C-A

Preserve and improve the quality of the environment through resource restoration and conservation, management, and pollution control.

POLICY C-1 OPEN WATER USES.

Limit use of open water areas to landings for boats and ferries; boating, swimming, and fishing; and parks.

POLICY C-2 EXISTING STRUCTURES BUILT OVER WATER.

Maintenance and replacement of lawfully existing structures built over San Francisco Bay (bayward of the mean high tide line) may be permitted. However, with the exception of piers,

docks, and public access facilities approved by the Bay Conservation and Development Commission (BCDC), expansion of existing structures or construction of new structures that would result in new filling of San Francisco Bay shall be prohibited.

POLICY C-3 HABITAT PRESERVATION.

Preserve and enhance the diversity of wildlife and aquatic habitats found in the Planning Area bayfront lands, including tidal marshes, seasonal marshes, lagoons, wetlands, and low-lying grasslands over historical marshlands.

POLICY C-4 NEW DEVELOPMENT.

Development shall not encroach into sensitive wildlife habitats, limit normal range areas, or create barriers to wildlife that cut off or substantially impede access to food, water, or

shelter, or cause damage to fisheries or fish habitats. Access to environmentally sensitive marshland and adjacent habitat shall be restricted, especially during spawning and nesting seasons.

POLICY C-5 USE OF LANDS UNDERLAIN BY BAY MUD.

Reserve those areas underlain by deposits of “young muds” for water-related recreational opportunities, habitat, open space, or limited development subject to approval by the Corps of Engineers and other trustee agencies.

WETLANDS

POLICY C-6 WETLAND SETBACKS.

Provide buffer zones of at least 100 feet between development and wetland areas to the maximum extent possible.

Program C-a Wetland and Streamside Regulations.

Amend the Zoning Ordinance to incorporate wetland and streamside development setbacks.

POLICY C-7 CONSTRUCTION IN JURISDICTIONAL WATERS AND WETLANDS

Development and construction shall comply with all federal and state regulations regarding jurisdictional waters and wetlands.

STREAMS AND RIPARIAN CORRIDORS

POLICY C-8 FRESHWATER STREAMS AND MARSHES.

Preserve and/or expand freshwater habitats in the bayfront areas associated with freshwater streams and small former marshes so that the circulation, distribution, and flow of the fresh water supply are facilitated.

POLICY C-9 STREAM SETBACKS.

Require open space buffers of at least 50 feet on each side of the top of the bank of perennial, intermittent, and ephemeral streams on properties less than five acres, and of at least 100 feet on each side of the top of the bank on properties greater than

five acres, to minimize disturbance of natural vegetation and maintain the environmental and scenic attributes of the corridor. Where modification of corridors is required for flood control or crossings, such modification shall be made in an environmentally sensitive manner that enhances, replaces, or retains vegetation.

FLOOD-PRONE AREAS

POLICY C-10 FLOOD HAZARD ZONE.

Avoid construction on lands that are shown to be within the 100-year flood hazard zone as shown on the current FEMA Flood Rate Insurance Map.

POLICY C-11 USES OF FLOODPLAINS

Use areas defined as floodplain for habitat and flood protection.

WILDLIFE AND HABITAT PRESERVATION

POLICY C-12 HABITAT PRESERVATION.

Preserve and protect wildlife, plant, and marine habitat in the open spaces, shoreline, marshes, mudflats, and other biologically sensitive areas to the greatest extent feasible.

POLICY C-13 DEVELOPMENT IMPACTS ON SPECIAL-STATUS SPECIES AND SENSITIVE HABITATS.

Assure new development and construction does not have a significant adverse effect on special-status species or sensitive natural communities to the extent feasible and as regulated by federal and state laws.

TREES

POLICY C-14 TREE PROTECTION.

Preserve protected trees, as defined in the Municipal Code, tree stands, & tree clusters to the maximum extent feasible.

Program C-b Tree Preservation.

Consider revising and expanding the Tiburon Tree Ordinance to provide protection of both individual trees and native woodlands. Factors to consider in expanding the current ordinance include the importance of protecting smaller sapling trees and balancing their protection against those of designated “protected trees”, defining critical management guidelines necessary to maintain healthy woodlands, and methods to encourage natural regeneration in woodland habitats.

POLICY C-15 WOODLAND PROTECTION.

Protect natural habitat, and natural wooded areas to the maximum extent feasible.

HISTORICAL AND CULTURAL RESOURCES

POLICY C-16 CULTURAL RESOURCE PROTECTION.

Protect significant geological, ecological, archaeological, tribal cultural, and paleontological resources and historic sites.

Program C-c Potential Cultural and Tribal Resources.

Require that projects proposed for sites that have the possibility of containing cultural and tribal cultural resources and resulting in ground disturbance be

evaluated by a qualified archaeologist prior to project approval and require such projects to implement measures to reduce or avoid impacts to any identified or inadvertently discovered cultural and tribal cultural resources. When encountering unanticipated cultural resources, artifacts, or human remains, contractors shall cease construction activities upon until proper authorities have been notified and a mitigation plan is developed.

POLICY C-17 STRUCTURES OF HISTORIC AND CULTURAL SIGNIFICANCE.

Preserve and protect structures and properties which have historical, cultural, aesthetic, or other special character or interest to the Town.

Program C-d Historic Building Overlay.

Consider adopting an overlay zone for the area containing the Town's

Inventory of Local Historical Buildings and adopting additional protection measures for the structures identified in the Inventory.

WATER CONSERVATION

POLICY C-18 WATER CONSERVATION.

Support the efforts of the Marin Municipal Water District (Marin Water) to conserve the use of water through enforcement of the Town's water conservation ordinance requiring implementation of water conservation measures.

Program C-e Development Impacts on Water Retention.

Where impervious surface construction and storm drain system installation and/or hillside stabilization (e.g., landslide repair) are proposed as part of development proposals, or

wherever such stabilization is required by the Town to protect public safety, require project applicants to analyze the impacts of these drainage pattern modifications on groundwater recharge and on downslope water wells and their yields. In the event impacts are likely, modifications to the proposed project, including possible downsizing, should be implemented to the extent feasible.

Program C-f Water Conservation Ordinance.

Continue to implement the Town's water conservation ordinance through the review of new development proposals involving new landscaping.

POLICY C-19 WATER SUPPLY PLANNING

Coordinate planning activities with Marin Water to ensure that both the Town and Marin Water have the latest information with respect to land use and water supply planning.

WATER QUALITY

POLICY C-20 WATER QUALITY.

Maintain or enhance water quality to promote the continued environmental health of natural waterway habitats.

Program C-g Implement Stormwater Regulations.

Continue to be an active member agency of the Marin County Stormwater Pollution Prevention Program (MCSTOPPP) to implement best management practices and to comply with federal and state water quality regulations to reduce pollution being conveyed through storm water systems to the Bay.

AIR QUALITY

POLICY C-21 IMPLEMENT THE CLEAN AIR PLAN.

Implement the Bay Area Air Quality Management District's Clean Air Plan by applying BAAQMD's rules, best control measures, and best management practices to construction, property maintenance, commercial operations, and other applicable activities.

Program C-h Participate in Emission Reduction Efforts.

Participate in efforts to voluntarily reduce activities that pollute on Spare the Air days and help publicize Spare the Air day activities.

Program C-i Reduce Particulate Emissions.

Promote the reduction of particulate matter from construction sites, roads, parking lots, and other sources through

requiring development projects to implement best management practices (BMPs).

Program C-j Reduce Air Quality Impacts of New Development.

Review all development and infrastructure projects for potential air quality impacts to residences, congregate housing, schools, and other sensitive receptors. Ensure that mitigation measures and best management practices are implemented to reduce significant emissions of criteria pollutants to the greatest extent feasible.

POLICY C-22 AIR QUALITY IMPACTS TO SENSITIVE RECEPTORS.

Minimize exposure of sensitive receptors to concentrations of air pollutant emissions, toxic air contaminants, and odors.

Program C-k Emission Reductions.

Require the use of feasible control measures to reduce PM10, NOx, and diesel particulate matter related to development, including construction and operational phases.

Program C-l Zero Emission Landscape and Small Off-Road Equipment.

Consider adoption of an ordinance requiring the use of zero emission landscape and small off-road equipment instead of gasoline and diesel-powered equipment in all residential and commercial areas.

POLICY C-23 VEHICLE EMISSIONS REDUCTION.

Encourage the reduction of the number of single-occupant vehicle trips and cumulative emissions that result from auto use through implementation of Mobility Element policies.





10.

OPEN SPACE,
PARKS, AND
RECREATION



YOU ARE HERE...

CONTENTS

- 1 INTRODUCTION
- 2 LAND USE
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10.1 PURPOSE OF THE CHAPTER

This chapter presents a framework for governing future decisions about how Tiburon will sustain open space and provide parks and recreational opportunities for today's residents, as well as future generations. The Town's parks and open space lands can provide biodiversity, recreation, flood risk reduction, and protection from hazardous conditions. The Town recognizes that development of open space lands can degrade its natural resources and impact the many benefits provided by these areas, and therefore seeks to discourage the conversion of open space land to urban uses. The chapter focuses on the protection, maintenance, and enhancement of Tiburon's open spaces, parks, and recreational facilities and addresses State requirements for the open space element of the general plan. Together with the Town's Zoning Ordinance regulations related to open space, this chapter constitutes the Town's open space plan. A description of the biological communities and special

status species in the planning area, and goals, policies, and programs to protect their habitat, are located in the Conservation chapter.

The Open Space, Parks + Recreation chapter includes the following sections.

- **10.2 Open Space.** Identifies open space areas in Tiburon.
- **10.3 Scenic Resources.** Describes visual resources in the planning area, including ridgelines, greenbelts, water, and wooded areas.
- **10.4 Parks and Recreation.** Describes community parks, mini-parks, regional parks, and recreational facilities and programming in Tiburon.
- **10.5 Goals, Policies, and Programs.** Identifies goals, policies, and programs to conserve, protect and improve open space lands, parks, and recreational facilities.

10.2 OPEN SPACE

Open space and preservation of the natural environment are valued and defining characteristics of the Tiburon Peninsula. The Tiburon Peninsula consists of over 800 acres of protected and publicly owned open space land. Additionally, there are approximately 115 acres of private open space protected from development through easement or another legal instrument. These open space areas are generally not open to public use. As shown in Table OS-1, approximately 769 acres of public open space land is located within the planning area.

Public and private open spaces and parks are shown in Figure OS-1, which constitutes the Town’s open space inventory and map. The open space inventory includes any parcel or area of land or water within the Tiburon town limits and sphere of influence that is essentially unimproved and devoted to open space use for natural resources, the managed production of resources, outdoor recreation, public health and safety, and tribal resources, as required

by California Government Code §65560. The policies and programs contained in Section 9.5 are aimed at the continued preservation and conservation of these lands.

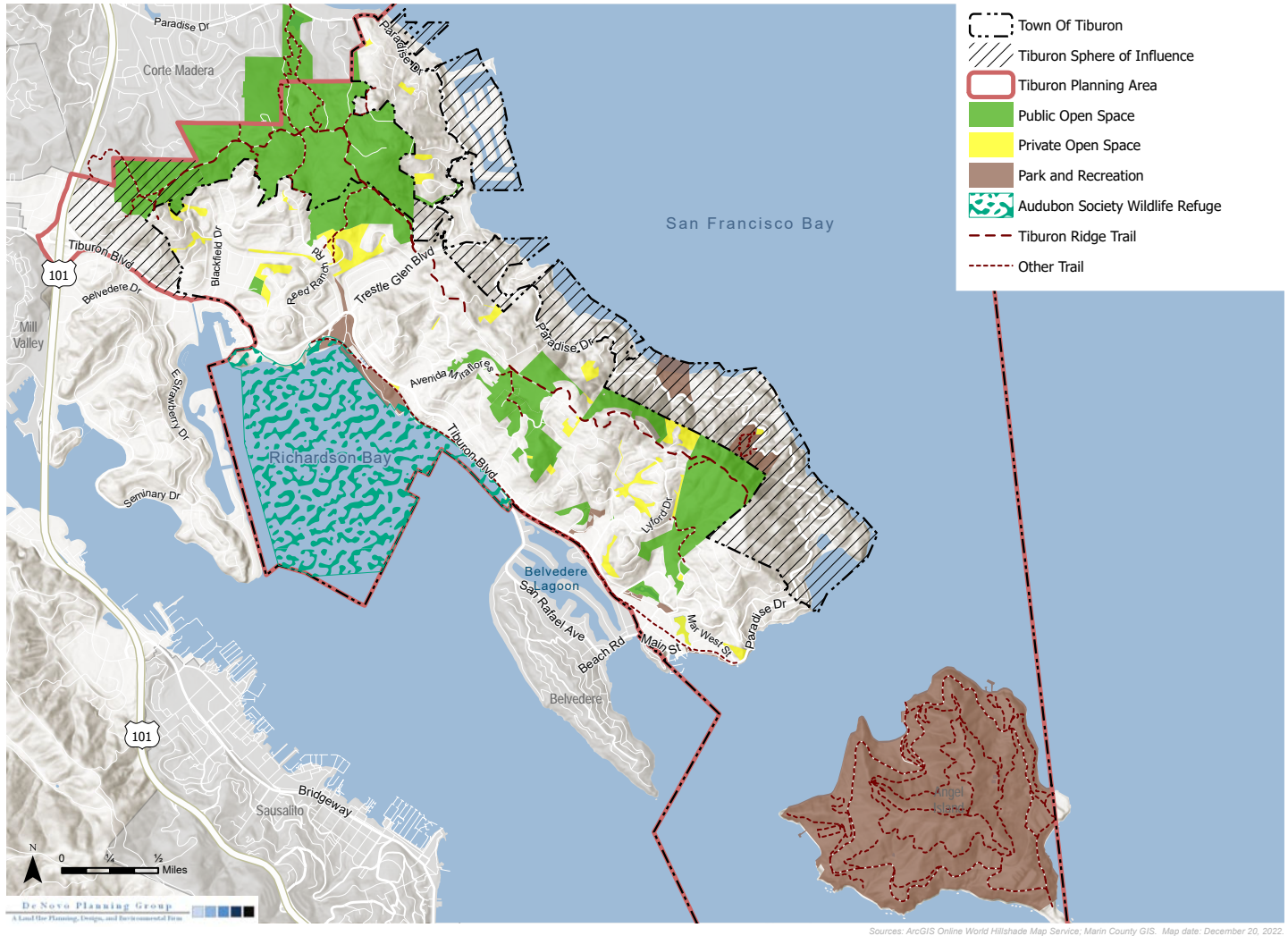
Table OS-1

PUBLIC OPEN SPACE IN THE PLANNING AREA

OPEN SPACE AREA	ACRES
Hamon (Rock & Tree) Open Space	10.5
Mt. Tiburon Subdivision Open Space	12.3
Hilarita Project Open Space	2.8
Cibrian Subdivision Open Space	3.8
Ring Mountain (County of Marin)	389.1
La Cresta Open Space	65.3
Del Madera Subdivision Open Space	29.2
Miraflores Subdivision Open Space	17.2
Mateo Drive Subdivision Open Space	2.8
Town Hall Area Open Space	2.0
Eavey Open Space	21.3
El Marinero Subdivision Open Space	9.3
Reed School District Open Space	11.8
Atkinson Open Space	59.7
Highlands Subdivision Open Space	3.1
Old Saint Hilary’s	123.9
Pt. Tiburon Marsh Open Space	5.1
TOTAL	769.1

Figure OS-1

OPEN SPACE AREAS AND PARKS



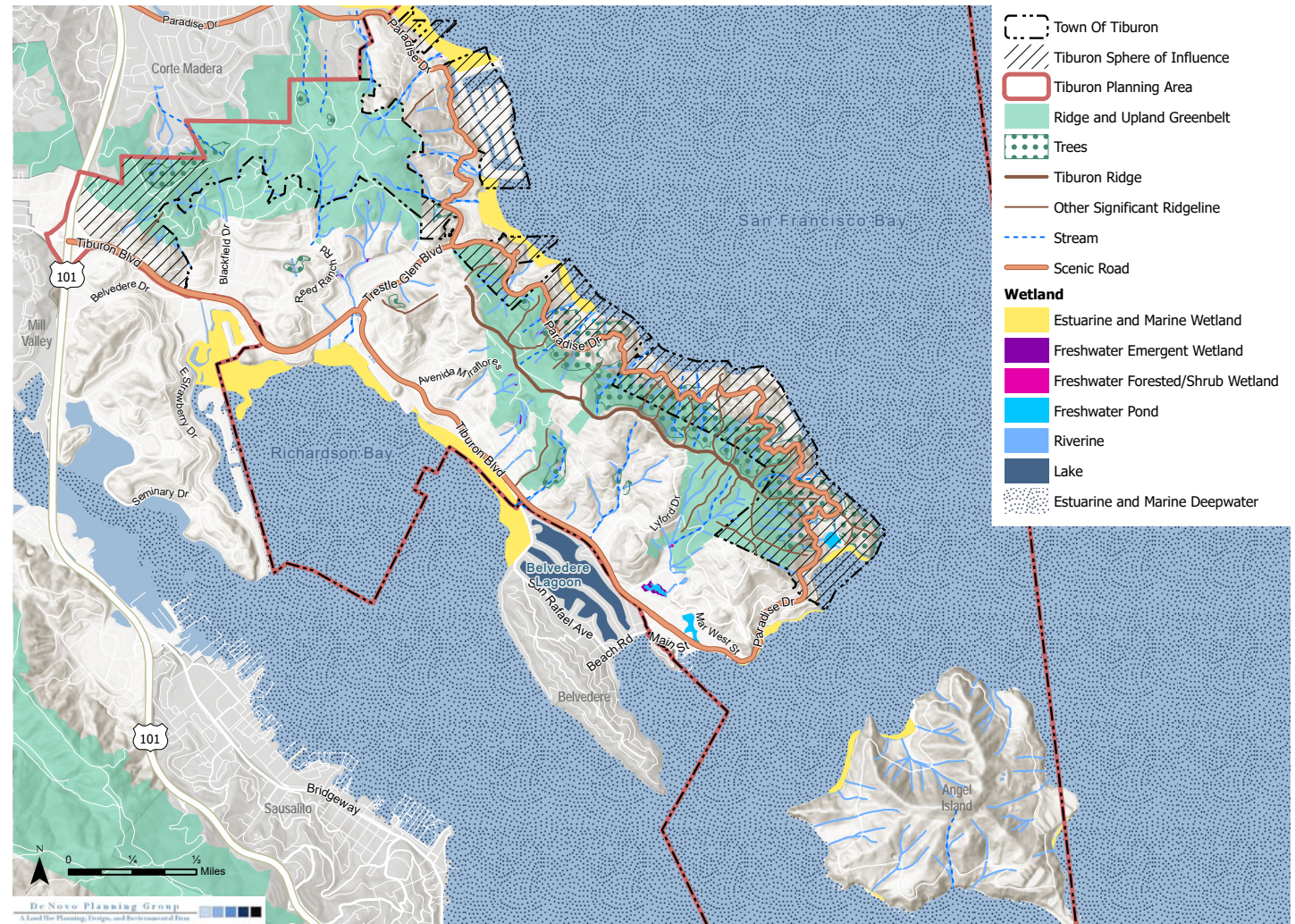
10.3 SCENIC RESOURCES

Tiburon has a unique visual environment with a diversity of landscapes and views of open space, Richardson Bay shoreline, San Francisco Bay shoreline, Angel Island, hills, ridgelines, stands of various types of trees, and other natural features.

Water, shorelines, and wetlands are important visual resources that provide critical habitat, recreational opportunities, and scenic vistas. Views of Richardson and San Francisco Bays are cherished by residents and contribute to the enjoyment of daily life. Another visual attraction is the abundance of wildlife, particularly birds and other special status species which are constantly moving around the Bay waters, marshes, and mudflats in search of food and refuge. Wildlife refuges like the Audubon Society Wildlife Refuge, located in Tiburon, provide scenic areas

Figure OS-2

RIDGELINES AND SCENIC CHARACTERISTICS



where wildlife can congregate and move freely.

Trees and woodland areas are important natural resources that provide habitat for birds and shaded, protected areas for other animals, and help to stabilize hillsides. Trees and wooded areas also contribute to the visual character of the community. Trees and woodlands are valued by the Town for their ecological importance, their visual enhancement of the community, and their contribution to residential privacy and quiet.

Ridgelines are defined as a line formed along the highest points of a mountain ridge, or as an area of higher ground separating two adjacent streams or watersheds. Besides water, ridgelines are the most visually defining open space attribute in the planning area. Ridgelines also provide the greatest opportunity for community scenic value. Public access to these ridgelines allows community members to enjoy unique views within the Town.

Open Space policies place the highest value on protecting undeveloped ridgelines. The Tiburon Ridge and Significant Ridgelines in the planning area are designated by Town Council Resolution 2859 and shown in Figure

OS-2. The figure also identifies other scenic characteristics, including upland greenbelts, areas with significant tree cover, streams, and wetlands.

Open Space policies call for the protection and preservation of view corridors and open space views from key roadways, including Tiburon Boulevard, Trestle Glen Boulevard, and Paradise Drive. These roadways are identified on Figure OS-2.

10.4 PARKS AND RECREATION

The Town owns and operates twelve parks as well as a multi-use path and the landscaped medians throughout Tiburon. The parks include community parks, mini-parks, and specialty facilities, defined as follows:

Community parks are developed primarily to meet the recreational needs of a large portion of the town. Community parks range in size according to their purpose and often feature community facilities or natural

resources. In Tiburon, the Richardson Bay Lineal Park offers a multi-use path and amenities along the bay waterfront, including an athletic field at McKegney Green, a playground at South of Knoll Park, historical interpretation signage along the Old Rail Trail, a wildflower exhibition garden at Blackie's Pasture, and a bronze, life-size statue of "Blackie," a retired U.S. Calvary horse that for 28 years grazed in the pasture that now bears his name.

Mini-parks primarily serve a small portion within the town, usually within one-half radius of the park. Mini-parks are generally oriented toward the recreational needs of children and youth. In Tiburon, the Cypress Hollow Park provides playground equipment while the Bel Aire Play Area is an unimproved green area for residents of the Bel Aire neighborhood.

Specialty facilities primarily provide for specific recreational activities, such as the Teather Park Tennis Courts in Tiburon.

In addition to the Town's parks, two regional parks are located within the planning area in unincorporated Marin County, which are maintained by the Marin County Parks and Open Space Department. The Paradise Beach Park



BLACKIE'S PASTURE

"Blackie," a retired U.S. Calvary horse, grazed the pasture that now bears his name. Photo (above) by George Geppert, c. late 1950s

provides a swimming area, kayak and canoe launch, and fishing pier as well as spacious lawns for picnicking and enjoying views across the water to the East Bay. The Tiburon Uplands Nature Preserve offers a hiking loop with access to the Old St. Hilary’s Open Space Preserve and panoramic Bay views.

Table OS-2 provides a summary of the existing parks in the Tiburon planning area, totaling 94.1 acres of parkland. The Town currently manages approximately 56.7 acres of parkland, which represents approximately 6.3 acres of Town parkland per 1,000 residents based on the 2010 Census population count.

ANGEL ISLAND

In addition to the parks on the Tiburon Peninsula, 726 of the 740 acres of Angel Island State Park are within the incorporated Town of Tiburon; the remaining 14 acres are in the City and County of San Francisco. The historic park offers peninsula residents and visitors opportunities for hiking, biking, camping, and boating. The Ranch provides popular youth summer camps on Angel Island.

RECREATIONAL FACILITIES AND PROGRAMS

The Town manages recreational programs and facilities through a joint powers agreement with the City of Belvedere. Programs are provided by The Ranch, which is governed by a nine-member board. The Ranch offers over 500 classes each year and registers over 4,800 participants.

The Ranch provides classes and activities for toddlers through older adults, including after-school sports, summer camps, fitness and specialty programming, and special events. The organization also manages facility rentals and key access for six tennis/pickleball courts at three locations.

In addition to public facilities, the Tiburon planning area is home to private facilities that require membership for access and use, including the Corinthian Yacht Club, the Tiburon Peninsula Club, the Belvedere Tennis Club, and the Tiburon Yacht Club/Paradise Cay Yacht Harbor. These facilities provide boat slips, tennis courts, swimming pools, and a fitness center.

Table OS-2

PARKS IN THE PLANNING AREA

PARK NAME	TYPE	ACREAGE
Richardson Bay Lineal Park	Community Park	
• Blackie’s Pasture	Community Park	15.5
• McKegney Green	Community Park	11.6
• South of Knoll Park and Playground	Community Park	0.16
• Multi-Use Path	Community Park	0.10
• Cypress Grove Garden Park	Community Park	0.1
Pt. Tiburon Shoreline Park	Community Park	2.3
• Elephant Rock Fishing Pier	Community Park	—
Reed Park	Community Park	1.8
Belveron Mini Park	Mini-Park	0.5
Bel Aire Play Area	Mini-Park	0.17
Cypress Hollow Park	Mini-Park	0.5
Zelinsky Park	Mini-Park	1.5
Teather Park Tennis Courts	Specialty Park	1.5
Paradise Beach Park	Regional Park	18.6
Tiburon Uplands Nature Preserve	Regional Park	18.8
TOTAL		94.1



TIBURON RIDGE

Trails in Old St. Hilary's Preserve offer incredible views over San Francisco Bay.

10.5 GOALS, POLICIES, AND PROGRAMS

OPEN SPACE PRESERVATION

GOAL OS-A

Protect, preserve, and enhance the Town's unique open space and natural beauty for its recreational and environmental benefits.

GOAL OS-B

Permanently preserve as much open space as possible to protect shorelines, open water, wetlands, significant ridgelines, streams, drainageways, riparian corridors, steep slopes, rock outcroppings, special

status species and their habitat, woodlands, cultural and historic resources, and areas of visual importance, such as views of and views from open space.

GOAL OS-C

Permanently protect, to the maximum extent feasible, the unique open space character of the Town which is attributable to its large amounts of undeveloped land and open water.

GOAL OS-D

Permanently protect as conservation areas, to the maximum extent feasible, all lands and other areas in the public trust.

GOAL OS-E

Protect open space for its visual values, habitat, and native vegetation and minimize impacts of any additional development.

POLICY OS-1 OPEN SPACE PRESERVATION.

Strive to permanently preserve through setbacks, dedication, purchase, easement, or other appropriate means exceptional structures, sites, open space, and sensitive

environmental resources. Encourage the permanent protection of open space through conveyance of fee title to an appropriate government agency or land trust; by easement; deed restriction; or other appropriate mechanism acceptable to the Town.

POLICY OS-2 OPEN SPACE DEDICATION.

When considering whether open space land should be dedicated to the Town or other public entity, weigh the benefits to the community of public ownership against the costs of management efforts and other liabilities associated with owning the land.

POLICY OS-3 PUBLIC ACCESS.

Strive to secure public access to those portions of open space land most appropriate for public use through trail easements that connect to other public

trails or through other appropriate legally permissible mechanisms.

POLICY OS-4 RETENTION OF PUBLICLY OWNED OPEN SPACE.

Permanently protect public or private open space. Publicly owned open space land should not be sold and should only be traded in exchange for open space which provides improved trail connections, resource protection, or other public benefits.

POLICY OS-5 CONTIGUOUS OPEN SPACE DEDICATION.

Land that is proposed for preservation as permanent open space shall typically be contiguous to existing open space and/or open space areas that may in the future be permanently preserved.

POLICY OS-6 DEVELOPMENT REVIEW.

Ensure that new development respects the ecological, visual, and safety benefits of hillsides, ridgelines, and other natural areas that serve as habitat and erosion protection as well as visual backdrops to the community. Use the development review process to retain the visual character and environmental attributes of the planning area.

Program OS-a Environmental Constraints Assessment.

Require applicants to demonstrate that proposals for development minimize environmental impacts and comply with the General Plan and applicable regulations, ordinances, and guidelines. Require preparation of an assessment of environmental constraints that addresses applicable topics identified by California Environmental Quality Act and open space characteristics, including those associated with aesthetics, biological resources, and

cultural and tribal cultural resources, prior to the submittal of Precise Development Plan applications for large undeveloped parcels.

Program OS-b Review Development Applications within Sphere of Influence.

Review development applications that are submitted to the County and that are within the Town's sphere of influence and areas of interest in order to encourage conformance with Town policies, including minimizing the visual impact of development on surrounding hills visible from the Town.

Program OS-c Environmental Assessment.

Require an environmental assessment for development proposed on sites that may contain sensitive biological resources, including wetlands, occurrences of special-status species and sensitive natural communities, native wildlife nurseries and nesting locations, and native wildlife movement

corridors. The assessment shall be conducted by a qualified professional to determine the presence, potential presence, or absence of any sensitive resources which could be affected by proposed development, shall provide an assessment of the potential impacts, and shall define measures to avoid significant adverse impacts to the resource. The development project shall be required to implement feasible measures to avoid or, if avoidance is not feasible, reduce significant adverse impacts.

POLICY OS-7 CLUSTER DEVELOPMENT.

Cluster lots in new subdivision design to maximize the preservation of open space to the greatest extent feasible. Where the Town determines that a project would better conform to the goals and policies of the General Plan, "estate lot" type development (i.e., large homes on large lots) may be considered. Easement, deed restriction, or other appropriate mechanism

acceptable to the Town shall be used to preserve open space within common areas or individual lots.

POLICY OS-8 GREENBELT SEPARATORS.

Require undeveloped greenbelts to separate development areas or to link open space areas where appropriate.

POLICY OS-9 RIDGELINE PROTECTION.

Protection of predominantly undeveloped ridgelines shall have the highest priority in balancing open space interests with development interests. Undeveloped ridgelines have overriding visual significance to the Town.

POLICY OS-10 SETBACKS FROM TIBURON RIDGE.

Development and the construction of buildings and yard improvements

associated with development, including landscaping and trees, shall be set back from either side of Tiburon Ridge as established in Figure OS-2:

1. a minimum of 150 horizontal feet, &
2. a minimum of 50 vertical feet, measured from the highest point of the roofline of a structure or tree.

If strict application of these requirements prevents all reasonable use of the property, encroachment into the setbacks may be allowed provided that structures are limited to a maximum 15 feet in height, as defined by the Tiburon Zoning Ordinance, and provided that both horizontal and vertical encroachment are minimized.

Program OS-d Ridgeline and Hillside Development Regulations.

Amend the Zoning Ordinance to incorporate the required setbacks from Significant Ridgelines contained in Policies OS-10 and OS-11, limitations on development of steep slopes in Policy OS-13, and the objective hillside



SHORELINE ACCESS

Tiburon has preserved its shoreline access for the public via the Shoreline Park.

development standards from the Design Guidelines for Hillside Dwellings.

POLICY OS-11 SETBACKS FROM SIGNIFICANT RIDGELINES.

Development shall be set back from Significant Ridgelines as established in Figure OS-2. Setbacks shall be based on an evaluation of the following characteristics: local and regional visual prominence, ability to connect to existing or potential open space, potential to act as a neighborhood separator, views of and views from, length, height, presence of trees, presence of unusual physical characteristics, highly visible open slopes, significant vegetation, sensitive habitat, special silhouette or back-drop features, difficulty of developing or accessing, and integrity of the ridgeline land form.

In evaluating Significant Ridgelines for protection, all characteristics identified in Policy OS-11 should not be judged equally. Significant Ridgelines that

have a high visual prominence, have the potential to connect to the Tiburon Ridge Trail, or have a distinct ridgeline land form, such as those found at the eastern terminus of the Tiburon Ridge, should be afforded greater protection than those that have low visibility, do not connect to the Tiburon Ridge, or do not have distinct ridgeline land forms.

If strict application of these requirements prevents all reasonable use of the property, encroachment into the setbacks may be allowed provided that structures are limited to a maximum 15 feet in height, as defined by the Tiburon Zoning Ordinance, and provided that both horizontal and vertical encroachment are minimized.

POLICY OS-12 ROADS AND UTILITIES CROSSING RIDGELINES.

Roads and utilities constructed along or across the Tiburon Ridge or Significant Ridgelines as established in Figure OS-2 shall be strongly discouraged. If no other vehicular access is viable,

crossing of ridges shall be minimized and shall be as near to perpendicular to the ridgeline as possible.

POLICY OS-13 DEVELOPMENT ON STEEP SLOPES.

Strongly discourage development on slopes exceeding 40%.

POLICY OS-14 GRADING.

Keep grading to a minimum to the maximum extent possible and make every effort to retain the natural features of the land including ridges, rolling landforms, knolls, vegetation, trees, rock outcroppings, and water courses.

POLICY OS-15 LANDSLIDE MITIGATION.

Avoid site grading that is not required by the Town's Landslide Mitigation Policy to the maximum extent feasible to retain natural landforms.

Program OS-e Hillside Stabilization.

Where hillslope stabilization is proposed as part of a development proposal, or wherever such stabilization is required by the Town to protect public safety, require the project to evaluate all slope repair-related modifications such as the secondary impacts of subsurface drainage on site and watershed ecological communities, including special-status species, sensitive natural communities, and wetlands. In the event impacts are likely, modifications to the proposed project shall be considered. In the event avoidance and project modification are infeasible, appropriate on- or off-site habitat mitigation shall be required prior to project approval, as mandated by the State and federal regulatory agencies.

POLICY OS-16 RESTORATION AFTER GRADING.

Restore natural vegetation and habitat to the maximum extent feasible where grading is required to stabilize areas of geologic instability.

POLICY OS-17 MINIMIZE GRADING IMPACTS.

Minimize the impact of grading on adjacent properties, water quality, and air quality.

POLICY OS-18 GRADED SLOPES.

Slopes created by grading shall be at a slope angle determined to have long-term stability for the materials being used, not exceeding 30 percent wherever possible. Final contours and slopes shall reflect natural land features, including natural vegetation.

POLICY OS-19 RETAINING WALLS.

The visual impact of retaining walls and similar engineering elements shall be reduced in size and scope to the maximum extent feasible by minimizing their use unless necessary as a foundation to reduce above-grade building mass and by requiring appropriate visual screening.

POLICY OS-20 VIEW PRESERVATION.

Identify and preserve principal vistas, view points, and view corridors affected by development to the extent feasible.

POLICY OS-21 PROTECT VISTAS FROM ROADWAYS.

Protect open space views from key roadways, including Tiburon Boulevard, Trestle Glen Boulevard, and Paradise Drive, through the permitting process.

POLICY OS-22 VIEWS FROM OPEN SPACE

Encourage development in areas where it least interferes with views of and views from open space to the maximum extent feasible.

POLICY OS-23 WATER VIEWS.

Protect visual access to the bayfront and scenic vistas of water and distinct shorelines through land use and development review procedures to the greatest extent feasible.



HILLSIDE DEVELOPMENT

Policies ensure that future hillside development sets back from significant ridgelines and minimizes grading.

OPEN SPACE MANAGEMENT

GOAL OS-F

Manage the Town's open spaces for the benefit of the entire community.

POLICY OS-24 USE OF PUBLIC OPEN SPACE.

Encourage conservation and educational uses of public open space lands. Authorize or provide conservation and education facilities, including nature trails, interpretive exhibits, day camps, nature study areas and other related facilities in areas where the impacts on the natural environment will be minimal.

Program OS-f Improve Trail Signage.

Provide improved trail signage to the public open space, including information on trail safety and identifying/protecting habitat for endangered species.

Program OS-g Trail Connection to Downtown.

Evaluate the potential for an off-road trail connection between the Town's public open space and Downtown/Tiburon Boulevard, securing trail easements over private property where possible.

POLICY OS-25 OPEN SPACE PARTNERSHIPS.

Encourage and seek agreements with other governmental jurisdictions such as County, State, Federal and other agencies and non-profit organizations for funding, acquisition, maintenance, and use of open space areas.

POLICY OS-26 COOPERATION WITH PRIVATE ORGANIZATIONS AND INDIVIDUALS.

Encourage and promote cooperation and participation of private groups, organizations, and individuals in the planning, operation, and preservation of open space lands as deemed necessary.

POLICY OS-27 OPEN SPACE COORDINATION.

Coordinate the use of open space lands with other public and quasi-public lands that are contiguous or otherwise inter-related to Town open space where desirable.

POLICY OS-28 RESTORATION AND ENHANCEMENT.

Engage in or authorize landscape restoration and/or enhancement

programs where the natural landscape has been altered or degraded and when funding and resources allow on Town open space land.

Program OS-h Open Space Management Plan.

Implement the adopted Open Space Management Plan that identifies maintenance projects and funding sources.

POLICY OS-29 NATIVE PLANTS.

Encourage the use of native plants for landscaping and discourage the planting of invasive, exotic species

POLICY OS-30 INVASIVE SPECIES.

Require the removal of invasive, exotic species, such as broom and pampas grass, as a condition of approval for new developments.

Program OS-i Invasive Species.

Encourage homeowners' associations to disseminate information about the harmful effects of invasive exotic species in landscaping.

POLICY OS-31 ONGOING MAINTENANCE OF PRIVATE PROPERTY.

Require new developments to ensure ongoing removal of invasive, exotic species through homeowners' associations, covenants, conditions, and restrictions (CC&Rs), or other appropriate mechanisms.

PARKS AND RECREATION

GOAL OS-G

Provide sufficient land and facilities for a balanced system of parks and recreation opportunities that serve all ages, abilities, and income levels.

GOAL OS-H

Anticipate population growth and to plan for and provide funds for the acquisition of adequate lands or installation of adequate facilities to address future parks and recreation needs of the community.

POLICY OS-32 MAINTAIN SUFFICIENT PARK FACILITIES

Maintain sufficient park land and recreational facilities over time.

Program OS-j Coordinate Park and Recreation Planning.

Work with the Belvedere-Tiburon Recreation Department and the City of Belvedere to consider the long- and short-term need for additional parklands, sporting facilities, picnic facilities, play areas, or programs to meet the community's recreational programming and facilities needs.

Program OS-k Parks Master Plan.

Prepare a Parks Master Plan to guide the use, development, and management of park facilities.

POLICY OS-33 PARKLAND DEDICATION.

Continue to require new parkland dedication and/or collection of in-lieu fees during the development review process. A ratio of 5.0 acres of park land per 1,000 persons is established for the Planning Area pursuant to the Quimby Act.

POLICY OS-34 USE OF PARK FUNDS.

Continue to use park funds and any future in-lieu fees for improvement of existing and future parks and for parkland acquisition purposes.

POLICY OS-35 PURSUE OUTSIDE FUNDING.

Pursue federal, state, county, and other funds to assist in the maintenance, improvement, and acquisition of existing and/or future park facilities.

POLICY OS-36 PARK MAINTENANCE.

Strive to adequately fund the ongoing maintenance of the Town's park and recreation facilities.

POLICY OS-37 BLACKIE'S PASTURE.

Retain the area known as Blackie's Pasture for passive, informal recreational use, including uses such as picnicking, hiking, wildlife watching, and open play areas which require minimal improvements such as pathways, benches, picnic tables, or restrooms. The quality and preservation of the environment should be the focus of the recreational experience.

POLICY OS-38 WATER RECREATION.

Maintain, and enhance where practical, existing water recreation opportunities.

Program OS-l Small Watercraft Launch.

Consider locations and funding for creation of a launch facility for small watercraft (e.g., kayaks and paddleboards), possibly in the Downtown area.

POLICY OS-39 PUBLIC SHORELINE ACCESS.

Encourage additional public shoreline access from publicly accessible land consistent with the Bay Conservation and Development Commission's (BCDC) San Francisco Bay Plan, especially in areas where none currently exists.

Program OS-m Richardson Bay Linear Park.

Prepare a framework or decision-making criteria for future improvements to the Richardson Bay Linear Park as part of the Parks Master Plan.

POLICY OS-40 PUBLIC TRAILS.

Continue to enhance the network of public trails within the Tiburon Planning Area, including connections between and to public trails.

Program OS-n Trail Easements.

Evaluate development applications for the existence and potential creation of easements and/or trails that connect or continue to allow public access to shoreline, recreation, and open space areas.

POLICY OS-41 RECREATIONAL AMENITIES.

Encourage public convenience facilities such as restrooms, bicycle racks, drinking fountains, and trash receptacles which may be provided by the State of California, the Town of Tiburon, and/or the local community.

POLICY OS-42 ANGEL ISLAND.

Maintain a positive, mutually beneficial working relationship with the California Department of Parks and Recreation and Angel Island administration to ensure that Angel Island remains a unique state resource and that the unique character of Downtown Tiburon is protected.

POLICY OS-43 RECREATION PROGRAMS.

Continue to work cooperatively with the Belvedere/Tiburon Joint Recreation Committee to administer and operate recreation programs and facilities for the residents of Belvedere and Tiburon.

POLICY OS-44 EQUAL ACCESS TO RECREATION PROGRAMS.

Ensure recreation programming is responsive to and serves the needs, interests, and desires of the entire

community, including those of different ages, abilities, and income levels.

Program OS-o Financial Assistance for Recreation Programs.

Explore ways of providing financial support to allow full access to recreation programs by residents of need.



TIBURON PARKS

Point Tiburon Shoreline Park (top) and McKegney Green (bottom) are among Tiburon's park assets.





11.

SAFETY +
RESILIENCE



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11 SAFETY + RESILIENCE

11.1 PURPOSE OF THE CHAPTER

Tiburon is vulnerable to a range of public safety threats including both natural and human-made hazards. Earthquakes, landslides, fire, flooding, sea level rise, and extreme heat events pose serious and real threats to the Town. Planning is critical to identify potential hazards and provide policies and regulatory actions to reduce the community's risk of death, illness, injury, property damage, and economic and social disruption.

This chapter presents a framework for governing future decisions about how the Town will provide a safe community and protect the community from natural and man-made hazards. The chapter addresses the requirements of the State-mandated safety element and partially addresses the requirements of the land use element of the general plan.

The Safety + Resilience chapter includes the following sections.

11.2 Hazard Mitigation and Emergency Preparedness.

Provides an overview to the Town's approach to reducing safety risks and responding to disasters when they occur.

11.3 Seismic and Geologic Hazards.

Describes environmental and man-made hazards including earthquakes, liquefaction, tsunami, and landslide.

11.4 Flood Hazards. Describes flood hazards and flood control and mitigation measures to protect the community from flooding and reduce damage.

11.5 Sea Level Rise. Presents the context of and projections for sea level rise, potentially vulnerable assets in Tiburon, and a framework for decision-making.

11.6 Fire Hazards. Discusses fire risks, fire hazard zones, and fire protection measures and service.

11.7 Public Safety. Provides an overview of crime in Tiburon and police protection services.

11.8 Goals, Policies, and Programs. Identifies goals, policies, and programs minimize hazards and risks to life and property.

11.2 HAZARD MITIGATION AND EMERGENCY PREPAREDNESS

HAZARD MITIGATION

Hazard mitigation is the use of long-term and short-term policies, programs, projects, and other activities to alleviate the death, injury, and property damage that can result from a disaster. Marin County and its partners, including the Town of Tiburon, developed the 2018 Multi-Jurisdictional Local Hazard Mitigation Plan (2018 LHMP) to assess risks posed by natural hazards and to develop a mitigation strategy for reducing the County's risks. The LHMP lays out a process to prepare for and lessen the impacts of specified natural hazards that are most likely to impact Marin, such as earthquakes, wildfires, floods, debris flows, wind damage, and tsunamis.

The County and its partners prepared the 2018 LHMP in accordance with the requirements of the Disaster Mitigation Act of 2000 (DMA 2000). Additionally, the plan complies with federal and state hazard mitigation

planning requirements to establish eligibility for funding under the FEMA grant programs. The 2018 LHMP serves as the current Local Hazard Mitigation Plan for all participating jurisdictions.

The 2018 LHMP is currently being updated and is expected to be adopted in 2023. In January 2022 a [Vulnerability Assessment](#) was prepared for the Marin Countywide Plan Safety Element Update that will be incorporated into the updated LHMP. The Vulnerability Assessment addresses the adaptation and resilience requirements of Gov't. Code §65302(g)(4)(A) for Marin County, including the Town of Tiburon, by:

- Identifying exposures to climate change hazards, including drought, extreme heat, flooding, and landslides, debris flows, and post-fire debris flows,
- Identifying population groups and community assets that are sensitive to localized climate change effects,

- Evaluating the adapting capacity of identified populations and assets, &
- Conducting vulnerability scoring to describe the degree to which natural, built, and human systems are at risk of exposure to climate change impacts.

Adaptation and resilience goals, policies, and programs in compliance with Gov't. Code §65302(g)(4)(B) and (C) are contained in Section 11.8.

EMERGENCY PREPAREDNESS

The Tiburon police station, in addition to day-to-day police activities, houses the Tiburon Peninsula Emergency Operations Center (EOC), which provides disaster response for Tiburon and Belvedere. The EOC is activated during extraordinary emergencies or events and during disasters. The Tiburon Peninsula Emergency Operations Plan guides the Town on how to operate

during an emergency. Tiburon also utilizes standard operating procedures established by Police, Fire, and Public Works for conducting routine monitoring of events to determine appropriate actions prior to activating the EOC.

At the local level, the Tiburon Peninsula EOC is used as the central location for gathering and disseminating information, coordinating all jurisdictional emergency operations, and coordinating with the Marin County Office of Emergency Services and the Marin County Operational Area EOC level during events outside the scope of the Town of Tiburon. When a disaster occurs and two or more of the county's local jurisdictions' EOCs (or at the request of one local jurisdiction) within the Marin County Operational Area are activated, the Marin County EOC serves as the focal point for information transfer and supports requests by cities and towns.

If the scope of an emergency is larger than the Marin Operational Area, regional- and state-level EOCs may need to be activated. The California Governor’s Office of Emergency Services is a California cabinet-level agency that is responsible for emergency preparedness, response, recovery, and homeland security activities within the state.

EVACUATION ROUTES

Tiburon’s location on a peninsula and topography of steep hillsides poses challenging constraints for emergency response and evacuation. One of the major problems Tiburon faces during any emergency is the possibility of becoming isolated from surrounding cities or counties and any subsequent resources or help. The Tiburon Peninsula has one major road (Tiburon Boulevard) and one minor road (Paradise Drive) which provide primary access to the entire planning area. Additionally, there is a second minor road (Trestle Glen Boulevard)

connecting Tiburon Boulevard and Paradise Drive in the northern portion of the planning area; however, the remaining transportation network consists of narrow local streets within the hillsides. Therefore, the susceptibility to road blockages is high and delays during evacuations will be inevitable. During an emergency, some areas could be inaccessible to emergency service personnel and vehicles due to the limited access to the area.

In the event of an area-wide emergency, evacuation of the Tiburon planning area would be difficult. Evacuation traffic on Tiburon Boulevard (Highway 131) would cause severe congestion since that is the only major access route for most of the planning area. As residents use the Highway 101 Tiburon Boulevard/East Blithedale Avenue interchange to evacuate out of Marin County, key choke points would occur causing massive delays for Tiburon residents, especially those located in residential areas in the southern portion of the peninsula. During an evacuation of the Tiburon

Peninsula area, it is anticipated that over 17,000 residents from Tiburon, Belvedere, and Strawberry would potentially utilize this interchange as the main evacuation route since it is the closest interchange to all three communities.

The fire departments serving Tiburon, the Tiburon Fire Protection District and the Southern Marin Fire Protection District, use a cloud-based platform called Zonehaven that provides public safety workers with tools to pre-plan evacuation zones and routes, run scenario models, and collaborate with other agencies. The platform communicates live updates to fire department personnel and the public about evacuation routes, traffic flow, and roadway conditions during an emergency. Using satellite images and other information, the platform delivers real-time evacuation instructions to residents through mobile alerts and social media that can be adapted to the type of emergency, such as wildfire, earthquake, and tsunami. As conditions change, evacuation routes

can be quickly modified. For example, roadways may be closed or turned into one-way evacuation routes as needed.

The Town approved an Evacuation Decal program in August 2018 to demarcate potential evaluation routes to assist residents, businesses, and visitors in evacuating in the event of the disaster. The Evacuation Decal program was developed by the Tiburon Fire Protection District with input from the Belvedere Tiburon Joint Disaster Advisory Council.



The Tiburon Fire Protection District (TFPD) provides fire and emergency medical response services to Tiburon from two stations, including Station 11 downtown (top). Tiburon Boulevard is the town's primary evacuation route (bottom).

11.3 SEISMIC AND GEOLOGIC HAZARDS

Tiburon is located in the seismically active San Francisco Bay region, an area with a long history of tectonic movements. The region sits on the boundary between two of the Earth's major tectonic plates—the Pacific and North American Plates—which move inexorably past each other at a rate of about two inches per year. Much of this motion is accommodated from time to time by sudden slips on faults, producing an earthquake. Although the San Andreas fault is the main origin of slip, other faults splay out from the plate boundary throughout most of California.

The San Andreas fault, located about 9 miles east of Tiburon, was the source of the magnitude 7.9 earthquake in 1906. The most recent large earthquake on the San Andreas fault was the magnitude 6.9 Loma Prieta earthquake in 1989. The Loma Prieta earthquake caused intense seismic activity throughout the Bay Area, collapsing a double-decked freeway in West Oakland and destroying buildings in San Francisco's

fill-based Marina District. In 2014, the United State Geological Survey's earthquake forecast for California concluded there is a 72% probability of at least one earthquake of magnitude 6.7 or greater striking somewhere in the San Francisco Bay region before 2043.

Other faults near Tiburon include the Hayward fault, which is located approximately 7 miles to the east. Figure SR-1 provides a map of earthquake faults in the region and indicates 69 significant earthquakes with a magnitude of 4.0 or greater since 1906. An earthquake with a magnitude of 4.0 can be felt by most people indoors, while an earthquake with a magnitude over 6.0 can cause damage over a large area. No significant earthquakes occurred Tiburon during this time.

Damage resulting from earthquakes is mainly from shaking. The intensity of shaking that a structure will experience during an earthquake depends upon the magnitude of the earthquake, the

proximity to the epicenter, and the type of ground materials beneath the structure. Soft soils amplify the shaking, while hard bedrock does not.

All buildings located in Tiburon are vulnerable to earthquake damage, but depending upon construction, some buildings are expected to perform better than others. One and two-story wood-frame buildings generally perform well, but they may shift if not bolted to the foundation or partially collapse if cripple walls (short walls between the foundation and first floor that create a crawl space) are not braced. Homes with rooms built over garages are also vulnerable to collapse if walls are not reinforced or braced. While current building codes address seismic safety, they are designed to protect occupant lives during an earthquake. Newly constructed buildings can still be significantly damaged during a major earthquake.

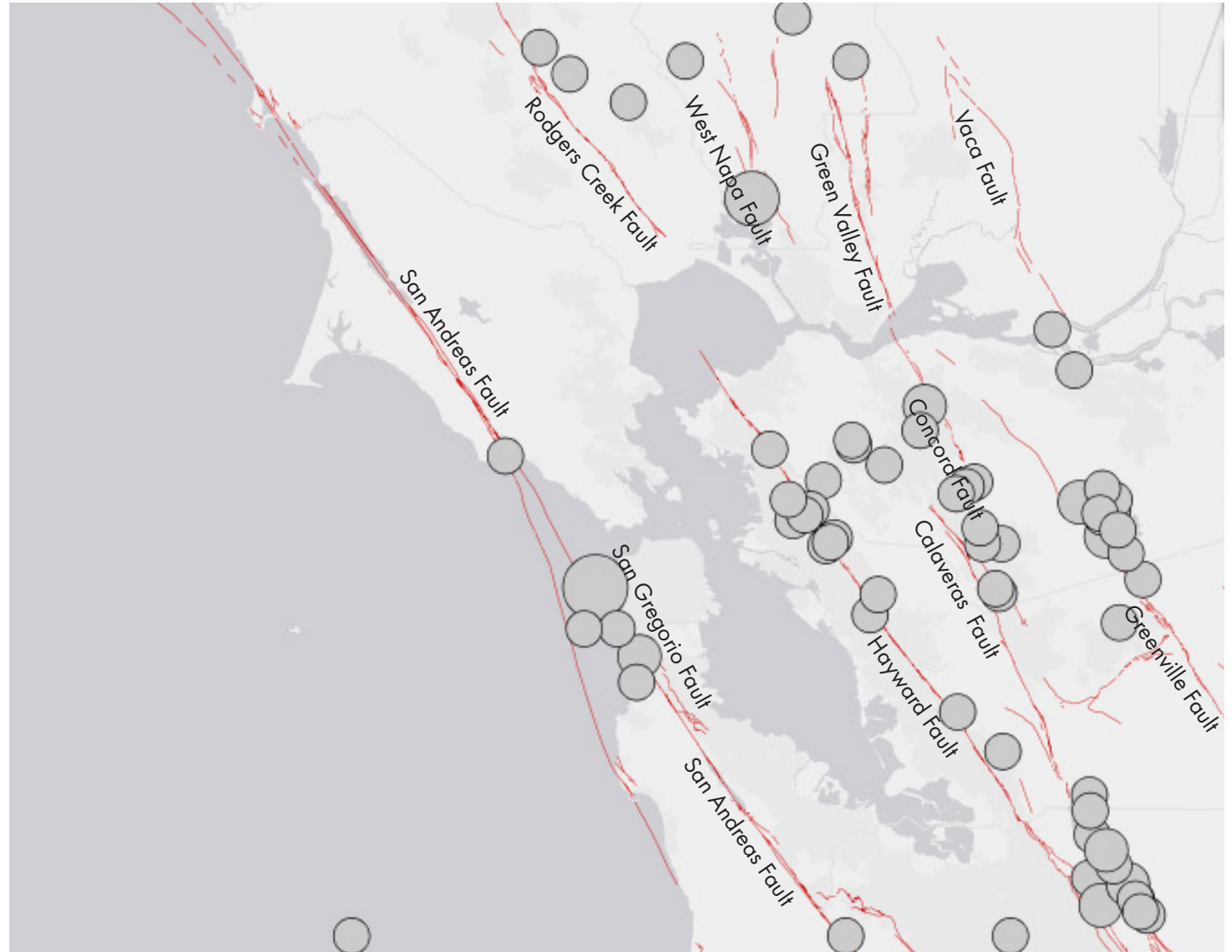
Unreinforced masonry buildings (including materials such as brick,

concrete, and stone), pre-1940 wood-frame houses, and pre-1973 concrete buildings are very likely to be damaged during earthquakes. In most cases, these older buildings require retrofit, or they risk significant structural damage during an earthquake.

Structures built in areas of water-saturated granular sediment or fill material are susceptible to liquefaction. The ground shaking from an earthquake transforms the material from a solid state to a temporarily liquid state. Liquefaction is a serious hazard because buildings in areas that experience liquefaction may sink or suffer major structural damage. Most single and multifamily homes under ten stories are unlikely to have foundations stable enough to withstand liquefaction even if they can withstand ground shaking.

Figure SR-1

EARTHQUAKE FAULTS AND SIGNIFICANT EARTHQUAKES WITH A MAGNITUDE OF 4.0 OR GREATER SINCE 1906



Source: U.S. Geological Survey, 2022

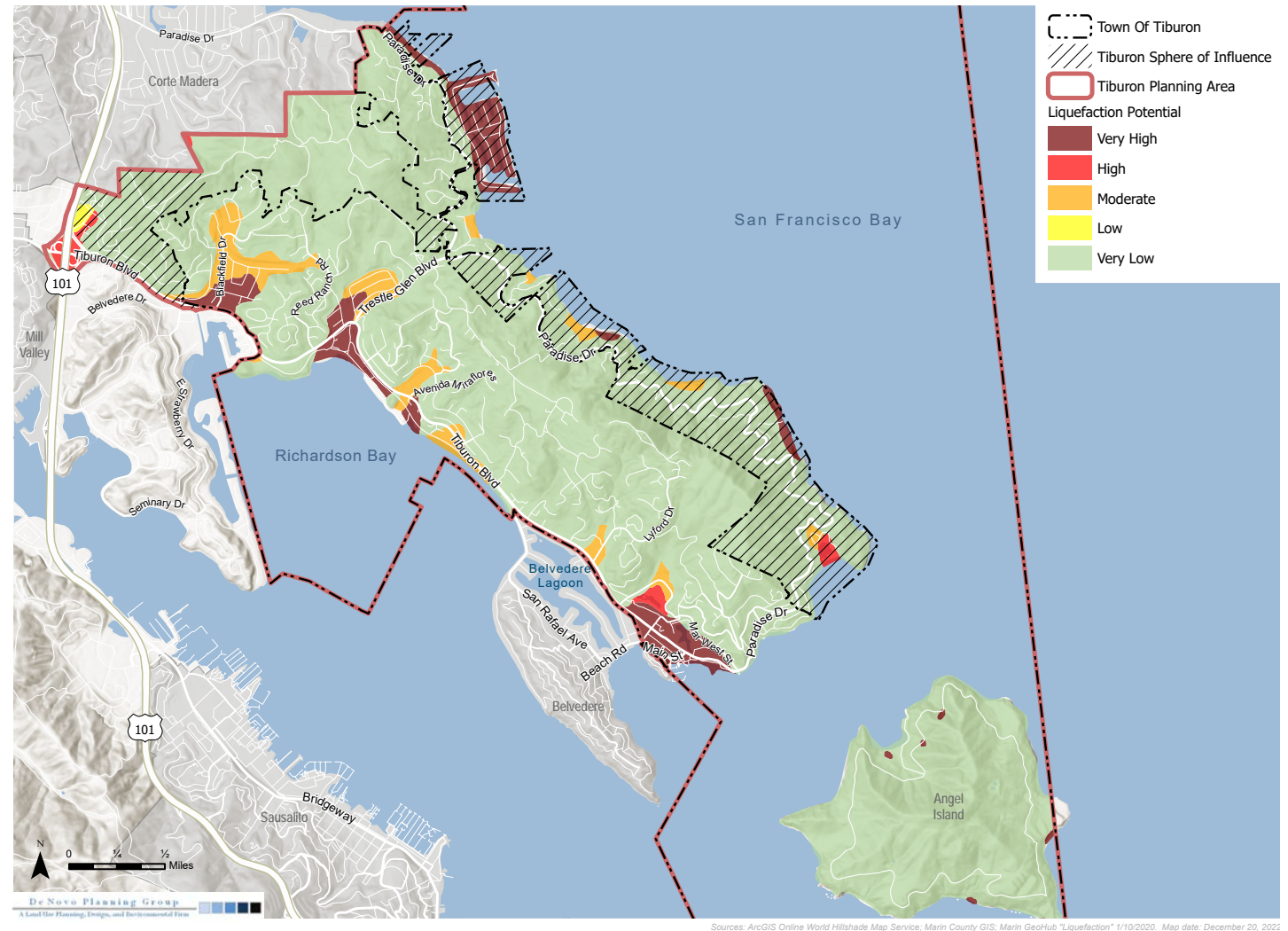
Liquefaction potential in the planning area includes designation of “Very Low” to “Very High” as shown in Figure SR-2. Areas in Tiburon designated with very high potential for liquefaction are generally located in the Downtown from the bay to Mar West Street, including Town Hall and the Tiburon Fire Station #11; the Blackie’s Pasture area and Tiburon Ridge and Belveron neighborhoods; and the Cove Shopping Center and Bel Aire neighborhood.

TSUNAMI

A tsunami is a series of traveling ocean waves caused by underwater earthquakes, volcanic eruptions, or landslides. Out in the ocean, tsunami waves do not dramatically increase in height. But as the waves travel inland, they build up to higher and higher heights as the depth of the ocean decreases. As the tsunami enters the shallow water of coastlines, waves can reach heights of over 100 feet and strike with devastating force. Depending on the location of an incident, a tsunami can reach the California coast in as little as ten minutes for a local source earthquake or take from 5 to 14 hours for a distant source earthquake. Areas

Figure SR-2

LIQUEFACTION POTENTIAL



at greater risk if they are less than 25 feet above sea level and within a mile of the shoreline.

While over 80 tsunamis have been observed or recorded along the coast of California in the past 150 years, there is no history of any significant damage caused by a tsunami in Marin County.

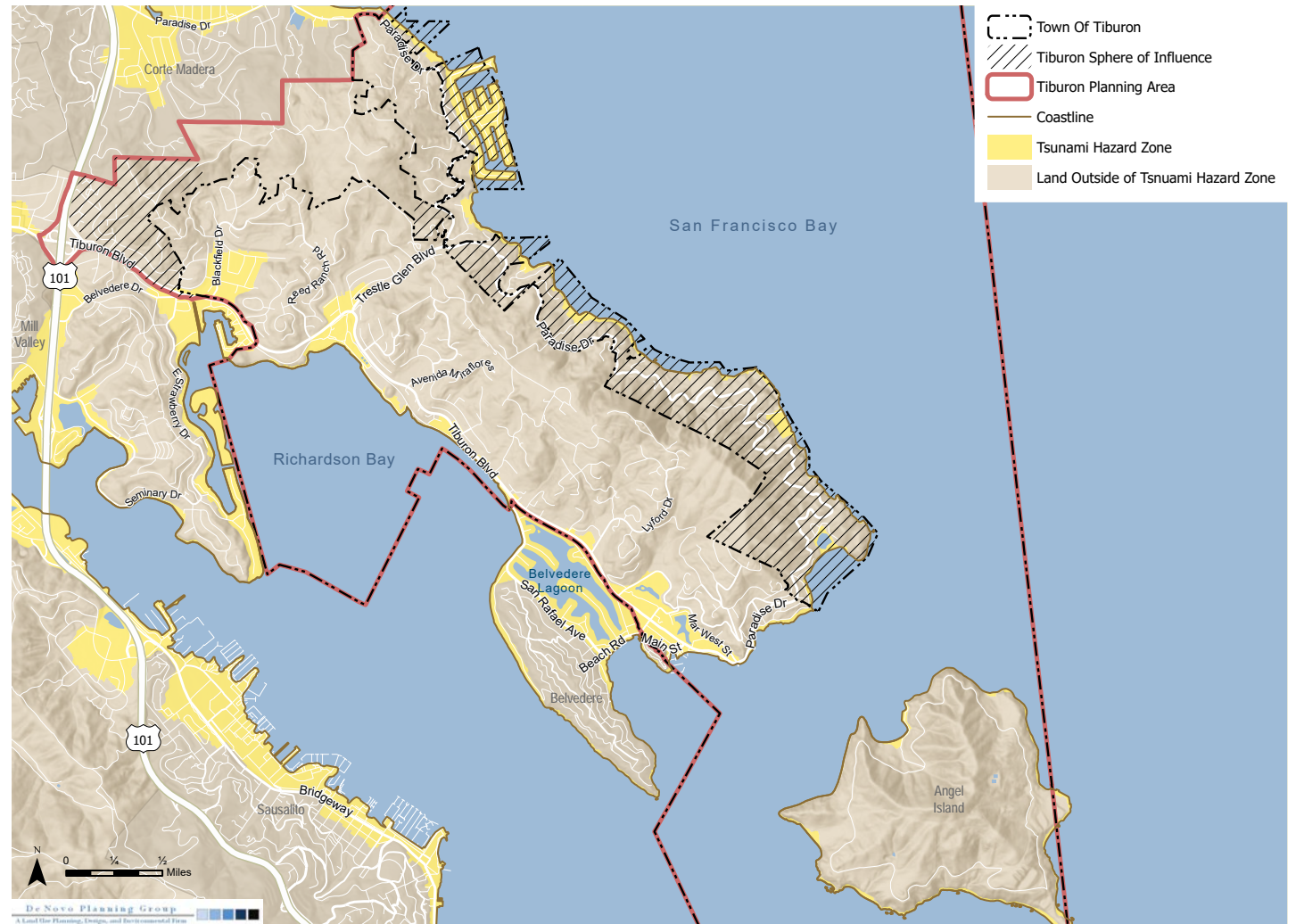
The Town is recognized by the National Oceanic and Atmospheric Administration as a TsunamiReady community. To be earn this designation, a community must:

- Establish a 24-hour warning point and emergency operations center
- Have more than one way to receive tsunami warnings and to alert the public
- Promote public readiness through community education and the distribution of information
- Develop a formal tsunami plan, which includes holding emergency exercises
- Comply with TsunamiReady guidelines

Figure SR-3 shows the tsunami inundation areas within the Tiburon Peninsula. Vulnerable areas are

Figure SR-3

TSUNAMI INUNDATION ZONES



Sources: ArcGIS Online World Hillshade Map Service; Marin County GIS; CGS Information Warehouse; Tsunami Hazard Area, produced by the California Geological Survey and the California Governor's Office of Emergency Services, State of California, 2022. Map date: December 20, 2022.

Downtown, including Town Hall and the Tiburon Fire Station #11; Blackie's Pasture; the Cove Shopping Center; and waterfront properties along Paradise Drive. Additionally, many recreational areas such as beaches, the shoreline park, Paradise Park, and the Old Rail Trail are at risk from tsunamis. A tidal surge from a tsunami could lead to flooding of low-lying areas, similar to a winter storm-related slow rise flood, but more rapidly. Inundation could continue for up to 24 hours from the time of initial impact.

LANDSLIDE

Landslides are a potential hazard to structures, roads, and utilities on hillsides in Tiburon. Landslides can move slowly, as in hillside creep, or can move quickly and disastrously, as is the case with debris flows.

Almost every landslide has multiple causes. Landslides can be initiated in slopes already on the verge of movement by rainfall, erosion, earthquake, and disturbance by human

activities. Factors that indicate the probable formation and relative risk of landslide and slope instability include:

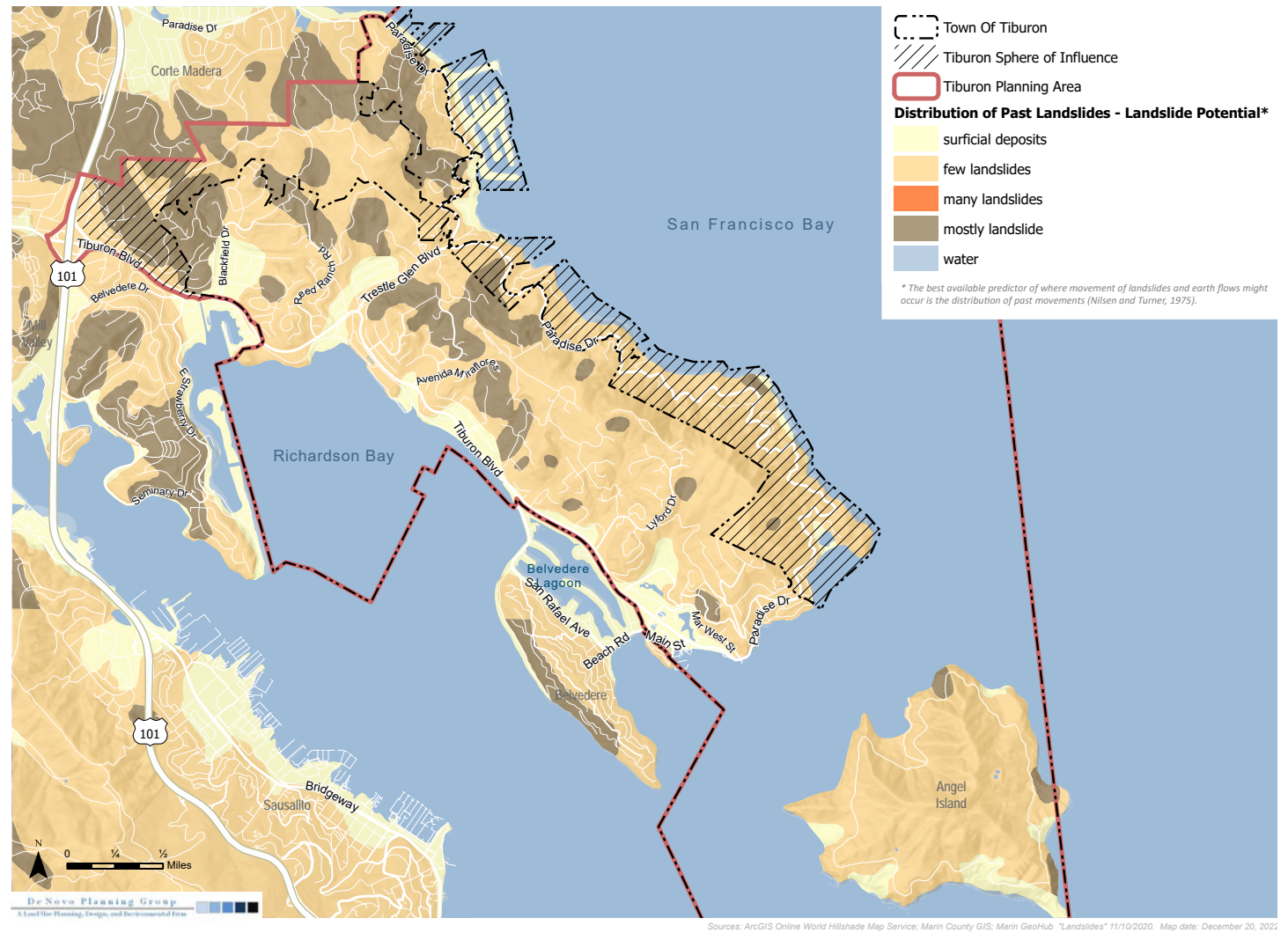
- **Slope Steepness:** Most landslides occur on moderate to steep slopes.
- **Slope Material:** Loose, unconsolidated soils and soft, weak rocks are more hazardous than are firm, consolidated soils, or hard bedrock.
- **Water Content:** Increased water content increases landslide hazard by decreasing resistance to sliding and adding weight to the materials on a slope.
- **Vegetation Coverage:** Abundant vegetation with deep roots increases slope stability.
- **Proximity to Areas of Erosion or Man-Made Cuts:** Undercutting slopes may greatly increase landslide potential.
- **Earthquake Ground Motions:** Strong ground shaking may trigger landslides in marginally stable slopes or loosen slope materials

and thus increase the risk of future landslides.

Hillsides in Tiburon have a low to high potential for landslide as shown in Figure SR-4.

Figure SR-4

LANDSLIDE POTENTIAL



11.4 FLOODING HAZARDS

Tiburon is subject to flooding problems due to periodic heavy winter rainfalls, tidal fluctuations, and the potential for tsunamis and sea level rise. Impacted areas are the low-lying areas adjacent to the San Francisco Bay, Belvedere Cove, Belvedere Lagoon, and Richardson Bay. During heavy rainfall conditions, and especially when combined with high tides, certain areas are known to flood, including Beach Road at Tiburon Boulevard, Tiburon Boulevard at Ned's Way, and Tiburon Boulevard near Greenwood Beach Road by the 76 gas station. Actions, such as clearing storm drains, are taken by the Department of Public Works in Tiburon to mitigate flooding on the Peninsula regularly and prior to expected storms. Sea level rise is expected to exacerbate flooding issues, as described in section 11.5.

Congress passed the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973 to address the increasing cost of flood-related disaster relief. The intent of the

National Flood Insurance Program, which was established by the 1968 Act, is to reduce the need for large, publicly funded flood control structures and disaster relief by restricting development on floodplains.

The Federal Emergency Management Agency (FEMA) administers the National Flood Insurance Program to provide subsidized flood insurance to communities that comply with FEMA regulations and limit development on floodplains. FEMA issues Flood Insurance Rate Maps (FIRM) for communities participating in the flood insurance program. The FIRM maps delineate flood hazard zones in the community.

The FIRM maps play several critical roles. First, the maps are used by local and county agencies to identify and plan for local or area flood protection. Second, the maps are used by the banking and insurance industries to determine if flood insurance is mandated for a specific property or

area. Lands located within the Special Flood Hazard Areas (areas subject to 1 percent chance of flooding in any given year) require that flood protection insurance be secured for federally regulated or insured loans. Lastly, the maps are used at the federal and State level to plan for waterway projects that are administered by the US Army Corps of Engineers.

Improvements, construction, and developments within Special Flood Hazard Areas are generally subject to the following standards:

- All new construction and substantial improvements of residential building must have the lowest floor (including basement) elevated to or above the base flood elevation (BFE).
- All new construction and substantial improvements of non-residential buildings must either have the lowest floor (including basement) elevated to or above the BFE or dry-floodproofed to the BFE.

- Buildings can be elevated to or above the BFE using fill, or they can be elevated on extended foundation walls or other enclosure walls, on piles, or on columns.
- Extended foundation or other enclosure walls must be designed and constructed to withstand hydrostatic pressure and be constructed with flood-resistant materials and contain openings that will permit the automatic entry and exit of floodwaters. Any enclosed area below the BFE can only be used for the parking of vehicles, building access, or storage.

The Town participates in the National Flood Insurance Program, which makes federally backed flood insurance available to homeowners, renters, and business owners in communities that adopt and enforce floodplain management ordinances to reduce flood damage. Approximately 140 flood insurance policies are in force in Tiburon.

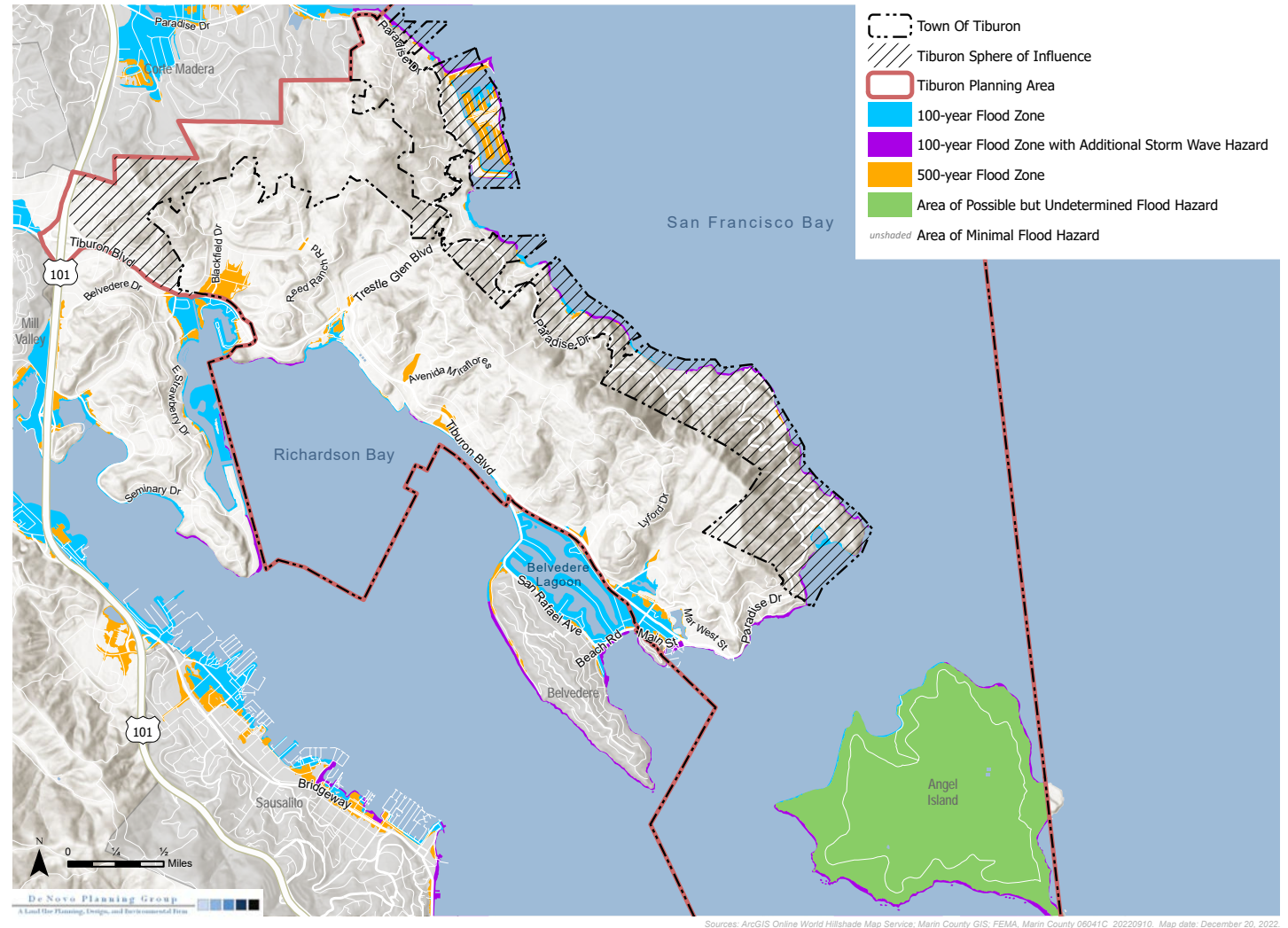
Figure SR-5

FEMA FLOOD HAZARD ZONES

The Town's Floodplain Management Regulations are contained in Title IV, Chapter 13D of the Tiburon Municipal Code. These regulations implement the FEMA standards for construction and development within Special Hazard Zones in Tiburon. The Town requires new construction and substantial improvement of any structure to have the lowest floor, including the basement, elevated at least two feet above the base flood elevation.

Figure SR-5 shows the areas of Tiburon that are prone to flooding, as identified by FEMA. Areas in the 100-year flood zone have a 1 percent chance of flooding in any given year, while areas in the 500-year flood zone have a 0.2 percent chance of flooding. Buildings with habitable living space or critical building equipment below grade are likely to be significantly damaged by flooding.

The 100-year floodplain is largely confined to the Boardwalk Shopping Center and Downtown Tiburon Area



adjacent to the Belvedere Lagoon, as well as areas along the coast, including Blackie's Pasture. The Town Hall and Tiburon Fire Station #11 are also located in the 100-year floodplain. Areas in the 500-year floodplain include the expanded areas of the 100-year flood plain, as well as the Cove Shopping Center and portions of the Bel Aire neighborhood. While property damage to structure is a major concern, damage to roads, utilities, and other infrastructure located in these zones could potentially impact other areas of the community as well.

The Town has robust maintenance and capital improvement programs to help manage and mitigate flood risk. Despite flood control efforts, Tiburon will experience local flooding in future years. During the winter months, Marin County experiences "atmospheric river" storms that can deliver over one inch of rain per hour over extended time frames, causing localized flooding. Scientists warn that climate change could increase the frequency and

intensity of atmospheric river storms in California, mostly in the form of occasional years with more extreme storms. These tendencies could produce more frequent and severe flooding.

In addition, the most severe winter storms come with strong winds and many of these cause damage. This can lead to power outages, road closures, clogged creeks and culverts, and damage to structures and personal property from fallen trees.

11.5 SEA LEVEL RISE

EFFECTS OF GLOBAL CLIMATE CHANGE

According to California’s latest Climate Change Assessment, annual average temperatures in the Bay Area will likely increase by approximately 4.4°F by the middle of this century and 7.2°F by the end of the century—unless there are significant efforts throughout the world to limit or reduce greenhouse gas emissions. Even with significant reduction efforts, the temperature increase is projected to be approximately 3.3°F by mid-century and 4.2°F by century’s end .

The effects of increasing global temperature are far-reaching and extremely difficult to quantify. The scientific community continues to study the effects of global climate change. According to the most recent California Climate Change Assessment (California’s Fourth Climate Change Assessment) (2018), the impacts of global warming in California are

anticipated to include, but are not limited to, the following:

- losses to the Sierra snowpack and water supply;
- more and more intense wildfires;
- saltwater contamination, flooding and pests that will affect agriculture;
- more and more extreme heat events that will impact vulnerable populations;
- threats to biological diversity; and
- rising sea levels, which could threaten coastal areas through accelerated coastal erosion, threats to levees and inland water systems and disruption to coastal wetlands and habitat.

This section discusses the role of local governments in adapting to sea level rise, sea level rise projections as they pertain to Tiburon, vulnerable areas and assets, and a framework for making adaptation decisions. The General Plan’s goals, policies, and

programs for adapting to sea level rise are in section 11.8.

ADAPTATION PLANNING IN MARIN COUNTY

Because local governments largely determine the shape of development through land use plans, regulations, and implementing decisions, local governments play an important role in developing climate change strategies including resiliency planning and adaptation. These strategies will need to be coordinated as part of a larger regional or statewide strategy.

Marin County established the Bay Waterfront Adaptation & Vulnerability Evaluation (BayWAVE) program in 2015 to study and address sea level rise. In June 2017, the BayWAVE program delivered the Marin Shoreline Sea Level Rise Vulnerability Assessment. This Vulnerability Assessment seeks to provide context and estimates of the physical and fiscal impacts across the County’s

bayside shoreline over the coming decades. The Vulnerability Assessment is also presented by jurisdiction in community profiles to enable local professionals, officials, and residents to engage in local discussions. Each community profile details key issues and geographic locations and includes economic, environmental, equity, and management considerations related to sea level rise vulnerability. A community profile for the Town of Tiburon is included in the Vulnerability Assessment.

As a next step in the BayWAVE program, Marin County released Adaptation Land Use Planning: Guidance for Marin County Local Governments, a guidebook to help local governments plan effectively to adapt to sea level rise. The County describes an “adaptation pathways” process that accommodates stakeholder engagement as well as cross-jurisdictional approaches to shared impacts. It encourages integration of capital improvement

tools with land use planning tools. The guide has been a resource in the development of policies and programs in this General Plan.

Notable adaptation efforts are currently underway in and around Tiburon, including both infrastructural strategies (the proposed Belvedere seawall) and nature-based strategies such as the gravel beach or replenished mixed sand-gravel beach under consideration for the Greenwood Beach area.

SEA LEVEL RISE PROJECTIONS AND STATE GUIDANCE

Global models indicate that California will see substantial sea level rise during this century, with the exact magnitude depending on such factors as global emissions, the rate at which oceans absorb heat, melting rates and movement of land-based ice sheets, and local coastal land subsidence or uplift.

The Marin Shoreline Sea Level Rise Vulnerability Assessment was prepared in June 2017 as part of the BayWAVE program to understand and identify the effects of sea level rise on the seaside communities within Marin County. Sea level rise estimates used in this analysis are from the USGS Coastal Storm Modeling Systems (CoSMoS) and are viewable online through the Our Coast Our Future (OCOF) Flood Map tool. The six OCOF scenarios selected for the Vulnerability Assessment analysis are identified in Table SR-1. Figure SR-6 illustrates how these scenarios may be considered in terms of time, based on the State of California's guidance from 2018.

SEA LEVEL RISE IN TIBURON

Tiburon is located along an extensive peninsula projecting into Richardson and San Pablo Bays. The peninsula is generally steep with several areas of reinforced shoreline. As shown



WATERFRONT HOUSING, GREENWOOD COVE AREA

Sea level rise and shallow groundwater is expected to cause tidal inundation in the Greenwood Cove area

in Figures SR-7 through SR-9, very limited areas of Tiburon (about 50 acres) are likely to be vulnerable in the near- and medium-term. However, this includes highly valued shoreline shops and restaurants on Main Street as well as portions of Bay Road and the Boardwalk shopping center and low-lying natural areas in the Greenwood Beach area. Access to Tiburon from Highway 101 and Corte Madera could also flood in the medium-term, potentially cutting off residents from critical services and destinations.

In the long-term, much of Downtown Tiburon as well as the Cove and Boardwalk shopping center areas and portions of Paradise Cay and Bel Aire neighborhoods (some 135 acres in total, on 450 properties) may be vulnerable to inundation. Vulnerable downtown assets include Tiburon Boulevard and other streets; the Bay Trail; the Ferry Terminal; the Tiburon Fire Department, library, and post office; historic buildings along Main Street; hotels, shops, businesses, and housing. The long-term projection (Scenario 6)

could result in over \$400 million in assessed value damage and nearly \$600 million in the single-family market in Tiburon, as well as approximately 2.5 miles of flooded roadways exposed to saltwater and erosion (Marin County Department of Public Works, June 2017).

SEA LEVEL RISE AND OTHER FACTORS

While these projections are critical to our ability to prepare and adapt, these projections may not present a complete picture of rising water levels in specific locations. Sea level rise will be accompanied by rising groundwater levels, fluvial flooding, and shoreline erosion. The interaction of these factors – as well as the potential for liquefaction associated with seismic events—will create localized conditions that are as yet not fully understood.

Figure SR-6

BAYWAVE SEA LEVEL RISE PROJECTIONS AND STATE GUIDANCE

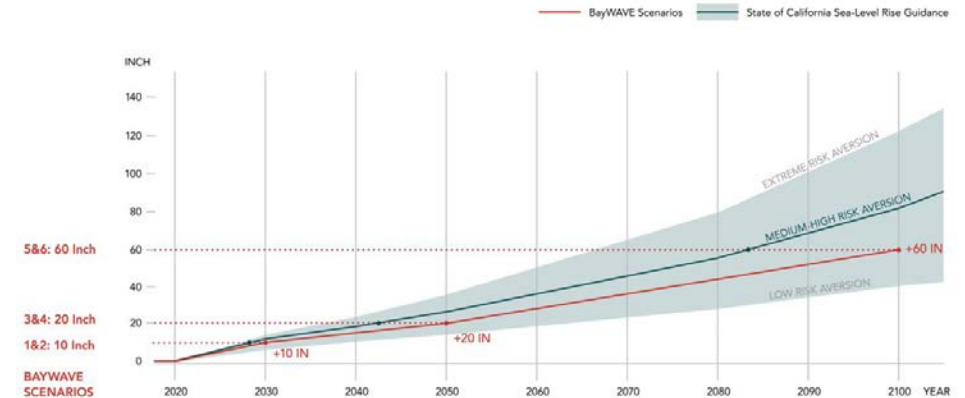


Table SR-1

BAYWAVE SEA LEVEL RISE & STORM SCENARIOS

Source: Marin County Department of Public Works, June 2017.

SCENARIO	SEA LEVEL RISE AND STORM	TERM PROJECTION
1	10 inches	Near-Term
2	10 inches + 100-year storm surge	
3	20 inches	Medium-Term
4	20 inches + 100-year storm surge	
5	60 inches	Long-Term
6	60 inches + 100-year storm surge	

Figure SR-7

BAYWAVE SCENARIOS 1 AND 2 IN TIBURON

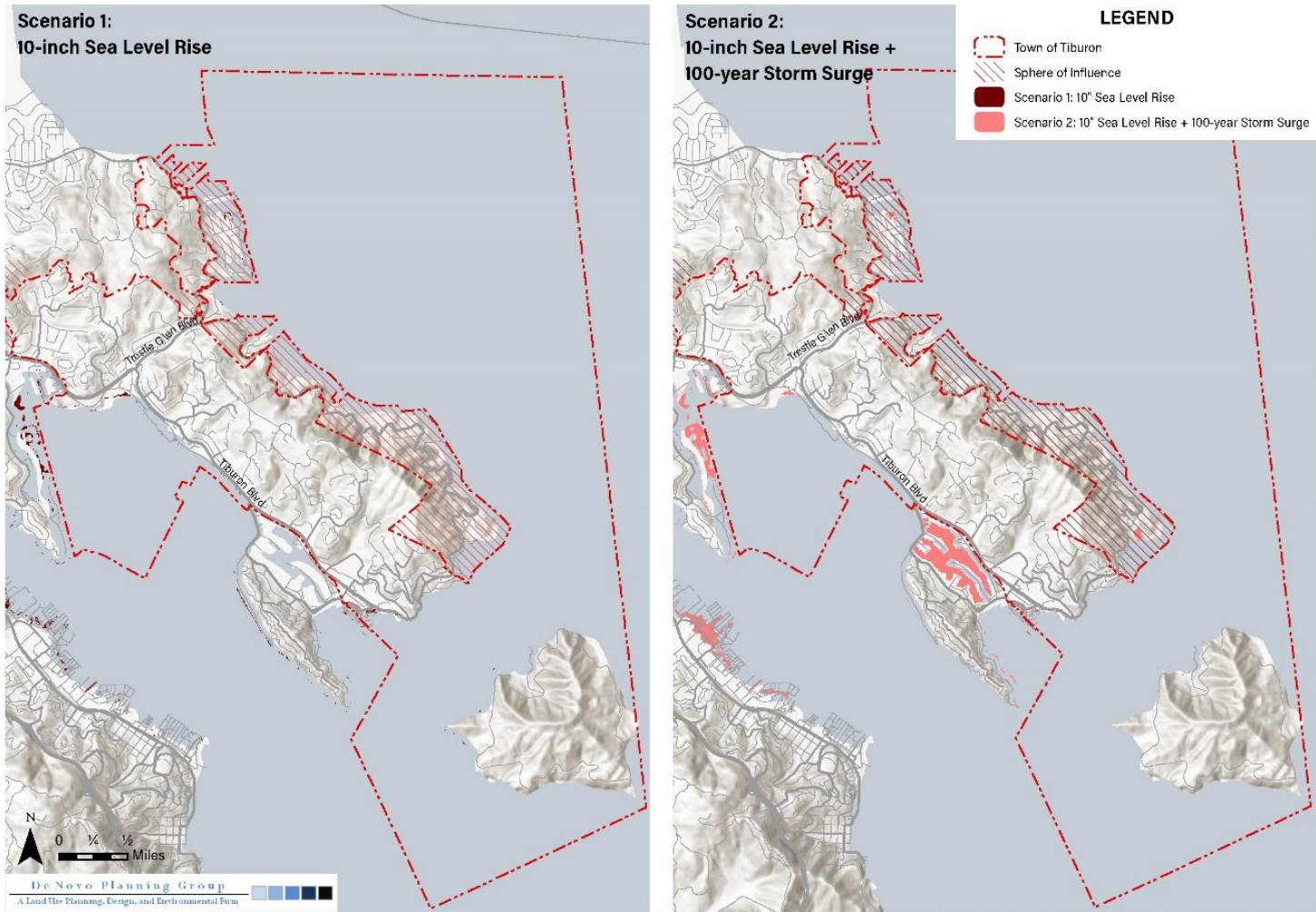


Figure SR-8

BAYWAVE SCENARIOS 3 AND 4 IN TIBURON

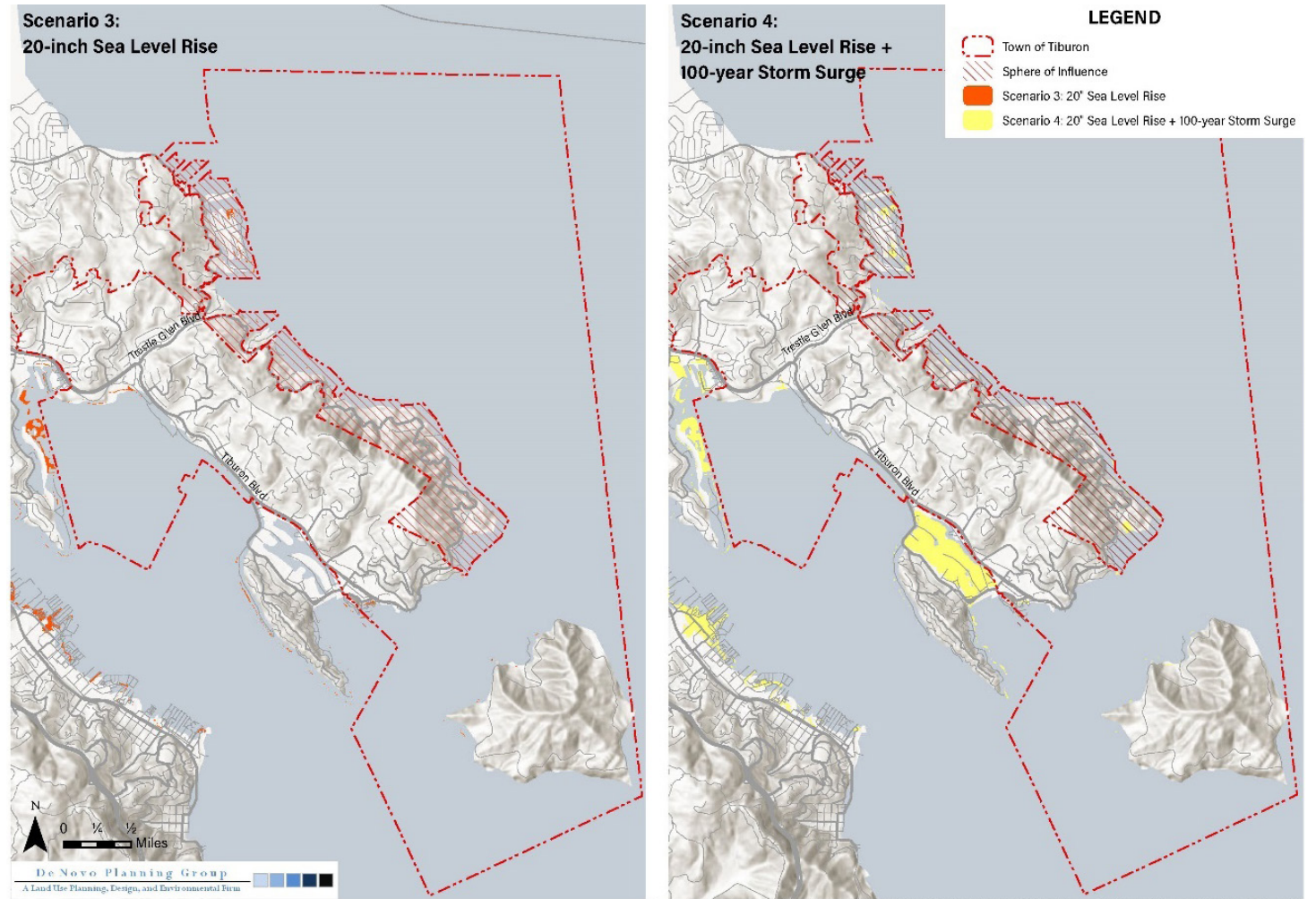
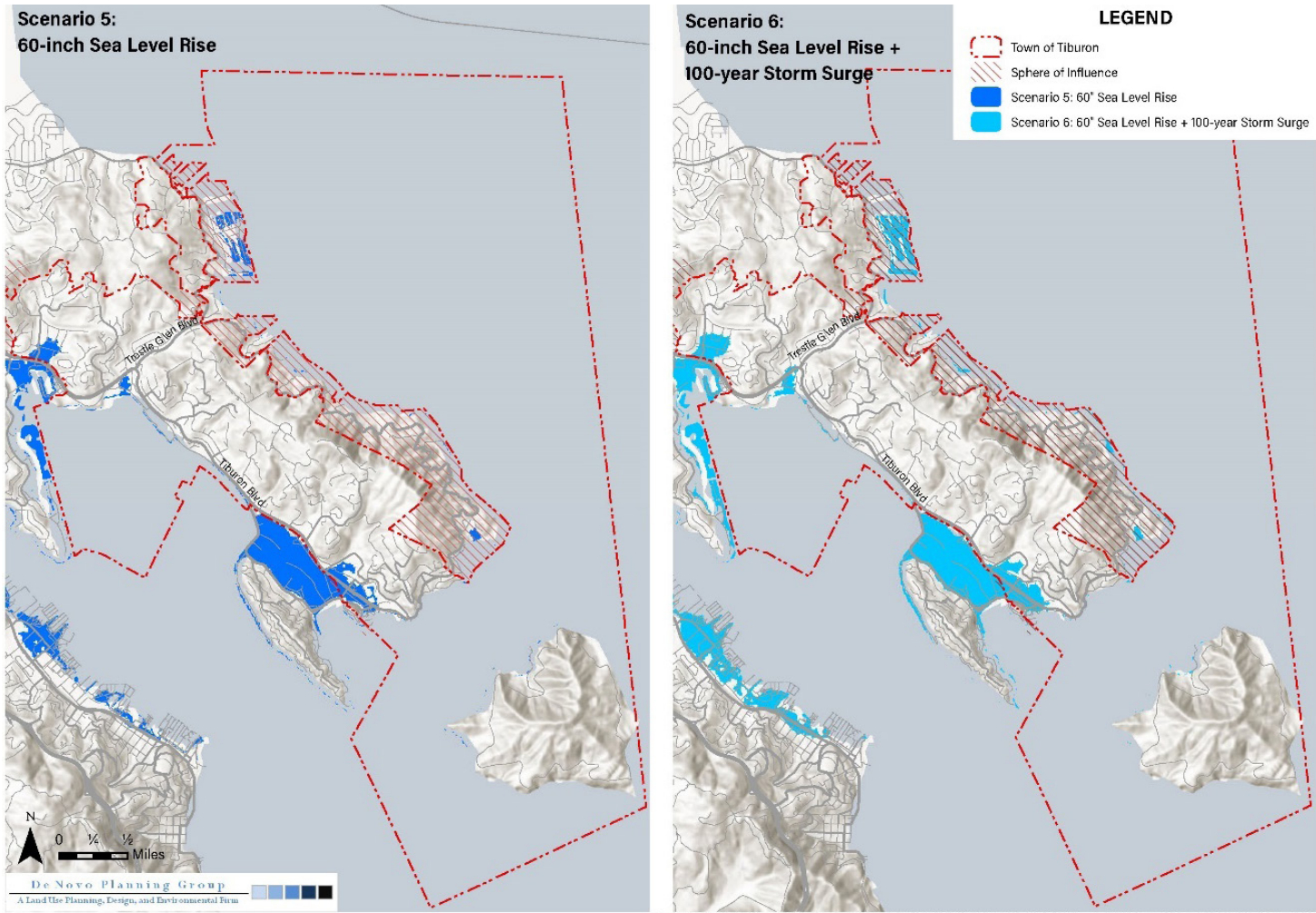


Figure SR-9

BAYWAVE SCENARIOS 5 AND 6 IN TIBURON



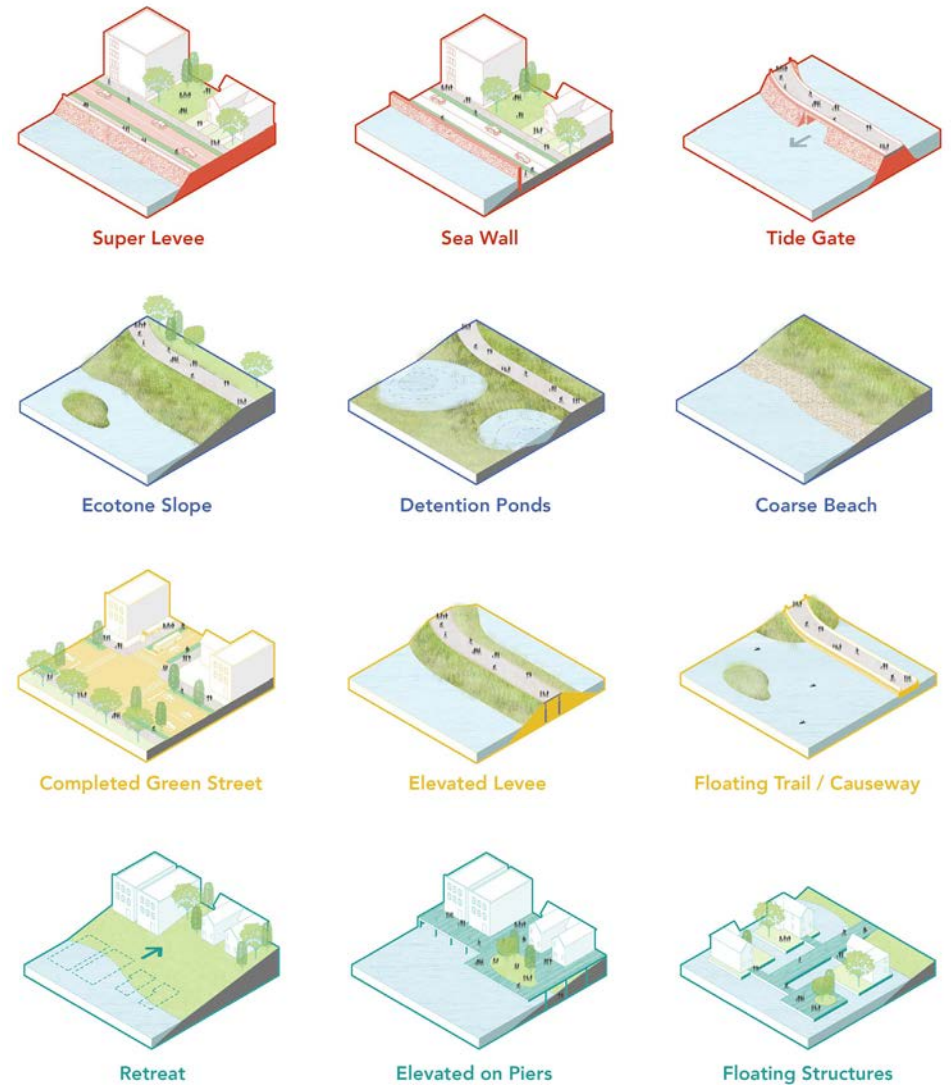
ADAPTATION PATHWAYS

Over its history, Tiburon's shoreline has changed to suit changing needs. Indeed, much of downtown is the result of the filling of what was previously a lagoon. Today, as a result of climate change, Tiburon must recognize that the shoreline may not be able to be maintained in place without new investments in both traditional and nature-based infrastructure. These investments should be considered in tandem with adjusted expectations for land use and buildings as the community continues to change and develop. The General Plan's policies and programs (see Section 11.8) provide a roadmap for the Town to pursue adaptation in the years ahead.

In addition to providing specific guidance for regulating new development, the General Plan calls for a more detailed adaptation strategy to be developed. Such a strategy should follow an approach

that reflects the community's vision for the future; considers the right match between potential adaptation tools and their environment; evaluates costs as well as additional benefits that could be gained; charts a sequence of adaptation over time; and considers a mix of public and private actions and partnerships.

Tiburon's adaptation strategy may include shoreline hardening tools like sea wall and coastal armoring; nature-based tools including the restoration of tidal marshes and creation of coarse-sand beach; green infrastructure as part of complete streets; and strategies to shift development out of harm's way over time.



ADAPTATION TOOLS

Adaptation tools could consist four key types including the shoreline hardening tools, nature-based tools, daptation tools for roads and infrastructure and tools to shift developmentout of harm's way over time.

11.6 FIRE HAZARDS

Wildland fire hazards exist in varying degrees throughout the Tiburon Peninsula and pose one of the greatest threats to public safety and property. The wildland fire hazard is caused by a combination of factors including weather, topography, highly flammable vegetation/fuel loading and human activity.

Marin County has experienced many wildland fires throughout its history. The most recent Marin County fire that resulted in significant structure loss was the Vision Fire in 1995 which destroyed 48 structures in the community of Inverness. In 1929, the Great Mill Valley Fire burned an area that is now developed with more than 1,100 homes. Other large fires in the area include the Kent Woodlands Wildfire in 1972 and the Sausalito wildfire in 1919.

In the time before Marin County was settled, fire was a natural part of the ecosystem. Since then, fire suppression policies and practices have contributed to the continuous growth of vegetation,

resulting in dangerous fuel loads. Combined with this fuel accumulation, people have been building homes in the wildlands, creating wildland urban interface (WUI) issues that increase the fire hazard.

In the WUI where natural fuels and structure fuels are intermixed, fire behavior is complex and difficult to predict. Research based on modeling, observations, and case studies in the WUI indicates that structure ignitability during wildland fires depends largely on the characteristics and building materials of the home and its immediate surroundings.

The dispersion of burning embers from wildfires is the most likely cause of home ignitions. When embers land near or on a structure, they can ignite nearby vegetation or accumulated debris on the roof or in the gutter. Embers can also enter the structure through openings such as an open window or vent and could ignite the interior of the structure or debris in the attic. Wildfire

can further ignite structures through direct flame contact and/or radiant heat. For this reason, it is important that structures and property in the WUI are less prone to ignition by ember dispersion, direct flame contact, and radiant heat.

Tiburon's approach to mitigating structure ignitability is based on findings from the National Institute of Standards and Technology that defensive actions by homeowners can significantly affect fire behavior and structure loss, and that effective fire prevention practices are essential in increasing structure survivability.

The California Building Code addresses the wildland fire threat to structures by requiring that structures located in state or locally designated WUI areas be built of fire-resistant materials. However, the requirements promulgated by the State only apply to new construction, and do not address existing structures and additions and remodels to existing structures.

Both the Tiburon Fire Protection District and the Southern Marin Fire District have adopted amendments to the Building Code to address home ignitability for both new and existing construction. The Fire Districts apply more stringent building standards for new construction and require projects involving a substantial remodel or large addition to install an automatic sprinkler system. The Fire Districts also require new construction and substantial remodels to prepare a vegetation management plan. All existing buildings and lands in the WUI must maintain defensible space. Areas in the WUI are shown in Figure SR-10.

The Fire Districts have also adopted Building Code amendments to require fire apparatus access roads and fire hydrants and fire hydrant upgrades under certain conditions.

The Marin County Community Wildfire Protection Plan (CWPP), updated in 2020, is an advisory document prepared by Fire Safe Marin in

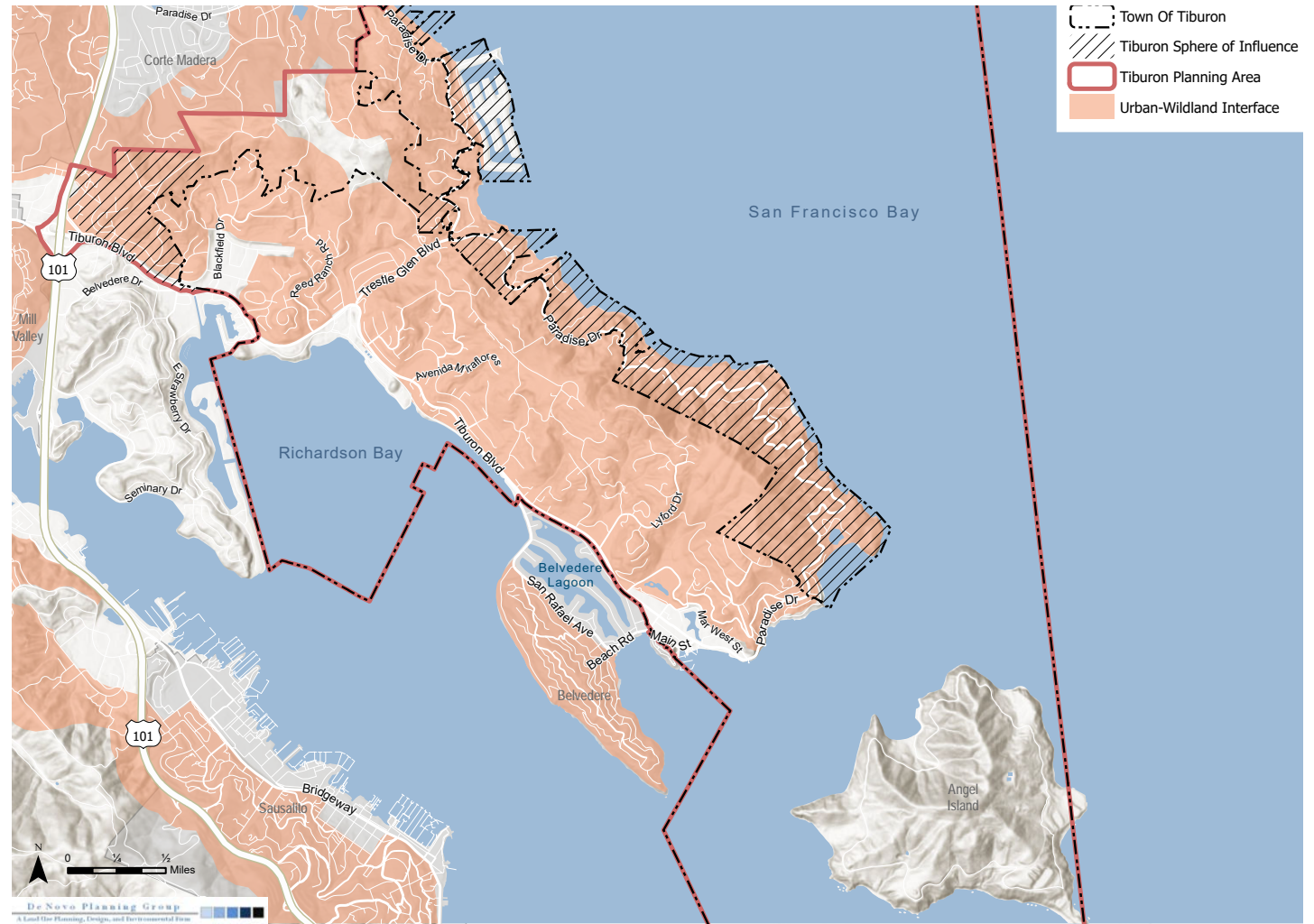
Figure SR-10

WILDLAND URBAN INTERFACE AREAS

collaboration with stakeholder agencies, including the Tiburon Fire Protection District and the Southern Marin Fire Protection District. The CWPP is a countywide strategic plan with action items to reduce fire hazard in the County, especially in areas of concern, which mostly fall within Marin's WUI boundary. The CWPP assists in protecting human life and reducing property loss from wildfire throughout Marin County. The CWPP describes wildfire risk, hazard, and recommendations for improving wildfire preparedness at the County level.

FIRE HAZARD SEVERITY ZONES

The California Department of Forestry and Fire Protection (CalFire) identifies fire hazard severity zones based on the severity of the fire hazard expected to prevail there. These areas are based on factors such as fuel type (vegetation that is fire prone), slope, aspect, and



Source: Tiburon Fire Protection District

Sources: ArcGIS Online World Hillshade Map Service; Marin County GIS; MarinMap. Map date: December 20, 202

Figure SR-11

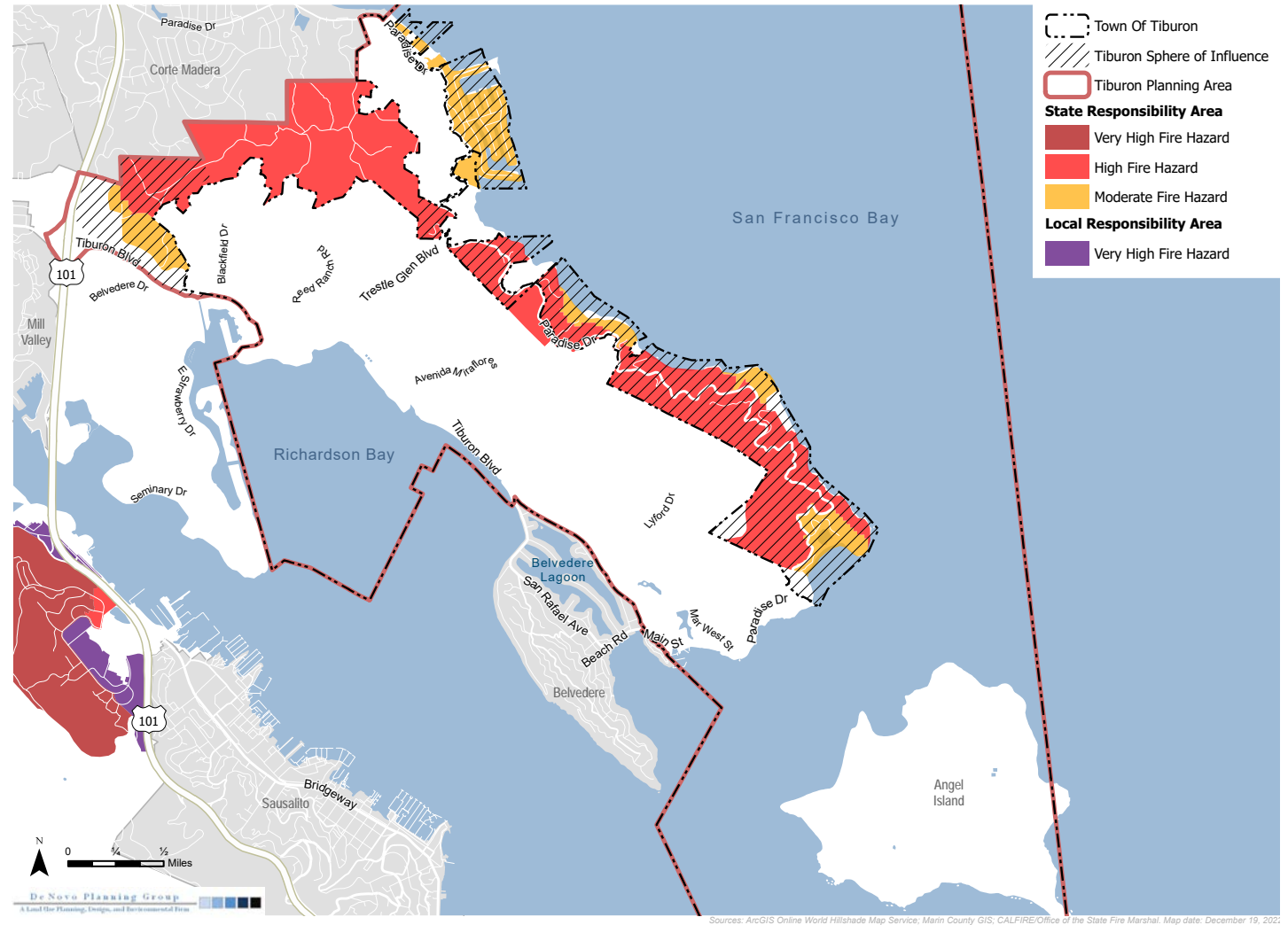
FIRE HAZARD SEVERITY ZONES

fire weather. There are three zones, based on increasing fire hazard: moderate, high, and very high.

Areas under State jurisdiction are referred to as State Responsibility Areas (SRAs). Within the vicinity of the Town, these SRAs are primarily found to the north and east of the Town limits within the unincorporated area. As shown in Figure SR-11, areas adjacent to the Town along Paradise Drive and in the Ring Mountain Preserve are categorized as a very high fire hazard severity zone.

Areas under the jurisdiction of local entities are referred to as Local Responsibility Areas. CalFire identifies very high fire zones within Local Responsibility Areas. There are no areas within the Town that are categorized as a very high fire hazard severity zone.

CalFire also produces a Fire Threat Model which is used to identify areas in California where large, catastrophic fires are most likely to happen. The ranking system is based on four wildfire factors: fuel model, slope, ladder index,



Source: CalFire

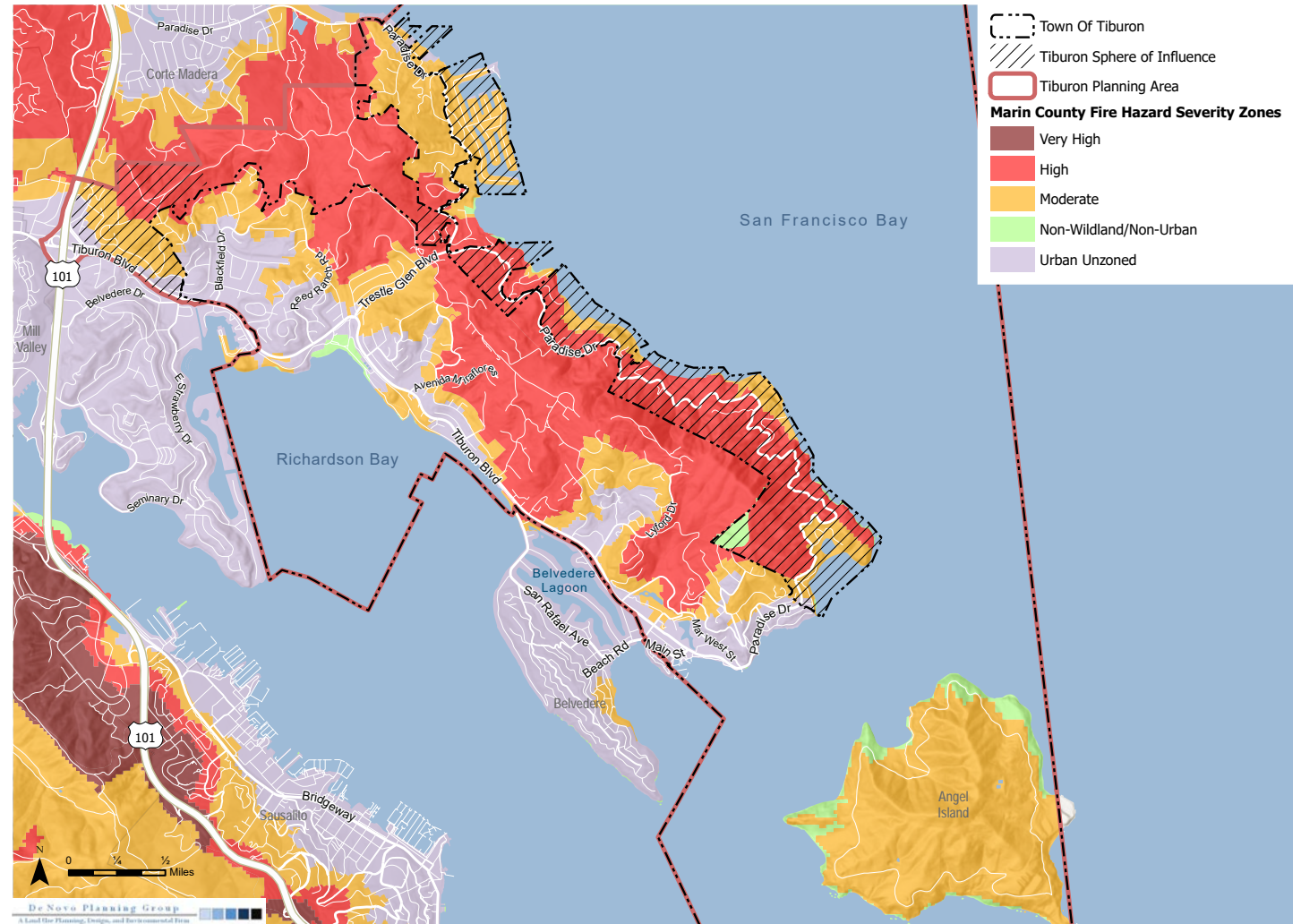
Figure SR-12

FIRE THREAT

and crown index. The model combines expected fire frequency with potential fire behavior to create five threat classes ranging from low to extreme. As shown in Figure SR-12, areas in Tiburon categorized as moderate and high fire threat are primarily located in the hillsides where there is both open space and single-family homes.

FIRE PROTECTION SERVICES

Fire protection and emergency medical services in Tiburon are provided by the Tiburon Fire Protection District (TFPD) and the Southern Marin Fire Protection District (SMFPD). As shown on Figure SR-13, the TFPD serves approximately 75 percent of the Tiburon planning area while the SMFPD provides fire-related services to approximately 25 percent of residents located in the northwest corner of the planning area.



Source: CalFire

Tiburon Fire Protection District

The TFPD provides structural fire and emergency medical response services to the Town of Tiburon, the City of Belvedere, and unincorporated residential and wildland areas on the peninsula, as well as parts of the San Francisco Bay to Angel Island State Park. Within the boundaries of TFPD are large single-family homes, multi-family residential complexes, numerous small businesses, public facilities, open space, and trails.

The TFPD provides a full range of services to the Tiburon peninsula, including:

- Community Risk Reduction Bureau – Code enforcement, plan reviews, annual business inspections, and summer defensible space program for homeowners;
- Public Education – Fire and burn prevention programs in schools, CPR, First Aid, and Community Disaster Preparedness classes;

- Emergency Medical Services;
- Fire Protection;
- Hazardous Materials Response;
- Fire Investigation; and
- Participation in Marin County and California Mutual Aid System.

The TFPD owns, operates, and maintains two fire stations with one concurrently used as its administrative building within the Tiburon planning area (Fire Station 10 and 11). TFPD fire station locations within Tiburon are shown in Figure SR-13. Each fire station has personnel covering three shifts over a 24-hour period.

The TFPD is a member of the Southern Marin Emergency Medical Paramedic System Joint Powers Authority, which provides emergency medical care and paramedic services to southern Marin County through a joint effort with five other member agencies. Additionally, the TFPD is a member of the Marin Emergency Radio Authority, a countywide public safety and

emergency radio system that allows emergency response agencies to communicate effectively with each other.

The TFPD's current response time goal is to maintain an overall response time of 8 minutes or less, 90 percent of the time. In Fiscal Year 2019-2020, the TFPD responded to 1,787 calls; two-thirds of the calls were for rescue and emergency medical services. TFPD's average response time excluding mutual aid was below 8 minutes for all incident types; however, the average response time when mutual aid was included exceeded 8 minutes for fire, hazardous materials, and severe weather/natural disaster incidents.

Southern Marin Fire Protection District

The SMFPD is an independent fire district that provides fire protection and emergency medical services to the City of Sausalito, Tamalpais Valley, Homestead Valley, Almonte, Alto Bowl,

Strawberry, the western area of the Town of Tiburon (Bel Aire/Blackfield/Reed Heights), and the National Park areas of Fort Baker and the Marin Headlands.

The SMFPD operates out of three stations with a minimum staffing of 15 personnel on duty at all times, as well as an administrative office where administrative and prevention staff are organized. The Tiburon area is served by Southern Marin Fire Station 9 as shown in Figure SR-13.

The SMFPD's response time standards are as follows:

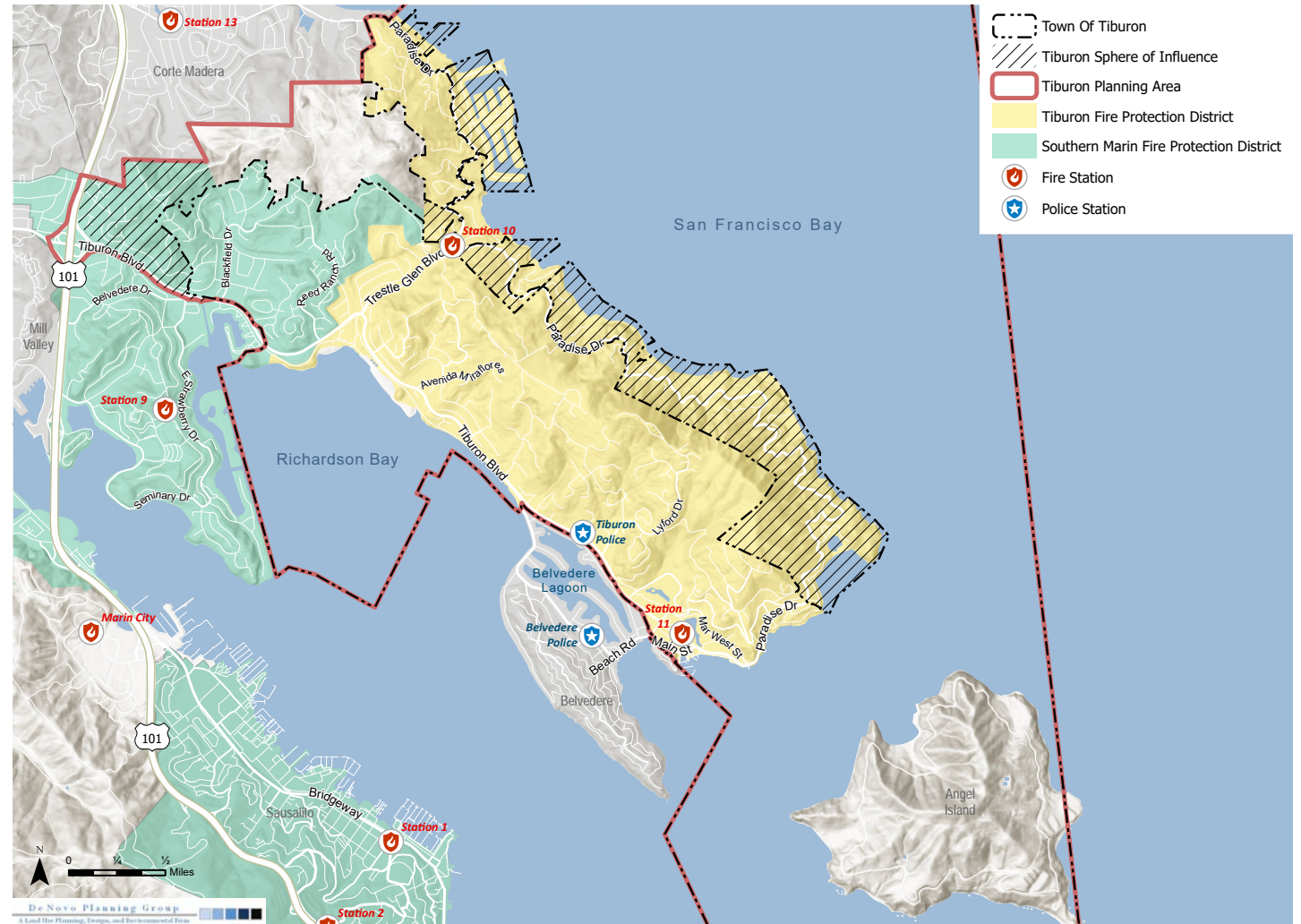
- Distribution of Fire Stations – First-due unit arrives within 9 minutes and 30 seconds of receipt of call 90 percent of the time.
- Effective Response Force – Minimum response of one ladder truck, four engines, one medic unit, and one Battalion Chief arrive within 11 minutes and 30 seconds from receipt of 9-1-1 call 90 percent of the time.

Figure SR-13

FIRE PROTECTION DISTRICTS AND FIRE AND POLICE STATIONS

- Hazardous Materials Response – First unit's travel time is 6 minutes or less 90 percent of the time.
- Technical Rescue – First unit arrives in 8 minutes or less 90 percent of the time and initiates rescue within a total response time of 11 minutes and 30 seconds, 90 percent of the time.

In 2017, 2018, and 2019, the SMFPD met these standards 100 percent of the time.



11.7 PUBLIC SAFETY

The Tiburon Police Department (TPD) is responsible for providing law enforcement services in the Town, including patrol, administration, support personnel, investigations, training, parking enforcement, and crime prevention program. The TPD’s location is shown on Figure SR-13. The TPD promotes community-oriented policing and understands that it is the community itself that can best say what it needs from its police department and that the police and the community must work together to accomplish jointly set goals.

Similar to other cities and towns, the TPD relies on the Marin Sheriff’s Office for search and rescue services and long-term holding facilities and County Animal Control for animal service. Additionally, the TPD is a member and partner of the Marin County Major Crimes Task Force whose objective is to investigate and prevent the illegal activity of highly mobile mid to upper-level drug dealers and suppliers and to disrupt and dismantle their criminal narcotic enterprises operating in Marin

County. The TPD also contracts with the Sheriff’s Office for dispatch services.

As shown in Table SR-2, the majority of crimes committed in Tiburon consist of non-violent property crimes, primarily theft of personal property without the use of force. The table shows crime statistics through 2020. The TPD also utilizes an online crime mapping tool that provides the community with up-to-date and accurate crime information.

Table SR-2

CRIME STATISTICS

Source: Tiburon Police Department Criminal/Incident Statistics

CATEGORY/CRIME	2018	2019	2020
Homicide	0	0	0
Rape	0	0	0
Robbery	2	0	1
Assault/Battery	10	3	10
Domestic Violence	7	6	7
Assaulting Police	1	0	0
SUBTOTAL VIOLENT CRIMES	20	9	18
Burglary	15	12	12
Motor Vehicle Theft	0	3	2
Larceny	63	66	60
Arson	0	0	0
SUBTOTAL PROPERTY CRIMES	78	81	84
TOTAL	98	90	92

11.8 GOALS, POLICIES, AND PROGRAMS

GOAL SR-A

Encourage disaster preparedness planning for effective emergency response and to protect public safety.

GOAL SR-B

Maintain a safe and healthy community.

GOAL SR-C

Identify hazardous areas & discourage to the maximum extent feasible development of areas subject to hazards including, but not limited to, geotechnical hazards, unstable slopes, and flood-prone areas.

GOAL SR-D

Ensure safe subdivision and building design.

GOAL SR-E

Reduce the impact of hazardous materials exposure and strive to reduce threats to health, safety, and the environment from hazardous materials.

HAZARD MITIGATION AND EMERGENCY PREPAREDNESS

POLICY SR-1 EMERGENCY PREPAREDNESS.

Ensure that the Town is prepared to effectively respond to any emergency or disaster, including hazardous material releases, in cooperation with other public agencies and appropriate organizations.

Program SR-a Local Hazard Mitigation Plan.

Implement the adopted Local Hazard Mitigation Plan to comply with the federal Disaster Mitigation Act of 2000 and maintain eligibility for hazard mitigation funding from FEMA.

Program SR-b Emergency Operations Plan.

Continue to review, update, & provide continued training to ensure that the Emergency Operations Plan remains effective in preparing for disasters.

Program SR-c Cooperation in Training and Educational Programs.

Support and participate in educational and training programs provided by the Fire Districts and other governmental or community-based agencies. Engage Neighborhood Watch Groups or similar neighborhood organizations to disseminate information and train to supplement Town resources during emergencies and disaster recovery.

Program SR-d Identify Evacuation Routes.

Work with the Tiburon Fire Protection District, the Southern Marin Fire Protection District, the Marin Wildfire

Prevention Authority, and the Tiburon Police Department to identify and map residential developments in hazard areas that do not have at least two emergency evacuation routes and identify mitigation measures as feasible.

Program SR-e Evaluate Evacuation Routes.

Work with the Tiburon Fire Protection District, the Southern Marin Fire Protection District, the Marin Wildfire Prevention Authority, and the Tiburon Police Department to evaluate evacuation routes for their capacity, safety, and viability under a range of emergency scenarios.

Program SR-f Improve Evacuation Routes.

Improve local evacuation capacity by identifying evacuation routes through signage and promotion of public safety route identification applications. Assess the feasibility of adding additional evacuation routes.

POLICY SR-2 POST-DISASTER SERVICES

Make provisions to continue essential public services during and after natural disasters and other catastrophes.

Program SR-g Essential Facilities.

Ensure essential public facilities are accessible and operational during flooding, seismic events, fires, extreme heat events, and other emergencies. Essential public facilities include, but are not limited to, hospitals and health care facilities, emergency shelters, emergency command centers, and emergency communications facilities.

Program SR-h Post-Earthquake Assessments.

Conduct an immediate post-earthquake assessment of critical facilities and buildings in the Planning Area to determine the extent of damages, if any, to essential Town infrastructure.

This should be performed by trained professional(s) utilizing the current state-of-knowledge regarding post-earthquake assessment.

POLICY SR-3 PUBLIC OUTREACH.

Encourage educational outreach and neighborhood organization to promote awareness and readiness among residents regarding disaster preparedness. Community involvement will be an essential part of the Town's resilience and recovery.

Program SR-i Public Safety Notifications.

Promote public safety emergency notification systems to warn residents of active threats such as flood or wildfire.

POLICY SR-4 NEW PUBLIC FACILITIES.

Locate new essential public facilities outside of high hazard areas, including

high fire risk areas, Special Flood Hazard Areas, and areas at high risk for geologic or soil instability, to the extent feasible. Where it is not feasible to locate essential public facilities outside of high hazard areas, require site design, construction, and other methods to minimize damage.

SEISMIC AND GEOLOGIC HAZARDS

POLICY SR-5 SEISMIC AND GEOLOGIC HAZARDS.

Reduce the risk of loss of life, personal injury, and property damage resulting from seismic and geologic hazards including ground shaking, land sliding, liquefaction, and slope failure.

POLICY SR-6 DEVELOPMENT IN AREAS WITH GEOLOGIC HAZARDS.

Assure that development allowed within areas of potential geologic hazard is neither endangered by, nor contributes to, the hazardous conditions on the site or on surrounding properties.

POLICY SR-7 HAZARD REDUCTION.

Actively encourage owners of developed property to repair or improve unstable slopes, install drainage facilities, and take other measures that may reduce potential safety hazards.

POLICY SR-8 DEVELOPMENT ON SLOPES.

Discourage development on slopes exceeding 40% wherever possible.

POLICY SR-9 DEVELOPMENT IN GULLIES.

Strongly discourage development located below or in the path of gullies which are highly susceptible to debris flow mudslides.

Program SR-j Building Code Compliance.

Require that new development and infrastructure projects conform to seismic requirements of the California Building Code and, when applicable, mitigation required by the California Environmental Quality Act.

Program SR-k Geotechnical Analysis

Require preparation of a report by an engineering geologist or geotechnical engineer for new development proposals including new subdivisions, additions, remodels, and infrastructure projects, as applicable, to determine the extent of geotechnical hazards, specify adequate repair/improvement techniques, describe optimum design for structures and improvements, and set forth any special requirements for the sites.

Program SR-l Landslide Mitigation Policy.

Require that new development in areas subject to land sliding comply with the Town's Landslide Mitigation Policy. Require physical improvements to landslides and to potential landslide areas in instances where avoidance is not feasible or appropriate, as determined through the development review process.

Program SR-m Water Infrastructure Safety.

Coordinate with the Marin Municipal Water District to replace the piping and fittings in those water tanks in the Planning Area that are not currently fitted with flexible, earthquake-resistant joints. In addition, the water tanks should be evaluated to ascertain their ability to withstand strong seismic ground shaking.

Program SR-n Seismic Improvement Program.

Create and implement a Seismic Improvement Program for public buildings and infrastructure. The Program shall include conducting a seismic risk assessment of existing Town infrastructure, which would help to create a list which would prioritize the buildings and equipment that should be retrofitted. Following risk assessment, the Town should adopt a Program that would upgrade vulnerable facilities based on the priority list.

Program SR-o Building Owner Education.

Increase education regarding upgrading of privately-owned buildings using structural and non-structural mitigation measures.

FLOODING AND SEA LEVEL RISE HAZARDS

POLICY SR-10 FLOOD RISK REDUCTION.

Reduce the risk of loss of life, personal injury, and property damage resulting from flooding by properly maintaining storm drainage systems, natural flood control channels, and waterways and regulating runoff from new construction and development projects. Encourage flood control measures that retain the natural features and conditions of watercourses to the maximum extent feasible.

POLICY SR-11 SEA LEVEL RISE PROJECTIONS.

Integrate flooding and sea level rise projections into policies and regulations to inform the public of the future hazard areas, assess and

address potential impacts to future development, inform future planning and building requirements, plan for opportunity areas for adaptation, and inform funding and financing decisions about short- and long-term adaptation projects.

Program SR-p Flooding and Sea Level Rise Protection Map.

Prepare and update a Flooding and Sea Level Rise Projection Map as a reference for town policies and regulations and as a publicly accessible tool for tracking flooding and sea level rise hazards. Update the Flooding and Sea Level Rise Map at least every five years, based on the most recent Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Maps and local projections from the County of Marin.

Program SR-q Coordinate with County of Marin.

Ensure information and data related to increased flooding and sea level

rise is current and consistent with the information and data utilized by the County of Marin.

Program SR-r Sea Level Rise Adaptation Plan.

Prepare and adopt an adaptation plan addressing increased flooding and sea level rise. The adaptation plan shall include the following components:

- a. Flooding and Sea Level Rise Projection Map, to be used as the basis for adaptation planning.
- b. Coordination with local, county, state, regional and federal agencies with bay and shoreline oversight, major property owners, and owners of critical infrastructure and facilities in the preparation of the adaptation plan.
- c. An outreach plan to major stakeholders and all property owners within the vulnerable areas.
- d. An inventory of potential areas and sites suitable for mid- to large-scale adaptation projects

e. A menu of adaptation measures and approaches that could include but not be limited to:

- Managed retreat, especially on low-lying, undeveloped, and underdeveloped sites, in areas that are permanent open space, and in areas that are environmentally constrained. Transfer of development rights from such areas should be encouraged.
- Innovative green shoreline protection and nature-based adaptation measures such as wetlands and habitat restoration, and horizontal levees where most practical and feasible.
- Hard line armoring measures (sea walls, levees, breakwater, locks, etc.) to minimize the potential for displacement of permanent residents and businesses.
- Elevating areas, structures, and infrastructure to reduce risks.

f. The appropriate timing and “phasing” of adaptation planning and implementation.

- g. Potential financing tools and opportunities.
- h. Coordination with or incorporation into the Local Hazard Mitigation Plan.

POLICY SR-12 COMMUNITY AWARENESS.

Increase community awareness related to flooding and sea level rise hazards.

SHORELINE CONDITIONS

Blackie's Pasture (above) and Greenwood Cove (below)



Program SR-s Residential Building Resale Inspections.

Include disclosure of potential property risk due to increased tidal flooding and sea level rise in preparing residential building resale inspections. Utilize the Sea Level Rise Prediction Map for confirming property vulnerability. Work with realtors and property owners to implement this disclosure.

Program SR-t National Flood Insurance Program (NFIP).

Continue to comply with the federal National Flood Insurance Program by maintaining a flood management program and flood plain management regulations. In addition, develop and periodically update a Community Rating System (CRS) to notify residents of the hazards of living in a flood-prone area, thereby reducing local flood insurance rates.

POLICY SR-13 PUBLIC FACILITIES.

Ensure that the Town's streets, public spaces, public buildings, and infrastructure are resilient to flooding and sea level rise.

Program SR-u Capital Improvement Planning.

Ensure flooding and sea level rise considerations are included in the Town's capital improvement planning.

Program SR-v Asset Management Plan.

Maintain an asset management plan that includes life cycle costs and considers sea level rise impacts.

Program SR-w Coordination with Caltrans and Other Roadway Partners.

Coordinate with Caltrans and other partners to ensure roadway improvements in vulnerable areas are

consistent with the Town's goals, and that infrastructure projects address and plan for increased flooding and sea level rise. This includes Tiburon Boulevard, Paradise Drive, and Main Street.

Program SR-x Coordinate with Utilities and Services.

Coordinate with the utilities and services that have infrastructure and facilities in vulnerable areas to ensure that sea level rise information and goals are consistent with the Town's goals, and that infrastructure/utility projects address and plan for increased flooding and sea level rise.

POLICY SR-14 FLOOD-RESISTANT NEW DEVELOPMENT.

Ensure new development is resilient to flooding and sea level rise.

Program SR-y Special Flood Hazard Areas.

Require new development and/or construction, where feasible, to be outside Special Flood Hazard Areas, which are defined by FEMA as areas that would be inundated by a flood having a 1% chance of occurring in any given year. Construction proposed within Special Flood Hazard Areas shall comply with the Town's Flood Damage Prevention Ordinance (Municipal Code Chapter 13D).

Program SR-z Protection from Wave Action.

Require structures constructed adjacent to areas subject to the 100-year tidal flood to be protected from destructive wave action.

Program SR-aa Development Projects.

Require new development, including substantial alterations, to consider and address increased flooding and

sea level rise impacts and to integrate resilience and adaptation measures into project design as warranted.

Program SR-bb Code Amendments for Minimum Floor Elevation.

Study amendment of the Town's Flood Damage Prevention Ordinance to establish a minimum finished floor elevation requirement of +3 feet above the FEMA 100-year flood elevation to protect new development against future sea level rise.

POLICY SR-15 MITIGATION OF STORM DRAINAGE IMPACTS

Ensure new development mitigates storm drainage impacts and potential increases in runoff through a combination of measures, including improvement of local storm drainage facilities.

Program SR-cc Design of New Drainage Facilities.

Design drainage facilities within new subdivisions to accommodate a 100-year storm.

Program SR-dd Stormwater Detention.

Utilize on-site detention of stormwater runoff to ensure that post-development peak flow rates from a site resulting from both the two-year and 100-year design rainstorms are not increased by new subdivisions or other permitted development projects.

Program SR-ee Expansion of Stormwater Drainage System.

To the extent that new subdivisions are responsible for exceeding the capacity of any existing stormwater drainage system, the applicant shall be responsible for the cost of improvements to the system such that the capacity is not exceeded upon project completion.

Program SR-ff Use of Stormwater Runoff Impact Fees.

Utilize Stormwater Runoff Impact Fees to upgrade, enhance, and/or rehabilitate the Town's public storm drain system to offset the increased demand on the capacity, operation, and sustainability of the Town storm drain system.

Program SR-gg Analysis of Impacts on Drainageways.

Require project applicants for new development to prepare a hydraulic and geomorphic assessment of on-site and downstream drainageways that are affected by project area runoff. Characteristics pertinent to channel stability would include bank erosion, excessive bed scour or sediment deposition, bed slope adjustments, lateral channel migration or bifurcation, and the condition of riparian vegetation. In the event existing channel instabilities are noted, the applicant may either propose their own channel stabilization program or defer

to the mitigations generated during the Town's environmental review. Any proposed stabilization measures shall anticipate any project-related changes to the drainageway flow regime.

Program SR-hh Green Infrastructure Improvements.

Evaluate potential measures to more sustainably manage stormwater and erosion and improve water quality associated with urban runoff. This includes improvements such as rain gardens and permeable pavement, which attenuate flooding downstream and provide ecological benefits.

POLICY SR-16 FUNDING PARTNERSHIPS.

Foster partnerships for funding and project implementation to address flooding and sea level rise hazards.

Program SR-ii Partners in Planning and Adaptation.

Work with the County of Marin, the City

of Belvedere, other adjacent agencies, property owners, and neighborhood groups/organizations to plan for and implement adaptation projects.

Program SR-jj County Flood Control Districts.

Work collaboratively with the County of Marin Flood Control and Water Conservation Districts to upgrade existing and/or plan for new facilities that would improve flood protection. Consider expanding the County flood control districts to include areas impacted by sea level rise.

Program SR-kk Countywide Agency/Joint Powers Authority.

Work with the County of Marin to facilitate the formation of a centralized countywide agency or joint powers authority to oversee adaptation planning, financing, and implementation.

FIRE HAZARDS

POLICY SR-17 FIRE RISK REDUCTION.

Reduce the risk of loss of life, personal injury, and property damage resulting from wildfire and urban fire hazards through code enforcement and coordination the local Fire Districts and other agencies to ensure the safe delivery of emergency services and the effective evacuation of the community in the event of a disaster.

POLICY SR-18 IMPACTS OF NEW DEVELOPMENT.

Require new development to provide sufficient water supply and equipment for fire suppression to ensure that the requirements for minimum fire flow and the size, type, and location of water mains and hydrants set forth in the California Fire Code and by local ordinance are met.

POLICY SR-19 MITIGATION OF INADEQUATE WATER SUPPLY.

Require new development within areas of insufficient peak load water supply to contribute to improvements to the water delivery system to meet requirements for minimum fire-flow.

POLICY SR-20 COOPERATION WITH FIRE DISTRICTS.

Work with the Fire Districts and other agencies to provide, enhance, and maintain adequate access, including secondary access, to all areas within the Planning Area.

Program SR-II Defensible Space Around Structures.

Consider adoption of an ordinance requiring the maintenance of defensible space on properties where fire hazard is significant. On-going maintenance

of defensible space buffers and fire protection infrastructure (e.g., safe access for emergency response vehicles, visible street signs, fuel breaks, and emergency water sources and supplies, etc.) in new development projects shall be assured in a form satisfactory to the Town and the Fire Districts prior to construction of improvements.

Program SR-mm Review New Developments for Fire Risk.

Review all development proposals for fire risk and require mitigation measures, including on-going maintenance of defensible space and infrastructure related to fire protection and fire hardening of structures and areas proximate to structures, for development located in state responsibility areas, high fire hazard severity zones, or other areas with significant wildfire potential, to reduce the probability of fire-related hazards to a less than significant level. Require all new development to meet

the adopted state and local fire codes. Refer all applications to the appropriate Fire Districts for review.

Program SR-nn Open Space Management Plan.

Implement the adopted Open Space Management Program to reduce fuel loads and maintain fire roads and evacuation routes.

POLICING

POLICY SR-21 POLICE SERVICES.

Maintain an adequate and cost-effective Police Department to serve and protect the community.

POLICY SR-22 COMMUNITY POLICING AND CRIME PREVENTION.

Continue to implement community policing and crime prevention programs to strengthen relationships between the Police Department and provide outreach to all neighborhoods within the community.

STRUCTURAL HAZARDS

POLICY SR-23 STRUCTURAL RISK REDUCTION.

Reduce the risk of loss of life, personal injury, and property damage resulting from structural, electrical, or fire damage to structures through code enforcement and public education.

Program SR-oo Implement the Building Code.

Review and inspect new development, building additions, and remodels, while enforcing the California Building Standards Code and local amendments.

Program SR-pp Update Building and Fire Codes.

Continue to update the Town’s building and fire codes and provide information to the public on new code provisions.

HAZARDOUS MATERIALS

POLICY SR-24 HAZARDOUS MATERIALS RISK REDUCTION.

Actively address the need to reduce exposure to hazardous materials.

POLICY SR-25 REDUCE USE OF HAZARDOUS MATERIALS.

Encourage residents and businesses to reduce or eliminate the use of hazardous materials, including encouraging residents to purchase toxic substances in only the amount needed to do the job, or use non-toxic alternatives that do not pose a threat.

POLICY SR-26 DISPOSAL OF HAZARDOUS MATERIALS.

Reduce the presence of hazardous materials in the community and support the operation of recycling centers that take hazardous substances, such as oil, paint, pesticides, cleaners, chlorine products, etc.

Program SR-qq Evaluation of Hazardous Material Impacts.

Evaluate the potential impacts related to hazardous materials during the environmental review process for new developments or businesses that involve use, transport, production, storage, and/or disposal of hazardous materials or that are proposed on a site affected by a hazardous materials release. Coordinate hazardous materials management with other public agencies regarding the use, storage, transport, or disposal of hazardous materials. The potential significant

impacts associated with exposure to hazardous emissions or hazardous materials shall be fully mitigated.

Program SR-rr Coordination with other Agencies.

Coordinate with other local agencies to implement proper management measures as identified by the County's Hazardous Materials Area Plan.



DOWNTOWN TIBURON SHORELINE



