Local Hazard Mitigation Plan

2020 Five Year Update

DRAFT

Local Hazard Mitigation Plan
2020 Five Year Update

Prepared by

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1 Chapter One - Introduction

Natural hazards and extreme weather events are an ongoing part of the cycle of weather and seasons. However, when natural hazards such as earthquakes, tsunamis or coastal storms are at their height, they pose severe risk to people and property. They can cause death or leave people injured or displaced, cause significant damage to our communities, businesses, public infrastructure and environment, and cost tremendous amounts in terms of response and recovery dollars and can contribute to economic loss.

In March 2011, the City of Capitola experienced significant rain events that caused a catastrophic failure of a storm drain, resulting in flooding of the Capitola Village. Damages associated with this flooding were estimated at approximately $4 million in the City of Capitola and $15 million dollars countywide, damaging many business and City facilities. In response to this event, the City pursued grant funding to prepare their first Local Hazard Mitigation Plan (LHMP or the Plan), which was completed in May of 2013.

The Disaster Mitigation Act of 2000 (DMA, Section 201.6(c)(4)(i) requires a Plan Maintenance Process which includes periodically reviewing and updating hazard mitigation plans. FEMA requires jurisdictions to update their LHMP every five years, subject to approval by the California Office of Emergency Services (CalOES). An approved and adopted LHMP is required to receive future federal and state emergency funding.

This document is the City of Capitola 2020 LHMP Five Year Update. It is the first update undertaken by the City.

The intent of the current Plan, while incorporating much of the prior LHMP versions, is to:

- Include any newly identified hazards
- Update hazards/risk data
- Update development data
- Review and revise as necessary the hazard mitigation goals and actions
- Update demographic data and maps
- Incorporate the City of Capitola Coastal Change Vulnerability Report (June 2017)

A successful hazard mitigation strategy enables the implementation and sustaining of local actions that reduce vulnerability and risk from hazards, or reduce the severity of the effects of hazards on people and property. Historically, in many local jurisdictions, disasters are followed by repairs and reconstruction which simply restore the area to pre-disaster conditions. Capitola has experienced many natural hazard events during its history (Appendix A – Timeline of Capitola Natural Hazard Events). Such efforts expedite a return to normalcy; however, the replication of pre-disaster conditions results in a cycle of damage, reconstruction, and repeated damage. Hazard mitigation ensures that post-disaster repairs and reconstruction result in a true reduction in future hazard vulnerability.

While we cannot prevent disasters from happening, their effects can be reduced or eliminated through a well-organized public education and awareness effort, preparedness activities and mitigation actions. For those hazards which cannot be fully mitigated, the community must be prepared to provide efficient and effective response and recovery. As a coastal community, the City of Capitola has historically experienced extreme wave surges, coastal storms, and flooding on a cyclical basis. In addition, Capitola is near the San Andreas earthquake fault line, and is at risk from tsunami, and a variety of other natural disasters. This Plan outlines opportunities to increase Capitola's resiliency in the face of future natural hazards.

1.1 Purpose of the Plan

As the cost of damages from natural disasters continues to increase, the City of Capitola understands the importance of identifying effective ways to reduce vulnerability to disasters. This Plan assists Capitola in reducing vulnerability to disasters by identifying critical facilities (Appendix B – Detailed Critical Facilities Inventory), resources, information, and strategies for risk reduction, while helping to guide and coordinate mitigation actions.

The Plan provides a set of strategies intended to do the following: reduce risk from natural hazards through education and outreach programs, foster the development of partnerships, and implement risk reduction activities.

The resources and information within the Plan:

- Establish a basis for coordination and collaboration among participating agencies and public entities;
- Identify and prioritize future mitigation projects; and
- Assist in meeting the requirements of federal assistance programs.

The Capitola Hazard Mitigation Plan works in conjunction with other plans, including the General Plan, Local Coastal Plan, and Emergency Operations Plan.

1.2 Authority

The Disaster Mitigation Act of 2000 (DMA 2000), Section 322 (a-d) requires that local governments, as a condition of receiving federal disaster mitigation funds, have a mitigation plan that describes the process for identifying hazards, risks and vulnerabilities, identifies and prioritizes mitigation actions, encourages the development of local mitigation and provides technical support for those efforts. This Plan serves to meet these requirements.

1.3 Plan Adoption

The City of Capitola will use a resolution to adopt the local hazard mitigation plan (see sample below).

1.4 Plan Use

Each section of this Plan provides information and resources to assist people in understanding the hazard-related issues facing residents, businesses, and the environment. The structure of the plan enables people to use a section of interest to them and allows the City of Capitola to review and update sections when new data is available. The ability to update individual sections of the mitigation plan places less of a financial burden on the City. Decision makers can allocate funding and staff resources to selected pieces in need of review, thereby avoiding a full update, which can be costly and time consuming. The ease of incorporating new data will result in a Plan that remains current and relevant to Capitola.

The Plan is comprised of the following chapters:

Chapter 1: Introduction
The Introduction describes the background and purpose of developing the mitigation plan in addition to introducing the mitigation priorities and summarizing the planning process.

Chapter 2: Community Profile
The Community Profile presents the history, geography, demographics, and socioeconomics of Capitola. It serves as a tool to provide a historical perspective of natural hazards in the City.

Chapter 3: Hazards Assessment
This chapter provides information on hazard identification, hazard profiles, vulnerability and risk associated with natural hazards, and a vulnerability assessment of critical facilities in relation to the identified hazards.

Chapter 4: Mitigation Actions
This chapter provides strategies and mitigation actions to reduce potential risks to Capitola's critical facilities, residents, and businesses.

Chapter 5: Plan Maintenance/ Capabilities
This chapter provides information on plan implementation, monitoring and evaluation, discusses the assets and capabilities available to achieve the proposed mitigation actions outlined in Chapter 4, and opportunities for continued public involvement.

1.5 Change in Priorities

Subsequent to adoption of the 2013 LHMP, there has been no change in the hazard rankings. However, several technical studies related to sea level rise have been prepared, including most notably the City of Capitola Coastal Climate Change Vulnerability Report (June 2017). This report provides a detailed assessment of the potential impacts of sea level rise and recommended measures to minimize its impact. These measures have been incorporated into Table 37: Capitola Hazard Mitigation Actions.

With respect to the other mitigation actions identified in Table 37: Capitola Hazard Mitigation Actions, the General Plan was adopted in 2014. It includes a Safety and Noise element, providing further guidance on hazard-related issues and policy direction. The City also made improvements to the Noble Gulch storm drain facilities and completed and evaluation of the likelihood of debris flow impacts to the Stockton Avenue bridge during a catastrophic flooding event.

City staff continue to work in close coordination with other jurisdictions and agency to address local and regional hazards. In particular, the City has been working with the Soquel Creek Water District to construct and implement the Pure Water Soquel, Groundwater Replenishment and Seawater Intrusion Prevention Project. This includes plans to construct a new Seawater Intrusion Prevention Well on Monterey Avenue.

1.6 Mitigation Priorities and Goals

The purpose of the Capitola Local Hazard Mitigation Plan is to promote sound public policy designed to protect citizens, critical facilities, infrastructure, private property, and the environment from natural hazards. This can be achieved by increasing public awareness, documenting the resources for risk reduction and loss-prevention, and identifying activities to guide the City toward building a safer, more sustainable community.

RESOLUTION ADOPTING A LOCAL HAZARD MITIGATION PLAN FOR THE City of Capitola:

WHEREAS, the Disaster Mitigation Act of 2000, as amended, requires that state and local governments, tribal nations and other eligible applicants develop and adopt hazard mitigation plans in order to receive certain federal assistance, and

WHEREAS, the City of Capitola having developed a Local Hazard Mitigation Plan Five Year Update meeting the requirements of Section 409 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act of 1988, and Section 322 of the Disaster Mitigation Act of 2000 (DMA 2000); and

WHEREAS, the DMA 2000 requires all cities, counties, and special districts to adopt a Local Hazard Mitigation Plan, and to update that plan at lease every five years as a condition of future funding for disaster mitigation from multiple FEM pre- and post-disaster mitigation grant programs; and

WHEREAS the City of Capitola seeks to maintain and enhance both a disaster-resistant and resilient city reducing the potential loss of life, property damage, and environmental degradation from natural disasters, which accelerating economic recovery from those disasters.

NOW THEREFORE, BE IT RESOLVED that the City of Capitola does hereby adopt the City of Capitola 2019-2024 Local Hazard Mitigation Plan Five Year Update as an official plan in accordance with the federal Disaster Mitigation Act of 2000, thereby meeting the continued eligibility requirements for the potential receipt of hazard mitigation grant funds; and

Be if further resolved that the City of Capitola will submit this Adopted Resolution to the Federal Emergency Management Agency Region IX Mitigation Division IX official to enable the plan's final approval

ADOPTED by the City Council this ___ day of _____, 2020.

APPROVED:

_____

(Title, Name)

_____

(Title, Name)

The four primary goals for reducing disaster risk in Capitola include:

1. Avoid or reduce the potential for loss of life, injury and economic damage to Capitola residents from earthquakes, floods, drought, tsunami, coastal erosion/ bluff failure, and other geological hazards.
2. Increase the ability of the City government to serve the community during and after hazard events.
3. Protect Capitola's unique character, scenic beauty and values from being compromised by hazard events.
4. Encourage mitigation activities to increase the disaster resilience of institutions, private companies and systems essential to a functioning City of Capitola.

1.8 Hazard Mitigation Planning Process

This document is the first update to the Local Hazard Mitigation Plan pursuant to the Disaster Mitigation Act of 2000 for the City of Capitola. The primary City staff developing, maintaining, and implementing this plan comprise the Hazard Mitigation Planning (HMP) Team. Members of this team represent the following City Departments:

- Public Works Department
- City Manager's Office
- Police Department
- Community Development Department
- Kimley-Horn & Associates (Consultants)

1.8.1 2020 Capitola LHMP Update

In 2018, the City initiated the planning effort to update the 2013 LHMP. The LHMP team identified characteristics and potential consequences of natural hazards that are a potential threat to the City of Capitola. With the understanding of the risks posed by the identified hazards, the team determined and reviewed previously listed priorities and assessed various methods to avoid or minimize any undesired effects. Recent historical incidents were noted and assessed. Responsible departments were consulted in the review and development of the goals, objectives and actions. As a result, the mitigation strategy, including goals, objectives and actions, were determined, followed by an implementation and monitoring plan. This monitoring plan included tracking of hazard mitigation projects, changes in day-to-day City operations, and continued hazard mitigation development.

Local Capabilities Assessment and Integration

This assessment of the mitigation goals, programs and capabilities included a review of the following items:

- Human and technical resources
- Financial resources and funding sources
- Local ordinances, zoning and building codes
- On-going plans and projects

Consistency with other City plans, programs and policies were reviewed by consulting with the respective City departments. This included a review of the City's 2014 General Plan, Local Coastal Plan, and Emergency Operations Plan.

Agency and Stakeholder Coordination

On February 28, 2019, the City of Capitola held a meeting inviting agencies and stakeholders that were involved in preparation of the 2013 LHMP to inform them about the 2020 LHMP update process and to seek their input

regarding hazards and hazard planning for Capitola. The invitation was sent to the following organizations identified in Table 1: 2020 LHMP Agency and Stakeholder Contact List.

Table 1: **2020 LHMP Agency and Stakeholder Contact List**

Name	Organization	Title
Jamie Goldstein	City of Capitola	City Manager
Katie Herlihy	City of Capitola	Community Dev. Director
Steve Jesberg	City of Capitola	Public Works Director
Michael Card	City of Capitola	Chief of Police
Tom Held	City of Capitola	Captain
Larry Laurent	City of Capitola	Information Technology
Carolyn Flynn	City of Capitola	LHMP Coordinator
Scotty Douglas	Santa Cruz Regional 911	General Manager
Paul Horvatt	County of Santa Cruz	Emergency Services Manager
Kevin C. Cole	Soquel Creek Water District	Field Crew Supervisor/ Safety
Shelley Flock	Soquel Creek Water District	Staff Analyst
Paul Rucker	Soquel Union Elementary School District	Director of Maintenance and Operations
Jeff Maxwell	Central Fire Protection District of Santa Cruz County	Chief/Battalion Chief
Tom Evans	National Weather Service Forecast Office, NOAA	Warning Coordination Meteorologist
Patsy Hernandez	Red Cross	
Charles Bockman	California State Parks	Parks Superintendent
Don Hill	SC County Public Works & Flood Control & Water Conservation District (Zone 5)	Assistant Director, Public Works
Rachel Lather	Santa Cruz County Sanitation District	Senior Civil Engineer
Wendy Abbott Sarsfield	PG&E	Central Coast Government Relations
Bill Wiseman	Kimley-Horn & Associates	Project Consultant

The meeting was attended by representatives from the City of Capitola, Soquel Union Elementary School District, and PG&E. Comments included general questions about the update process and schedule and subsequent coordination needs. PG&E wanted to confirm that fire hazards would be addressed in the plan, which was confirmed.

Public Involvement

The Public Review Draft Capitola 2020 LHMP was posted on the City's web site for review and comment. A 14-day public comment period was initiated on April 15, 2020, requesting comments be submitted to the Public Works Director by April 29, 2020. Copies were also made available at City Hall.

2 Chapter Two – Community Profile

2.1 Physical Setting

Capitola is a small coastal community in Santa Cruz County, encompassing approximately two square miles. The city is located north of the Monterey Bay shoreline, south of Highway 1, east of the City of Santa Cruz, and west of the unincorporated towns of Soquel and Aptos. Exhibit 1: Regional Vicinity Map, depicts Capitola's regional location. Capitola has a temperate Mediterranean climate and distinct landforms influenced by the San Andreas Fault system. Figure 1 is a historic photo of Capitola viewed from the Esplanade.

The City of Capitola is a popular tourist destination due to its beaches, historic charm, visitor amenities, and scenic location. Capitola has a population of approximately 10,000 residents; however, the number of tourists visiting the City on a given day can be more than three times this number.

2.2 History

Capitola has always been a popular tourist and resort area. Between 1874 and 1883, "Camp Capitola" was primarily a campground for families vacationing during the summer season. Capitola's owner, Frederick Augustus Hihn, contracted for construction of the resort's first hotel in 1878. He began to subdivide surrounding tracts for the sale of lots for summer homes in 1882. Two years later, Hihn added an annex to the hotel and built a ballroom/skating rink and other amenities. About that time, the railroad through Capitola was broad gauged. Costing between $100 and $300, the lots began to sell rapidly with the added convenience of the improved rail line. Hihn's improvements continued, including construction of the Grand Hotel Capitola from 1894-1897 and the addition of the Union Traction Company streetcar line in 1903-4.

Figure 1 – The Esplanade (ca. 1910)

When Hihn died in 1913, his Capitola resort properties were inherited by his daughter Katherine Henderson. In 1919, she sold to capitalist H. Allen Rispin and a syndicate of San Francisco investors. By 1920, Rispin owned the entire waterfront, the Capitola Hotel, resort concessions, and 30 acres along Soquel Creek. The decade between 1920 and 1930 saw an increase in construction in Capitola; however, during the Depression many buildings burned, including the hotel.

In 1949, the residents of Capitola were successful in their campaign to incorporate. The new city had a population of 2,000 residents. In the late 1960's and early 1970's, Capitola experienced a growth surge with the construction of the Capitola Mall along 41st Avenue. For several decades, Capitola Mall was the regional shopping destination in the County. New retail options countywide beginning in the 1990's meant less growth for Capitola's primary retail mall area.

Today, Capitola remains a popular tourist destination. Shops and restaurants are located throughout the Village while the beach areas offer a variety of opportunities for recreational activities. Throughout the years since Capitola was first developed a myriad of hazard events have occurred that have impacted the City's residents, businesses, and infrastructure. Appendix A – Timeline of Capitola Natural Hazard Events provides a chronology of the natural hazard events that have affected the City, which includes dates and times (where available), pictures, and background information regarding the event.

2.3 Community Profile

The City of Capitola has a population of approximately 10,000 residents within an area of approximately two square miles. Tables 2 through 4 provide an overview of the City's population data, ethnicity, and education levels.

Table 2: **Capitola Population Data**

Population	
Total Population	10,080
Median Resident Age	41.9
Median Household Income	$ 69,016
Per Capita Income	$ 38,229
Median House Value	$ 585,100
Source U. S. Census American Community Survey, July 2018	

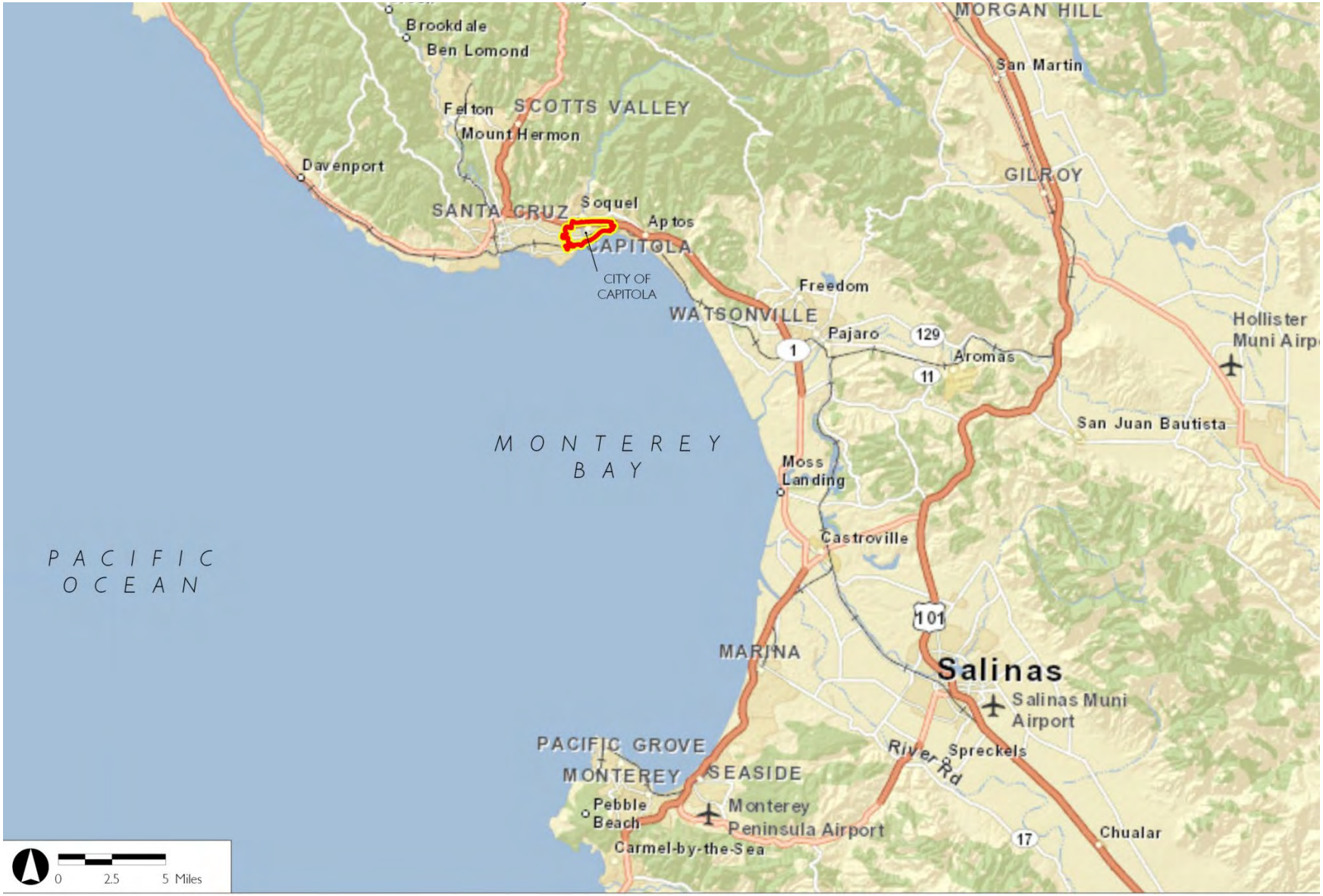
Table 3: **Capitola Ethnicity**

Ethnicity	
White (non-Hispanic)	86.7%
Black	0.5%
American Indian	0.1%
Asian	4.3%
Pacific Islander	0.0%
Two or More Races	5.8%
Hispanic or Latino	26.8%
Source U. S. Census American Community Survey, July 2018	

Table 4: **Capitola Education Levels**

Education Attainment (Age 25 and Over)	
High school graduate or higher	92.7%
Bachelor's degree or higher	36.8%
Source U. S. Census American Community Survey, July 2018	

Exhibit 1: Regional Vicinity Map



2.4 Economic Trends

Capitola City is predominantly occupied by residential uses. The City contains a large retail presence, particularly along 41st Avenue. There is strong demand for visitor accommodations, particularly during the summer months.

Capitola's high rate of workers commuting to jobs outside the City shows that Capitola largely serves as a bedroom community for people working outside the City. However, the City also features more jobs than employed residents, thus indicating a mismatch between the kinds of jobs offered versus the skill levels and occupations of residents.

2.5 Existing Land Use

The General Plan is the principle policy document that regulates land use in Capitola. The Land Use Element contains a Land Use Map (refer to Exhibit 2: Land Use Map), that identifies 12 land use designations. Table 4: General Plan Land Use Designations identifies the General Plan land use designations and description of the typical uses allowed within each designation. The City of Capitola General Plan addresses the use and development of private land, including residential and commercial areas.

Capitola's land use pattern is well established and is unlikely to change in the future. Single-family homes are the most common land use in Capitola, occupying 26 percent of the city. Residential land uses, as a group, occupy more than half of the City area. Retail is the most common commercial land use, occupying 11 percent of the city. A relatively small percentage of Capitola is occupied by office, industrial and mixed uses (1 percent each). A relatively large percentage of the city (14 percent) is occupied by open space and recreational land uses, and approximately 4 percent of City land is vacant.

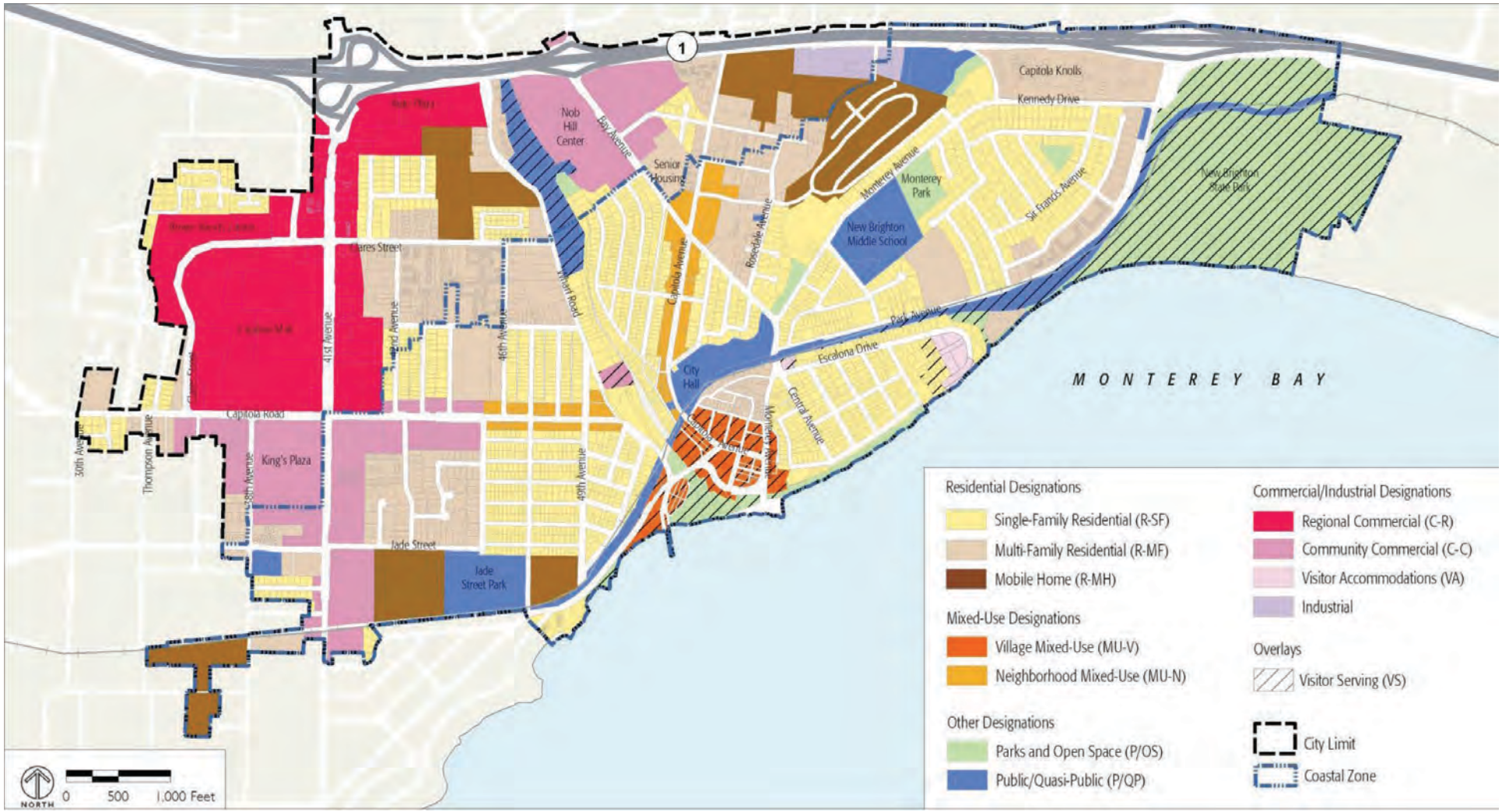
Using these land use designations, the City of Capitola has some capability to reduce risks to lives and property from natural and man-caused hazards. For example, open space land use can be designated in areas of hazard risk to prevent damage to developed property. Similarly, understanding where residential and commercial land uses are in relation to hazard risk is a key component to implementing mitigation strategies.

Table 5: **General Plan Land Use Designations**

	Land Use Designation	Description
RESIDENTIAL	Single-Family Residential (R-1)	Primarily detached single-family homes. Allows residential uses up 10 dwelling units per acre.
	Multi-Family Residential (RM)	Allows residential uses at a density of 5 to 20 units per acre.
	Mobile Home (R-MH)	Allows mobile home development at 20 mobile homes per acre.
COMMERCIAL	Village Mixed-Use (MU-V)	Applies to properties the Capitola Village. Allows for a mix of commercial, residential, visitor-serving, recreational, and public uses.
	Neighborhood Mixed Use (MU-N)	Allows for a mixture of commercial and residential land uses.
	Community Commercial (C-C)	Allows for commercial areas that serve local neighborhoods.
	Regional Shopping (C-R)	Allows for large-scale shopping areas that provide goods and services to the regional population.
	Industrial (I)	Allows for industrial land uses.
VISITOR SERVING		
	Visitor Serving (VS)	Allows for visitor-serving land uses and activities.
OTHER	Parks and Open Space (P/OS)	Applies to open space lands whose primary purpose is recreation.
	Public/Quasi-Public (P/QP)	Applies to areas for public utility facilities.

Source: City of Capitola General Plan, 2019

EXHIBIT 2: Land Use Map



2.6 Residential Neighborhoods

Residential uses in Capitola are grouped together in neighborhoods, each with their own special character. The general boundaries of these neighbor-hoods are shown in Exhibit 3 - Capitola Neighborhoods. Each neighborhood has a unique identity defined by its history, design character, land use mix, and natural setting.

EXHIBIT 3: Capitola Neighborhoods

Source: City of Capitola, 2010. *Neighborhood boundaries are approximate.

2.6.1 41st Avenue/West Capitola

The 41st Avenue/ West Capitola neighborhood is comprised of an assortment of detached single-family homes, multi-family housing, and three mobile home parks. The area is known by some as the "North Forties" and includes the Trotter Street area. Housing constructed in the 1970s and 1980s creates a more modern feel to the neighborhood. The Rispin property, the Shadowbrook property, and the Capitola Library are located along the eastern edge of the neighborhood.

2.6.2 Cliffwood Heights

The Cliffwood Heights neighborhood consists primarily of detached single-family homes as well as multi-family housing on Monterey Avenue and Park Avenue. Homes are typically one or two stories occupying relatively large lots. Wider streets with sidewalks and newer homes contribute to a more contemporary feel to the neighborhood. Monterey Park, Cortez Park, and New Brighton Middle School are also located within the Cliffwood Heights neighborhood.

2.6.3 Depot Hill

The Depot Hill neighborhood is nestled along Capitola's shoreline and overlooks Capitola Village. Detached single-family homes on relatively small lots create an intimate feel. A high concentration of historic single-family homes, a variety of architectural styles, and a sidewalk exemption allowance contributes to the neighborhood's coastal village feel. The Inn at Depot Hill and Monarch Cove Inn (formerly El Salto Re-sort) are located in the Depot Hill neighborhood.

2.6.4 Jewel Box

The Jewel Box neighborhood is tucked in the northerly cliff, bounded by the Prospect bluff overlooking the Wharf and Village, located south of Capitola Road and east of 41st Avenue. East of 45th Avenue detached single-family homes occupy quaint lots. Vintage beach cottages and bungalows contribute to a coastal village feel in this community. Multi-family condominiums line the west side of 45th Avenue, with lawns between buildings. The Jewel Box neighborhood includes the West Cliff neighborhood and also contains two mobile home parks, the 10-acre Jade Street Park, Opal Cliffs Elementary School, and the Jade Street Community Center; and a few commercial establishments along Capitola Road.

2.6.5 Riverview Terrace

The Riverview Terrace neighborhood is bordered by Soquel Creek, Capitola Avenue, Bay Avenue, and Center Street. The neighborhood contains a high concentration of historic homes, including many smaller cottages and bungalows. Many homes occupy small lots, with minimal setbacks and structures in close proximity to one another and the street. Narrow streets with on-street parking and no sidewalk contribute to a compact and intimate feel.

2.6.6 Upper Village

The Upper Village neighborhood contains a variety of housing types, including single-family homes, multi-family apartment complexes, and three mobile home parks. In many cases these different land uses are adjacent to or facing one another. Homes located closer to the Village tend to have a more historic and intimate character than those located closer to Highway 1.

2.6.7 Capitola Village

Capitola Village is the "heart" of Capitola and possesses the charm of an inti-mate coastal village. The Village is a true mixed-use district with a diversity of visitor-serving commercial establishments, public amenities, and residential uses. During the summer months, the Village is a popular tourist destination. Visitors are attracted by Capitola Beach, unique accommodations, and the historic village character. Village residents enjoy these amenities year round. The Village is pedestrian friendly, with human-scale architecture and a diversity of public gathering places. Capitola Village contains a high concentration of landmark destinations such as the Esplanade Park, Capitola Beach, the Six Sisters, the Venetian, and the historic Capitola Wharf.

2.7 Development Trends

The City of Capitola is largely built-out, with very little vacant land remaining for new development. The majority of future development in the City is likely to consist of extensive remodeling of existing structures or redevelopment of properties requiring demolition and replacement of existing buildings.

The Capitola City Hall contains the City's administrative departments as well as the Police Department. Across the street is the Central Fire Protection District Station No. 4. Both a portion of City Hall and the fire station are located within the FEMA 100 year flood plain.

Note no changes in development that would result in a decrease or increase in risk to the city…

2.8 Critical Facilities

As shown in Table 5: Capitola Critical Facilities List, there are 25 critical facilities in the City of Capitola. Exhibit 4 – Capitola Critical Facilities identifies their location. These include a police station, fire station, City owned properties, shelters, and other facilities that provide important services to the community. Damage to these facilities during a hazard event has the potential to impair response and recovery from the event and may lead to disruption of critical emergency services. This list includes facilities owned and operated by City or local utilities and districts, but does not include state or federal facilities, which are outside local control.

The LHMP Team identified replacement and contents values for a majority of the facilities. These represent the total potential loss value for each facility. If a facility is destroyed in a hazard event, the replacement and contents values indicate the cost to replace the facility. Typically, the cost to repair a damaged facility will be less than the replacement value. While the replacement and contents values are used throughout this plan to estimate potential losses, it is noted that the actual cost to recover from a hazard event will depend on the type and magnitude of the event.

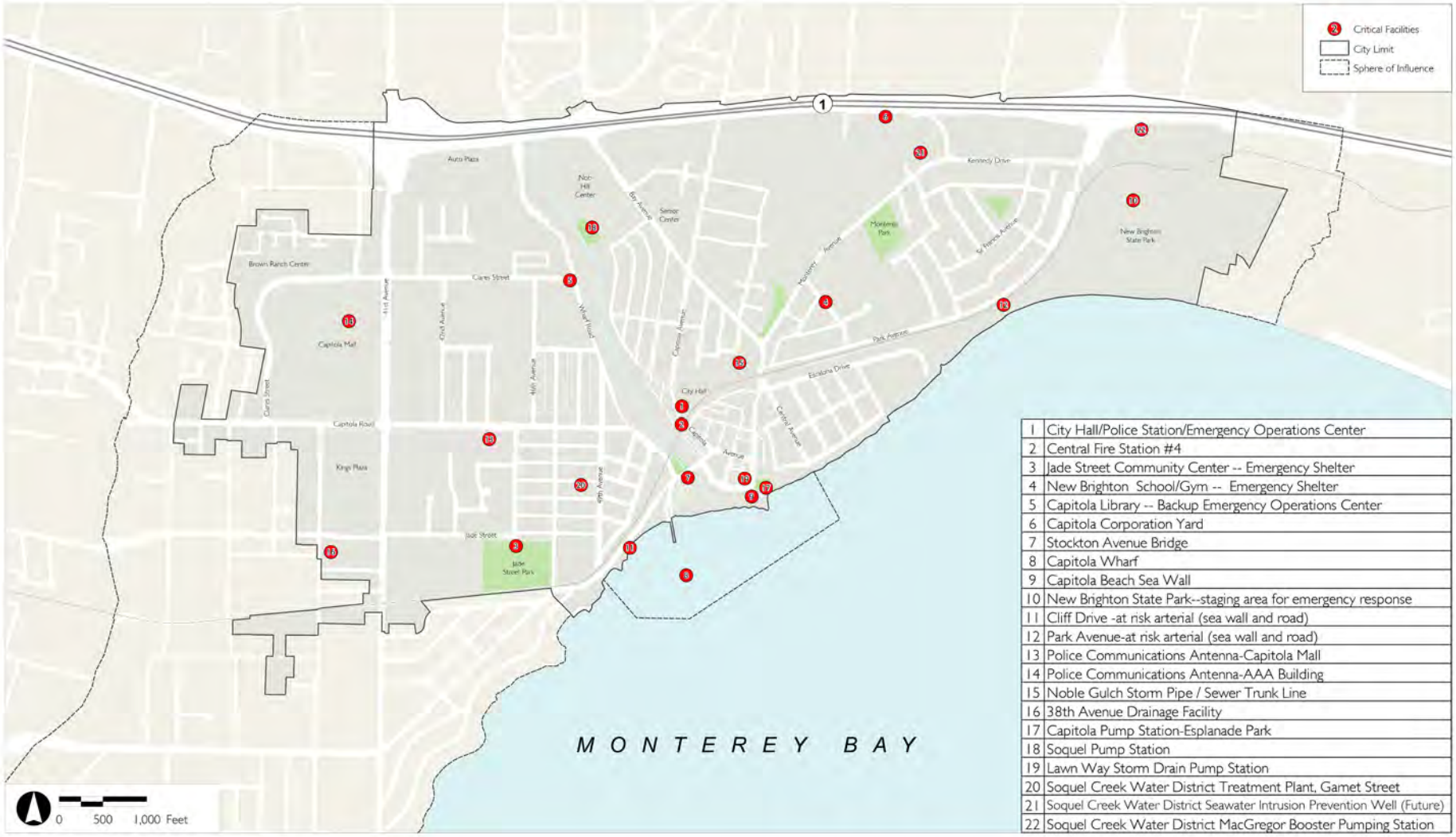
Table 6: **Capitola Critical Facilities List**

Map #	Facility	Notes	Replacement Value	Contents Value
1	City Hall/Emergency Operations Center	Steep hillside on southern portion of site	$8,000,000	$750,000
1	Capitola Police Station	Steep hillside on southern portion of site	$4,000,000	$750,000
2	Central Fire Station #4	Steep slope across Capitola Road	$3,000,000	$100,000
3	Jade Street Community Center - Emergency Shelter and Police Antenna		$3,000,000	$200,000
4	New Brighton Gym and Performing Arts Center-- Emergency Shelter		$2,500,000	$75,000
4	New Brighton School Performing Arts Center-Back-up Emergency Shelter		$4,000,000	$700,000
5	Capitola Library -- Backup Emergency Operations Center	Wharf Road in vicinity of library located adjacent to steep slope hazard area	$10,000,000	$700,000
6	Capitola Corporation Yard	Creek to the east has steep slopes, no risk	$2,000,000	$500,000
7	Stockton Avenue Bridge	Mid-span piers catch mud and debris	$10,000,000	N/A
8	Capitola Wharf		$20,000,000	$300,000
9	Capitola Beach Sea Wall		$5,000,000	N/A
10	New Brighton State Park - staging area for emergency response		N/A	N/A
11	Cliff Drive - at risk arterial (sea wall and road)		$8,000,000	N/A

Table 6: **Capitola Critical Facilities List**

Map #	Facility	Notes	Replacement Value	Contents Value
12	Park Avenue - at risk arterial (sea wall and road)		$4,000,000	N/A
13	Police Communications Antenna - Capitola Mall		$100,000	N/A
14	Police Communications Antenna-AAA Building		$100,000	N/A
15	Noble Gulch Storm Pipe		$10,000,000	N/A
16	38th Avenue Drainage Facility		$2,000,000	$300,000
17	Capitola Sewage Pump Station - Esplanade Park		$10,000,000	$800,000
18	Soquel Sewage Pump Station		$10,000,000	$1,700,000
19	Lawn Way Storm Drain Pump Station		$500,000	N/A
20	Soquel Creek Water District Treatment Plant, Garnet Street	Costs per SCWD.	$2,000,000	$700,000
21	Soquel Creek Water District Seawater Intrusion Prevention Well, Monterey Avenue	To be constructed as part of the Pure Water Soquel project.	$2,000,000	$70,000
22	Soquel Creek Water District MacGregor Booster Pumping Station		$300,000	N/A
23	Capitola Beach Flume		$2,000,000	N/A
24	Capitola Beach Jetty		$3,000,000	N/A
25	Grand Avenue Cliffs		N/A	N/A
Total Potential Losses			**$125,500,000**	**$7,645,000**

CAPITOLA CRITICAL FACILITIES
EXHIBIT 4



1	City Hall/Police Station/Emergency Operations Center
2	Central Fire Station #4
3	Jade Street Community Center -- Emergency Shelter
4	New Brighton School/Gym -- Emergency Shelter
5	Capitola Library -- Backup Emergency Operations Center
6	Capitola Corporation Yard
7	Stockton Avenue Bridge
8	Capitola Wharf
9	Capitola Beach Sea Wall
10	New Brighton State Park--staging area for emergency response
11	Cliff Drive -at risk arterial (sea wall and road)
12	Park Avenue-at risk arterial (sea wall and road)
13	Police Communications Antenna-Capitola Mall
14	Police Communications Antenna-AAA Building
15	Noble Gulch Storm Pipe / Sewer Trunk Line
16	38th Avenue Drainage Facility
17	Capitola Pump Station-Esplanade Park
18	Soquel Pump Station
19	Lawn Way Storm Drain Pump Station
20	Soquel Creek Water District Treatment Plant, Gamet Street
21	Soquel Creek Water District Seawater Intrusion Prevention Well (Future)
22	Soquel Creek Water District MacGregor Booster Pumping Station

Source: City of Capitola, 2010; Santa Cruz County, 2010.

3 Chapter Three – Hazards Assessment

This chapter provides a detailed discussion of the potential hazards and potential risk/ vulnerability to City facilities.

3.1 Hazard Identification and Prioritization

3.1.1 Hazard Identification

Table 7: City of Capitola Hazard Identification summarizes the natural hazards and shows which were identified in the 2013 LHMP and retained in this update. Hazards that have been excluded from further consideration are shaded gray.

Table 7: **City of Capitola Hazard Identification**

Hazard	Risk	Rationale
Agricultural Pests	No	Not enough agriculture in the City to warrant a concern.
Avalanche	No	Not Applicable
Coastal Erosion / Bluff Failure	Yes	This is an event based concern as well as a long term concern, specifically because storm/sewer utility pipelines run through the bluffs.
Coastal Storm	Yes	Concerns include high surf, high tide, storm related coastal flooding from ocean and fluvial (Soquel Creek), wharf protection
Dam Failure	No	There are no levees or dams that failure would impact the City.
Drought	Yes	The City receives about 90% of its water supply from Soquel Creek Water District (SqCWD) while the remaining 10% is supplied by the City of Santa Cruz Water Department (SCWD). Both agencies are solely dependent upon local water supplies as no water is imported from outside of the area. SqCWD obtains 100% of its supply from groundwater sources, whereas the SCWD is primarily supplied by surface water sources. Both water providers are susceptible to drought and water supply shortages. While groundwater sources are generally less susceptible to seasonal drought than surface water sources, coastal groundwater levels in the area are below elevations that protect the local groundwater basin from seawater intrusion, creating a state of overdraft that is exacerbated by drought conditions.
Earthquake (Liquefaction)	Yes	Capitola is located in an area susceptible to earthquake ground shaking and liquefaction.

Hazard	Risk	Rationale
Expansive soils	No	Discussion during TAC Meeting #1 indicated some concern regarding expansive soils along Soquel Creek and other parts of the City. Mapping conducted after the meeting indicated that expansive soils are identified within the City, however no issues as a result of these soils have been reported.
Extreme Temperature	No	During the 2006 heat wave, the City of Capitola did not experience any problems. Extreme cold in the past has caused a few pipe breaks but no significant problems.
Flood	Yes	Flooding within Capitola occurs as a result of surface water runoff from the mountainous areas north and east of the City, changes in tidal elevations (high tide), local coastal storms, and surges from distant storms offshore. These sources can occur separately or in conjunction with one another increasing the magnitude of the effects.
Geological Hazards	N/A	This category may be used to group bluff erosion, earthquake, landslides, etc. in the hazard profiles.
Hailstorm	No	There has been no significant damage from previous storms. The TAC noted that thunderstorms with lightening could damage antennas used for communication, but agreed it was not a significant risk.
Hazardous Materials Spills	Yes	The majority of properties within the City containing hazardous materials are located along 41st Avenue. Additional concerns include Highway 1, railroad, oil spills, and the drinking water treatment facility in the Jewel Box area.
Hurricane	No	Not Applicable
Land Subsidence	No	Not Applicable
Landslide and Mudflow	Yes	Due to steep topography, there is a potential for landslides and mudflows to occur below Wharf Road and above Soquel Creek, which could impact the Stockton Avenue Bridge and Village.
Human Caused Hazards	No	Except for Hazardous Materials Spills, the TAC agreed the intent of this plan is to focus on natural hazard risk.
Severe Winter Storm	No	Not Applicable
Tornado	No	Tornados and water spouts are possible, but very rare. The TAC noted that a tornado occurrence could be devastating, but the probability does not warrant inclusion in this plan.
Tsunami	Yes	Due to its location along the coast, Capitola is susceptible to Tsunami inundation, which could reach as high as 30 feet depending on the location of the source. Evacuations within the City occurred as a result of the most recent tsunami event in March 2011; however, no damage occurred within the City.
Volcano	No	The City is not located within a region of active volcanism.

Hazard	Risk	Rationale
Wildfire	Yes	Concerns include: Wharf Road Corridor, New Brighton area, eucalyptus trees along the bluffs
Wind	No	Regular wind does not cause significant damage
Windstorm	Yes	During severe windstorms trees fall. Severe wind also exacerbates wildfires.
Sea Level Rise	Yes	The City is located adjacent to the Pacific Ocean and is therefore prone to the effects of seal level rise. To address this issue, the City recently participated in a sea level rise study and its potential impacts in and around Capitola, which is included as Appendix C.
Climate Change	N/A	Climate change will be considered as an exacerbation factor for all of the identified hazards.

3.1.2 Hazard Prioritization

City staff and their consultant involved in preparing the 2020 LHMP update assigned each hazard a ranking based on probability of occurrence and potential impact. These rankings were based on group discussion, knowledge of past occurrences, and familiarity with the City's infrastructure vulnerabilities. The results are presented in Table 8: Capitola Hazard Ranking Worksheet.

Table 9: Capitola Hazard Ranking Worksheet Legend provides additional detail regarding how the probability, affected area, and impact categories were weighted and how the total score was calculated.

Table 8: **Capitola Hazard Ranking Worksheet**

Hazard Type	Probability	Impact			Total Score	Hazard Planning Consideration
		Affected Area	Primary Impact	Secondary Impacts		
Earthquake (and Liquefaction)	4	4	4	4	64.00	Significant
Flood (riverine and coastal, including storm surge)	4	4	4	4	64.00	Significant
Sea Level Rise	4	1	4	4	44.80	Significant
Drought	3	4	3	3	40.80	Moderate
Windstorm	3	4	3	2	37.80	Moderate
Coastal Erosion / Bluff Failure	4	1	3	2	31.20	Moderate
Tsunami	2	2	4	4	25.60	Moderate
Hazardous Materials	2	3	3	3	24.00	Moderate
Wildfire	2	2	2	2	16.00	Moderate
Landslide and Mudflow	2	1	2	2	12.80	Moderate
Expansive soils	1	2	2	2	8.00	Limited

Table 9: **Capitola Hazard Ranking Worksheet Legend**

Probability	Importance	2.0
Based on estimated likelihood of occurrence from historical data		
Probability		Score
Unlikely (Less than 1% probability in next 100 years or has a recurrence interval of greater than every 100 years.)		1
Somewhat Likely (Between 1 and 10% probability in next year or has a recurrence interval of 11 to 100 years.)		2
Likely (Between 10 and 100% probability in next year or has a recurrence interval of 10 years or less.)		3
Highly Likely (Near 100% probability in next year or happens every year.)		4
Affected Area	Importance	0.8
Based on size of geographical area of community affected by hazard		
Affected Area		Score
Isolated		1
Small		2
Medium		3
Large		4

Secondary Impacts	Importance	0.5
Based on estimated secondary impacts to community at large		
Impact		Score
Negligible - no loss of function, downtime, and/or evacuations		1
Limited - minimal loss of function, downtime, and/or evacuations		2
Moderate - some loss of function, downtime, and/or evacuations		3
High - major loss of function, downtime, and/or evacuations		4
Total Score = Probability x Impact, where:		
Probability = (Probability Score x Importance)		
Impact = (Affected Area + Primary Impact + Secondary Impacts), where:		
Affected Area = Affected Area Score x Importance		
Primary Impact = Primary Impact Score x Importance		
Secondary Impacts = Secondary Impacts Score x Importance		

Table 9: **Capitola Hazard Ranking Worksheet Legend**

Primary Impact	Importance	0.7	Hazard Planning Consideration			
Based on percentage of damage to typical facility in community			Total Score	(Range)	Distribution	Hazard Level
Impact		Score	0.0	12.0	1	Limited
Negligible - less than 10% damage		1	12.1	42.0	7	Moderate
Limited - between 10% and 25% damage		2	42.1	64.0	3	Significant
Critical - between 25% and 50% damage		3				
Catastrophic - more than 50% damage		4				

The probability of each hazard is determined by assigning a level, from unlikely to highly likely, based on the likelihood of occurrence from historical data. The total impact value includes the affected area, primary impact and secondary impact levels of each hazard. Each level's score is reflected in the matrix. The total score for each hazard is the probability score multiplied by its importance factor times the sum of the impact level scores multiplied by their importance factors. Based on this total score, the hazards are separated into three categories based on the hazard level they pose to the communities: Significant, Moderate, and Limited.

Based on this ranking exercise, the City of Capitola confirmed the identified hazards and corresponding planning considerations for this 2020 LHMP update as those listed in Table 10: Capitola Identified Hazards and Planning Considerations.

Table 10: **Capitola Identified Hazards and Planning Considerations**

Identified Hazard	Hazard Planning Consideration
Earthquake (and Liquefaction)	Significant
Coastal Storm / Flooding	Significant
Sea Level Rise	Significant
Drought	Moderate
Windstorm	Moderate
Coastal Erosion / Bluff Failure	Moderate
Tsunami	Moderate
Hazardous Materials	Moderate
Wildfire	Moderate
Landslide and Mudflow	Moderate

3.2 Climate Change Considerations

It should be noted that sea level rise was originally identified as an explicit hazard by the Technical Advisory Committee, however through follow up discussion with the HMP Team, it was determined that sea level rise is an effect associated with climate change. Since climate change also can affect other hazards within the City, the HMP Team determined that it would be best to discuss climate change considerations throughout all applicable hazard profiles.

In June of 2017, the Central Coast Wetlands Group published the City of Capitola Coastal Climate Change Vulnerability Report. This report is incorporated into this 2020 LHMP update by reference and is included as Appendix C. The evaluation provides a predictive chronology of future risks to assist with local coastal planning and foster discussions with state regulatory and funding agencies.

Climate change is a serious issue, as it affects communities in a variety of ways. For the City of Capitola, climate change can result in a multitude of impacts and potentially exacerbate existing natural and human caused hazards or create new hazards. To address potential climate change impacts, the City of Capitola has identified climate change considerations within each hazard profile in this Plan. These considerations deal with issues such as sea level rise, changing weather patterns and precipitation regimes, coastal storms, flooding, and other hazards that could be exacerbated by these changing conditions. Within each hazard profile, the City has provided a discussion of some of the potential impacts that could be a result of climate change. This discussion is intended to supplement, but not replace, the Probability of Future Occurrence discussion.

3.3 Vulnerability/Risk Assessment Methodology[1]

The critical facilities listed in the section above were mapped in GIS and overlaid with mapped hazard areas to determine which assets are located within each hazard area. Hazard area and critical facility overlays were

[1] All GIS data used in the vulnerability analyses profiled in Section 3.3 was provided by the City of Capitola, County of Santa Cruz or applicable State or Federal Agency.

conducted for flood, beach erosion, cliff erosion, liquefaction, landslide/mudslide (slope), and tsunami. For hazardous materials, it was determined which critical assets are located within 500 and 1,000 feet of a hazardous materials site.

Hazard and critical facility overlays were not conducted for wildfire, windstorm, drought, and earthquake. Per Santa Cruz County fire hazard maps, there are no fire hazard areas located in the City of Capitola. Windstorms affect the entire City and therefore all facilities listed in the critical facility inventory could be potentially susceptible to damage from a windstorm. Drought does not inflict physical damage on Capitola's critical assets; however, residents could be impacted by potential restrictions from the two water districts. 90% of the City's water supply is provided by the Soquel Creek Water District, which, although supplied by groundwater and less susceptible to seasonal drought, is susceptible to overdraft. The remaining 10% of the water supply is provided by the City of Santa Cruz Water Department, which is supplied by surface water and is susceptible to seasonal drought. There are no fault zones that fall within the City of Capitola and therefore an overlay was not conducted for earthquake.

Each hazard profile in the section below includes a Vulnerability/Risk Assessment section that presents the results of the methodology described above. Replacement and contents values for the facilities that fall within the hazard areas are tallied in each vulnerability table to estimate the total potential losses to each hazard. It should be noted that the actual losses will depend on the type and extent of the hazard event.

Combined coastal climate change hazards were based on findings as described in the City of Capitola Coastal Change Vulnerability Report, June 2017, which is incorporated in this LHMP update and included as Appendix C.

A comprehensive list of facilities and the hazard areas they fall within can be found in Appendix A – Critical Facilities Inventory.

3.4 Hazard Profiles

The following are profiles of the hazards identified for the City of Capitola. The profiles include a vulnerability analysis and risk assessment using the methodologies described in the Vulnerability/ Risk Assessment Section above.

3.4.1 Geologic Hazards (Earthquake and Liquefaction)

Identifying Earthquake and Liquefaction Hazards

An earthquake is a sudden release of energy in the earth's crust. Caused by movement along fault lines, earthquakes vary in size and severity. The focus of an earthquake is found at the first point of movement along the fault line (which may be beneath the surface), and the epicenter is the corresponding point above the focus at the earth's surface.

Damage from an earthquake varies with the local geological conditions, the quality of construction, the energy released by the earthquake, the distance from the earthquake's focus, and the type of faulting that generates the earthquake. Earthquake related hazards include primary impacts (fault rupture and ground shaking) and secondary impacts (liquefaction). This hazard profile will discuss ground shaking and liquefaction, since these are the two most likely impacts anticipated as a result of an earthquake.

Ground Shaking: Ground motion/shaking is the primary cause of damage and injury during earthquakes and can result in surface rupture, liquefaction, landslides, lateral spreading, differential settlement, tsunamis, building and infrastructure failure, which could lead to fire and other collateral damage. Typically, areas underlain by thick, water-saturated, unconsolidated material will experience greater shaking motion than areas underlain by firm bedrock, but, in some cases, topographic relief may intensify shaking along ridge tops, where landslides may develop.

Fires and structural failure are the most hazardous results of ground shaking. Most earthquake-induced fires start because of ruptured power lines and gas lines or electrically powered stoves and equipment. Structural failure is generally a result of age, quality, and type of building construction.

Liquefaction: Liquefaction is the transformation of loose, water-saturated granular materials (such as sand and silt) from a solid to a liquid state. This results in the loss of soil strength and the soil's ability to support weight. Buildings and their occupants are at risk when the ground can no longer support these buildings and structures.

Profiling Earthquake and Liquefaction Hazards

Location

Capitola is located in one of the most seismically active areas of the country. Significant earthquakes occur along well-defined, active fault zones that trend northwesterly. The regional faults of significance potentially affecting Capitola include the San Andreas, the Zayante, and the Palo Colorado-San Gregorio faults. The most probable seismic hazards to Capitola are from the San Andreas Fault (in the Santa Cruz Mountains) and, further south, the Palo Colorado-San Gregorio fault as shown in Exhibit 5 - Active Fault Zones.

The main trace of the San Andreas Fault is approximately nine miles northeast of Capitola. One of the largest local earthquakes in recent history occurred on October 17, 1989 due to movement on this fault (Loma Prieta Earthquake) and measured 7.1 on the Richter scale.

The Zayante fault is located approximately five miles northeast of Capitola, and the Palo Colorado-San Gregorio is located 14 miles southwest of Capitola. The California Geologic Survey considers the Zayante fault active, although it has not caused any significant earthquakes historically, only some aftershocks after the Loma Prieta earthquake. The Palo Colorado-San Gregorio fault is not well understood, but is considered potentially active with an estimated maximum credible magnitude of 7.7 and a recurrence level of 800+ years (City of Capitola General Plan White Paper #4 Environmental Resources & Hazards, 2011).

Liquefaction can also occur in Capitola. Exhibit 6: Liquefaction Potential shows the liquefaction potential in Capitola. Significant portions of Capitola have either High or Very High potential for liquefaction. These areas are generally located along the alignment of drainage courses like Soquel Creek, Noble Gulch and Tannery Gulch. More specifically, areas determined to have a Very High potential include the northern end of Bay Avenue, including Highway 1/Bay Avenue/Porter Avenue interchange, and a large portion of Capitola Village. Areas determined to have a High potential include the residential and commercial areas along the southern portion of Bay Avenue and along Capitola Avenue.

Extent of Earthquake

The size and magnitude (M) of an earthquake is measured in various ways. The Richter scale determines the amount of ground displacement or shaking that occurs near the epicenter. This scale is shown in Table 11: Richter Scale.

Another scale, the Moment Magnitude scale, measures the magnitude of medium and large sized earthquakes by characterizing the amount of energy released by the earthquake. The magnitude is based on the seismic moment of the earthquake, which is equal to the rigidity of the Earth multiplied by the average amount of slip on the fault and the size of the area that slipped. (USGS, Glossary of Terms on Earthquake Maps) The Modified Mercalli Intensity Scale measures ground shaking intensity in terms of perception and damage and takes into account localized earthquake effects. This scale is shown in Table 12: Modified Mercalli Intensity Scale for Earthquakes.

Table 11: **Richter Scale**

Richter Magnitudes (M)	Earthquake Effects
Less than 3.5	Generally not felt, but recorded.
3.5-5.4	Often felt, but rarely causes damage.
Under 6.0	At most slight damage to well-designed buildings. Can cause major damage to poorly constructed buildings over small regions.
6.1-6.9	Can be destructive in areas up to about 100 kilometers across where people live.
7.0-7.9	Major earthquake. Can cause serious damage over larger areas.
8 or greater	Great earthquake. Can cause serious damage in areas several hundred kilometers across.

Table 12: **Modified Mercalli Intensity Scale for Earthquakes**

Scale	Intensity	Earthquake Effects	Corresponding Richter Scale Magnitude
I	Instrumental	Detected only on seismographs	
II	Feeble	Some people feel it	<4.2
III	Slight	Felt by people resting; like a truck rumbling by	
IV	Moderate	Felt by people walking	
V	Slightly Strong	Sleepers awake; church bells ring	<4.8
VI	Strong	Trees sway; suspended objects swing; objects fall off shelves	<5.4
VII	Very Strong	Mild Alarm; walls crack; plaster falls	<6.1
VIII	Destructive	Moving cars uncontrollable; masonry fractures; poorly constructed buildings damaged	

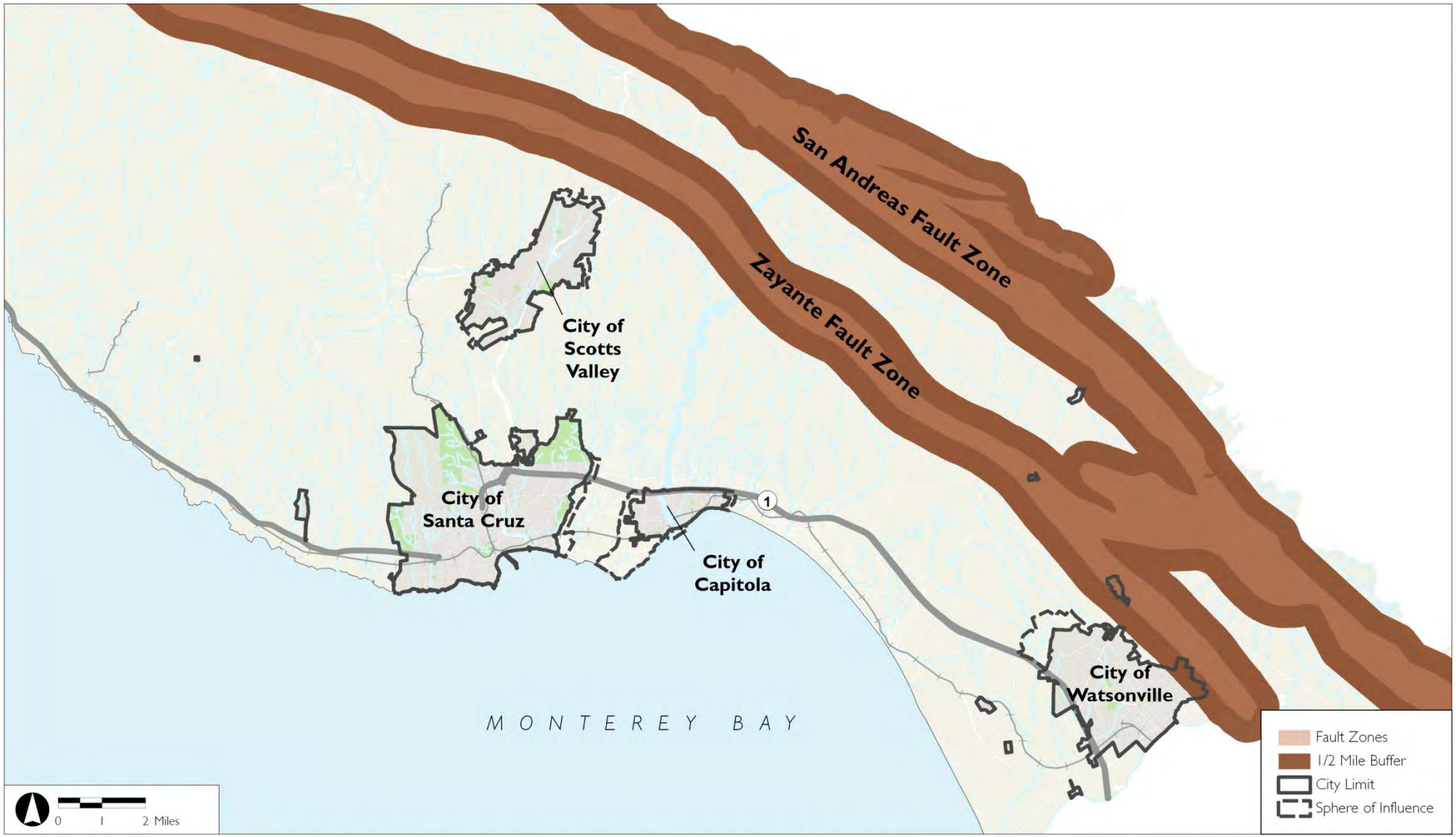
Table 12: **Modified Mercalli Intensity Scale for Earthquakes**

Scale	Intensity	Earthquake Effects	Corresponding Richter Scale Magnitude
IX	Ruinous	Some houses collapse; ground cracks; pipes break open	<6.9
X	Disastrous	Ground cracks profusely; many buildings destroyed; liquefaction and landslides widespread	<7.3
XI	Very Disastrous	Most buildings and bridges collapse; roads, railways, pipes and cables destroyed; general triggering of other hazards	<8.1
XII	Catastrophic	Total destruction; trees fall; ground rises and falls in waves	>8.1

Seismic historical records of Capitola show that earthquakes of 6.5 – 7.0 M occur periodically on the San Andreas Fault (City of Capitola General Plan White Paper #4 Environmental Resources & Hazards, 2011). The San Andreas Fault zone poses the most significant threat to Santa Cruz County and to the City of Capitola. Based on records from the 1906 San Francisco earthquake, it is estimated that the maximum credible earthquake likely to occur on the San Andreas Fault would equal 8.3 M on the Richter scale, which represents more than 30 times the energy released by the 1989 Loma Prieta Earthquake. Santa Cruz County was one of the hardest hit counties during that earthquake.

ACTIVE FAULT ZONES

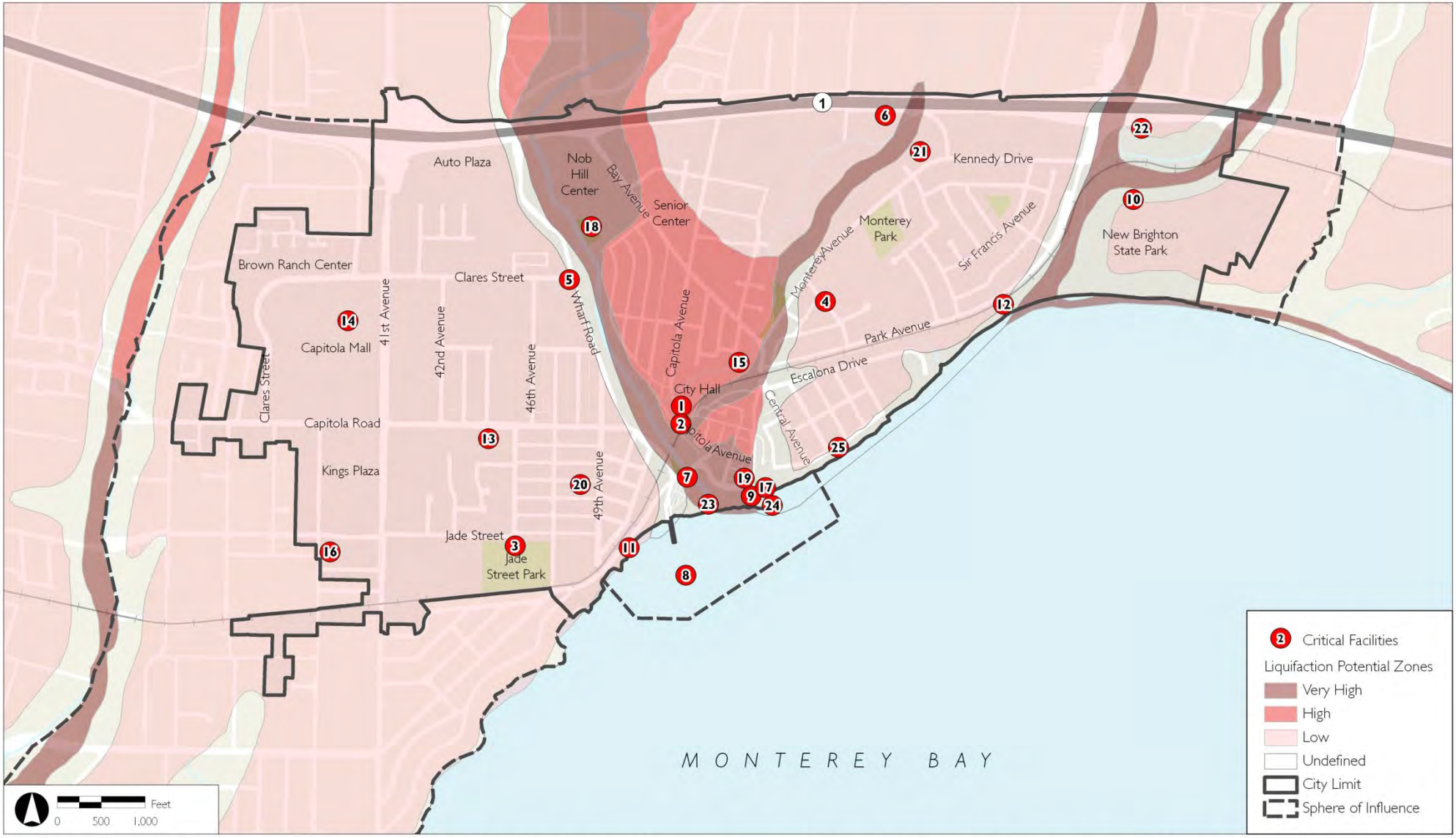
EXHIBIT 5



Source: City of Capitola, 2010; Santa Cruz County, 2010; Hazards. "Fault Zones." [shapefile]. (2012). Santa Cruz County Geographic Information System File Download Site. Available at <http://sccftpmap.co.santa-cruz.ca.us/File%20Download%20Site/Hazards/Shapefiles/Hazards.zip>, Downloaded: February 1, 2012.

LIQUEFACTION POTENTIAL

EXHIBIT 6



Source: City of Capitola, 2010; Santa Cruz County, 2010; Hazards. "Liquifaction." [shapefile]. (2009) Available at <http://sccftpmap.co.santa-cruz.ca.us/File%20Download%20Site/Hazards/Shapefiles/Hazards.zip>. Downloaded: January 29, 2011.

Extent of Liquefaction

Areas within Capitola that have a High and Very High potential for liquefaction (as identified on Exhibit 6) would be the primary areas affected by liquefaction during an earthquake event. In addition, other areas within the City that experience shallow groundwater conditions (less than 50 feet beneath the ground surface [bgs]) may also be susceptible to liquefaction if loose unconsolidated materials are located beneath the surface within these areas.

Past Occurrences - Earthquake

While Santa Cruz County has sustained numerous earthquakes throughout history, the two most destructive incidents were the 1906 San Francisco earthquake and the 1989 Loma Prieta earthquake. Table 13 Historical Earthquake Events summarizes historical records collected by the City of Capitola Historical Museum.

Table 13: **Historical Earthquake Events**

Date	Time	Impact/Property Damage
January 9, 1857		Three earthquakes struck the Santa Cruz vicinity in a series. The tower and a portion of the Santa Cruz Mission Church collapsed.
August 1, 1863		Described as "severe shock"
October 8, 1865		Unknown
October 25, 1868		"Second only to October 1865"
July 1, 1882		Worst since 1868
March 1883		Severe shock with several aftershocks recorded. No damaged listed for Capitola.
September 18, 1888		Described as extremely severe.
1906	5:12am	Nine men killed in mudslide at the Loma Prieta mill above Soquel; surge on local creeks; water pipes broken; chimneys and walls cracked. Splits in the earth. Magnitude 8.3.
October 28, 1926		Damage recorded in Capitola
April 15, 1941		Santa Cruz epicenter. No damage.
June 2, 1941		Sharp jolt
April 15, 1954		Falling plaster, broken chimneys, shattered dishes
January 16, 1980		Epicenter of 3.6 magnitude quake in Corralitos
October 17, 1989	5:04pm, Duration: 15 seconds	6.9 magnitude earthquake, epicenter 3 miles north of Aptos. Comparatively, damage to Capitola homes and businesses was not severe. Within the city, no buildings immediately collapsed and no one was injured physically. Damage countywide ultimately estimated to be about $1 billion.

The events described below were all recorded by a seismic recorder at the Capitola Fire Station.

San Francisco Earthquake: April 18, 1906 - Magnitude 8.3, Intensity Viii-Xiii, occurred 91.1 miles away from City center – The earthquake was felt from southern Oregon to south of Los Angeles and inland as far as central Nevada. There were no recorded deaths in Santa Cruz but the old courthouse partially collapsed and approximately 1/3 of the chimneys within the city of Santa Cruz were destroyed or damaged. Landslides were observed throughout the Santa Cruz Mountains, and fault rupture was nearly continuous along the San Andreas

Fault zone, and nearby fault zones in the county of Santa Cruz. Infrastructure was destroyed and broken water mains and pipes shut off water supply in many areas.

Monterey Bay Earthquake: October 1926 - Magnitude 6.1 – Two large earthquakes caused considerable damage in the Monterey Bay region. The first shock was severe at Santa Cruz, where many chimneys were knocked down, and old brick buildings sustained damage.

Coyote Lake Earthquake: August 6, 1979 - Magnitude 5.9, Intensity VI-VII, occurred 20.7 miles away from City center – Felt from approximately 37 miles north of Bakersfield, north to Sacramento, east to the Pacific Ocean.

Livermore Earthquake: January 24, 1980 - Magnitude 5.9, occurred 52.5 miles from City center – The earthquake injured 44 people and caused an estimated $11.5 million in property damage. The shock was associated with surface rupture along the Greenville fault. It was felt over a large area of central California and a few towns in western Nevada.

Morgan Hill Earthquake: April 24, 1984 - Magnitude 6.2, Intensity VII-IX, occurred 26.5 miles from City center – Damage from the earthquake estimated at 7.5 million dollars. The earthquake was felt from Bakersfield to Sacramento and from San Francisco to Reno.

Unnamed Earthquake: June 27, 1988: Magnitude 5.9, occurred 11.4 miles from City center

Loma Prieta Earthquake: October 17, 1989 - Magnitude 7.1 occurred 5 miles from City Center (see Figure 2) – This major earthquake caused 63 deaths, 3,757 injuries, and an estimated $6 billion in property damage statewide. It was the largest earthquake to occur on the San Andreas Fault since the San Francisco earthquake in April 1906. Communities sustaining heavy damage in the epicentral area included Los Gatos, Santa Cruz, and Watsonville. Liquefaction occurred as far as 110 kilometers from the epicenter and contributed to significant property damage in the Santa Cruz and Monterey Bay area. The severe shaking near Santa Cruz caused heavy damage to the unreinforced masonry buildings in that area. Most of the landslides and rockfalls that occurred as a result of the earthquake occurred in the Santa Cruz Mountains. Shaking from this earthquake was felt throughout Capitola and resulting damage varied from minor structural damage and window and chimney breakage throughout the city. The most extensive damage in the city occurred in mobile home parks where coaches were knocked off their foundations disrupting gas and water services. Figure 3 shows what the City of

Figure 2 - Loma Prieta Earthquake

Capitola looked like just minutes after the earthquake occurred. As seen in the photo a significant amount of dust was generated as a result of the shaking.

Figure 3 - Dust Generated from the Loma Prieta Earthquake (ca. 1989)

San Juan Bautista Earthquake: August 12, 1998 – Magnitude 5.0 – Earthquake occurred on the San Andreas Fault, 12 kilometers southeast of San Juan Bautista.

Gilroy Earthquake: May 13, 2002 – Magnitude 4.9

Parkfield Earthquake: September 28, 2004 – Magnitude 6.0 – Earthquake occurred on the San Andreas Fault. It ruptured roughly the same segment of the fault that broke in 1966. Strong shaking lasted for about 10 seconds.

Alum Rock Area Earthquake: October 30, 2007 – Magnitude 5.6. This was the last significant earthquake before 2020 to occur

Past Occurrences - Liquefaction

Prior instances of liquefaction have not occurred or have been extremely isolated within the City of Capitola.

Probability of Future Occurrence

There are at least six major faults and fault systems within or near Santa Cruz County and the City of Capitola, placing both locations in an area of high seismic risk. Earthquakes can cause severe damage over a long distance and, therefore, Santa Cruz County and Capitola remain at risk from seismic activity along the faults in the greater San Francisco Bay area. The reduction of seismic stresses that occurred in the Loma Prieta earthquake did nothing to relieve, and possibly increased, stresses along other faults, including other sections of the San Andreas Fault.

To clarify the extent of future earthquake risk, a partnership between the United States Geological Survey, California Geologic Survey, and Southern California Earthquake Center was formed in September 2004 to provide a uniform forecast. Known as the Working Group on California Earthquake Probabilities, this group evaluated and systemized currently available historic and paleoseismic information to produce a probabilistic seismic hazards analysis to indicate the type of future earthquakes. One product of this analysis is a method of estimating the probability of ground shaking, which is illustrated in Table 14: Ten Most Likely Damaging Earthquake Scenarios. The 30-year probability of an M ≥ 6.7 earthquake on the northern segment of the San Andreas Fault is 21% and on the San Gregorio Fault is 6%. Other faults within the region can also cause damage in the county, including the Hayward-Rogers Creek Fault that has a 31% probability of having a M ≥ 6.7 earthquake in the next thirty years.

Because the ten most likely future earthquakes in the Bay area occur on faults throughout the region, the impact and potential losses reported here reveal significant risk for the entire San Francisco Bay area region including Santa Cruz County and the City of Capitola.

The probability that liquefaction will occur in the future in Capitola is dependent on many factors including the intensity of ground shaking, location of the earthquake, and subsurface conditions (including groundwater

elevation). For those areas of the City identified with a High and Very High liquefaction potential, it should be anticipated that potential damage could occur under anticipated future earthquakes.

Table 14: **Ten Most Likely Damaging Earthquake Scenarios**

Earthquake Fault	30-year probability	Magnitude
Rodgers Creek	15.2%	7.0
Northern Calaveras	12.4%	6.8
Southern Hayward (possible repeat of 1868 EQ)	11.3%	6.7
Northern + Southern Hayward	8.5%	6.9
Mt. Diablo	7.5%	6.7
Green Valley –Concord	6.0%	6.7
San Andreas: Entire N. CA Segment (possible repeat of 1906 EQ)	4.7%	7.9
San Andreas: Peninsula Segment (possible repeat of 1838 EQ)	4.4%	7.2
Northern San Gregorio segment	3.9%	7.2
San Andreas: Peninsula + Santa Cruz segment	3.5%	7.4

Climate Change Considerations

As climate change occurs, it is anticipated that changes to precipitation regimes and hydrological patterns would result. Since liquefaction is dependent on the presence of shallow subsurface water, an increase in groundwater levels could occur due to increased precipitation, as well as sea-level rise, which is anticipated to inundate low lying coastal areas within Capitola. The potential increase in shallow subsurface water conditions could expand the potential liquefiable areas within the City, increasing the risk of future damage to structures within the City.

Vulnerability/Risk Assessment

While Capitola remains a seismically active area, there are no active earthquake faults located within the City limits. Therefore, an overlay analysis between the earthquake faults and the City's critical facilities was not conducted. However, given the proximity to active faults, it is anticipated that a seismic event will produce intense shaking that could impact the entire community's population and systems. Depending on the intensity of shaking and location of the earthquake epicenter, buildings, structures, roadways, and utility systems (i.e. water lines, sewer lines, power lines, and storm drains) could be damaged. It is difficult to identify specific areas within the City that may be more vulnerable than others as a result of this impact. Based on this, it is assumed that all areas are equally vulnerable as a result of seismic impact.

Based on the extent of liquefaction potential zones within the City (Exhibit 6) and the location of critical facilities (depicted on Exhibit 6), Table 15: Capitola Critical Facilities Located in a Liquefaction Potential Zone identifies the critical facilities that fall within each zone of liquefaction potential, ranging from low to very high and the financial implications of their loss. Those areas where liquefaction potential is unknown is determined to be "Undefined".

It is expected that a liquefaction event would most likely impact facilities within the "Very High" potential zone. If all of the facilities in that zone are completely destroyed the loss would amount to $27,500,000. A liquefaction event impacting facilities in the "High" potential zone could result in a total loss of $22,000,000. While it is unlikely that an event would impact facilities in the low liquefaction potential zones and the undefined liquefaction areas, a rare, large, catastrophic event could impact facilities within all liquefaction zones. The total potential losses for an event of this scale are estimated to be a total of $125,500,000.

The extent of the liquefaction potential layer did not allow for the intersection of the Capitola Wharf location. However, given the proximity to water and similar characteristics to other areas of high liquefaction potential within the City, it is assumed that liquefaction could occur in the vicinity of this location.

Table 15: **Capitola Critical Facilities Located in a Liquefaction Potential Zone**

Map #	Facility	Very High (A)	High (B)	Low (D)	Undefined (Unkn)	Replacement Value	Contents Value	Potential Loss
1	City Hall/Emergency Operations Center		X			$8,000,000	$750,000	$8,750,000
1	Capitola Police Station		X			$4,000,000	$750,000	$4,750,000
2	Central Fire Station #4		X			$3,000,000	$100,000	$3,100,000
3	Jade Street Community Center -- Emergency Shelter			X		$3,000,000	$200,000	$3,200,000
4	New Brighton Gym -- Emergency Shelter			X		$2,500,000	$75,000	$2,575,000
4	New Brighton School -- Back-up Emergency Shelter			X		$4,000,000	$700,000	$4,700,000
5	Capitola Library -- Backup Emergency Operations Center			X		$10,000,000	$700,000	$10,700,000
6	Capitola Corporation Yard			X		$2,000,000	$500,000	$2,500,000
7	Stockton Avenue Bridge	X				$10,000,000	N/A	$10,000,000
8	Capitola Wharf	Outside of Hazard layer extent				$20,000,000	$300,000	$20,300,000
9	Capitola Beach Sea Wall	X				$5,000,000	N/A	$5,000,000
10	New Brighton State Park--staging area for emergency response		X	X	X	N/A	N/A	N/A

Table 15: **Capitola Critical Facilities Located in a Liquefaction Potential Zone**

Map #	Facility	Very High (A)	High (B)	Low (D)	Undefined (Unkn)	Replacement Value	Contents Value	Potential Loss
11	Cliff Drive -at risk arterial (sea wall and road)			X		$8,000,000	N/A	$8,000,000
12	Park Avenue-at risk arterial (sea wall and road)			X		$4,000,000	N/A	$4,000,000
13	Police Communications Antenna-Capitola Mall			X		$100,000	N/A	$100,000
14	Police Communications Antenna-AAA Building			X		$100,000	N/A	$100,000
15	Noble Gulch Storm Pipe		X			$10,000,000	N/A	$10,000,000
16	38th Avenue Drainage Facility			X		$2,000,000	$300,000	$2,300,000
17	Capitola Pump Station-Esplanade Park				X	$10,000,000	$800,000	$10,800,000
18	Soquel Pump Station	X				$10,000,000	$1,700,000	$11,700,000
19	Lawn Way Storm Drain Pump Station	X				$500,000	N/A	$500,000
20	Soquel Creek Water District Treatment Plant, Garnet Street			X		$2,000,000	$700,000	$2,700,000
21	Soquel Creek Water District Seawater Intrusion Prevention Well, Monterey Avenue			X		$2,000,000	$70,000	$2,070,000
22	Soquel Creek Water District MacGregor Booster Pumping Station			X		$300,000	N/A	$300,000
23	Capitola Beach Flume	X				$2,000,000	N/A	$2,000,000

Table 15: **Capitola Critical Facilities Located in a Liquefaction Potential Zone**

Map #	Facility	Very High (A)	High (B)	Low (D)	Undefined (Unkn)	Replacement Value	Contents Value	Potential Loss
24	Capitola Beach Jetty				X	$3,000,000	N/A	$3,000,000
25	Grand Avenue Cliffs				X	N/A	N/A	N/A
	Total Potential Losses					$125,500,000	$7,645,000	$133,145,000

3.4.2 Coastal Storm/ Flooding

Identifying Coastal Storm and Flooding Hazards

Flooding and coastal storms present similar risks and are usually related types of hazards in Capitola. Coastal storms can cause increases in tidal elevations (called storm surge), wind speed, coastal erosion, and debris flows, as well as flooding.

Coastal storms are generated in the Pacific Ocean and, as they rise over the mountain and ridges that border the eastern boundaries of Santa Cruz County, the air associated with these storms cools, resulting in large amounts of precipitation. The topography of the County provides fairly steep and well defined watershed areas to funnel the falling rain into runoff tributaries. Periods of heavy rainfall are common during fall and winter months causing Soquel Creek, the major drainage course through Capitola, and its tributaries to rise.

During a flood, excess water from rainfall or storm surge accumulates and overflows onto stream banks, beaches, and adjacent floodplains (as illustrated in Figure 4). Floodplains are lowlands adjacent to rivers, lakes, and oceans that are subject to recurring floods. Several factors determine the severity of floods, including rainfall intensity and duration; creek and storm drain system capacity, and the infiltration rate of the ground.

A flood occurs when a waterway receives a discharge greater than its conveyance capacity. Floods may result from intense rainfall, localized drainage problems, tsunamis or failure of flood control or water supply structures such as culverts, levees, dams or reservoirs. Floods usually occur in relation to precipitation. Flood severity is determined by the quantity and rate at which water enters the waterway, increasing volume and velocity of water flow. The rate of surface runoff, the major component of flood severity, is influenced by the topography of the

Figure 4 - Flooding Along Soquel Creek Northwest of the Capitola Village (ca. 1996)

region as well as the extent to which ground soil allows for infiltration in addition to the percent of impervious surfaces.

Floodwaters can carry large objects downstream with a force strong enough to destroy stationary structures such as homes and bridges and break utility lines. Floodwaters also saturate materials and earth resulting in the instability, collapse, and destruction of structures as well as the loss of human life.

3.4.3 Profiling Coastal Storm/ Flood Hazards

Location

Capitola Wharf: The Capitola Wharf is located in Monterey Bay and serves as a tourist attraction within Capitola Village. The wharf has a long history within the City, first founded in 1857. The current Capitola Wharf (Figure 5) was constructed in the 1980's following storm damage. It is an 855 foot long structure that contains a bait shop, restaurant, restroom facilities, and free fishing. This wharf is particularly vulnerable to coastal storms.

Figure 5 - View of Capitola Wharf looking South (ca. 2012)

Soquel Creek Watershed: Capitola is located in the lower reaches of the Soquel Creek Watershed, which is located between the cities of Santa Cruz and Watsonville. The Soquel Creek watershed drains an area of approximately 42 square miles. Major tributaries include the West Branch (Burns, Laurel, Hester Creek, Amaya Creek, Fern Gulch, Ashbury Gulch, and Hinkley Creek) and the Main Branch (Moore's Gulch, Grover Gulch, Love Creek, and Bate's Creek). Other tributaries include Noble Gulch, Porter Gulch, Tannery Gulch and Borregas Creek. Principal land use in the watershed includes urban development, rural residential development, agriculture, parks and recreation, and mining and timber harvesting. The Village, a cultural and business center in Capitola, is located at the terminus of Soquel Creek, where it enters the Pacific Ocean. Storm events can result in a significant amount of vegetation debris, which can get blocked at the Stockton Bridge and further exacerbate flood conditions.

Noble Gulch: Noble Gulch is a significant drainage that flows into Soquel Creek at the Capitola Village. Starting in the 1920's, the last 2,000 feet of the Gulch (west of Bay Avenue) was diverted via a 72-inch drainage pipe that extends under the current Pacific Cove Mobile Home Park. During a heavy storm in March 2011, high storm flows in Noble Gulch broke a 72 inch storm drain resulting in flood waters damaging the mobile home park and downstream properties. More information about this event is provided in the *Past Occurrences* section below.

FEMA Special Flood Hazard Area Map: Exhibit 7 - Flood Hazard Zones identifies the 100 and 500 year floodplains as identified by FEMA. The entire stretch of Soquel Creek (within the City limits) and a portion of Noble Gulch creek are located within the 100-year flood zone, which is generally narrow and follows the flow path of the main channel.

Extent

Exhibit 7 identifies the special flood hazard areas within the City of Capitola. These areas are subject to the 100 year flood (1 percent annual chance flood event), 500 year flood (.2 percent annual chance flood event), and

coastal flooding (1 percent annual chance flood event with additional hazards associated with storm-induced waves). The TAC noted that occasionally waves from coastal storms do surpass the seawall built in the 1980s, which can cause localized flooding in the Capitola Village. Table 16: FEMA Flood Zones provides definitions of the FEMA Special Flood Hazard Area Zones delineated on Flood Insurance Rate Maps (FIRMs).

Table 16: **FEMA Flood Zones**

Annual Probability of Flooding of 1% or greater (100 Year Flood Zones)	
A	Subject to 100-year flood. Base flood elevation undetermined.
AE or A1-A30	Both AE and A1-A30 represent areas subject to 100-year flood with base flood elevation determined.
AH	Subject to 100-year shallow flooding (usually areas of ponding) with average depth of 1-3 feet. Base flood elevation determined.
AO	Subject to 100-year shallow flooding (usually sheet flow on sloping terrain) with average depth of 1-3 feet. Base flood elevation undetermined.
V	Subject to 100-year flood and additional velocity hazard (wave action). Base flood elevation undetermined.
VE or V1-V30	Both VE and V1-V30 represent areas subject to 100-year flood and additional velocity hazard (wave action). Base flood elevation determined.
Annual Probability of Flooding of 0.2% to 1% (500 Year Flood Zone)	
B or X500	Both B and X500 represent areas between the limits of the 100-year and 500-year flood; or certain areas subject to 100-year flood with average depths less than 1 foot or where the contributing drainage area is less than 1 square mile; or areas protected by levees from the 100-year flood.
Annual Probability of Flooding of Less than 0.2%	
C or X	Both C and X represent areas outside the 500-year flood plain with less than 0.2% annual probability of flooding.
Annual Probability of Flooding of Less than 1%	
No SFHA	Areas outside a "Special Flood Hazard Area" (or 100-year flood plain). Can include areas inundated by 0.2% annual chance flooding; areas inundated by 1% annual chance flooding with average depths of less than 1 foot or with drainage areas less than 1 square mile; areas protected by levees from 1% annual chance flooding; or areas outside the 1% and 0.2% annual chance floodplains.

The potential extent of flooding from Soquel Creek is quantified using the scale depicted in Figure 6. This scale illustrates stage level (water elevation within the creek) and the corresponding stage category (base flow, watch, monitor, flood warning) on the left hand side and past events (included measured flood depth) on the right hand side. Seven events in the past 30 years have exceeded a five year flood event, triggering a flood warning stage along Soquel Creek. Information regarding historic flooding events, including flood depth, are described in the Past Occurrences section of this hazard profile.

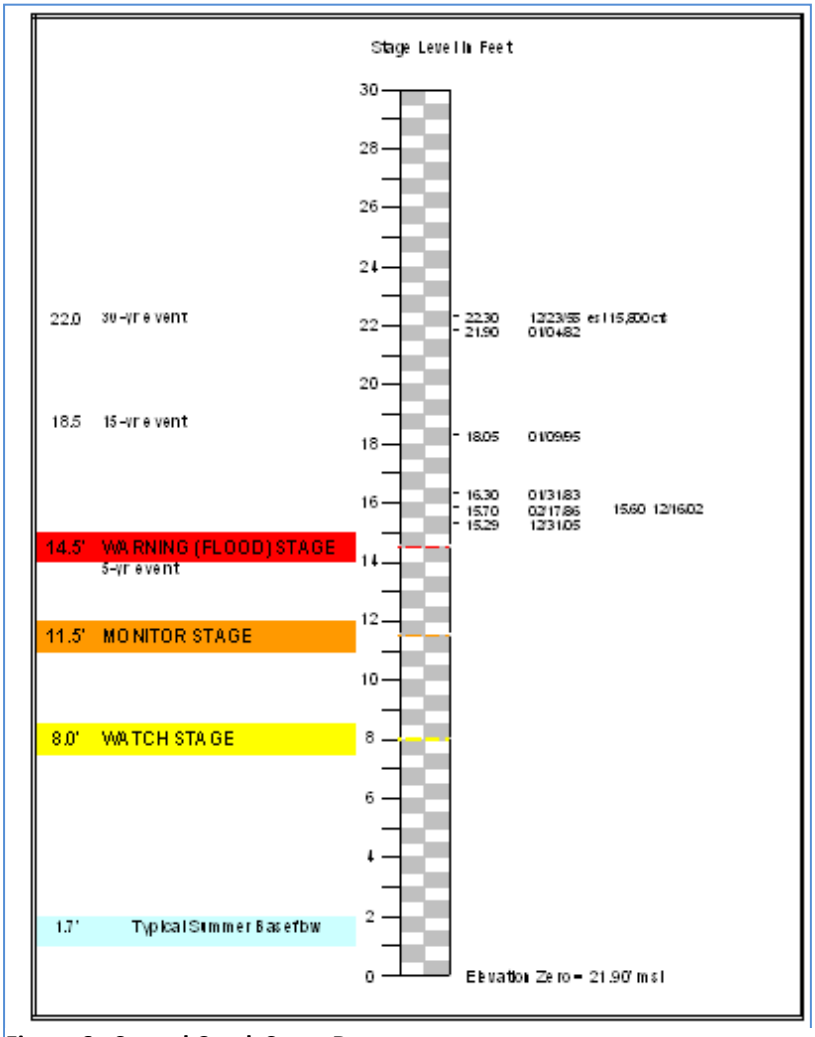


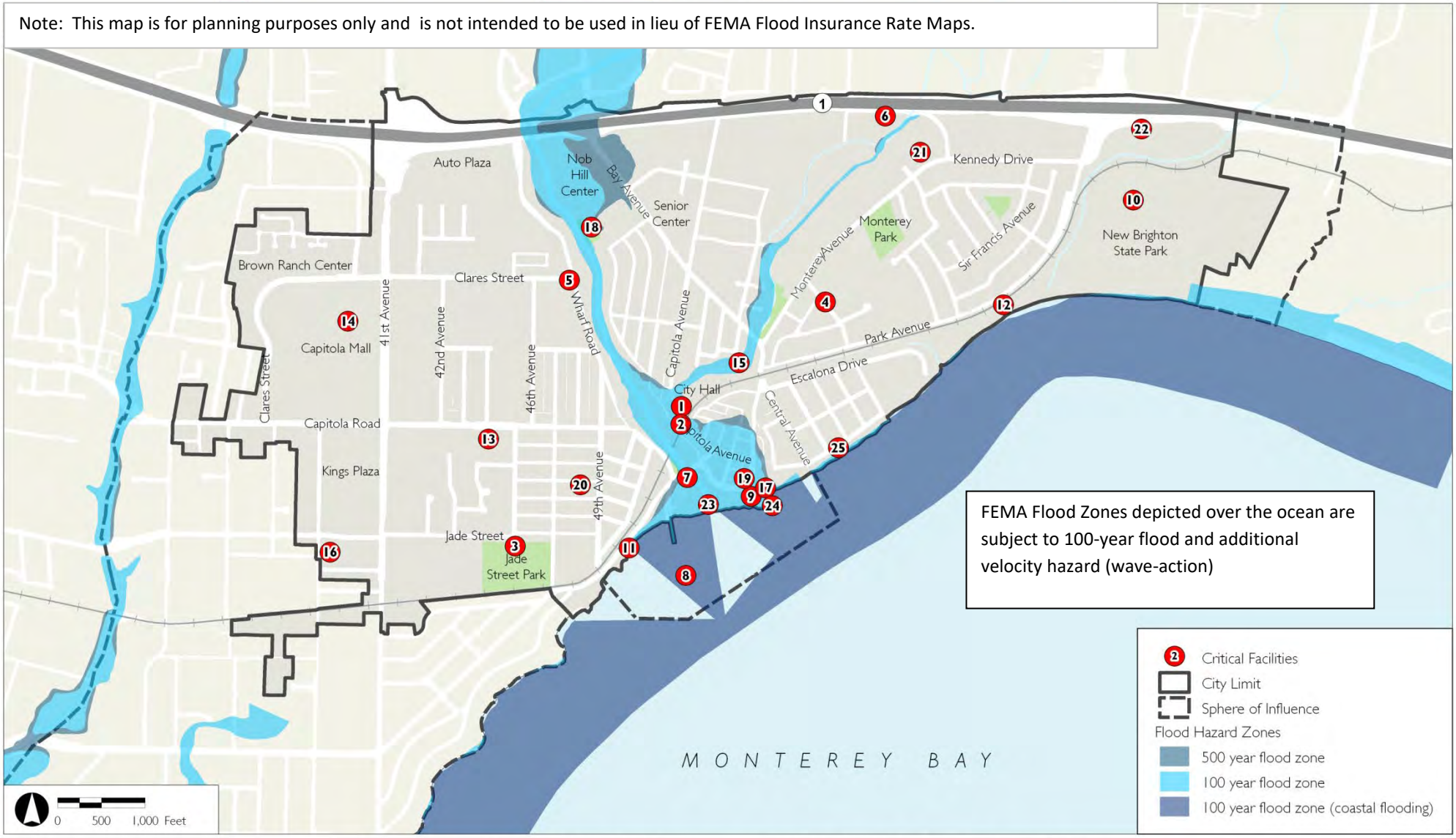
Figure 6 - Soquel Creek Stage Data

(Source: City of Capitola Public Works)

FLOOD HAZARD ZONES

EXHIBIT 7

Note: This map is for planning purposes only and is not intended to be used in lieu of FEMA Flood Insurance Rate Maps.



Source: City of Capitola, 2010; Santa Cruz County, 2011; FEMA DFIRM Santa Cruz County, California, USA. DFIRM Special Flood Hazard Areas (Flood Plains). FIRM and FIS effective date December 1, 2003.

Past Occurrences

Coastal Storm: Past events of storm surge, high surf/tide, flooding, and coastal erosion that have affected the City are identified in Table 17: Historical Coastal Storm and High Surf Events. This information along with the pictures depicting flooding and coastal storm damage in Figures 7 through 9 were provided by the City of Capitola Historical Museum.

Figure 7: Coastal Storm (ca. 1926)

Figure 8: Coastal Storm (ca. 1940)

Figure 9: Coastal Storm (ca. 1983)

Table 17: **Historical Coastal Storm and High Surf Events**

Date	Event	Injury	Impact/Property Damage
January 1862	Storm/Flood		Major event- Soquel village inundated; mills, flumes, school, town hall, houses and barns were destroyed. Massive pile of debris went out to sea and then washed ashore at Soquel Landing.
November 25, 1865	Storm/High Tide		500 feet of the Soquel Landing wharf is lost; the remaining 600 feet are deemed "useless". Nearby barn blown down. Two young whales and a hair cloth sofa washed ashore. Waves described as "mountain high". Wharf damage is $6,000. Pilings are deposited in a potato field beyond the beach.
December 14, 1867	Storm		Wharves damaged in Aptos and Watsonville but no specifics are listed for Soquel Landing.
September 19, 1868	Tidal Wave		High tide described as tidal wave; damage unknown.
February 3, 1869	Storm/ Flood/ Slides/ Washouts		New bridge washed away at Soquel; roads impassable.
December 23, 1871	Southeast gale, food, high tide		Water gauged to be "higher than flood of 1862."
January 24, 1874	Storm		Roaring surf. Rain threatens crops.
January 19, 1878	Storm with Tide		No Capitola impact recorded.
January 30, 1881	Storm		Conflicting reports on damage to Capitola. One report describes the resort as destroyed, while another stated damage was "not as serious"
December 16, 1886	High surf		Capitola impact unknown
December 30, 1886	High surf		High seas; ships prevented from landing.
May 10, 1887	Heaviest surf of the season		No damage reported for Capitola.
January 5, 1889	Storm		Damage to beach areas
December 26, 1889	Storm		Train service stopped; Santa Cruz County becomes isolated.
January 6, 1890	Storm / Mudslides in mountains		Worst winter in 40 years; concern for grain crops
February 8, 1892	High Tides	Swimmers endangered	Yacht "Petrel" washed ashore at Capitola; beachfront concessions damaged.
January 12, 1899	Severe Storm		Duration of several days; damage unknown.
January 2, 1900	Storm		Severe; no damage listed.
March 14, 1905	Storm		Judged to be "worst in 27 years." Capitola impact unknown.
April 27, 1907	Storm		High water and flooding; Capitola damage unknown.
January 21, 1911	Storm		Unknown

Table 17: **Historical Coastal Storm and High Surf Events**

Date	Event	Injury	Impact/Property Damage
March 7, 1911	Storm		Unknown
November 27, 1913	Storm and Tide	Fisherman Alberto Gibelli stranded when mid-section of wharf washed away.	Great groundswells when the tide was highest. Waves ran across the beach to the Esplanade and water spread "clear to the railroad tracks." Union Traction Company tracks covered with sand. Water reached the Hihn Superintendent's Building (Capitola and Monterey Avenues), and waves were described as "monster." About 200 feet washed of wharf washed away. Stranded fisherman rescued and pulled underwater to safety. A huge pile of debris covered the beach and was cut-up for firewood.
November 28, 1919	Storm		Damage high; no Capitola details.
December 27, 1921	Storm		Described as "great".
February 12 and 13, 1926	High Tides		Waves to 20 feet. Wharf damaged. Sea wall promenade broken at Venetian Courts. Apartments flooded. Breakers slammed into Esplanade, destroying boathouse/bathhouse, beach concessions. Tide hits the second floor of Hotel Capitola. Water runs a foot deep through village.
December 26, 1931	Storm		Soquel Creek rises; cleans lagoon at Capitola. Debris and wood deposited on the beach.
December 28 and 29, 1931	Storm and High Tide		Damage to cottages and concessions at New Brighton Beach. Roads fill with "the muck of the sea." At Seacliff Beach, the concrete ship Palo Alto is shaken loose and moved about three feet as if "impelled by the spirit of the sea to fulfill its destiny and start moving." Soquel "River" widens to sixty feet, the highest since 1890, damaging property in Soquel and all the way to the mouth at Capitola. Orchards are lost with the rapid rise of water. Hundreds gather to watch the tides batter the concessions at the beach. There is a "vortex of water where the river and sea meet." The waterfront is piled high with flood debris thrown back up the beach. The creek cuts across the beach and moves sand below the new outlet. Two months later, workers discovered a noticeable settling of the western end of the bathhouse, due to a break in the retaining wall. This left a portion of the bathhouse supported only by its concrete flooring. Repairs required rebuilding the retaining wall and replacing the fill.
March 22 and 23, 1937	Storm		Boats in the streets at Capitola. An estimated $3,000 is spent to repair the sea wall at the Venetian Court Apartments.

Table 17: **Historical Coastal Storm and High Surf Events**

Date	Event	Injury	Impact/Property Damage
January 4, 1939	Wind and Waves		Main damage to Capitola Beach Club at the Esplanade and Monterey Avenue. Water and sand carried into the structure and spread out over the dance floor to the bandstand. While the storm was still raging, thieves jimmied the back door of the club's tap room, and made away with two slot machines, along with the stands on which they had rested. Ocean also swept over the Esplanade during the night, and into town for a block-and-a-half, carrying sand and rocks, some 6-8 inches in diameter. Waves hit the front and sides of the pier. Sand and rocks were swept into lower terraces of the Venetian Court and covered porches of the casino on the waterfront, but did no serious damage.
January 8, 1940 9pm until Noon	Storm		The "old Capitola casino" owned by Capitola Amusement Company was the principal victim of storm. Casino "capsized" shortly after 9 a.m. Plans for new structure announced immediately.
January 12, 1940	Storm		Most rain "since 1890" reported.
January 26, 1940	Storm		"Shatters all records"
March 31, 1940	Storm		"Wettest day in Santa Cruz history."
December 23, 1940	Storm		Flood conditions, winds
February 9, 1941	Storm		Near record storm
April 2, 1941	Severe Storm		Lasting many days. Damage unknown.
August 1, 1949	"Heaviest surf in 20 years"		18 foot waves recorded along the coast. Swimmer drowns in Santa Cruz.
Winter 1953	Giant Swells		Ocean side of building at the end of the Capitola Wharf smashed in by waves 20-30 feet at high tide. Six pilings broken off.
April 3, 1958	High Tide		Esplanade smashed by tides. Andy Antonetti's Merry-go-round damaged; horses are knocked off and washed down San Jose Avenue.
February 9, 1960	Gale winds, heavy seas		Power outages, slides, and winds 35-40 mph. Capitola hardest hit. Damage estimated at $100,000. Ten Venetian Court apartments flooded. "A sign was ripped off the end of the wharf, rolled into a ball, and deposited into an apartment." Heavy waves smashed the beach restaurants, amusement concessions, and the merry-go-round. Rocks and logs strewn across the beach. Water pushed back under the Stockton Bridge, crushing the riverfront fences 100 yards on either side. An estimated $5,000 in damage was done to the wharf building, but not much happened to the wharf itself. Cliffs crumbled on Grand Avenue. Police Chief Marty Bergthold called it "The worst storm in 15 years." A portion of Grand Avenue falls into the ocean.'

Table 17: **Historical Coastal Storm and High Surf Events**

Date	Event	Injury	Impact/Property Damage
December 1965	Storm		The City replaced 21 pilings under the wharf that were weakened by the storm. Capitola officials fear that waves would smash the seawall which protected sewer lines that ran from Capitola's pumping station to the East Cliff Sanitation District plant. That winter, the county public works department offered 500 cubic feet of rock rubble to be placed against the seawall.
January 1967	Storm		Reported as heavy
January 1973	Storm		Beach littered with tons of driftwood after heavy rains.
December 21, 1976	High waves		Waves crash over wharf
January 1978	High waves		Capitola Village streets flooded. Waves crash over wharf.
October 2, 1979	High waves		At least eight sailboats were destroyed at Capitola during the morning. A powerful swell brook 15 boats from their moorings off the Capitola Wharf. The boats were pushed ashore by 12-to-20 foot waves that pounded the shoreline
December 17, 1982	Storm		Restaurant on the newly renovated Capitola Wharf is damaged in storm.
January 27, 1983	High Tide		Capitola Wharf buildings, the Venetian Courts, the former boathouse building (Mr. Toots Downstairs) and all other business of the Esplanade were flooded. Water extends down San Jose Avenue and Lawn Way. Huge logs and debris are scattered through town. The giant surf took out a 30-foot section of the wharf which had been renovated in 1982.
February 10, 1983	High Tide		Surf rolls over the sea wall along the Esplanade. Water and debris extend as far as Capitola Avenue.
March 1, 1983	High Tide/Strong Winds		Waves damaged the restaurant at the end of the wharf, crashed over beach wall and entered restaurants on the Esplanade, "but damage was nothing compared to the million-dollar loss suffered in January," said Capitola City Manager Steve Burrell.
Winter 2008	High Tide		Old bathhouse/boathouse building (Margaritaville/Stockton Bridge Grill) battered by swells. This was the last significant coastal storm/flooding event before 2020 to occur.

Flooding: Table 18: Historical Flood Events identifies notable occasions of flooding as researched by the City of Capitola Historical Museum.

Table 18: **Historical Flood Events**

Date	Injury	Impact/Property Damage
1791-1792		Santa Cruz Mission destroyed.
1847		Sawmill constructed on Soquel Creek (Rancho Soquel) destroyed. It had been built by John Hames and John Daubenbiss, who later obtained lands of the Rancho Rodeo, and became the founders of the town of Soquel (1852).
1852		This was a major flood event but impact not recorded (no newspapers had yet been established).
December 4, 1875		Compared to ferocity of the 1862 flood.
March 10, 1884		Storm lasted five days. No Capitola impact described in newspapers.
January 27, 1890		Judged to be as bad as 1852, 1862, and 1871; Capitola floods, footbridge and span of wagon bridge destroyed. Esplanade flooded—buildings to be replaced in "permanent form." A huge pile of debris appears along the beach.
January 20, 1906		Buildings from Loma Prieta Lumber Company camp above Soquel are destroyed. Debris at Capitola. Downtown Soquel floods. Landslides in hills.
January 1, 1914		Flood in Soquel and along Soquel Creek.
January 4, 1935		Capitola Village floods; thirty feet of the sea wall is taken out. Beach playground disappears. Venetian Courts hit hard but damage minimal.
February 14, 1937		Soquel Creek floods in Soquel Village due to logjam at the bridge on Soquel Drive. Landslides in watershed.
February 27, 1940		Logs pile against bridge in downtown Soquel and village floods. Landslides in watershed.
February 5, 1945		Local damage unknown.
December 22, 1955		At the Soquel Drive bridge in downtown Soquel, remains of a four-room house and five cabins joined the rubble that wedged against the bridge abutments, causing the bridge to collapse. Overall damage to property in Soquel and Capitola exceeded $1 million. Capitola damage included the Venetian Courts. Noble Creek and Tannery Creek also flooded.
December 20, 1964		Storm and tide alarms City with a disappearing beach.
January 1980		No damage reported.
January 3-5, 1982	Estimated damage to public property: $270,889	Torrential rainfall, floods, mudslides countywide. Soquel Creek overflowed and flooded Soquel. The logjam at the bridge was estimated to be nearly 100 yards wide and 25 feet high. In Capitola, damage was comparatively minimal. The roadway leading to the Stockton Avenue bridge was damaged. The bridge bulkhead was undercut. Several of the Venetian Court units were damaged and a portion of the seawall gave way.
March 1995		The creek rose near the village.
Winter 1996		Yards and basements of homes along both sides of Soquel Creek near the village were flooded.
March 24 and 26, 2011		Noble Creek floods village; Tannery Creek rushes through New Brighton Parking lot and undermines the cliff roadway.

The most recent and damaging event that has occurred in the past 15 years is the 2011 flooding event in Capitola, which is summarized below:

March 2011: Rushing water from a heavy storm overwhelmed an underground pipe drain that sends water from Noble Gulch Creek, which a tributary to Soquel Creek. This event caused a sinkhole at Pacific Cove Mobile Home Park, causing damage to mobile homes and businesses within Capitola Village. Water cascaded down Capitola Avenue into the Village flooding numerous businesses as well as City buildings (Police Station, Fire Station, and City Hall), see Figure 10. The Capitola Public Works Director estimated approximately $500,000 worth of damage to city property, and several million dollars' worth of damage to the city-owned Pacific Cove Mobile Park occurred as a result of this event. According to the National Climactic Data Center (NCDC), property damage county-wide resulting from this flood was estimated at $15.5 million.

This was the last significant flooding event before 2020 to occur

Figure 10 - Flooding within the Capitola Village (ca. 2011)

Probability of Future Occurrence

Coastal Storms: Significant storms, with associated damage, strike the Monterey Bay communities with a frequency of one large storm every 3 to 4 years (Ott Water Engineers, Inc., 1984). This equates to a 25% to 33% chance of a large storm occurring within Capitola in a given year.

Flooding: The FEMA flood zones identified on Exhibit 7 provide the probability of a future occurrence of a flood in Capitola. The probability of occurrence is expressed in a percentage of the change of a flood of a specific extent occurring in any given year. For areas located within the 100 year flood zone, there is a 1% chance in a given year that this area will be inundated by flood waters. For areas located within the 500 year flood zone, this probability decreases to 0.2%. Exhibit 7 also identifies the critical facilities within the City that are located within the 100 and 500 year floodplains.

Climate Change Considerations

Climate change can increase the probability and intensity of both fluvial (river) and coastal storms, which could increase the probability and intensity of flooding in Capitola, particularly in the Village and along the Soquel River.

The City of Capitola Coastal Climate Vulnerability Report (CCWG, 2017) considers flooding and severe coastal storms, which are exacerbated due to sea level rise to be a considerable, potential risk to the City and its residents. Sea level rise has been an on-going progression and due to climate change, this progression has recently and will in the future become more severe.

As shown in Exhibit 8 - Future Combine Coastal Climate Change Hazard Zones (2030, 2060, and 2100), flooding and coastal storm hazard zones were projected and mapped for the years 2030, 2060, and 2100, and quantified in terms of number of damaged or lost facilities and assets and their value (see analysis below). A copy of the report is included as Appendix C and incorporated herein by reference as part of this LHMP update.

Vulnerability/Risk Assessment

Table 19: Capitola Critical Facilities Located in a FEMA Flood Zone identifies the Capitola critical facilities located within the 100 year FEMA floodplain, which have a greater risk to flooding. The potential loss is based on the assumption that all facilities within the 100 year flood zone would be completely destroyed during a coastal storm/flooding event and shows the maximum potential losses. While this is possible, actual losses will vary based on the magnitude of the event. In addition to loss of critical facilities, it is estimated based on 2010 Census Tract data that up to 967 residents located within the City and Sphere of Influence could be impacted by 100 year flood events. This estimate is based on the area of flood impact within each Census Tract multiplied by the population density of the Census Tract. Since the majority of the City's 100 year flood zone is located along Noble Gulch and Soquel Creek, roadways and utility systems (water pump stations, sewer lift stations, storm drains, and overhead electric lines) adjacent to these drainages are most susceptible to flood related hazards.

Table 19: **Capitola Critical Facilities Located in a FEMA Flood Zone**

Map #	Facility	Within 100 Year Flood Zone	Replacement Value	Contents Value	Potential Loss
1	City Hall/Emergency Operations Center	Y	$8,000,000	$750,000	$8,750,000
1	Capitola Police Station	Y	$4,000,000	$750,000	$4,750,000
2	Central Fire Station #4	Y	$3,000,000	$100,000	$3,100,000
7	Stockton Avenue Bridge	Y	$10,000,000	N/A	$10,000,000
8	Capitola Wharf	Y	$20,000,000	$300,000	$20,300,000
9	Capitola Beach Sea Wall	Y	$5,000,000	N/A	$5,000,000
15	Noble Gulch Storm Pipe	Y	$10,000,000	N/A	$10,000,000
17	Capitola Pump Station-Esplanade Park	Y	$10,000,000	$800,000	$10,800,000
18	Soquel Pump Station	Y	$10,000,000	$1,700,000	$11,700,000
19	Lawn Way Storm Drain Pump Station	Y	$500,000	N/A	$500,000
23	Capitola Beach Flume	Y	$2,000,000	N/A	$2,000,000
24	Capitola Beach Jetty	Y	$3,000,000	N/A	$3,000,000
	Total Potential Losses		**$85,500,000**	**$4,400,000**	**$89,900,000**

Combined Impacts of Coastal Climate Change

The California Coastal Commission Sea Level Rise Policy Guidance (November 2018) recommends all communities evaluate the impacts from sea level rise on various land uses. The guidance recommends using a method called "scenario-based analysis". Since sea level rise projections are not exact, but rather presented in ranges, scenario-based planning includes examining the consequences of multiple rates of sea level rise, plus extreme water levels from storms and El Niño events.

In general, the Coastal Commission recommends using best available science (currently the 2018 State of California Ocean Protection Council [OPC] SLR Guidance) to identify a range of sea level rise scenarios, including the low, medium-high, and, as appropriate, extreme risk aversion scenario. These projections are an update from a previous scenario estimate by the National Research Council (NRC) Seal Level Rise study prepared in 2012. A comparison of these two scenarios are shown below in Table 20: Comparison of Sea Level Rise Estimates for Medium-High Risk Aversion for Capitola. The delta between the two methodologies suggests that sea level rise could be greater than previously anticipated, particularly by the year 2100.

Table 20: **Comparison of Sea Level Rise Estimates for Medium-High Risk Aversion for Capitola**

Time Horizon	NRC 2012 Projected SLR	OPC 2018 Projected SLR (Monterey Tide Gauge)	Difference
2030	0.3 ft.	0.8 ft.	0.5 ft.
2060	2.4 ft.	2.6 ft.	0.2 ft.
2100	5.2 ft.	6.9 ft.	1.7 ft.

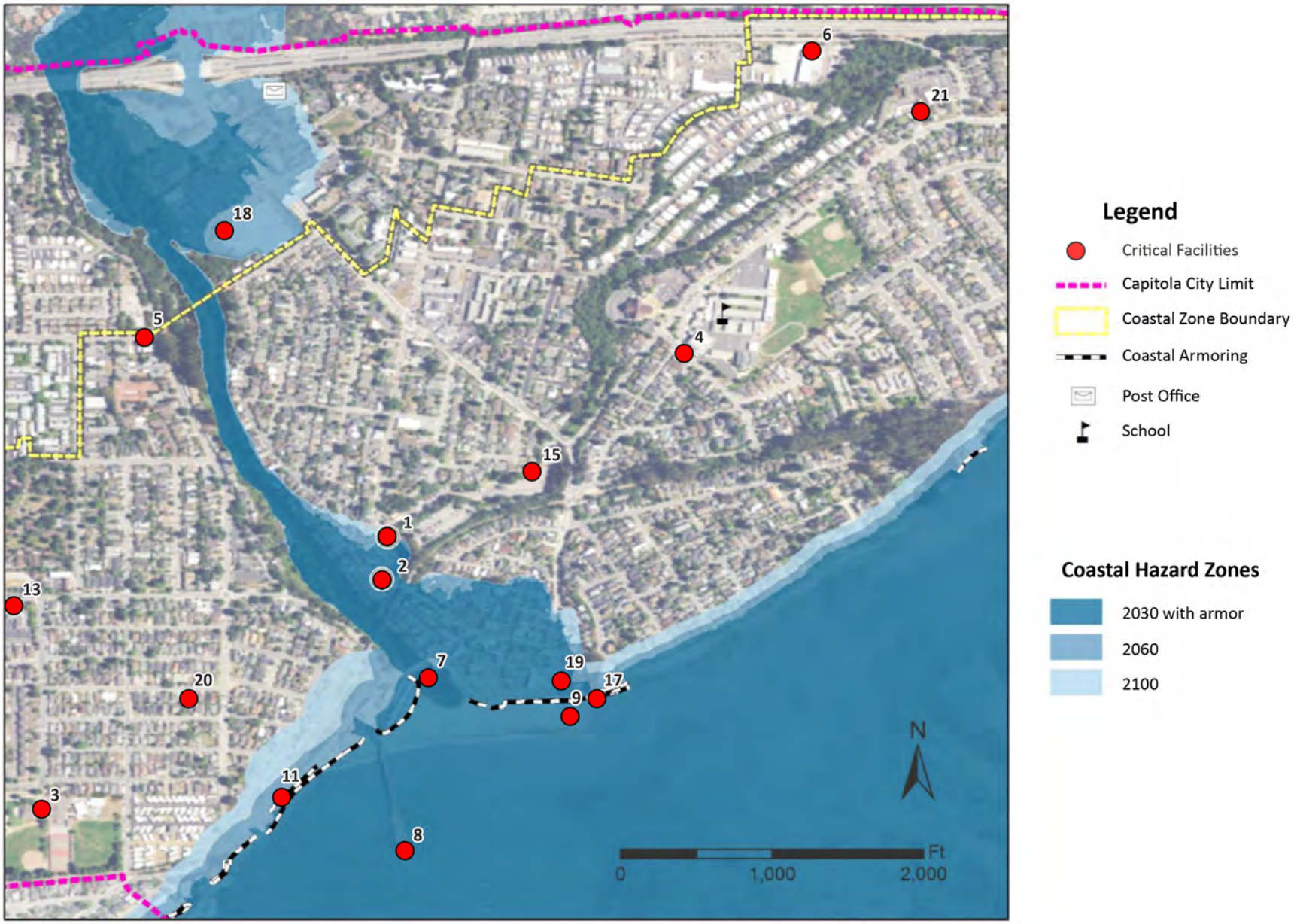
Regardless of the estimates, sea level rise, when combined with coastal storm flooding and rising tides, creates a significant threat to Capitola. For the purposes of assessment of these combined impacts of coastal climate change, the conclusions below are based on the 2017 CCWG City of Capitola Coastal Climate Change Vulnerability Report (included as part of this LHMP as Appendix C) as it analyzed a comprehensive vulnerability assessment of Capitola's public and private land use and infrastructure assets. Exhibit 8 - Future Combine Coastal Climate Change Hazard Zones (2030, 2060, and 2100) identifies areas of Future Combine Coastal Climate Change Hazard Zones (2030, 2060, and 2100). To the degree these impacts could be greater based on evolving scenario estimates only reinforces the fact that policy planning that addresses the long-range effects of the combined impacts of coastal climate change is an important issue for the City of Capitola.

Key findings from the CCWG report include:

- Infrastructure closest to the beach will continue to be impacted by the force of waves, the deposition of sand, kelp and other flotsam, and by floodwaters that do not drain between waves.
- Infrastructure further inland is most vulnerable to flooding by a combination of ocean and riverine sources.
- Infrastructure identified as vulnerable to coastal flooding by 2030 is similar to that which is currently vulnerable.

- Total property values at risk from the combined hazards of coastal climate change for 2030 were estimated at $200 million.
- Property value at risk may increase to $275 million dollars by 2060. That value is reduced by approximately $50 million dollars if current coastal armoring is replaced or upgraded.
- By 2060 use of all 12 public access ways may be restricted due to various coastal climate vulnerabilities.
- Projected flood water depths along the river walkway are estimated to be as much as 8 feet by 2060.
- Cliff Drive remains a key western access road into the downtown area and is vulnerable to cliff erosion by 2060 if coastal armoring is not replaced.
- By 2100 most of the beach may be lost due to higher sea levels and beach erosion if back beach structures are rebuilt in their current locations.
- As many as 221 properties are within the 2100 bluff erosion zone if protective structures are not maintained or replaced.
- By 2100 SLR and Fluvial models used in this analysis project that much of the downtown area may be periodically flooded during winter storms and high river discharges.
- By 2100 tidal inundation within portions of the downtown area may become a serious challenge, risking 23 residential and 23 commercial buildings to monthly flooding.
- By 2100, portions of Capitola may be too difficult and costly to protect from the combined hazards of Coastal Climate Change.

Exhibit 8 - Future Combined Coastal Climate Change Hazard Zones



3.5 Drought and Water Resources

3.5.1 Identifying Drought Hazards

Drought: A drought is a period of dry weather that persists long enough to cause problems such as crop damage and/or water supply shortages. Droughts can occur in short durations (single year occurrence) or can persist for several years (multi-year) which can impact hydrologic cycles and biologic communities. Droughts may not be predictable, but they should be expected. They occur with some regularity and varying levels of severity. The magnitude and duration of a drought is something that can be predicted based on historical records and should be taken into account in water resource planning.

The City of Capitola receives about 90% of its water supply from the Soquel Creek Water District (SqCWD), while the remaining 10% is supplied by the City of Santa Cruz Water Department (SCWD). In general, SqCWD serves areas of the City that are located east of 41st Avenue and the SCWD serves the portions of the City that are located west of 41st Avenue. Neither agency receives imported water from sources outside of the area, thus both agencies are solely dependent on local water supplies and face a number of critical constraints in their ability to provide enough water to meet current and future demand.

SqCWD obtains 100 percent of its water supply from two groundwater sources within the Soquel-Aptos area. While groundwater sources in general are usually less susceptible to seasonal drought than surface water sources, droughts do impact SqCWD's groundwater supply. Due to cumulative over-pumping for many years, coastal groundwater levels are below elevations that protect the local groundwater basin from seawater intrusion. This condition creates a state of overdraft that is exacerbated by drought conditions to the extent that less rainfall reduces groundwater recharge and generally increases water demand.

The SCWD obtains the majority of its water supply from surface water sources. Approximately 79 percent of its annual water supply needs are met by coastal stream surface diversions, and about 17 percent of its needs are met by Loch Lomond Reservoir. The remaining 4 percent of SCWD's annual supply needs are met by its Live Oak groundwater wells. The SCWD's water supply has limited capacity to serve additional users under normal conditions and has insufficient supply to meet existing demand under drought conditions.

Both water providers have experienced drought periods which resulted in water supply curtailment actions, the most recent occurring from 2007-2009, and both are susceptible to drought conditions in the future. In addition to the 2007-2009 drought, California experienced two other state-wide drought periods within the last forty years: 1976-1977 and 1987-1992.

Groundwater supply: The water supply in Capitola is primarily provided by SqCWD, which has been able to meet historical demand within its service area even though the underlying groundwater basin is overdrafted and at risk from seawater intrusion. In order to recover groundwater levels to protective elevations and eliminate overdraft, SqCWD needs to and is planning on reducing pumping to the Pre-Recovery Pumping Yield of 2,900 acre-feet per year (afy) within approximately 5 years, and maintaining pumping at or below this level for approximately 20 years. For perspective, the SqCWD pumped about 4,000 acre-feet of groundwater in 2011, so an approximate pumping reduction of 30 percent is required to meet the Pre-Recovery Pumping Yield. In response to overdraft conditions and the resulting need to reduce pumping by approximately 30 percent from 2011 levels, SqCWD continues to advocate water conservation and evaluate a desalination project with the SCWD as a supplemental

water supply. SqCWD maintains an Urban Water Management Plan[2], which outlines water conservation strategies. SqCWD also completed a Well Master Plan and will be developing up to five new wells over the next five or so years to redistribute pumping inland away from vulnerable coastal areas and to achieve more uniform drawdown of the groundwater basin.

Seawater Intrusion: Seawater intrusion is the movement of ocean water into an area occupied by fresh groundwater, causing chloride contamination of the groundwater. While coastal aquifers naturally experience some seawater intrusion due to the seawater and freshwater interface, freshwater naturally serves as a barrier to seawater moving further inland. However, when coastal groundwater levels are depressed near or below sea level due to over-pumping, seawater can move inland and contaminate groundwater.

The State of California has declared the Santa Cruz Mid-County Groundwater Basin — which supplies water to the SqCWD, Central Water District, City of Santa Cruz, and over a thousand private well users and private mutual systems — as critically overdrafted and mandated that the basin be brought into sustainability by 2040. This mandate affects all basin users, not just the SqCWD.

The SqCWD is solely dependent on groundwater as is most of the Santa Cruz Mid-County area . In addition to the groundwater basin being overdrafted, seawater intrusion is present in Pleasure Point, Aptos, Seascape, and La Selva Beach; data collected in 2017 confirmed the entire coastline is at-risk.

To address this issue, SqCWD is actively working on a groundwater replenishment and seawater intrusion prevention project called Pure Water Soquel. This project will involve taking already treated municipal wastewater from the City of Santa Cruz, purifying it through advanced water purification methods, replenishing the basin through recharge wells, and creating a seawater barrier. One of these recharge wells will be located on Monterey Avenue and replace the existing (now decommissioned) SqCWD Treatment Plant (critical facility # 21). The goal is to have the project operational by 2022.

3.5.2 Profiling Drought Hazards

Location

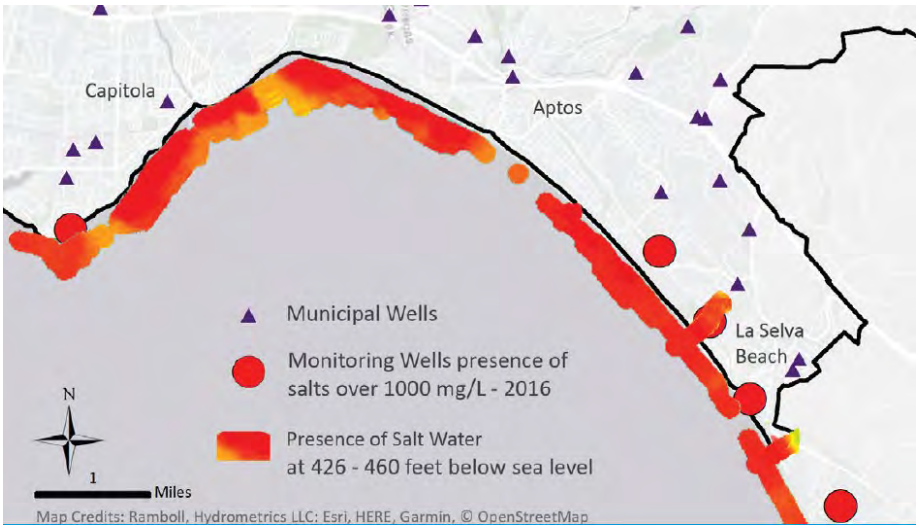
Exhibit 9 - Water Supply illustrates the SqCWD and SCWD boundaries as well as the limits of the local groundwater basin.

Drought: Droughts can occur over large regions (multiple states) or be isolated to small areas such as a City or County. The Santa Cruz County Hazard Mitigation Plan notes the entire county is susceptible to and at risk of drought conditions. Likewise, the City of Capitola is susceptible to drought.

Groundwater Supply: The majority of Capitola is served by the SqCWD, which currently relies solely on groundwater aquifers within the Soquel-Aptos area. The aquifers are located within two geologic formations that underlie the SqCWD service area. The Purisima Formation provides approximately two-thirds of SqCWD's annual production and serves the communities of Capitola, Soquel, Seacliff Beach, and Aptos. The Aromas Red Sands aquifer provides the remaining one-third of SqCWD's annual production and mainly serves the communities of Seascape, Rio Del Mar, and La Selva Beach.

[2] Soquel Creek Water District Urban Water Management Plan

Seawater Intrusion: As shown in the image below, seawater instruction is actively occurring on the Monterey Bay coastline, including Capitola.



Extent

Drought: For a county-wide perspective on the extent of seasonal drought impacts, it is helpful to reference the SCWD since they rely on surface water for water supply. They are able to meet 100% of the existing water demand in about 7 out of every 10 years and at least approximately 90% of existing demand in about 9 out of 10 years. A significant shortage occurs on average about one out of every 10 years.

In addition to water supply shortages, prolonged periods of drought in the Capitola region can exacerbate the potential for wildfires that may affect the City. A decline in water supply can also negatively affect the ability to protect lands from wildfire and/or the City's ability to respond to fire incidents.

Groundwater Supply and Seawater Intrusion:

The Pure Water Soquel project includes facilities in portions of the cities of Santa Cruz and Capitola, and in the Live Oak, Soquel, and Aptos communities of unincorporated Santa Cruz County. The treatment process is planned to be split: tertiary treatment at the Santa Cruz Wastewater Treatment Facility and Advanced Water Purification at the corner of Chanticleer Avenue/Soquel Avenue and the planned three seawater intrusion prevention wells at Monterey Avenue, Willowbrook Lane, and Cabrillo College Drive. The project will; help increase the sustainability of the District's groundwater supply, upon which it currently relies for 100% of its water supply, reduce the degree of overdraft conditions in the District's groundwater basin, protect against and aid in preventing further seawater intrusion of the groundwater basin, and promote beneficial reuse by reducing discharge of treated wastewater to the Monterey Bay National Marine Sanctuary by 25%.

Past Occurrences

Drought: In recent history, Santa Cruz County was impacted by 3 statewide drought occurrences: 1976-77, 1987-1992, and 2007-09. Table 21: Historical Drought Events presents the impacts of drought researched by the City of Capitola Historical Museum.

Table 21: **Historical Drought Events**

Date	Impact/Property Damage
1863-1864	Unknown.
1877	Capitola's founder, S.A. Hall, was boarding 300 horses at his stable during the summer. The price of hay went to $20.00 a ton due to the drought, and he lost money. When landowner F.A. Hihn increased the rent two years later, Hall couldn't afford the increase, and left
1928-1937	Reported as one of longest and most severe in state's history. Capitola is bordered by bulb ranches and floral nurseries, as well as poultry ranches and rabbit farms.
December 14, 1936	Long drought ended by rain.
1947-1949	Statewide.
1976-1977	Water conservation ordered.
1987-1992	Severe drought, water conservation ordered.
2007-2009	Water waste regulations strictly enforced; voluntary 15% conservation savings requested by local water providers.
2013 - 2017	On-going drought conditions resulted in water use restrictions throughout California. This was the last significant drought event before 2020 to occur

Groundwater Supply: The Soquel Creek Water District is currently experiencing a water supply shortfall due to overdraft of the groundwater basin.

Probability of Future Occurrence

Drought: As noted in the Santa Cruz County Hazard Mitigation Plan, one approach to evaluating probability of future events focuses on the magnitude of the worst case drought, because it is the degree of shortfall that determines what actions the community would have to take and the resulting hardships the public would face. It should also take into account, though, the chance of that event occurring before a solution is achieved. The amount of time that elapses before new supply can be developed is an important consideration because it also has a bearing on the degree of risk faced by water customers; the longer the delay, the greater the risk. As with the threat of other natural hazards like a flood or an earthquake, the probability of a severe drought in any one-year may be comfortably low.

For instance, the drought on record of 1977 has a recurrence interval of 1 in 59 years. This means the probability of such an event is 1/59 or 0.017, which is the same as a 1.7% chance of occurrence in any one year. But the percent probability of occurrence, or chance, of a shortage occurring over a longer time frame is considerably higher, which changes the perception of the significance of risk.

Groundwater Supply: The SqCWD Urban Water Management Plan addresses the fact that without incorporating additional conservation methods and a supplemental supply of water to their existing groundwater water supply, the District will be unable to service all water demands in the future without exacerbating overdraft conditions in the basin or imposing significant water use restrictions.

Seawater Intrusion: As discussed above, seawater intrusion in and around Capitola is being addressed by the Pure Water Soquel project.

3.5.3 Climate Change Considerations

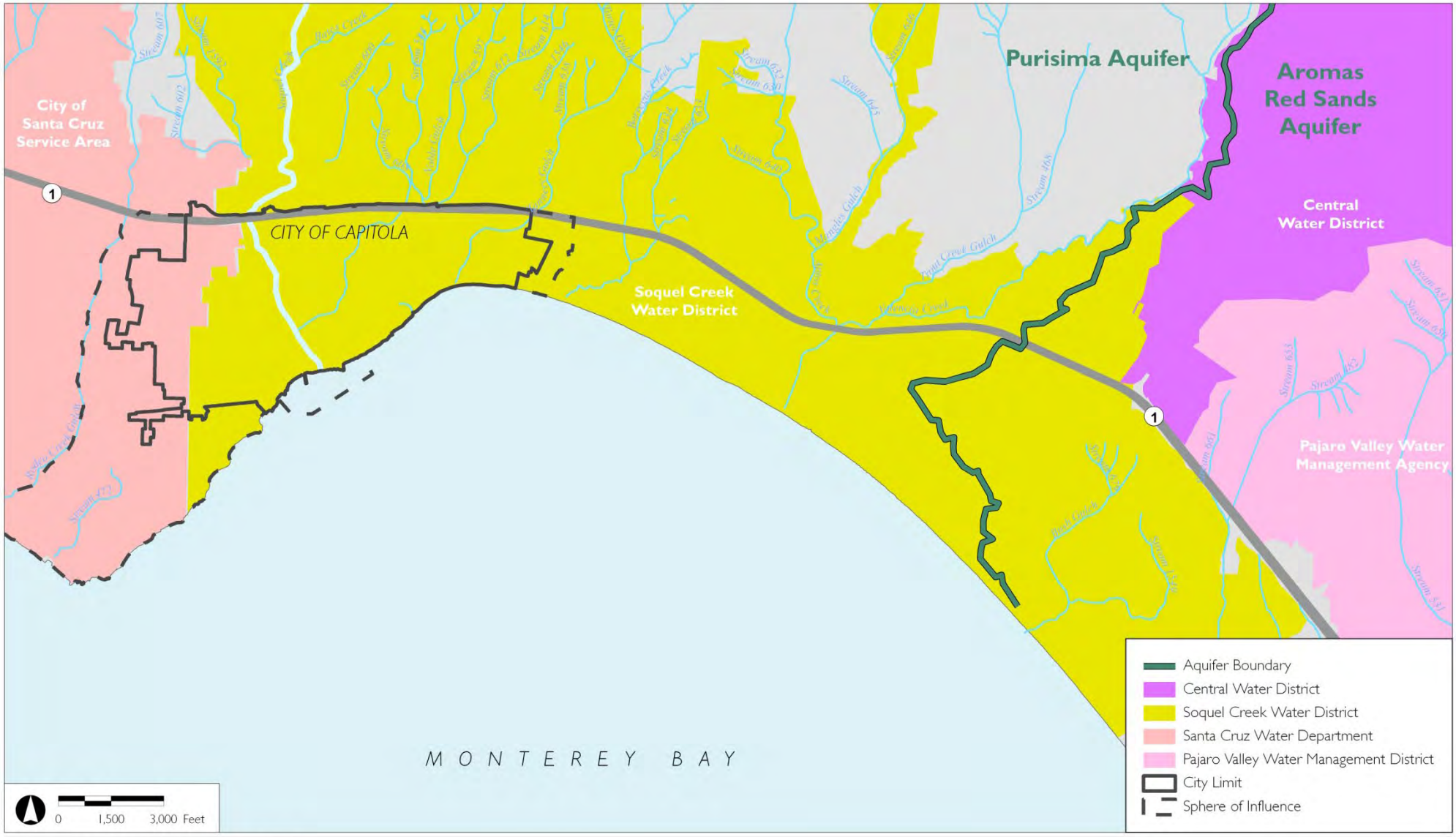
Per the SqCWD Urban Water Management Plan, consistent future use of the Aromas and Purisima groundwater sources may be affected by climate change. Climate change forecasts indicate a potentially significant decrease (e.g., 30%) in recharge of groundwater basins. Additionally, projected rises in sea level may increase the risk and extent of seawater intrusion. Due to climate change, the City of Capitola may expect more severe droughts of longer duration.

Vulnerability/Risk Assessment

Drought does not inflict physical damage on Capitola's critical assets; however, residents and businesses could be impacted by the water district they are provided by. 90% of the City's water supply is provided by the Soquel Creek Water District, which, although supplied by groundwater and less susceptible to seasonal drought, is susceptible to overdraft. The remaining 10% of the water supply is provided by the City of Santa Cruz Water Department, which is supplied by surface water and is susceptible to seasonal drought. Exhibit 9: Water Supply shows the water district boundaries.

WATER SUPPLY

EXHIBIT 9



Source: City of Capitola, 2010; Santa Cruz County, 2012.

3.6 Windstorm

3.6.1 Identifying Windstorm Hazards

Winds are horizontal flows of air that blow from areas of high pressure to areas of low pressure. Wind strength depends on the difference between the high- and low-pressure systems and the distance between them. A steep pressure gradient results from a large pressure difference or short distance between these systems and causes high winds. High winds are defined as those that last longer than 1 hour at greater than 39 miles per hour (mph) or for any length of time at greater than 57 mph.

3.6.2 Profiling Windstorm Hazards

Location

As illustrated in Exhibit 10 - Prevailing Wind Patterns, Capitola experiences prevailing wind conditions that are generated from the north and northwest, following the California coast. Due to its proximity to the ocean, Capitola also experiences ocean breezes that average between 1-2 miles per hour.

Extent

Since 2004 the highest recorded wind speed in Capitola has reached 46 mph. [3] Wind damage in Capitola may not always be associated with wind, but with tree falls that occur during windy conditions. If soil is saturated due to rain, the trees are more susceptible to falling in the wind.

Past Occurrences

Table 22: Windstorms Reported in Santa Cruz County, California 1965-2011 identifies past high wind, strong wind, and tornado events in Santa Cruz County from 1965 through 2011.

Table 22: **Windstorms Reported in Santa Cruz County, California 1965-2011**

Date	Type of Event	Magnitude	Countywide Property Damage
4/1/1965	Tornado	F1 (73-112 mph)	$0
12/05/1998	Tornado	F0 (40-72 mph)	$50,000
4/3/1999	High Winds	85 MPH	$0
4/4/2001	High Winds	71 MPH	$2,700,000
11/24/2001	High Winds	85 MPH	$7,100,000
12/21/2001	Tornado	F1 (73-112 mph)	$250,000
1/7/2005	High Winds	58 MPH	$0
2/27/2006	High Winds	70 MPH	1 Fatality
12/27/2006	High Winds	40 MPH	$100,000
10/12/2008	Strong Winds	47 MPH	$150,000
1/25/2009	Strong Winds	39 MPH	$25,000
2/15/2009	High Winds	64 MPH	$25,000
4/14/2009	Strong Winds	48 MPH	$70,000
10/13/2009	High Winds	61 MPH	$0
11/28/2009	Strong Winds	43 MPH	$50,000
1/18/2010	Strong Winds	39 MPH	$150,000
1/19/2010	Strong Winds	44 MPH	$200,000

[3] Capitola Weather Net, accessed February 24, 2012. http://www.capitolaweather.net/climate.php

Table 22: **Windstorms Reported in Santa Cruz County, California 1965-2011**

Date	Type of Event	Magnitude	Countywide Property Damage
4/11/2010	Strong Winds	45 MPH	$25,000
10/24/2010	Strong Winds	47 MPH	$15,000
11/20/2010	Strong Wind	48 MPH	$500,000
12/19/2010	Strong Winds	45 MPH	$15,000
12/28/2010	High Winds	50 MPH	$15,000
2/25/2011	Strong Winds	39 MPH	$35,000
11/30/2011	High Winds	56 MPH	$8,000

National Climatic Data Center

http://www4.ncdc.noaa.gov/cgi-win/wwcgi.dll?wwevent~storms

Since 2011, NOAA has recorded 11 events with wind speeds 60 knots and higher in Santa Cruz County. The last strong wind event occurred on February 9, 2020.

The City of Capitola Historical Museum researched the historical impacts from wind events as presented in Table 23: Historical Wind Events.

Table 23: **Historical Wind Events**

Date	Injury	Impact/Property Damage
February 10, 1938		Winds up to 70 mph; 500 trees uprooted throughout county.
December 9, 1943		60-mile-an-hour winds create damage in county
1975		40 knot winds downed trees and power lines.
1976 February 9, 2020		Winds downed power lines Winds over 70 mph downed trees and power lines.

In addition to the historical wind events listed above, historical coastal storm events, listed in the flood profile, may also produce wind damage.

Probability of Future Occurrence

Due to its location, it is anticipated that Capitola will experience windstorms in the future. The predominant wind pattern throughout this area is from north to south, however strong winds have been known to occur from other directions as well. It is difficult to predict the amount of damage that could occur from a windstorm with great precision. Based on current modeling and information it is anticipated that most windstorms will follow the general patterns that have historically affected the City. However, what is difficult to predict far into the future is the intensity and duration of a storm. Understanding that windstorm will occur within the City, it is better for the City to determine what potential vulnerabilities exist associated with a windstorm and mitigate these vulnerabilities effectively.

Climate Change Considerations

It is anticipated that wind patterns and windstorm development may be altered due to climate change. The resulting change could increase future storm intensity and duration and potentially change the location of where these storms are generated. With this in mind it will be important for the City to consider how anticipated changes

in weather patterns may change future events and how they respond and mitigate hazards associated with windstorms.

Vulnerability/Risk Assessment

The entire City of Capitola and all critical facilities are susceptible to windstorm damage. A majority of windstorm damage that occurs is associated with fallen trees/ tree limbs. Facilities located in close proximity to large trees may be more susceptible to windstorm damage as a result. It is highly unlikely that a windstorm would completely destroy any of the identified critical facilities. However, the replacement values for these facilities may be referenced in Table 7: Capitola Critical Facilities List.

PREVAILING WIND PATTERNS

EXHIBIT 10

Source: City of Capitola, 2010; Santa Cruz County, 2010; ESRI, 2011.

3.6.3 Coastal Erosion/Bluff Failure

Identifying Coastal Erosion/Bluff Failure Hazards

Coastal erosion is the wearing away of coastal land. It is commonly used to describe the horizontal retreat of the shoreline along the ocean. Erosion can be measured as a rate, with respect to either a linear retreat (feet of shoreline recession per year) or volumetric loss (cubic yards of eroded sediment per linear foot of shoreline frontage per year).

Erosion rates are not uniform and vary over time at any single location. Annual variations are the result of seasonal changes in wave action and water levels. Erosion is caused by coastal storms and flood events, changes in the geometry of tidal inlets and bays and man-made structures and human activities such as shore protection structures and dredging.

Coastal erosion includes both cliff and bluff erosion and beach erosion, and is a result of both winter wave attack as well as constant wave action. Beaches change seasonally in response to changes in wave conditions. Winter storm waves are larger, steeper, and contain more energy, typically moving significant amounts of sand from the beaches to offshore sandbars, creating steep, narrow beaches. In the summer, lower, less energetic waves return the sand, widening beaches, and creating gentle slopes. During the winter months when beaches are narrow, or absent altogether, the storm waves attack the cliffs and bluffs more frequently. There are many factors involved in coastal erosion, including human activity, sea-level elevation, seasonal fluctuations and climate change, and sand movement from year to year in the same location.

Wind, waves, and the long-shore currents are some of the driving forces behind coastal erosion. The removal and deposition of sand creates long-term changes to beach shape and structure. Sand may be transported to landside dunes, deep ocean trenches, other beaches, and deep ocean bottoms.

Coastal erosion such as cliff and bluff erosion is also a result of processes related to the land such as rainfall and runoff, weathering, uplift, and earthquakes.

3.6.4 Profiling Coastal Erosion/Bluff Failure Hazards

Location

Capitola is a coastal city, residing within the Monterey Bay area of the Pacific Ocean. The entire coastal edge of the City is affected by coastal erosion. Areas of particular concern include:

Capitola Beach**:** Capitola Beach is a gently rising beach. A jetty located at the eastern edge of the beach has allowed the beach to remain relatively stable. Seasonal changes cause the amount of sand to change whereby winter storms deplete the sand supply, which is then replenished in summer months.

Capitola Cliffs**:** Located along Cliff Drive and the Depot Hill neighborhood. These areas have experienced high levels of coastal erosion (see Figure 11). The cliffs are characterized by gently dipping, late Tertiary sedimentary rocks that are generally overlain by nearly horizontal, quaternary terrace deposits. The local shoreline is nearly parallel to the dominant direction of approach for refracted waves. As a result, littoral drift is rapid, inhibiting formation of a continuous protective beach. Instead, a series of pocket beaches, which are sensitive to seasonal changes and human intervention, have formed. Cliff Drive within this portion of the City has been armored with a rip rap toe and concrete walls along the bluff, which provides erosion protection, however the Depot Hill neighborhood portion is unprotected.

The sanitation district is interested in seeing where the coastal erosion and bluff failure risks are the highest so they can evaluate if it will affect their infrastructure. They are actively planning to relocate sewers based on risk. They use the Capital Improvement Program to budget for these projects.

Extent

Coastal Bluff Failure**:** The historic rate of bluff retreat in Capitola is approximately 0.9 feet per year. If this rate continues, the pedestrian pathway along the cliff area in the Depot Hill neighborhood would be unusable within 10-15 years and the Grand Avenue right-of-way almost entirely gone within 25 years. Assuming this constant rate of retreat, the first houses would be threatened or damaged in approximately 50 years, and most would be damaged or destroyed within approximately 75 years. After 100 years, some of the second-line houses could be threatened.

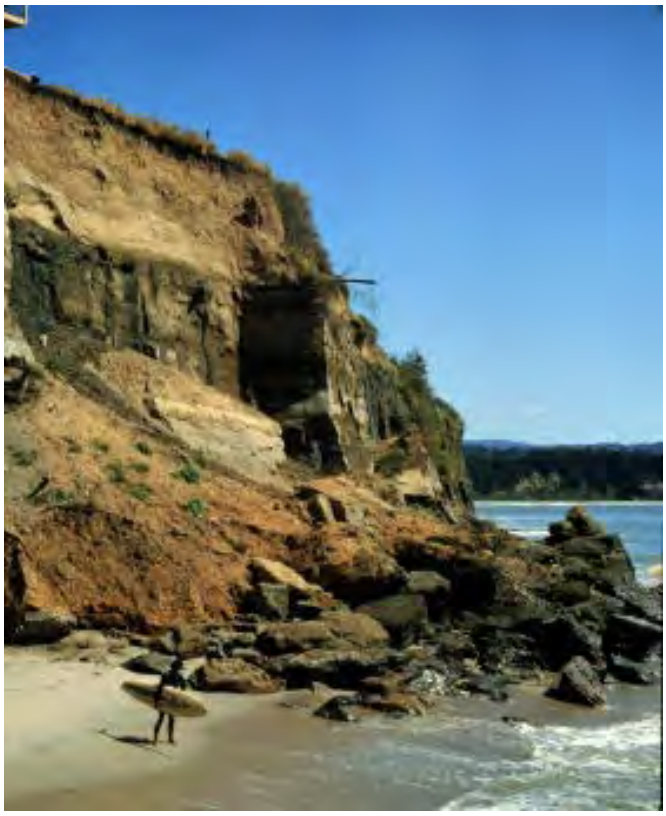


Figure 11 - Episodic coastal bluff failure in Capitola

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Figure 12a - Cliff Erosion Beneath Apartments on Depot Hill (c. 1984)

An example of coastal bluff failure are illustrated in Figures 12a and b. Both sewer and sanitary infrastructure run through the bluffs in Capitola and have the potential to be impacted by bluff failure. In addition, sewer treatment plants are commonly located along the coast of California and are at risk to bluff failure and beach erosion in many locations. In addition, development that has been placed on top of bluffs within Capitola is vulnerable to erosion, as illustrated in Figure 13.

In 2018, the City closed a portion of the Grand Avenue pedestrian pathway between Sacramento Avenue and Oakland Avenue due to concern for bluff failure. On December 2, 2019, a portion of the bluff failed taking with it a portion of the pathway with it.

Figure 12b – Grand Avenue Pedestrian Pathway Erosion

Beach Erosion**:** Beach erosion (as shown in Figure 13) is a seasonal occurrence during the winter months within Capitola. In a 2009 study prepared by the USGS[4], the highest long-term shoreline erosion rates along the California coast were found in the Monterey Bay region, where the average rate of erosion was -0.6 meters/year. The short-

Figure 13 - Capitola Beach Erosion

[4] Rates and Trends of Coastal Change in California and the Regional Behavior of the Beach and Cliff system (http://allenpress.com/pdf/COAS_25.3_603_615.pdf)

term erosion rate was also high, at -0.8 meters/year. These erosion rates not only contribute to the loss of beach sand along the Capitola coast, but also contribute to erosion along the cliffs within this part of the State as well.

Past Occurrences

Although coastal erosion is a continuous process, the rate of erosion is accelerated during times of severe storm activity. The NCDC database captures ocean surf events, which include high tides and surf, rip currents, and storm surge on a county-wide basis. The events noted in the NCDC database that may have contributed to increased coastal erosion in Capitola include:

October 28-29, 1999: A 15 foot swell in association with a relatively high tide produced waves as high as 40 feet which broke through the seawall in Capitola and flooded low lying streets and businesses. The Capitola Wharf was closed because the waves were breaking up through the decking of the wharf. The event caused $1 million in property damage.

February 25, 2004: A strong winter storm brought ocean water onto the Capitola Wharf producing damage on the wharf and adjacent restaurant.

Additional coastal erosion in Capitola's history as researched by the City of Capitola Historical Museum is presented in Table 24: Historic Erosion Events.

Table 24: **Historic Erosion Events**

Date	Impact/Property Damage
1911	Incidents of cliff erosion along Grand Avenue prompt Lewis B. Hanchett, the owner of El Salto Resort, to begin chopping down trees along what is left of "Lover's Lane" along the bluff of Depot Hill. Hanchett believed that when the trees fell, they further hastened the cliff erosion.
January 24, 1930	About 130 residents appear before Santa Cruz County Supervisors to protest announced firing of 12-inch guns at Camp McQuaide, Capitola. Among petitioners claims are that "the terrific jar of the guns loosens the rim of the cliffs, and the earth is sloughing off to a dangerous degree."
January 9, 1935	Near the seawall cave-in by the site of the old hotel, a tree fell sixty feet from Grand Avenue. The "new favorite outdoor sport" for onlookers is to walk behind the sewer plant to see the fallen tree and debris of the broken sea wall.
May 2, 1955	Sentinel: Capitola City Council Asks Cleanup Help "Believe it or not, a few people still occasionally throw garbage over the cliff, particularly along Grand Avenue. This not only creates health hazards, but also attracts rodents which burrow into and weaken the cliff, increasing the rate of cliff erosion…."
1963	Capitola City Council votes to start condemnation proceedings against Harry Hooper to obtain 320 feet of Hooper Beach for erosion control to protect Cliff Drive, where a high rise development was planned.
1963	Capitola City Council considers construction of seawall to control erosion from Grand Avenue to New Brighton Beach. The filled in area would also provide parking for approximately 400 cars.
December 20, 1964	Construction begins on controversial Crest "prestige" 24-unit apartment house on the bay side of Grand Avenue on Depot Hill. Robert Lamberson, architect. Grand Avenue residents eventually sue the City over a disputed 10-foot setback for the project, which was built on a former park site at the top of the bluff. In the 1980s, several units facing the bay were removed due to cliff erosion. $500,000

Table 24: **Historic Erosion Events**

Date	Impact/Property Damage
January 13, 1965	Capitola considers feasibility study to build 370-foot seawall along Grand Avenue. Backfilling below Grand Avenue would be used for a 1,000-car parking lot. Developers expressed desire to lease portion of the parking lot for a three-story, 20 unit convention hotel with restaurant and cocktail bar, to be built along the Grand Avenue bluff. First step was to have the beach deeded to the city by the state. $1,228,000 estimated cost for parking lot $275,000 estimated cost for hotel.
Summer 1965	Capitola requests help from the State Department of Water Resources to solve the problem of disappearing sand, due to "failure of Santa Cruz harbor officials to install a recommended sand by-pass at the harbor jetty.
Summer 1965	Off-Shore parking lot plan revised. Parking lot to extend 430 feet out into the way from the cliffs south of Capitola beach for about 1,500 feet. A breakwater is planned to extend 600 feet south to the end of the high cliff area, to prevent cliff erosion. The parking lot would also be used as an "overnight parking unit" with commercial concessions for tourists. Project to cover ten acres reclaimed from the bay.
1966	Lifelong resident Violet Gooch hired Granite Construction to build a rip-rap wall at the base of the cliff at the end of the row of homes west of the wharf. (Hooper Beach)
1968	Army Corps of Engineers begins work to construct a groin, completed the following spring. $160,000.
February 15, 1984 1984 – present	Even though planner Susan Tupper warned the plan might not be a lasting solution, Capitola City Council approved a plan to stabilize its crumbling cliffs by installing artificial seaweed—a series of floating plastic fronds anchored to a sand-filled tube. The intent was to capture sand that drifts down the coast each year, thereby building a sandy beach in front of the cliffs below Grand Avenue. The "ersatz" seaweed lasted until the next major storm and then drifted to sea. The cliff continues to erode at a rate of 12-18 feet per year. $120,000. Ongoing isolated slope failures have occurred along the Grand Avenue Bluff.

In addition to the past erosion events listed above, coastal storms and high tides can also contribute to erosion and bluff failure. Figure 14 depicts a bluff failure along Grand Avenue that occurred in conjunction with the coastal storm that occurred in 1960. Additional detail of these past events can be found in the flood profile.

Figure 14 - Bluff Failure along Grand Avenue (associated with 1960 coastal storm)

Probability of Future Occurrence

Based on its coastal location, bluff and shoreline erosion will continue to occur in Capitola in the future. The amount of erosion will be dependent on the intensity of future storms and whether or not corrective actions are taken by the City or County to protect shoreline areas by reducing erosion rates. With regard to beach erosion/ bluff failure, it is less a matter of whether or not the hazard will occur and more a matter of the rate in which the hazard will cause additional damage (i.e. structural failure).

Climate Change Considerations

As a coastal community, the potential for sea level rise could increase Capitola's vulnerability to flooding and coastal erosion. The cliffs and sandy beaches that line sections of the Capitola coastline are already susceptible to erosion due to wave attack. It is anticipated that this susceptibility will increase in the event of sea-level rise. In areas not lined with vertical cliffs and bluffs, the depletion of sandy beaches may expose previously protected areas to additional flood hazards.

Exhibit 11 - Erosion Risk from Sea Level Rise, shows the location of future erosion hazard areas in the Year 2100, assuming a 1.4 meter rise in Mean Sea Level. The hazard area is a swath of land approximately 250 feet wide that extends the length of nearly all of Capitola's shoreline, with the exception of a .2 mile gap along the low-lying area at the mouth of Soquel Creek in the Village. Assuming a rise in MSL of 1.4 meters, a total of 40 additional acres of land in Capitola will be vulnerable to bluff erosion hazards. Future vulnerable areas include Cliff Drive and surrounding open space and residential areas in the City's Jewel Box neighborhood, between the Village and New Brighton State Park. In addition, the coastal edge of New Brighton State Park on the east side of the City would be vulnerable to bluff erosion. An estimated 19 acres of land in Capitola would be susceptible to beach erosion in the year 2100, most likely in the low-lying area where Soquel Creek meets the Monterey Bay. At-risk areas include most of Capitola Village on both the south and north side of Soquel Creek.

Vulnerability/Risk Assessment

Intersections between critical facilities and areas of beach erosion and cliff erosion were conducted to determine which facilities are at risk to erosion. Based on this analysis, Table 25: Capitola Critical Facilities Exposed to Increased Erosion Potential identifies the facilities that could be impacted by increased beach and/ or cliff erosion in the future. The total potential loss shown in the table below is based on the assumption that all facilities within

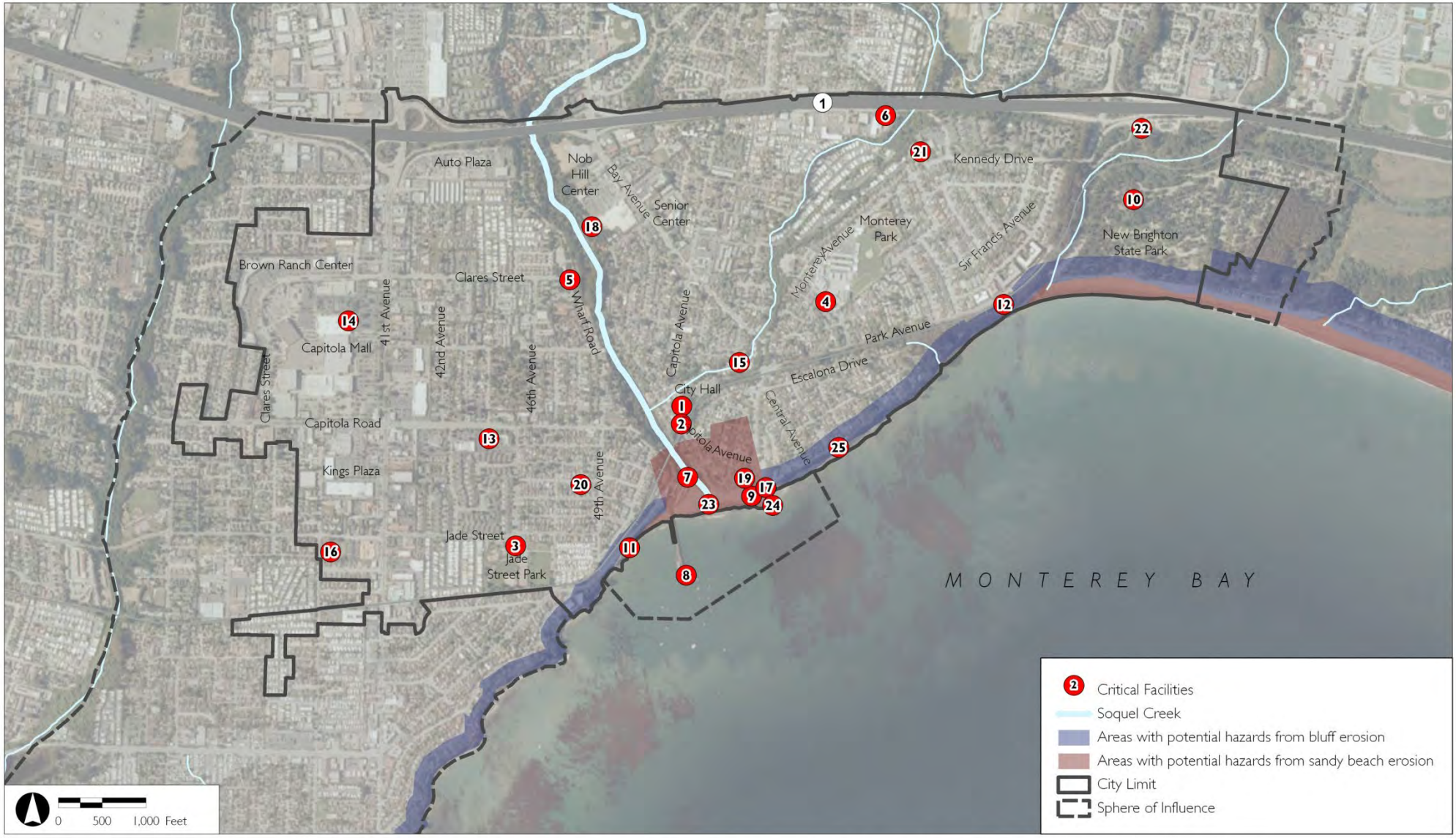
the beach and cliff erosion potential areas would be completely destroyed during an erosion event and shows the maximum potential losses. While this is possible, actual losses will vary based on the type and magnitude of the event.

Table 25: **Capitola Critical Facilities Exposed to Increased Erosion Potential**

Map #	Facility	Within Area of Beach Erosion Potential	Within Area of Cliff Erosion Potential	Replacement Value	Contents Value	Potential Loss
7	Stockton Avenue Bridge	X		$10,000,000	N/A	$7,000,000
11	Cliff Drive -at risk arterial (sea wall and road)		X	$8,000,000	N/A	$5,000,000
12	Park Avenue-at risk arterial (sea wall and road)		X	$4,000,000	N/A	$3,000,000
17	Capitola Pump Station-Esplanade Park		X	$10,000,000	800,000	$2,800,000
19	Lawn Way Storm Drain Pump Station	X		$500,000	N/A	$200,000
25	Grand Avenue Pathway		X	N/A	N/A	N/A
	Total Potential Losses			$17,200,000	$800,000	$18,000,000

EROSION RISK FROM SEA LEVEL RISE

EXHIBIT 11



Source: City of Capitola, 2010; Santa Cruz County, 2010; Pacific Institute, 2012;The Impacts of Sea-Level Rise on the California Coast. "Bluff erosion hazard with a 1.4 meter sea-level rise, 2100." [shapefile]. (2009). Oakland, CA: Pacific Institute. Available at <http://www.pacinst.org/reports/sea_level_rise/files/Bluff_hz_yr2100.zip>, Downloaded: March 14, 2012.

Discalimer: This map is for planning purposes only. It is not to be used in lieu of site-specific studies of erosion.

3.6.5 Tsunami

3.6.6 Identifying Tsunami Hazards

A tsunami is a series of traveling ocean waves of extremely long length generated primarily by earthquakes occurring below or near the ocean floor. Underwater volcanic eruptions and landslides can also generate tsunamis. In the deep ocean, the tsunami waves propagate across the deep ocean with a speed exceeding 500 miles per hour and a wave height of only one foot or less. Tsunami waves are distinguished from ordinary ocean waves by their great length between wave crests, often exceeding 60 miles or more in the deep ocean, and by the time between these crests, ranging from ten minutes to an hour.

As tsunamis reach the shallow waters of the coast, the waves slow down and the water can pile up into a wall of destruction 30 feet or more in height. The effect can be amplified where a bay, harbor or lagoon is present, funneling the wave as it moves inland. Large tsunamis have been known to rise over 100 feet. Even a tsunami 10 to 20 feet high can be very destructive and cause many deaths and injuries.

Tsunamis can be categorized as "local" and Pacific-wide. Typically, a Pacific-wide tsunami is generated by major vertical ocean bottom movement in offshore deep trenches. A "local" tsunami can be a component of the Pacific-wide tsunami in the area of the earthquake or a wave that is confined to the area of generation within a bay or harbor and caused by movement of the bay itself or landslides. The local tsunami may be the most serious threat as it strikes suddenly, sometimes before the earthquake shaking stops.

3.6.7 Profiling Tsunami Hazards

Location and Extent

The City of Capitola is located on the Monterey Bay. Several active and potentially active earthquake faults are located near Capitola. Even a moderate earthquake occurring on any of the nearby faults could result in local source tsunamis from submarine landsliding in Monterey Bay. Additionally, distinct source tsunamis from the Cascadia Subduction Zone to the north, or Teletsunamis from elsewhere in the Pacific Ocean are also capable of causing tsunamis, which could result in inundation and damage in Capitola.

According to the Cal EMA Tsunami Inundation Maps of the Soquel and Santa Cruz Quadrangles, prepared on July 1, 2009, the entire Capitola coastline is susceptible to inundation by a tsunami. Properties located along Capitola Beach could experience significant damage from tsunami run up. In addition, inland areas of the City along Soquel Creek could experience flooding as far north as California State Route 1 (SR1) following a tsunami.

Exhibit 12 – Tsunami Inundation Risk, identifies the tsunami hazard areas within Capitola based on the Cal EMA Tsunami Inundation Mapping. This mapping is based on a theoretical worst case earthquake causing theoretical worst case inundations that could extend approximately 100 feet inland from the coast, encompassing the Capitola Village up to Cherry Avenue, the Lower Riverview neighborhood, and the Venetian Court area adjacent to Wharf Road. Along Soquel Creek, tsunami inundation could extend north to SR 1, essentially dividing the City in two and potentially limiting access between the eastern and western portions of the City.

Past Occurrences

Tsunamis have been documented extensively in California since 1806. Table 26: Tsunami Events in Northern California 1930-2011, contains a list of tsunamis that have impacted Northern California.

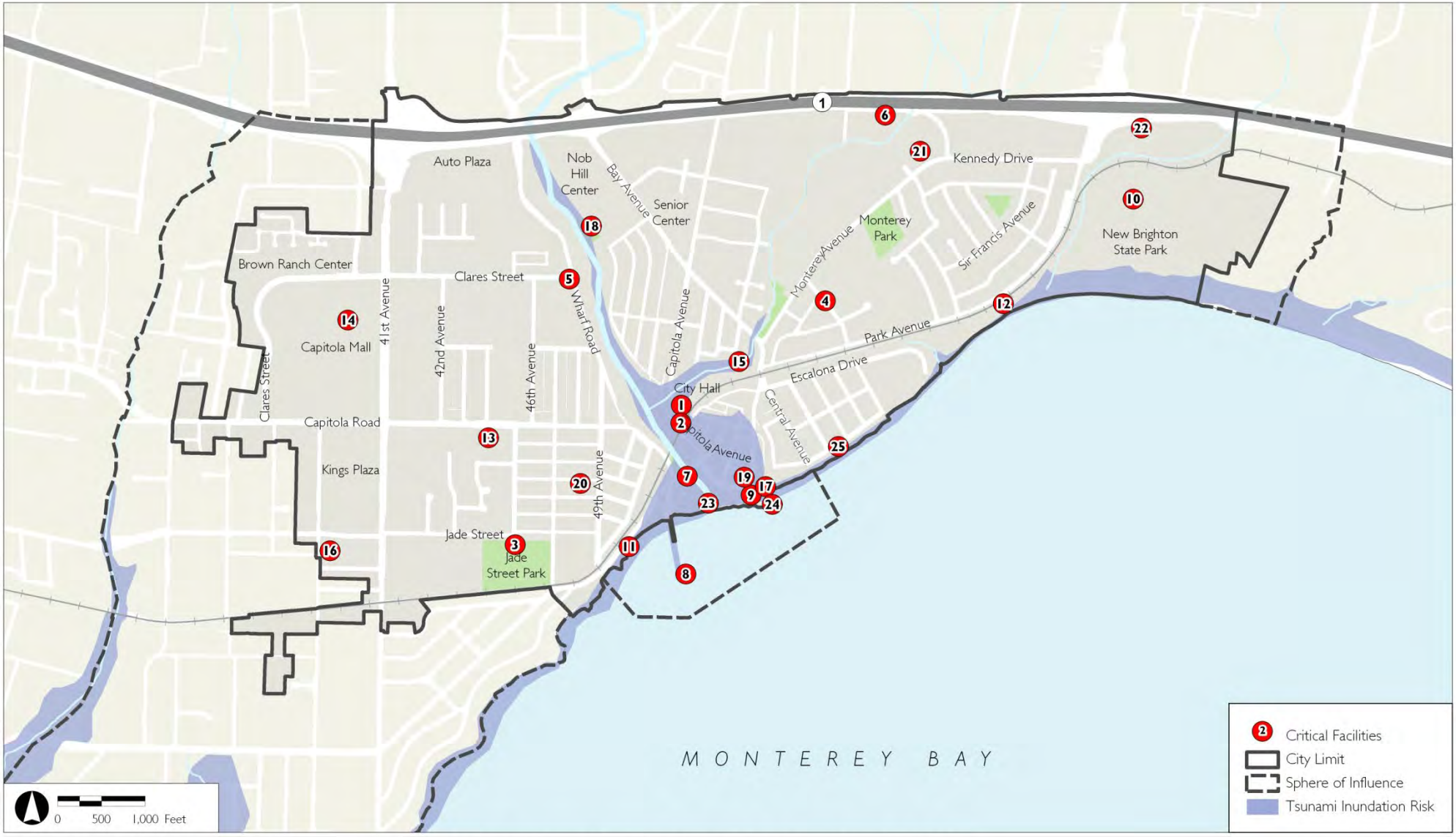
Table 26: **Tsunami Events in Northern California 1930-2011**

Date	Tsunami Location	Maximum Water Height*(m)	Earthquake Magnitude	Tsunami Source Location
10/3/1931	San Francisco	0.03	7.9	Solomon Islands
3/2/1933	San Francisco	0.07	8.4	Sanriku, Japan
11/10/1938	Crescent City	0.18	8.2	Alaska
4/6/1943	San Francisco	0.03	8.2	Chile
12/7/1944	San Francisco	0.02	8.1	Japan
4/1/1946	Santa Cruz	3.5	8.1	Unimak Island, Alaska
12/20/1946	San Francisco	0.05	8.1	Honshu, Japan
3/4/1952	San Francisco	0.02	8.1	Hokkaido, Japan
11/4/1952	San Francisco	0.54	9	Kamchatka Peninsula, Russia
3/9/1957	Monterey	0.61	8.6	Alaska
11/6/1958	San Francisco	0.2	8.3	Kuril Islands, Russia
5/22/1960	Santa Cruz	0.91	9.5	Chile
10/13/1963	San Francisco	0.1	8.5	Kuril Islands, Russia
3/28/1964	Capitola	2.13	9.2	Alaska
2/4/1965	Santa Cruz	0.61	8.7	Aleutian Islands, Alaska
10/17/1966	San Francisco	0.1	8.1	Lima, Peru
5/16/1968	San Francisco	0.1	8.2	Japan
7/26/1971	Crescent City	0.06	7.9	Papua New Guinea
10/3/1974	Crescent City	0.08	8.1	Lima, Peru
11/29/1975	San Francisco	0.06	7.1	Hawaii
5/7/1986	Crescent City	0.06	8	Aleutian Islands, Alaska
11/30/1987	San Francisco	0.05	7.9	Yakutat, Alaska
3/6/1988	San Francisco	0.01	7.7	Alaska
10/19/1989	Monterey	0.2	6.9	California
4/25/1992	Monterey	0.03	7.2	Cape Mendocino, CA
9/1/1994	Crescent City	0.07	7	California
10/4/1994	Crescent City	0.5	8.3	Kuril Islands, Russia
7/30/1995	Monterey	0.04	8	Chile
12/3/1995	Monterey	0.1	7.9	Kuril Islands, Russia
2/17/1996	Monterey	0.05	8.2	Indonesia
6/10/1996	San Francisco	0.02	7.9	Andreanof Islands, AK
6/23/2001	Monterey	0.08	8.4	Peru
9/25/2003	Monterey	0.05	8.3	Hokkaido Island, Japan
12/26/2004	Monterey	0.1	9.1	Indonesia
6/15/2005	Crescent City	0.1	7.2	California
5/3/2006	San Francisco	0.05	8	Tonga
1/13/2007	San Francisco	0.05	8.1	Kuril Islands, Russia
8/15/2007	Crescent City	0.16	8	Peru
9/29/2009	Monterey	0.15	8	Samoa Islands
10/7/2009	Monterey	0.05	7.6	Vanuatu Islands
2/27/2010	Monterey	0.28	8.8	Chile
3/11/2011	Santa Cruz	1.9	9	Honshu Island, Japan

* The maximum water height above sea level in meters NOAA/WDC Tsunami Runup Database
http://www.ngdc.noaa.gov/nndc/struts/form?t=101650&s=167&d=166

TSUNAMI INUNDATION RISK

EXHIBIT 12



Source: City of Capitola, 2010; Santa Cruz County, 2012; Tsunami Inundation Risk of Caliofornia, USC Tsunami Research Center, 2009 via California Resources Agency ArcGIS Map Server.

Table 27: Historic Tsunami Events highlights the tsunami occurrences which impacted the City of Capitola, as researched by the City of Capitola Historical Museum.

Table 27: **Historic Tsunami Events**

Date	Impact/Property Damage*
April 1946	Earthquake in Aleutians produced 115-foot wave. Tsunami observed along the West Coast. A man was swept to sea in Santa Cruz. Ten-foot waves hit the coastline.
March 11, 2011	Capitola Village received warnings, but no damage

* Historical information provided by City of Capitola Historical Museum, 2012.

The March 2011 Tsunami event closed roads in Capitola Village. As a precaution, the City of Capitola issued a voluntary evacuation, notifying individuals through reverse 911, for the hotels on the wharf and a significant portion of the village. They used reverse 911 to issue the voluntary evacuation. Fortunately, it was low tide at the time the tsunami reached the California coast. The water receded past the end of the wharf, which is a very rare occurrence. If the tide was higher, the tsunami could have been large enough to overtop the seawall. No significant damage occurred from the tsunami event. This was the last Tsunami event before 2020 to occur.

Probability of Future Occurrence

Since scientists cannot predict when earthquakes will occur, they cannot determine exactly when a tsunami will be generated. Tsunamis are caused by large offshore earthquakes and ocean landslides. Dangerous tsunamis would most likely originate in the Aleutian and Chilean trenches, or the eastern coast of Japan or the Pacific Islands.

Based on modeling prepared by the California Geologic Survey, Tsunami Flow Depth Estimates for Capitola are provided in Table 28: Tsunami Flow Depth Estimates for Capitola. This table identifies the modeled source location of the earthquake event, magnitude of the modeled earthquake, approximate travel time and maximum flow depth values of the waves generated by the event. As indicated in this table Capitola is most susceptible to Tsunamis generated in the Alaska/ Aleutian Islands area as well as a local tsunami generated by a landslide within the Monterey Canyon.

Table 28: **Tsunami Flow Depth Estimates for Capitola**

Tsunami Source Location	Magnitude (Mw)	Approximate Travel Time	Tsunami Flow Depth (in feet above MSL)
Cascadia Subduction Zone	9.0	1 hour	5
Alaska/ Aleutian Islands	8.9-9.3	5 hours	7 - 30
Kuril Islands	8.8	9 hours	4 - 5
Japan	8.8	10 hours	4
Marianas Subduction Zone	8.6	11 hours	3
Chile	9.3-9.4	13-14 hours	4-6
Monterey Canyon Landslide*	N/A	7-15 minutes	16

*A Monterey Canyon Landslide could be triggered by an average earthquake.

Capitola is participating in the Tsunami Ready Program in order to mitigate the effects of future tsunamis. The Tsunami Ready Program is designed to help cities, towns, counties, universities, and other large sites in coastal areas reduce the potential for disastrous tsunami-related c consequences. Tsunami Ready status is achieved

through a vigorous certification program that includes planning, communication, and education specifically addressing tsunami hazards. As part of this program, tsunami inundation maps, evacuation maps, and a tsunami ready signage plan, indicating the perimeter of an inundation zone and the appropriate action to be taken by individuals on the beach when an earthquake occurs, were created.

Climate Change Considerations

As a coastal community, the threat of inundation from a Tsunami is always there. Given the anticipated changes in sea level elevation associated with climate change, it is likely that the City's risk to tsunami inundation would increase. With a sea level increase, larger portions of the Capitola coast would be inundated by the rising sea, allowing for greater tsunami run up into the interior portions of the City. The main areas that would experience inundation due to sea level rise are the lower reaches of Soquel Creek and coastal areas of New Brighton State Park. Since these same areas are also susceptible to tsunami inundation, it is likely that additional areas along the periphery of the zone identified on Exhibit 12 would experience run up as sea level increases.

Vulnerability/Risk Assessment

Table 29: Capitola Critical Facilities Exposed to Tsunami Inundation identifies the critical facilities that are potentially at risk during a tsunami event. Depending on the location or origination, severity of movement, and time of year when the event occurs, these facilities could be impacted by tsunami inundation. The total potential loss shown in the table below is based on the assumption that all facilities within the tsunami inundation zone would be completely destroyed during a tsunami event and shows the maximum potential losses. In addition to loss of critical facilities, it is estimated based on 2010 Census Tract data that up to 1,694 residents located within the City and Sphere of Influence could be impacted by tsunami inundation. This estimate is based on the area of flood impact within each Census Tract multiplied by the population density of the Census Tract. A majority of the impact would occur along the shoreline and within the Capitola Village area of the City. Roadways and utility systems (water pump stations, sewer lift stations, storm drains, and overhead electric lines) within these areas are most susceptible to tsunami hazards. While this is possible, actual losses will vary based on the magnitude of the event.

Table 29: **Capitola Critical Facilities Exposed to Tsunami Inundation**

Map #	Facility	Within Tsunami Inundation Zone	Replacement Value	Contents Value	Potential Loss
1	City Hall/Emergency Operations Center	Y	$8,000,000	$750,000	$4,750,000
1	Capitola Police Station	Y	$4,000,000	$750,000	$2,750,000
2	Central Fire Station #4	Y	$3,000,000	$100,000	$1,100,000
7	Stockton Avenue Bridge	Y	$10,000,000	N/A	$7,000,000
8	Capitola Wharf	Y	$20,000,000	$300,000	$7,300,000
9	Capitola Beach Sea Wall	Y	$5,000,000	N/A	$3,000,000
11	Cliff Drive -at risk arterial (sea wall and road)	Y	$8,000,000	N/A	$5,000,000
15	Noble Gulch Storm Pipe	Y	$10,000,000	N/A	$5,500,000
17	Capitola Pump Station-Esplanade Park	Y	$10,000,000	$8,000,000	$10,000,000
19	Lawn Way Storm Drain Pump Station	Y	$500,000	N/A	$200,000
23	Capitola Beach Flume	Y	$2,000,000	N/A	$2,000,000
24	Capitola Beach Jetty	Y	$3,000,000	N/A	$3,000,000
	Total Potential Losses		**$83,500,000**	**$9,900,000**	**$51,600,000**

3.6.8 Hazardous Materials

Identifying Hazardous Material Release Hazards

"Hazardous materials" covers a large number of substances that are a danger to the public. These include toxic metals, chemicals, and gases; flammable and/or explosive liquids and solids; corrosive materials; infectious substances; and radioactive materials. The City of Capitola has adopted a Hazardous Materials Ordinance which requires that the City be notified of all use, storage, and transport of hazardous materials.

In addition to the immediate risk to life safety, public health, and air quality, the potential for water source contamination and the potential environmental impacts of accidental hazardous materials releases and toxic substances, there is also concern over the long-term public health and environmental impacts that may result from the sustained use of or exposure to certain substances. An incident could result in the evacuation of a few people, a section of a facility, or an entire neighborhood.

Profiling Hazardous Material Release Hazards

Location and Extent

Hazardous materials are everywhere and are accidentally released or spilled many times during any given day. On average, the California State Warning Center receives eight to ten thousand hazardous material spill reports on hazardous material incidents and potential hazardous material incidents. Of these incidents, most are minor but some do cause significant impacts such as injuries, evacuation, and the need for cleanup. As illustrated in *Exhibit 13 - Hazardous Materials Locations*, the western portion of Capitola contains the majority of City's hazardous materials locations, with a significant number of locations located along 41st Avenue.

One area of special concern regarding toxic spills is the close proximity of the Capitola Auto Plaza Mall and Highway One, to Soquel Creek. In case of a hazardous materials spill from either location, the discharge could migrate into Soquel Creek. Another concern regarding hazardous materials spills is the potential for chemicals and substances to migrate into the groundwater table. Since a majority of the City is served by Soquel Creek Water District which relies on groundwater, any potential contaminants entering the groundwater aquifer could impact the District's ability to serve its customers.

Past Occurrences

Table 30: RIMS Spill Database for Capitola, CA contains a list of spills documented on the CalOES's (CalEMA) Regional Information Management System (RIMS) between 2006 and the beginning of 2012. Since 2006 there have been 14 cases documented within Capitola, which equates to an average of approximately 2.7 spills per year. One historic event documented by the Capitola Historical Museum includes birds known as Sooty Shearwaters falling from the sky in the summer of 1961 due to toxins from red algae. The birds covered the streets, wharf, and beach.

Probability of Future Occurrence

Although past occurrences can be an indicator of future impacts, in the case of hazardous materials spills, the City is constantly improving the mechanisms by which they approve and regulate businesses that use hazardous materials. In addition, technological advances and increases in industry standards are also improving safety and further preventing/ minimizing potential releases of hazardous materials. As a result, it is anticipated that future incidents will decrease over time as newer technologies, standards, and regulations are put in place.

Table 30: **RIMS Spill Database for Capitola, CA**

Date	Spill Site	Substance
2/6/2006	Storm Drain	Raw Sewage
4/24/2006	Railroad	Unknown
5/12/2006	Road	Raw Sewage
7/4/2006	Waterways	Unspecified
8/13/2006	Merchant/Business	Raw Sewage
4/3/2007	Residence	Raw Sewage
4/26/2007	Railroad	Unspecified
2/22/2009	Merchant/Business	Raw Sewage
3/23/2009	Other	Raw Sewage
4/27/2011	Residence	Other
7/9/2011	Ship/Harbor/Port	Petroleum
7/9/2011	Waterways	Petroleum
8/1/2011	Waterways	Petroleum
1/20/2012	Merchant/Business	Chemical

Hazardous Materials Spill Report http://www.oes.ca.gov/operational/malhaz.nsf

The chemical spill on January 20, 2012 is the last known significant hazard event before 2020 to occur in Capitola.

Climate Change Considerations

Anticipating that precipitation regimes may change in the future as a result of climate change, there may be greater opportunity for the release of hazardous materials to enter local waterways and the groundwater aquifer.

It is anticipated that if this concern increases that the City and other regulating agencies would re-visit procedures and practices in place to ensure that the greatest amount of protection occurs.

Vulnerability/Risk Assessment

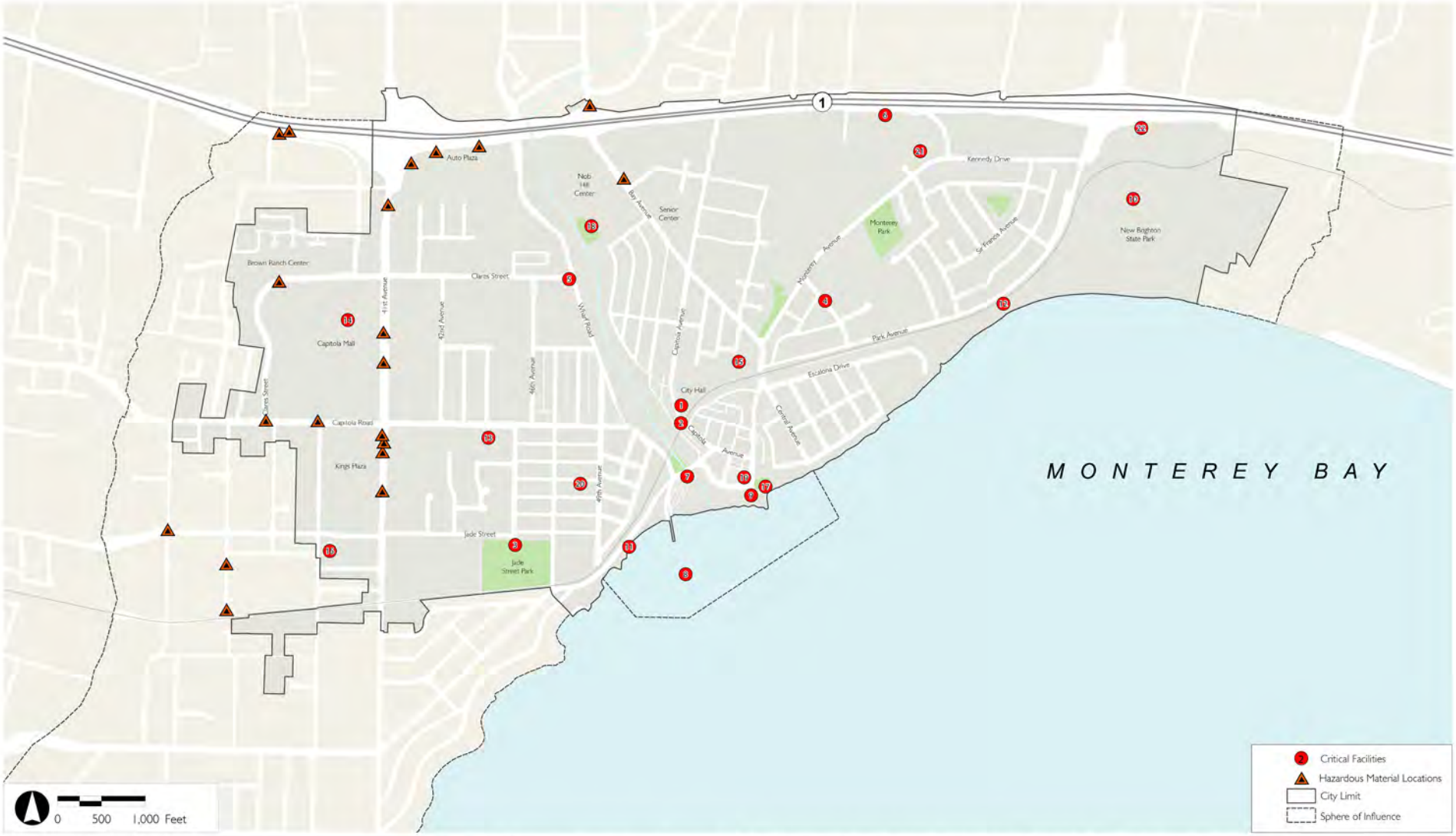
Table 31: Capitola Critical Facilities Located Close to Hazardous Materials Locations identifies locations that could be exposed to hazardous materials releases during a disaster event. These locations only take into consideration the proximity to existing hazardous materials facilities and do not include potential exposure associated with the movement/ transport of hazardous materials. The total potential loss shown in the table below is based on the assumption that all facilities within 1,000 feet of a hazardous materials facility would be completely destroyed during a hazardous materials release/event and shows the maximum potential losses. While this is possible, actual losses will vary based on the location and magnitude of the event.

Table 31: **Capitola Critical Facilities Located Close to Hazardous Materials Locations**

Map #	Facilities	Hazardous Materials within 500'	Hazardous Materials within 1000'	Replacement Value	Contents Value	Potential Loss
14	Police Communications Antenna-AAA Building	X	X	$100,000	N/A	$100,000
16	38th Avenue Drainage Facility		X	$2,000,000	$300,000	$2,300,000
18	Soquel Pump Station		X	$10,000,000	$1,700,000	$11,700,000
17	Capitola Pump Station – Esplanade Park		X	$10,000,000	$800,000	$10,800,000
	Total Potential Losses			**$22,100,000**	**$2,800,000**	**$24,900,000**

HAZARDOUS MATERIALS LOCATIONS

EXHIBIT 13



Source: City of Capitola, 2010; Santa Cruz County, 2011; Environmental Protection Agency (EPA) Resource Conservation and Recovery Act (RCRA) Information System, "Facilities Regulated by EPA" (April 17, 2009). Washington D.C. U.S. Environmental Protection Agency, Headquarters. Available at <http://www.epa.gov/emefdata/em4ef.home>, Downloaded February 3, 2012.

3.6.9 Wildfire

Identifying Wildfire Hazards

Fire hazards threaten lives, property, and natural resources, and also present a considerable risk to vegetation and wildlife habitat. Fires occur in wildland and urban areas.

A wildfire is an uncontrolled fire spreading through vegetative fuels. Wildfires can be caused by human error (such as campfires), intentionally by arson, by mechanical sources of ignition (such as heaters and generators), and by natural events (such as lightning). Wildfires often occur in forests or other areas with ample vegetation. In areas where structures and other human development meets or intermingles with wildland or vegetative fuels (referred to as the "wildland urban interface"), wildfires can cause significant property damage and present extreme threats to public health and safety.

Urban fires usually result from sources within structures themselves and are generally related to specific sites and structures. The availability of firefighting services is essential to minimizing losses that result from a fire. Effective fire protection in urban areas is based upon several factors, such as the age of structures, efficiency of circulation routes (ultimately affects response times), and availability of water resources to combat fires.

3.6.10 Profiling Wildfire Hazards

Location and Extent

As indicated in Exhibit 14 - Fire Hazard Areas, there are no fire hazard areas located in the City of Capitola based on the available fire mapping for Santa Cruz County. However, fire hazard areas do exist two miles north of the city limits along the foothills of the Santa Cruz Mountains.

In addition to the mapped fire hazard areas within the County, the areas that are most susceptible to fire hazards are drainage courses that have a significant amount of vegetation within them such as Soquel Creek. It is likely that these areas within the City would experience fires due to natural or man-made causes. The wildland threat for Capitola is increased due to localized invasive species such as Eucalyptus groves.

Past Occurrences

There are no significant wildfire events that have impacted the City of Capitola.

Probability of Future Occurrence

Despite the fact that there has not been a recent wildland fire within the city limits, residential development continues to spread into wildland/urban interface areas increasing the danger to life and property should a fire occur. Areas of concern associated with wildland fire are those adjacent to natural areas that are heavily vegetated (i.e. Soquel Creek). These areas are even more susceptible if human activities are allowed within, as these activities can introduce new ignition sources into these areas.

Cal FIRE has not identified fire hazard areas within the City of Capitola. Based on this, threats to populations and systems associated with wildland fires are anticipated to be minimal. However, a fire threat will always exist in a wildland/urban interface area as long as vegetation, trees, down and dead fuels, structures and humans co-exist. There is a high probability that fires will occur in one or more of these areas.

Climate Change Considerations

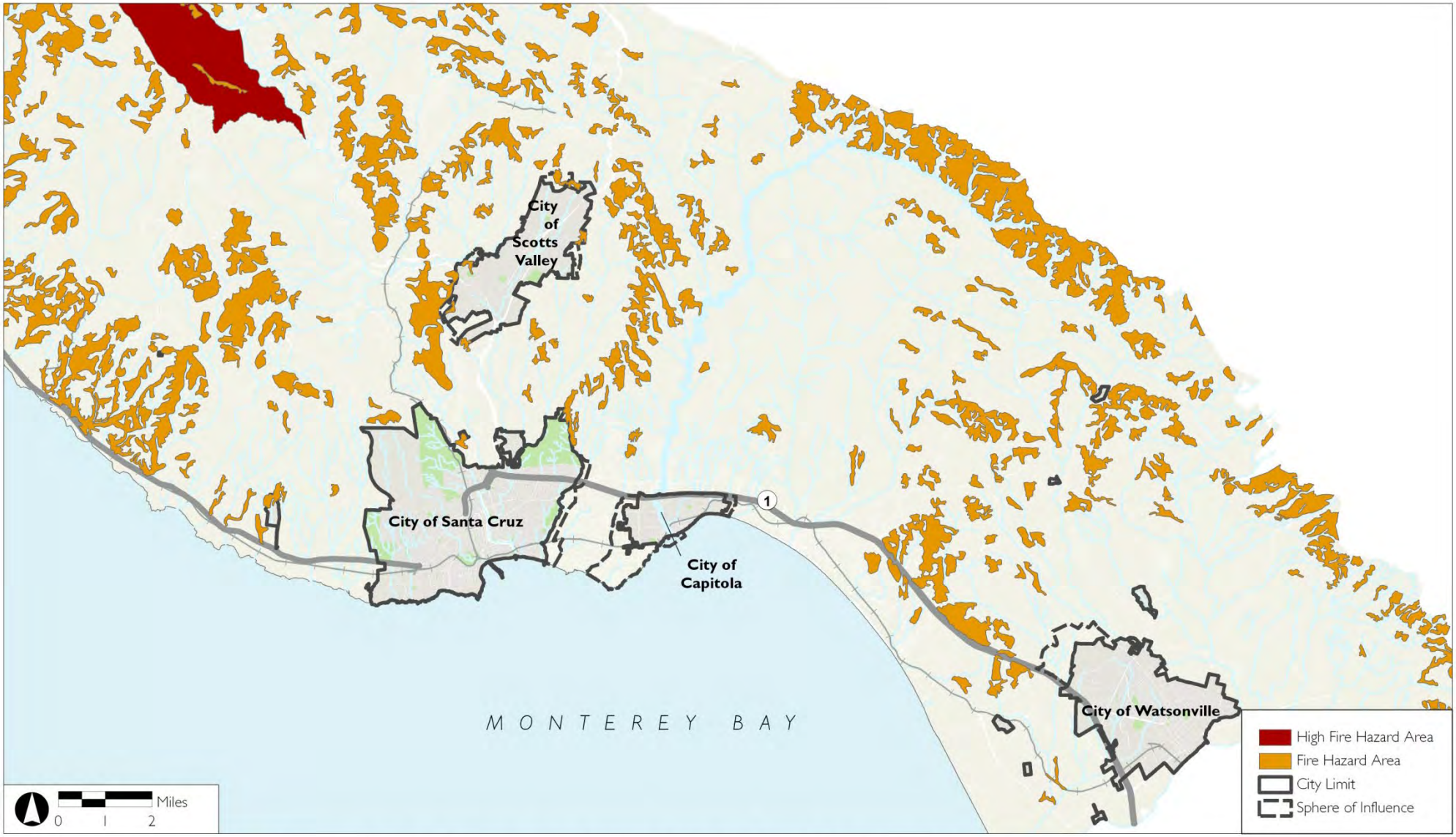
Anticipating that precipitation regimes may change in the future as a result of climate change, there may be greater opportunity for wildfire hazards throughout the State of California. Increases future droughts and hotter temperatures could increase fuel loads within wildland areas increase the risk associated with wildland fires.

Vulnerability/Risk Assessment

As indicated in Exhibit 14 - Fire Hazard Areas, there are no fire hazard areas located in the City of Capitola based on the available fire mapping for Santa Cruz County. Intersections between critical facilities and fire hazard areas were not conducted since these areas are not within the City.

FIRE HAZARD AREAS

EXHIBIT 14



Source: City of Capitola, 2010; Santa Cruz County, 2010; Emergency Management. "Fire Hazard Areas." [shapefile]. (2010). Santa Cruz County Geographic Information System File Download Site. Available at <http://sccftpmap.co.santa-cruz.ca.us/File%20Download%20Site/Emergency%20Management/Shapefiles/EmergencyMgmt.zip>, Downloaded: January 29, 2011.

3.7 Landslide and Mudflow

3.7.1 Identifying Landslide and Mudflow Hazards

General slope stability is determined by a number of factors such as the angle of the slope, vegetative cover, wildland fire, bedrock, soil, seismic activity, precipitation, groundwater, erosion, and human alterations to land such as hillside grading activities. Slopes may be in temporary equilibrium until one of the aforementioned factors is modified by natural or human activity resulting in an unstable condition and potential slope failure.

Figure 15 - Debris generated during the Flash Floods (ca. 1955)

A landslide is defined as a downward and outward movement of soil and rock. Such a movement occurs when steep slopes are destabilized by excess water accumulation in the soil, the addition of excess weight to the top of a slope, the removal of support from the bottom of a slope, or a combination of the above. The force of rocks, soils, or other debris moving down a slope can devastate anything in its path as illustrated in Figure 15.

Mudflows, often referred to as "debris flows" or "mudslides" are caused by sustained and intense rain fall that is accompanied by rocks, vegetation and other debris. These are fast moving down slope flows and can cause severe damage. The rapid movement and sudden arrival of debris flows pose a hazard to life and property during and immediately following the triggering rainfall. In order to trigger "debris flows" a storm must have a critical combination of rainfall intensity and duration leading to saturation of the hill slope soils, generation of positive pore fluid pressures within the soil and ultimately, slope failure.

Examples of common impacts can include death and injuries, damage to structures and infrastructure, environmental damages (such as destruction of plant life and habitat), economic impacts, impacts to continuity of business and/or government, etc. They can be general statements as they apply to the City.

3.7.2 Profiling Landslide and Mudflow Hazards

Location and Extent

Landslides are a common occurrence in the Santa Cruz Mountains. Intense winter storms, high rainfall amounts, and steep terrain are all conducive to land sliding. Earthquake activity can exacerbate this hazard. The 1906 San Francisco earthquake set off dozens of large landslides in the Santa Cruz Mountains, some of which claimed human lives.

Capitola's topography ranges in steepness from 0 percent slope (flat) to more than 50 percent slope. The majority of the City falls into a relatively flat category. The primary area of concern for the City of Capitola with regard to

landslides is the land above Soquel Creek and below Wharf Road. Exhibit 15 - *Topographic Relief* categorizes the City of Capitola and surrounding areas based on the percentage of slope. Areas on the map most susceptible to landslides and mudflows have slopes greater than 50% and are colored red. The majority of these areas are coastal bluffs, escarpments of decomposed rock or soil resulting from erosion or faulting, with a vertical elevation of at least ten feet. In addition to the coastal bluffs, there are areas along Soquel Creek, Nobel Gulch, and Tannery Gulch that have steep slopes that could be susceptible to landslides and mudflows.

Coastal bluff areas within Capitola that have steep topography include Cliff Drive and surrounding open space, residential areas in the City's Jewel Box neighborhood, as well as shoreline residences and open space areas of the Depot Hill neighborhood, between the Village and New Brighton State Park.

Past Occurrences

Table 32: Landslides and Mudflows identifies past landslide and mudflow events in Santa Cruz County from 2005 through 2011. No major landslides or mudflows have occurred in Capitola.

Table 32: **Landslides and Mudflows**

Date	Location	Magnitude	County-wide Property Damage
3/22/2005	Valencia Road in Aptos	Mudflow	$150,000
3/22/2005	Scotts Valley	Landslide	$375,000
3/22/2005	Santa Cruz County	Landslide	$1,000,000
10/13/2009	Highway 84	Landslide	$10,000
12/19/2010	Old San Jose Road	Mudflow	$4,000

National Climatic Data Center http://www4.ncdc.noaa.gov/cgi-win/wwcgi.dll?wwevent~storms

In addition to the past landslide and mudflow events listed above, coastal storms can contribute to landslide and mudflow. Historical events describing coastal storms of this nature can be found in the flood profile.

Probability of Future Occurrence

Although nature caused landslides are beyond control, most recent landslides in the Santa Cruz Mountains have been caused by a combination of human activity and natural factors. Human activities that may destabilize slopes include logging, woodland conversion, road building, housing construction and any activity which alters normal drainage patterns. Whether or not any of these activities will trigger landslides depends on the existing natural conditions. Some soil and rock types are more prone to land sliding than others. In Capitola, areas of greatest concern are located within drainage courses like Soquel Creek, Noble Gulch, and Tannery Gulch. Landslides within these drainages could occur in areas of steep topography, if conditions allow.

Climate Change Considerations

Anticipating that precipitation regimes may change in the future as a result of climate change, there may be greater opportunity for landslides and mudflows. Current climate change science indicates that storms may become less frequent and more intense, which could result in greater amounts of runoff at higher velocities within the various drainages in Capitola. With greater amounts of precipitation underlying soils and rock units could become saturated quicker increasing the risk for landslides. In addition, if water runoff is occurring at greater velocities, there is greater potential for erosion, which could induce landslides and mudflows within Capitola.

Vulnerability/Risk Assessment

Table 33: Topographic Relief Associated with Capitola Critical Facilities identifies the critical facilities located within the increasing slope categories identified on Exhibit 15: Topographic Relief. The greater the slope, the more

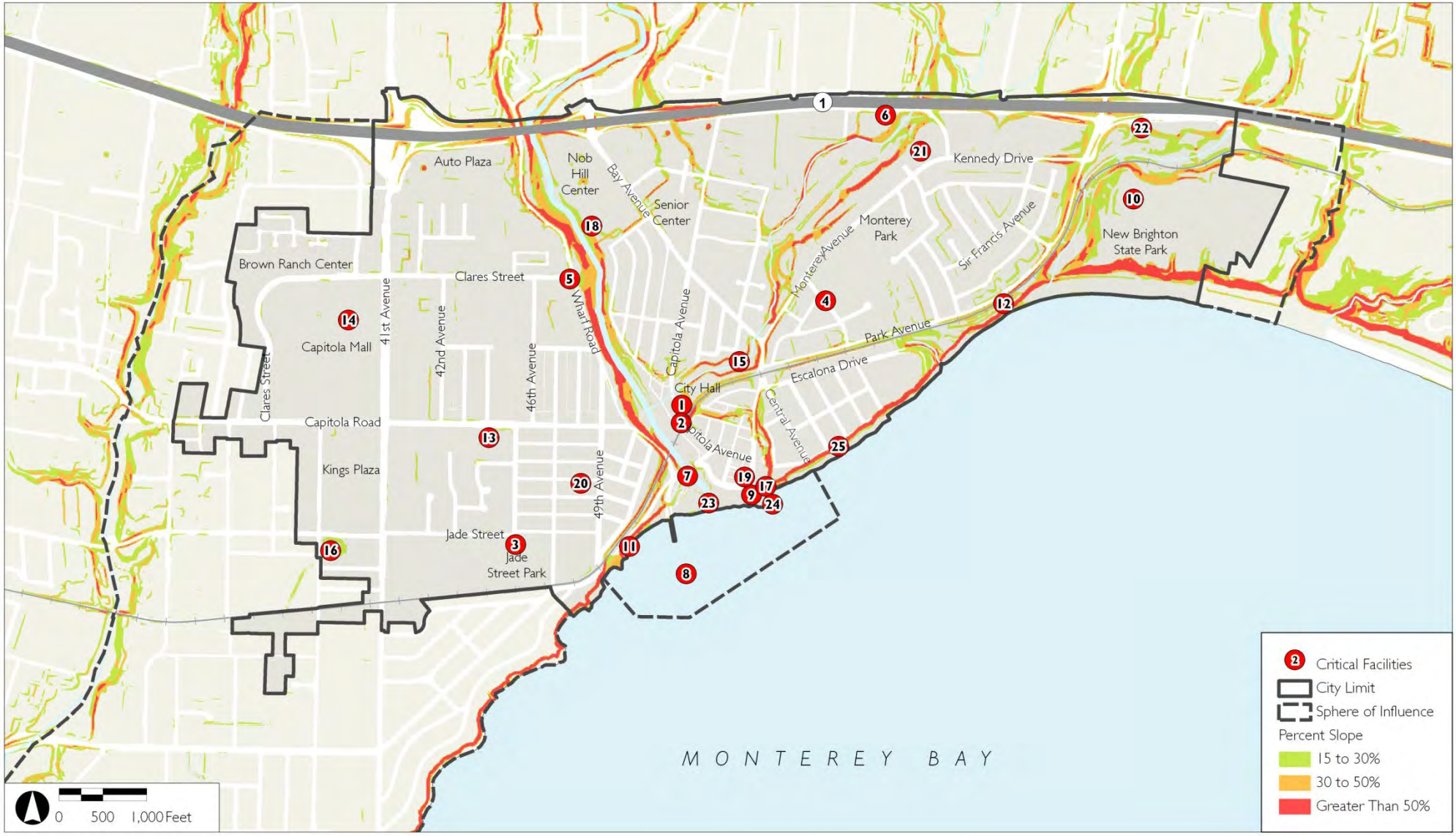
susceptible the area is to a landslide or mudflow. The replacement, contents, and potential loss values have been calculated for each facility located in a sloped area. As stated above, the greater the slope, the more susceptible the area is to a landslide or mudflow.

Map #	Facility	Topographic Relief (Slope)				Replacement Value	Contents Value
		0-15%(no color)	15-30% (green)	30-50% (orange)	>50% (red)		
1	City Hall/Emergency Operations Center	X	X	X	X	$8,000,000	$750,000
1	Capitola Police Station	X	X	X	X	$4,000,000	$750,000
2	Central Fire Station #4	X				$3,000,000	$100,000
3	Jade Street Community Center -- Emergency Shelter	X				$3,000,000	$200,000
4	New Brighton Gym -- Emergency Shelter	X				$2,500,000	$75,000
4	New Brighton School -- Back-up Emergency Shelter	X				$4,000,000	$700,000
5	Capitola Library -- Backup Emergency Operations Center	X				$10,000,000	$700,000
6	Capitola Corporation Yard	X				$2,000,000	$500,000
7	Stockton Avenue Bridge	X	X	X	X	$10,000,000	N/A
9	Capitola Beach Sea Wall	X				$5,000,000	N/A
10	New Brighton State Park--staging area for emergency response	X				N/A	N/A
11	Cliff Drive -at risk arterial (sea wall and road)	X	X	X	X	$8,000,000	N/A
12	Park Avenue-at risk arterial (sea wall and road)	X	X	X	X	$4,000,000	N/A
13	Police Communications Antenna-Capitola Mall	X				$100,000	N/A
14	Police Communications Antenna-AAA Building	X				$100,000	
15	Noble Gulch Storm Pipe	X	X	X	X	$10,000,000	N/A
16	38th Avenue Drainage Facility	X	X			$2,000,000	$300,000

Map #	Facility	Topographic Relief (Slope)				Replacement Value	Contents Value
		0-15%(no color)	15-30% (green)	30-50% (orange)	>50% (red)		
17	Capitola Pump Station-Esplanade Park	X	X	X	X	$10,000,000	$800,000
18	Soquel Pump Station	X	X	X		$10,000,000	$1,700,000
19	Lawn Way Storm Drain Pump Station	X				$500,000	N/A
20	Soquel Creek Water District Treatment Plant, Garnet Street	X				$2,000,000	$700,000
21	Soquel Creek Water District Seawater Intrusion Prevention Well, Monterey Avenue	X				$2,000,000	$70,000
22	SCWD MacGregor Booster Pumping Station	X	X	X		$300,000	N/A
23	Capitola Beach Flume	X				$2,000,000	N/A
24	Capitola Beach Jetty	X				$3,000,000	N/A
25	Grand Avenue Cliffs	X				N/A	N/A
	Total Potential Losses					$115,500,000	$7,345,000

TOPOGRAPHIC RELIEF

EXHIBIT 15



Source: City of Capitola, 2010; Santa Cruz County, 2012.

3.7.3 Expansive Soils

The Technical Advisory Committee initially identified expansive soils as a hazard of risk to the City of Capitola with limited hazard planning consideration. Based on the lack of past occurrences and minimal risk of future impacts from expansive soils, the Hazard Mitigation Planning Team decided not to include a profile for expansive soils. This hazard may be re-visited in future updates to this Plan.

3.8 Summary of Vulnerability

Table 33: Risk Assessment Summary shows a summary of critical facilities that intersect with hazard areas in the City of Capitola. Those facilities that intersect with a hazard area are indicated with a "Y" and a red shaded cell. Facilities that do not fall within the hazard area are designated by an "N" and a green shaded cell. The Capitola Beach Sea Wall and New Brighton State Park were not intersected ("NA") with the liquefaction potential hazard area because they fall outside the hazard area boundary.

As stated above, hazard and critical facility overlays were not conducted for wildfire, windstorm, drought, and earthquake. Overlays were conducted for erosion, flood, hazardous materials, liquefaction, landslide/mudslide, and tsunami. More detailed findings from this analysis can be found in the sections below.

3.9 Significant Hazards

The vulnerability assessments within each hazard profile are used to understand the varying levels of risk to the City of Capitola. Based on these assessments, the planning team concluded the two hazards of greatest concern to the City of Capitola are **coastal storm/flooding** and **tsunami**. For both of these hazards, 12 of the City's 25 critical facilities fall within the 100 year flood zone and the tsunami inundation zone. **Liquefaction** also poses a significant threat to the City. Nine critical facilities fall within the Very High and High liquefaction potential zones, 13 facilities fall within the low liquefaction potential zone, meaning that 22 of the City's 25 critical facilities are at risk to damage caused by liquefaction. **Landslide and mudslide** also pose a risk to the City, with 12 facilities falling within the 30% to greater than 50% slope range.

Table 33: **Risk Assessment Summary**

Facility		Beach Erosion	Cliff Erosion	Flood	Hazardous Materials			Liquefaction Potential				Topo (Slope)				Tsunami
				100 yr.	intersect	within 500'	within 1000'	Very High (A)	High (B)	Low (D)	Undefined (Unkn)	0-15%(no color)	15-30% (green)	30-50% (orange)	>50% (red)	
1	City Hall/Emergency Operations Center	N	N	Y	N	N	N	N	Y	N	N	N	N	N	Y	Y
1	Capitola Police Station	N	N	Y	N	N	N	N	Y	N	N	N	N	N	Y	Y
2	Central Fire Station #4	N	N	Y	N	N	N	N	Y	N	N	Y	N	N	N	Y
3	Jade Street Community Center -- Emergency Shelter	N	N	N	N	N	N	N	N	Y	N	Y	N	N	N	N
4	New Brighton Gym Emergency Shelter	N	N	N	N	N	N	N	N	Y	N	Y	N	N	N	N
4	New Brighton School Backup Emergency Shelter	N	N	N	N	N	N	N	N	Y	N	Y	N	N	N	N

Table 33: **Risk Assessment Summary**

Facility		Beach Erosion	Cliff Erosion	Flood	Hazardous Materials			Liquefaction Potential				Topo (Slope)				Tsunami
				100 yr.	intersect	within 500'	within 1000'	Very High (A)	High (B)	Low (D)	Undefined (Unkn)	0-15%(no color)	15-30% (green)	30-50% (orange)	>50% (red)	
5	Capitola Library Backup Emergency Operations Center	N	N	N	N	N	N	N	N	Y	N	Y	N	N	N	N
6	Capitola Corporation Yard	N	N	N	N	N	N	N	N	Y	N	Y	N	N	N	N
7	Stockton Avenue Bridge	Y	N	Y	N	N	N	Y	N	N	N	Y	Y	Y	Y	Y
8	Capitola Wharf	N	N	Y	N	N	N	NA	NA	NA	NA	N	N	N	N	Y
9	Capitola Beach Sea Wall	N	N	Y	N	N	N	Y	N	N	N	Y	N	N	N	Y
10	New Brighton State Park--staging area for emergency response	N	N	N	N	N	N	NA	NA	NA	NA	Y	N	N	N	N
11	Cliff Drive -at risk arterial (sea wall and road)	N	Y	N	N	N	N	N	N	Y	N	Y	Y	Y	Y	Y

Table 33: **Risk Assessment Summary**

Facility		Beach Erosion	Cliff Erosion	Flood	Hazardous Materials			Liquefaction Potential				Topo (Slope)				Tsunami
				100 yr.	intersect	within 500'	within 1000'	Very High (A)	High (B)	Low (D)	Undefined (Unkn)	0-15%(no color)	15-30% (green)	30-50% (orange)	>50% (red)	
12	Park Avenue-at risk arterial (sea wall and road)	N	Y	N	N	N	N	N	N	Y	N	Y	Y	Y	Y	N
13	Police Communications Antenna-Capitola Mall	N	N	N	N	N	N	N	N	Y	N	Y	N	N	N	N
14	Police Communications Antenna-AAA Building	N	N	N	N	Y	Y	N	N	Y	N	Y	N	N	N	N
15	Noble Gulch Storm Pipe	N	N	Y	N	N	N	N	Y	N	N	Y	Y	Y	Y	Y
16	38th Avenue Drainage Facility	N	N	N	N	N	Y	N	N	Y	N	Y	Y	N	N	N
17	Capitola Pump Station-Esplanade Park	N	Y	Y	Y	N	N	YY	N	N	Y	Y	Y	Y	Y	Y
18	Soquel Pump Station	N	N	Y	N	N	Y	Y	N	N	N	Y	Y	Y	N	N

Table 33: **Risk Assessment Summary**

Facility		Beach Erosion	Cliff Erosion	Flood	Hazardous Materials			Liquefaction Potential				Topo (Slope)				Tsunami
				100 yr.	intersect	within 500'	within 1000'	Very High (A)	High (B)	Low (D)	Undefined (Unkn)	0-15%(no color)	15-30% (green)	30-50% (orange)	>50% (red)	
19	Lawn Way Storm Drain Pump Station	Y	N	Y	N	N	N	Y	N	N	N	Y	N	N	N	Y
20	Soquel Creek Water District Treatment Plant, Garnet Street	N	N	N	N	N	N	N	N	Y	N	Y	N	N	N	N
21	Soquel Creek Water District Seawater Intrusion Prevention Well, Monterey Avenue	N	N	N	N	N	N	N	N	Y	N	Y	N	N	N	N
22	Soquel Creek Water District MacGregor Booster Pumping Station	N	N	N	N	N	N	N	N	Y	N	Y	Y	Y	N	N
23	Capitola Beach Flume	N	N	Y	N	N	N	Y	N	N	N	Y	N	N	N	Y

Table 33: **Risk Assessment Summary**

Facility		Beach Erosion	Cliff Erosion	Flood	Hazardous Materials			Liquefaction Potential				Topo (Slope)				Tsunami
				100 yr.	intersect	within 500'	within 1000'	Very High (A)	High (B)	Low (D)	Undefined (Unkn)	0-15%(no color)	15-30% (green)	30-50% (orange)	>50% (red)	
24	Capitola Beach Jetty	N	N	Y	N	N	N	N	N	N	Y	Y	N	N	N	Y
25	Grand Avenue Cliffs	N	Y	N	N	N	N	N	N	N	Y	Y	N	N	N	N

Y denotes that the critical facility intersects the hazard layer	N denotes that the critical facility does not intersect the hazard layer	NA denotes that the hazard layer is not available within the geographic extent of the analysis

3.10 Facilities at Most Risk

The critical facilities listed in Table 35: Capitola Critical Facilities At Risk are the most at risk to hazard events in the City of Capitola. They fall within multiple hazard zones making them susceptible to future damage from a variety of potential events.

Table 34: **Capitola Critical Facilities At Risk**

Facility	Erosion	Flood	HAZMAT	Liquefaction	Slope	Tsunami
Stockton Avenue Bridge	Y	Y	N	Y	Y	Y
Capitola Pump Station-Esplanade Park	Y	Y	Y	Y	Y	Y
Cliff Drive	Y	N	N	Y	Y	Y
Noble Gulch Storm Pipe	N	Y	N	Y	Y	Y
Park Avenue	Y	N	N	Y	Y	N
Soquel Pump Station	N	Y	Y	Y	Y	N

3.11 Potential Losses

Table 36: Most Costly Capitola Critical Facilities identifies the critical facilities with the greatest replacement value (combination of building replacement and contents value), in the City of Capitola. Should these facilities be completely destroyed by a hazard event, their replacement will be the most costly compared to other identified critical facilities.

Table 35: **Most Costly Capitola Critical Facilities**

Map #	Facility	Replacement Value
8	Capitola Wharf	$20,000,000
5	Capitola Library -- Backup Emergency Operations Center	$10,000,000
7	Stockton Avenue Bridge	$10,000,000
15	Noble Gulch Storm Pipe	$10,000,000
17	Capitola Sewage Pump Station - Esplanade Park	$10,000,000
18	Soquel Sewage Pump Station	$10,000,000
1	City Hall/Emergency Operations Center	$8,000,000
11	Cliff Drive - at risk arterial (sea wall and road)	$8,000,000
9	Capitola Beach Sea Wall	$5,000,000

Of these facilities, the Stockton Avenue Bridge, Cliff Drive, the Noble Gulch Storm Pipe, and the Soquel Sewage Pump Station are also facilities that are most susceptible to hazard events in the City of Capitola.

4 Chapter Four – Mitigation Actions

Hazard mitigation strategies are used to reduce the hazard impacts on large employment and industrial centers, public infrastructure, and critical facilities. This section of the City of Capitola Hazard Mitigation Plan is derived from an in-depth review of the vulnerabilities and capabilities described in this Plan. Mitigation actions from the Santa Cruz County Hazard Mitigation Plan and City of Santa Cruz Hazard Mitigation Plan were also reviewed so that the City of Capitola can support these actions. Overall, the actions represent Capitola's risk-based approach for reducing and/or eliminating the potential losses as identified in the Vulnerability Assessment section of each Hazard Profile.

4.1 Hazard Mitigation Overview

4.1.1 FEMA'S National Flood Insurance Program

In 1968, the US Congress created the National Flood Insurance Program (NFIP). Participation in the NFIP by a Community is voluntary; however, in order to receive funding from FEMA, a Community is required to participate in the program.

The City of Capitola participates in the NFIP and development in the floodplain is permitted according to Title 15.20 Floodplain District of the Municipal Code. Ordinance No. 970 adopted on May 10, 2012 amended the Title 15.20 floodplain management regulations per FEMA guidance and for consistency with the 2010 updated digital flood insurance rate maps. The ordinance is administered, implemented, and enforced by the City's Building Official as the designated floodplain administrator. The Building Official grants or denies building permits in accord with Title 15.20 Floodplain District of the Municipal Code.

The Community Rating System (CRS) is a voluntary part of the National Flood Insurance Program that seeks to coordinate all flood-related activities, reduce flood losses, facilitate accurate insurance rating, and promote public awareness of flood insurance by creating incentives for a community to go beyond minimum discounts. CRS ratings are on a 10-point scale (from 10 to 1, with 1 being the best rating), with residents of the community who live within FEMA's Special Flood Hazard Areas (SFHA) receiving a 5% reduction in flood insurance rates for every Class improvement in the community's CRS rating. The City of Capitola does not currently participate in the Community Rating System.

Repetitive Loss Properties: At this time, the City of Capitola is not aware of any Repetitive Loss Properties under the National Flood Insurance Program.

4.1.2 Hazard Mitigation Goals

The plan goals, presented in the Mitigation Priorities and Goals section of Chapter 1, serve as basis for direction to promote sound public policy designed to protect citizens, critical facilities, infrastructure, private property, and the environment from hazards. The Plan goals guide the direction of future activities aimed at reducing risk and preventing loss from natural hazards. The goals also serve as checkpoints as agencies and organizations begin implementing mitigation action items.

The hazard mitigation actions identified below list those activities which the City of Capitola will utilize to reduce their risk to potential hazards. These mitigation actions were identified through data collection and research, collaboration with the Technical Advisory Committee, and public input. Mitigation actions as related to coastal

climate change vulnerability as derived in part from the Coastal Climate Change Vulnerability Report, June 2017, which is included as part of this LHMP update and included as Appendix C.

Some of these actions may be eligible for funding through Federal and State grant programs, and other funding sources as made available to the City. The mitigation actions are intended to address the comprehensive range of identified hazards. Some actions may address risk reduction from multiple hazards.

4.1.3 Hazard Mitigation Prioritization

Through discussion and self-analysis, the TAC used the STAPLE/E (Social, Technical, Administrative, Political, Legal, Economic, and Environmental) criteria, as described in Table 36: STAPLE/E Review and Selection Criteria, when considering and prioritizing the most appropriate mitigation alternatives for the City. This methodology (as endorsed by FEMA) requires that social, technical, administrative, political, legal, economic, and environmental considerations be taken into account when reviewing potential actions to undertake. This process was used to help ensure that the most equitable and feasible actions would be undertaken based on the City's unique capabilities.

To develop a consensus priority ranking for the mitigation actions, each representative at the third milestone meeting was given ten votes to identify their highest priority mitigation actions. The votes were tallied to identify the highest priority mitigation actions and results incorporated into the final mitigation action priority rankings.

Table 36: **STAPLE/E Review and Selection Criteria**

Social
• Is the proposed action socially acceptable to the jurisdiction and surrounding community? • Are there equity issues involved that would mean that one segment of the jurisdiction and/or community is treated unfairly? • Will the action cause social disruption?
Technical
• Will the proposed action work? • Will it create more problems than it solves? • Does it solve a problem or only a symptom? • Is it the most useful action in light of other jurisdiction goals?
Administrative
• Can the jurisdiction implement the action? • Is there someone to coordinate and lead the effort? • Is there sufficient funding, staff, and technical support available? • Are there ongoing administrative requirements that need to be met?
Political
• Is the action politically acceptable? • Is there public support both to implement and to maintain the project?

Table 36: **STAPLE/E Review and Selection Criteria**

Legal
• Is the jurisdiction authorized to implement the proposed action? • Are there legal side effects? Could the activity be construed as a taking? • Will the jurisdiction be liable for action or lack of action? • Will the activity be challenged?
Economic
• What are the costs and benefits of this action? • Do the benefits exceed the costs? • Are initial, maintenance, and administrative costs taken into account? • Has funding been secured for the proposed action? If not, what are the potential funding sources (public, non-profit, and private)? • How will this action affect the fiscal capability of the jurisdiction? • What burden will this action place on the tax base or local economy? • What are the budget and revenue effects of this activity? • Does the action contribute to other jurisdiction goals? • What benefits will the action provide?
Environmental
• How will the action affect the environment? • Will the action need environmental regulatory approvals? • Will it meet local and state regulatory requirements? • Are endangered or threatened species likely to be affected?

4.1.4 Hazard Mitigation Benefit-Cost Review

FEMA requires local governments to analyze the benefits and costs of a range of mitigation actions that can reduce the effects of each hazard within their community. Benefit-cost analysis is used in hazard mitigation to show if the benefits to life and property protected through mitigation efforts exceed the cost of the mitigation activity. Conducting benefit/cost analysis for a mitigation activity can assist communities in determining whether a project is worth undertaking now, in order to avoid disaster related damages later. The analysis is based on calculating the frequency and severity of a hazard, avoided future damages, and risk.

A hazard mitigation plan must demonstrate that a process was employed that emphasized a review of benefits and costs when prioritizing the mitigation actions. The benefit-cost review must be comprehensive to the extent that it can evaluate the monetary as well as the non-monetary benefits and costs associated with each action. The benefit-cost review should at least consider the following questions:

- How many people will benefit from the action?
- How large an area is impacted?

- How critical are the facilities that benefit from the action (which is more beneficial to protect, the fire station or the administrative building)?
- Environmentally, does it make sense to do this project for the overall community?

For the Capitola LHMP, the Technical Advisory Committee used these questions to determine the appropriateness of mitigation actions. Those actions that did not have adequate benefits were excluded from the preliminary list of mitigation actions.

4.2 Hazard Mitigation Actions

The process used to identify hazard mitigation actions for this Plan included the following:

- Review of the Risk Assessment presented in Chapter 3 of this plan;
- Review of the Capabilities Assessment presented in Chapter 5 of this plan;
- Review of the Santa Cruz County and City of Santa Cruz Hazard Mitigation Plan mitigation actions;
- Review of new concerns/ issues that need to be addressed to reduce hazards to critical facilities.

Table 37: Capitola Hazard Mitigation Actions identifies the primary hazard, mitigation action priority, proposed mitigation action, City department responsible for implementation, the anticipated funding source(s), and the target completion date.

Potential Funding Source(s) identified in the table include the following:

PDM	Pre-Disaster Mitigation (FEMA)
HMGP	Hazard Mitigation Grant Program (FEMA)
CDBG	Community Development Block Grant (CA Department of Housing & Community Development)
FMA	Flood Mitigation Assistance (FEMA)
FHA	Federal Highway Administration
CalEMA	CalOES
Caltrans	California Department of Transportation

Table 37: **Capitola Hazard Mitigation Actions**

Mitigation Action	Responsible Department	Potential Funding Source(s)	Target Completion Date	Priority	Status Since 2013 LHMP
1. Earthquake / Liquefaction Hazard Related Actions					
A. Continue to enforce the requirements of the Geologic Hazards District (Chapter 17.48) of the Capitola Municipal Code which requires the assessment of geologic hazards by a registered geologist or professional engineer for all new development projects. The geologic hazards identified through this assessment process are then mitigated by avoidance or through measures designed by civil engineers using the California Building Code.	Community Development, Public Works, and Building	Staff budget, Review Fees, Development Impact Fees	Ongoing	Low	Unchanged
B. Continue to enforce the most current versions of both the California Building Code (CBC) and the California Building Standards with regards to seismicity, including requiring engineering and liquefaction studies for all potentially affected development.	Public Works and Building	Staff budget	Ongoing	Low	Unchanged

Table 37: **Capitola Hazard Mitigation Actions**

Mitigation Action	Responsible Department	Potential Funding Source(s)	Target Completion Date	Priority	Status Since 2013 LHMP
C. In cooperation with other agencies, conduct seismic evaluations of all City owned critical facilities (including roadways, water, sewer, storm drains and emergency use facilities) and coordinate with other agencies to evaluate non-city owned critical facilities. Seek funding sources to assist in necessary upgrades of these critical facilities.	Public Works and Other Agencies	PDM, HMGP, Staff budget, and General Fund	2025	Low	Unchanged
D. Work with Caltrans and other relevant agencies to evaluate and retrofit the structural integrity of all bridges to ensure their safety during a seismic event.	Public Works	PDM, HMGP, Staff budget	2030	Low	Unchanged
E. Continue training appropriate plan check staff on seismic requirements for new and existing structures.	Building	Staff budget	Ongoing	Low	Unchanged
2. Coastal Storm / Flooding Hazard Related Actions					
A. Evaluate the likelihood of debris flow impacts to the Stockton Avenue bridge during a catastrophic flooding event.	Public Works	FHA, FMA, Staff budget	2017	High	Completed
B. Improve the Noble Gulch storm drain facilities to protect against flooding within the Capitola Village.	Public Works and Community Development	PDM, HMGP, General Fund	2025	High	Unchanged

Table 37: **Capitola Hazard Mitigation Actions**

Mitigation Action	Responsible Department	Potential Funding Source(s)	Target Completion Date	Priority	Status Since 2013 LHMP
C. Relocate or elevate critical facilities (e.g. City hall, police, fire, etc.) above the level of the 100-year flood elevation.	Public Works and Community Development	PDM, HMGP, General Fund	2035	High	Unchanged
D. Continue to implement the Soquel Creek Lagoon Management Plan.	Public Works and Community Development	PDM, HMGP, FMA, Staff budget	Ongoing	Medium	Unchanged
E. Participate in the National Weather Service (NWS) Storm Ready Program	Community Development and Public Works	Staff budget, General Fund	Ongoing	Medium	Unchanged
F. Assist in the planning and/or improvement of infrastructure (e.g. sewers) and facilities to help minimize flooding impacts, particularly in critical flood-prone areas (e.g. Capitola Village).	Public Works and Community Development in coordination with the County Sanitation District	FHA, PDM	Ongoing	Low	Unchanged
G. Continually monitor and review CA State Water Resources Control Board regulations and permit requirements to ensure consistency with city policies and regulations. This includes on-site retention of stormwater runoff from impervious surfaces and the implementation of Low Impact Development (LIDs) standards on new development.	Public Works and Community Development	Staff budget	Ongoing	Low	Unchanged

Table 37: **Capitola Hazard Mitigation Actions**

Mitigation Action	Responsible Department	Potential Funding Source(s)	Target Completion Date	Priority	Status Since 2013 LHMP
H. Limit development and monitor conditions of development and grading permits to prevent sedimentation in natural channels and wetlands.	Community Development	Staff budget	Ongoing	Low	Unchanged
I. Develop more accurate GIS maps of the City's drainage system in coordination with future updates of the Capitola Stormwater Management Program.	Public Works and Community Development	CalEMA, General Fund, Staff budget	2025	Low	Unchanged
J. In coordination with the Santa Cruz County Public Works & Flood Control & Water Conservation District (Zone 5), evaluate the effectiveness of current policies and ordinances to ensure that storm water runoff from impervious surfaces does not contribute to flooding.	Public Works and Community Development	Staff budget	2025	Low	Unchanged
K. Continually monitor and review FEMA's National Flood Insurance Program (NFIP) requirements to ensure the City's floodplain management regulations are in compliance.	Public Works and Community Development	Staff budget	Ongoing	Low	Unchanged
L. Participate in the FEMA NFIP Community Rating System (CRS).	Community Development	Staff budget	2025	Low	Unchanged

Table 37: **Capitola Hazard Mitigation Actions**

Mitigation Action	Responsible Department	Potential Funding Source(s)	Target Completion Date	Priority	Status Since 2013 LHMP
M. Work in coordination with the Santa Cruz County Public Works & Flood Control & Water Conservation District (Zone 5) to develop and disseminate public education materials on flood protection and mitigation by working collaboratively with community groups, non-governmental organizations and the local media.	Community Development	General Fund	Ongoing	Low	Unchanged
N. Review and update the city's existing ordinances as they relate to storm / flooding hazards, consistent with the risks identified in this LHMP.	Community Development	Staff budget, PDM, HMGP, General Fund	2025	Low	Unchanged
O. Adopt policies to limit municipal capital improvements that would be at risk.	Public Works and Community Development	Staff budget, General Fund	2030	Low	Unchanged
P. Improve resiliency to flooding along Soquel Creek and Coast such as the construction of flood walls and improved building guidelines (increase free board and first floor parking).	Public Works and Community Development	PDM, HMGP, CDBG, CalEMA, FMA	2050	Low	New
Q. Investigate natural habitat buffering to reduce coastal flooding such as beach and kelp management.	Public Works and Community Development	HMGP	2030	Low	New

Table 37: **Capitola Hazard Mitigation Actions**

Mitigation Action	Responsible Department	Potential Funding Source(s)	Target Completion Date	Priority	Status Since 2013 LHMP
R. Upgrade vulnerable storm drains with tidal flap gates and pumps, as appropriate.	Public Works	PDM, HMGP, FMA, CalEMA, General Fund	2030	Low	New
S. Investigate beach nourishment in concert with rebuilding the City's two groins located at the east end of the main beach.	Public Works	PDM, HMGP	2020	Medium	New
T. Prepare a coastal bluff and beach management plan for Capitola that outlines short- and long-term coastal bluff management strategies that will help to establish local protection and adaptation priorities.	Public Works and Community Development	PDM, HMGP, CDBG, General Fund	2030	Medium	New
U. Prioritize coastal protection structures for upgrade and replacement including the sea wall along The Esplanade and coastal revetments.	Public Works	PDM, HMGP, CDBG, General Fund	2040	Low	New
V. Consider resiliency improvements to protect and maintain critical vehicular and non-vehicular coastal access ways.	Public Works and Community Development	PDM, HMGP, CDBG, General Fund	2030	Medium	New
W. Adopt policies to limit municipal capital improvements that would be at risk.	Public Works and Community Development	Staff budget, General Fund	2025	Medium	New

Table 37: **Capitola Hazard Mitigation Actions**

Mitigation Action	Responsible Department	Potential Funding Source(s)	Target Completion Date	Priority	Status Since 2013 LHMP
X. Improve resiliency to flooding along Soquel Creek including the possibility of a temporary or permanent flood wall along the Soquel Creek walking path may help to reduce flooding within high risk areas.	Public Works and Community Development	PDM, HMGP, FMA, CalEMA	2050	Low	New
Y. Identify priority areas for future protection accounting for costs, structural feasibility and secondary implications. (flood wall, seawall or revetment)	Public Works and Community Development	PDM, HMGP, FMA, CalEMA; Staff budget; General Fund	2060	Low	New
3. Drought Hazard Related Actions					
A. Work in coordination with the City of Santa Cruz and the Soquel Creek Water District to implement water conservation strategies that maximize the use of existing water resources.	Community Development	Staff budget	Ongoing	Low	Unchanged
B. Work in coordination with the Soquel Creek Water District to construct and implement the Pure Water Soquel, Groundwater Replenishment and Seawater Intrusion Prevention Project	Public Works	Staff budget, Prop 84 – IRWMP	2022	High	Unchanged
C. Coordinate with the Soquel Creek Water District and City of Santa Cruz to inform public of water conservation restrictions and drought conditions.	Community Development	Staff budget	Ongoing	Low	Unchanged

Table 37: **Capitola Hazard Mitigation Actions**

Mitigation Action	Responsible Department	Potential Funding Source(s)	Target Completion Date	Priority	Status Since 2013 LHMP
4. Windstorm Hazard Related Actions					
A. Coordinate with Pacific Gas & Electric to implement an ongoing tree trimming program for trees located in close proximity to overhead power lines.	Public Works	Staff budget, PG&E	Ongoing	Low	Unchanged
B. Establish a working relationship with the NWS Decision Support program to be advised of upcoming weather conditions in a manner that enables smart decisions.	Police Department	Staff budget	2025	Low	Unchanged
5. Coastal Erosion/ Bluff Failure Hazard Related Actions					
A. Work in close coordination with state and local agencies and organizations to protect and preserve the coastline and its coastal bluffs through restoration efforts to help ensure safe coastal access and the protection of adjacent infrastructure and facilities. These efforts may include beach replenishment, coastal bluff protection, seawall construction, and other appropriate measures.	Public Works, Community Development, County Sanitation District	Staff budget	Ongoing	Medium	Unchanged
6. Tsunami Hazard Related Actions					

Table 37: **Capitola Hazard Mitigation Actions**

Mitigation Action	Responsible Department	Potential Funding Source(s)	Target Completion Date	Priority	Status Since 2013 LHMP
A. Continue implementation of Tsunami Ready Program	Community Development, Public Works, Police	Staff budget	Ongoing	Medium	Unchanged
B. Maintain a public communication system to warn the public of a potential tsunami threat.	Community Development, Public Works, Police	Staff budget	Ongoing	Medium	Unchanged
C. Support the timely and accurate update of tsunami inundation maps within the Monterey Bay area. Then integrate the new tsunami inundation maps into the risk assessment of this Local Hazard Mitigation Plan	Community Development, Public Works, Police	Staff budget	Ongoing	Low	Unchanged
D. Continue to work collaboratively with relevant agencies and organizations to investigate tsunami threat to the City based on the best available information.	Community Development, Public Works, Police	Staff budget	Ongoing	Low	Unchanged
7. Hazardous Materials Related Actions					
A. Continue to coordinate with the Santa Cruz County Department of Environmental Health Services, on enforcement of State and local statutes and regulations pertaining to hazardous materials/ waste storage, use, and disposal.	Community Development, Public Works, Police, Fire	Staff budget	Ongoing	Low	Unchanged

Table 37: **Capitola Hazard Mitigation Actions**

Mitigation Action	Responsible Department	Potential Funding Source(s)	Target Completion Date	Priority	Status Since 2013 LHMP
B. Support staff training and education requirements regarding emergency response procedures associated with transportation-based hazardous materials releases.	Community Development, Public Works, Police, Fire	Staff budget	Ongoing	Low	Unchanged
C. Continue to coordinate the Urban Area Security Initiative to enhance preparedness efforts.	Police	UASI, Homeland Security Grant	Ongoing	Not Ranked*	Unchanged
8. Fire Hazard Related Actions					
A. Coordinate with the Fire District and Department of Corrections to create fuel reduction zones near properties at risk, shaded fuel breaks, and clean up areas prone to ground fuel litter common with invasive species habitat (i.e. Eucalyptus)	Fire, Public Works	Staff Budget	Ongoing	Not Ranked*	Unchanged
B. Continue to maintain cooperative fire protection and fire prevention agreements with the Central Fire Protection District and other relevant agencies.	Community Development, Public Works, Police, Fire	Staff budget	Ongoing	Low	Unchanged
C. Identify inadequate access roadways. Develop a program to address inadequacies.	Community Development, Public Works, Fire, Police	PDM, HMGP, General Fund	Ongoing2025	Low	Unchanged

Table 37: **Capitola Hazard Mitigation Actions**

Mitigation Action	Responsible Department	Potential Funding Source(s)	Target Completion Date	Priority	Status Since 2013 LHMP
D. Promote land use planning and implement building codes to reduce incidence of human-caused wildfires especially in very high fire hazard areas.	Community Development, Building, Fire	Staff budget	Ongoing	Low	Unchanged
E. Implement building codes relevant to fire protection in new development or major renovations. (i.e. built-in fire extinguishing and fire alarm systems)	Community Development, Building, Fire	Staff budget	Ongoing	Low	Unchanged
F. Work cooperatively with Central Fire Protection District, CalFire, and other relevant agencies to promote the implementation and awareness of fire prevention programs.	Community Development, Fire	Staff budget	Ongoing	Low	Unchanged
9. Landslide/ Mudflow Hazard Related Actions					
A. Continue to require that geologic/engineering reports be prepared for any proposed construction near landsliding and require mitigation of landslide hazards before issuing any building or grading permits.	Community Development, Building, Public Works	Staff budget	Ongoing	Low	Unchanged
10. Multi-Hazard Related Actions					

Table 37: **Capitola Hazard Mitigation Actions**

Mitigation Action	Responsible Department	Potential Funding Source(s)	Target Completion Date	Priority	Status Since 2013 LHMP
B. Coordinate hazard mitigation progress/efforts with the Santa Cruz County Office of Emergency Services and other agencies and cities within Santa Cruz County.	Community Development, Public Works, Police, Fire, City Manager	Staff budget	Ongoing	Medium	Unchanged
C. Continue to work with Santa Cruz 911 and other relevant agencies to maintain a coordinated and effective emergency communication system.	Community Development, Public Works, Police, Fire	Staff budget	Ongoing	Low	Unchanged
D. Continue to update and enhance mapping data and the City's GIS for all hazards.	Information Technology	General Fund	Ongoing	Low	Unchanged
E. Verify the replacement value of City-owned critical facilities and coordinate with other agencies for non city-owned facilities to improve the risk assessment within this plan.	Public Works, Community Development, Finance	General Fund	2019	Low	Completed
F. Work with the appropriate cellular phone service providers to ensure there is always adequate cellular services to critical facilities within the City.	Police, Information Technology	Staff budget	Ongoing	Low	Unchanged
G. Reference and integrate the City's Local Hazard Mitigation Plan into the Safety Element of the General Plan.	Community Development	General Fund, DRI	2015	Low	Completed

Table 37: **Capitola Hazard Mitigation Actions**

Mitigation Action	Responsible Department	Potential Funding Source(s)	Target Completion Date	Priority	Status Since 2013 LHMP
H. Integrate the results of the Monterey Bay Sea Level Rise Study into the Local Hazard Mitigation Plan risk assessment and the General Plan Safety Element.	Community Development	DRI	2025	Low	New
I. As part of the General Plan Update process, develop a plan to address climate change/ climate adaptation issues within the City and its surroundings.	Community Development	Staff budget	2014	Low	Completed
J. Protect and preserve the coastline through permit review and continue to review coastal development for conformance with applicable City regulations (e.g. geologic, flood).	Community Development, Public Works	Staff budget	Ongoing	Low	Unchanged
K. Review and update the city's existing ordinances as they relate to hazards and risks identified in this LHMP.	Community Development	Staff budget	2025	Low	Unchanged

*These mitigation actions were added after mitigation action ranking was conducted.

4.3 Capabilities Assessment

This capability assessment is designed to identify existing local agencies, personnel, planning tools, public policy and programs, technology, and funds that have the capability to support hazard mitigation activities and strategies outlined in this LHMP. To create this capability assessment, the Technical Advisory Committee collaborated to identify current local capabilities and mechanisms available to the City of Capitola for reducing damage from future natural hazard events. These plans and resources were reviewed while developing the Local Hazard Mitigation Plan and summarized below.

4.3.1 Key Resources

The City of Capitola and the County of Santa Cruz have several key departments with resources to support the implementation of mitigation actions. These departments offer a variety of planning, technical, policy, and staffing resources as summarized in Table 38: Capitola Capabilities Assessment.

Table 38: **Capitola Capabilities Assessment**

Type of Resource	Resource Name	Ability to Support Mitigation
Community Development Department		
Personnel Resource	Community Development Director	Leads the development and implementation of this Local Hazard Mitigation Plan. Can use personnel resources to include outreach to the public.
Policy Resource	Zoning Ordinance	The Zoning Ordinance is the main tool to implement the City's General Plan. It sets land use regulations and the zoning map for the City. Hazard mitigation related zones include the floodplain district and the geologic hazards district. Mitigation actions outlined in this Plan can be adopted in the form of land use/development regulations.
Policy Resource	Building Code/Fire Code	International Building Code, International Fire Code.
Policy Resource	Code Enforcement	Each zoning district has specific zoning codes and guidelines that were developed to enhance and protect each district. The Community Development Department enforces and carries out these guidelines.
Technical and Personnel Resources	GIS Program	GIS creates an updated zoning map and General Plan map and also maintains an interactive parcel map that residents can use to determine if they are located in a floodplain, floodway, or redevelopment district.

Table 38: **Capitola Capabilities Assessment**

Type of Resource	Resource Name	Ability to Support Mitigation
Plan Resource	General Plan	Principal policy document that guides conservation, development, and change in the City. Identifies City programs and policies as they pertain to land use, public services, housing, natural resources, and safety. Hazard data and mitigation actions described in this Plan have been incorporated into the General Plan. Capitola's General Plan was adopted 2014. The City can adopt the 2020 LHMP into the Safety Element of the General Plan
Policy Resource	Housing Program	The City offers numerous programs to help residents maintain safe housing.
Plan Resource	Flood Management Plan	The City manages floodplain per Chapter 17.50 Floodplain Management of the Capitola Municipal Code.
Personnel Resource	Planning Commission	The Planning Commission meets once per month to discuss planning capabilities in Capitola. They review and comment on the LHMP.
Plan Resource	2007 Economic Development Strategic Plan	The underlying belief of the Economic Development Strategy is that the local economy interlinks with many other aspects of a community, including housing, transportation, recreation, and safety. This document helps understand economic development trends in Capitola.
Plan Resource	Existing Conditions White Papers	Provide background information on City of Capitola.
Plan and Technical Resource	Local Coastal Program Land Use Plan	Land Use maps will be revised as part of the LCP update which is currently underway. Planning and IT departments may update the General Plan maps, as relevant, to address mitigation identified in this LHMP.
Plan Resource	2005 Historic Structures List	Provides a list of historic structures in Capitola.
Plan Resource	Climate Action Plan	Completed 2015.
Building Department		
Personnel Resource	Building Official	Enforces building codes and development ordinances including the floodplain management ordinance. New and updated building codes can address hazards as addressed in this LHMP.
Policy Resource	Inspections & Permit	Building permits ensure that zoning requirements as well as fire and structural safety standards are met.
City Council		
Policy Resource	Policy Approval	Policy legislation and implementation

Table 38: **Capitola Capabilities Assessment**

Type of Resource	Resource Name	Ability to Support Mitigation
City Administration		
Administrative / Personnel Resource	City Manager	Supports the development and implementation of this Local Hazard Mitigation Plan by allocating the appropriate personnel and resources.
Financial Resource	Finance	Budgeting and Risk Management for City owned facilities. Money for the local match for FEMA mitigation funding are available from the City of Capitola General Fund.
Public Works Department		
Personnel Resource	Public Works Director	Participates in the development and implementation of this Hazard Mitigation Plan.
Technical and Policy Resource	Streets Program	Provides maintenance and improvement of the City's streets and highways. Also provides maintenance of Soquel Creek, Capitola Lagoon, City owned buildings, and the municipal wharf.
Policy and Plan Resource	Storm Water Management Program	The Depot Hill Drainage Study was conducted in 2008 and the Storm Water Management Program is updated annually.
Policy and Plan Resource	Capital Improvement Program	The Capital Improvement Program should be informed by the strategies identified and prioritized in this plan.
Personnel Resource	Grant writing	Part of the Engineering Department
Police Department		
Training and Personnel Resource	Police Chief	Coordinates preparedness training, public outreach on safety and emergency preparedness, and emergency response.
Policy and Plan Resource	Emergency Preparedness	Includes emergency preparedness guides for the elderly, physically challenged, and children.
Special Districts		
Central Fire Protection District of Santa Cruz County		
Personnel Resource	Fire Chief	Coordinates emergency response, fire prevention education, CERT training, and wildfire education and prevention.
Plan Resource	Wildland Fire Structure Protection Plan	A western portion of the City limits (where there is a large stand of Eucalyptus trees) is located in the Central Fire Districts Wildland Protection Zone CTL 11.
Plan Resource	Central Fire District Master and Strategic Plan	This Plan can assist the City in identifying future improvements and prioritize mitigation activities.

Table 38: **Capitola Capabilities Assessment**

Type of Resource	Resource Name	Ability to Support Mitigation
Personnel Resource	Emergency Services	Coordinates with City staff on emergency preparedness, response, and mitigation activities.
Policy Resource	Public Education Program and CERT Training	Educates City employees and residents on hazards awareness, prevention, and preparedness.
Policy Resource	Commercial Building Inspections and Permits	The Fire District provides reoccurring fire prevention inspections of all commercial buildings in the City. The District also provides plan check and permit functions for commercial development addressing Fire Code Standards.
Soquel Creek Water District		
Plan Resource	Urban Water Management Plan and Pure Water Soquel Project	Identifies adequate water supplies and proper planning, funding, and construction of future water infrastructure improvements.
Plan Resource	Emergency Response Plan (ERP)	The goals of the ERP are to rapidly restore water service after an emergency, ensure adequate water supply for fire suppression, minimize water system damage, minimize impact and loss to customers, minimize negative impacts on public health and employee safety, and provide emergency public information concerning customer service.
Plan Resource	Groundwater Management Plan	Enhances existing water supplies and identifies future opportunities for planning and funding of groundwater management activities.
Soquel Union Elementary School District		
Personnel and Technical Resource	New Brighton School	The School District owns and manages the New Brighton School which is the City's back-up Emergency shelter location, which is co-located with the New Brighton Gym (the city-owned primary emergency shelter.)
911 Communications Center		
Technical Resource	Santa Cruz Regional 911	Provides a means of notification to residents and listed phone numbers during an emergency situation allowing resident and businesses to relocate out of a potentially vulnerable area.
City of Santa Cruz Water District		
Plan and Personnel Resource	Wildfire Preparedness	Links to various wildfire educational websites. Personnel can develop and outreach program to inform the public that these website exist.

Table 38: **Capitola Capabilities Assessment**

Type of Resource	Resource Name	Ability to Support Mitigation
Plan Resource	Urban Water Management Plan	A long range planning document to aid in updating city and county General Plans and for preparation of environmental documents under the California Environmental Quality Act. Serves as a detailed source of information to coordinate local water supply availability and certain land use decisions made by cities and counties.
Plan Resource	Water Supply Assessment	Assesses the adequacy of the water supply to meet the demand of proposed projects over the next 20 years in addition to the public water system's existing and planned future uses.
Plan Resource	Adequacy of Municipal Water Supplies to Support Future Development	Provides information on the ability of the system to deliver water and offers possible approaches that could be used by policy makers to integrate local land use decisions with long-term water supply availability.
Plan Resource	Water Shortage Contingency Plan	Establishes procedures and actions that can be taken to respond to a large, long term shortage in the water supply.
Plan Resource	City of Santa Cruz/Soquel Creek Water District Evaluation of Regional Water Supply Alternative	Provides an evaluation of "regional" desalination and wastewater reclamation facilities to augment water supplies for both the City and the District.
Santa Cruz County		
Technical Resource	County Flood Control and Water Conservation District (5)	Provides flood protection and regulation and stormwater services for Zone 5 facilities.
Technical Resource	County Sanitation District	Operates water and wastewater services.
Technical Resource	County Public Works	Assist the City in protecting the public's health, safety, and welfare through superior engineering, maintenance, operations, and administrative services that incorporate customer service and integrity with competence and productivity for a sustained commitment to excellence.
Plan Resource	San Mateo-Santa Cruz Community Wildfire Protection Plan	Identifies wildfire hazard areas and methods for reduction/ elimination of fire hazards.

Table 38: **Capitola Capabilities Assessment**

Type of Resource	Resource Name	Ability to Support Mitigation
Plan Resource	Hazard Mitigation Plan	Identifies mitigation actions for County of Santa Cruz critical facilities.
Plan Resource	Coastal Incident Response Plan	Establishes response framework and protocols for incidents along the Santa Cruz County coastline, including the City of Capitola.
Plan Resource	Operational Area Emergency Management Plan (2005)	Overall emergency management plan for the Santa Cruz County Operational Area.
Plan Resource	Tsunami Response Plan Annex (2010)	The City of Capitola relies on the Tsunami Response Plan Annex developed to accompany the Operational Area Emergency Management Plan.
Plan Resource	General Plan	Provides policies within Santa Cruz County intended to reduce hazards and disasters.
Plan Resource	Emergency Preparedness Guide	Provides a resource for residents/ businesses to better prepare for future disaster/ emergency situations.
Policy Resource	Growth Management	Reduces development potential within hazard prone areas.
Technical Resource	Rain and Stream Gauging	Allow the City to better monitor rainfall and stream flow totals to gauge the adequacy of storm drain infrastructure capacity.
Technical and Staffing Resource	NIMS Training	On an ongoing basis, County OES conducts training for all department heads on their role in an emergency based on the National Incident Management Systems (NIMS). This training proved to be successful in the response to the severe floods in March 2011.
Technical Resource	National Weather Service	Decision Support Program (improved forecast interpretations for making informed decisions)
Technical Resource	CalOES	Hazard Mitigation Web Portal provides guidance and examples of hazard mitigation planning as well as notifications regarding available funding.
Technical Resource	Federal Emergency Management Agency	Guidance for hazard mitigation planning processes and resources.

4.3.2 Fiscal Capability

City of Capitola Budget Department Overview

The following summarizes Capitola's fiscal capabilities in terms of the City's financial resources and allocated spending. Sales tax and property tax are the primary sources of Capitola's financial resources. The City has allocated the majority of these financial resources to Public Safety, Community Development, Public Works, and City Manager/City Clerk/Human Resources departments which are all relevant for implementing hazard mitigation actions.

The City Council, City Manager, Community Development, Police, and Public Works departments all have a general fund that could be used toward mitigation activities. These departments also have budgets used to employ City staff that are an integral part of the mitigation planning process. These staff members include:

- The City Manager's department employs an Information Systems Specialist.
- The Community Development Department staff includes a community development director, one planner, and a building inspector and official.
- Public Works Department staff includes a public works director and a ten person maintenance crew.
- The Police Department employees a chief, captain, sergeant, and 16 police officers. This department is also responsible for the City's Emergency Preparedness.

Capital Improvement Projects: 2020-2022

Capital improvements projects scheduled for the 2020-21 fiscal year include several projects that include hazard mitigation elements. Three specific projects to rehabilitate the Capitola wharf, beach jetty and flume address sea level rise, costal storm damage, and climate change. The flume and jetty project, scheduled for Fall of 2020, will rehabilitate these structures to their designed specifications. The wharf project, currently in environmental review and permitting, will increase the storm resiliency of the structure while providing for future raising of the wharf deck to further address sea level rise. The water project is currently on schedule to begin construction in 2021.

5 Chapter Five - Plan Maintenance Process

This Chapter identifies the formal process that will ensure that the Capitola LHMP (the Plan) remains an active and relevant document. The Plan maintenance process includes a schedule for monitoring and evaluating the Plan annually and producing an update every five years.

This chapter describes how Capitola will integrate public participation throughout the plan maintenance and implementation process. It also describes how the City intends to incorporate the mitigation actions outlined in this Plan into existing planning mechanisms and programs. These include the Capitola General Plan, the City's Capital Improvement Program, as well as building code enforcement and implementation. The Plan's format allows the City to readily update sections when new data becomes available, resulting in a Plan that will remain current and relevant to the City of Capitola.

5.1 Monitoring, Evaluating and Updating the Plan

5.1.1 Coordinating Body

The Capitola Hazard Mitigation Planning Team will be responsible for the maintenance of this LHMP. The City of Capitola Community Development Department will take the lead in LHMP maintenance issues, by coordinating maintenance of this Plan and undertaking the formal review process and the rewrite of the LHMP.

5.1.2 Convener

The City of Capitola Community Development Department will facilitate the Hazard Mitigation Planning Team meetings, and will assign tasks such as updating and presenting the Plan to other Departments, Stakeholder Groups, and/or elected officials. Plan implementation and evaluation will be a shared responsibility among all of the Hazard Planning Team.

5.1.3 Evaluation

The minimum task of the ongoing annual hazard mitigation planning team meeting will be the evaluation of the progress of the Plan and incorporating the actions into other planning documents. This review will include the following:

- Summary of any hazard events that occurred during the prior year and their impact on the community.
- Review of successful mitigation initiatives identified in the Plan.
- Brief discussion about why targeted mitigation strategies were not completed.
- Re-evaluation of the mitigation actions plan to determine if the timeline for identified projects needs to be amended (such as changing a long-term project to a short-term project due to funding availability).
- Recommendations for new mitigation actions.
- Changes in, or potential for, new funding options/grant opportunities.
- Integration of new GIS data and maps that can be used to inform the Plan.
- Evaluation of any other planning programs or initiatives within the City that involve hazard mitigation.

The City will create a template to guide the LHMP team in preparing a progress report. The City will also prepare a formal annual report on the progress of the LHMP. This report will be used as follows:

- Distributed to City department heads for review.
- Provided to the local media through a press release.
- Presented in the form of a council report to the City Council.

5.2 Method and Schedule for Updating the Plan within 5 years

Section 201.6.(d)(3) of Title 44 of the Code of Federal Regulations requires that local hazard mitigation plans be reviewed, revised if appropriate, and resubmitted for approval in order to remain eligible for benefits awarded under the Disaster Mitigation Act (DMA). The City intends to update the Plan on a five-year cycle from the date of initial plan adoption. It is anticipated that this update process will occur one year prior to expiration of the existing plan. This cycle may be accelerated to less than five years based on the following triggers:

- A Presidential Disaster Declaration that impacts the City of Capitola.
- A hazard event that causes loss of life.

The intent of the update process will be to add new planning process methods, community profile data, hazard data and events, vulnerability analyses, mitigation actions and goals to the adopted plan so that the Plan will always be current and up to date. Based on the needs identified by the planning team, the update will, at a minimum, include the elements below:

1. The update process will be convened through a committee appointed by the Community Development Director and will consist of at least one member of the General Plan Update Advisory Committee or staff to ensure consistency between Plans.
2. The hazard risk assessment will be reviewed and updated using best available information and technologies on an annual basis.
3. The evaluation of critical structures and mapping will be updated and improved as funding becomes available.
4. The mitigation actions will be reviewed and revised to account for any actions completed, deferred, or changed to account for changes in the risk assessment or new City policies identified under other planning mechanisms, as appropriate (such as the General Plan).
5. The draft update will be sent to appropriate agencies for comment.
6. The public will be given an opportunity to comment prior to adoption.
7. The Capitola City Council will adopt the updated Plan.

5.3 Adoption

The Capitola City Council is responsible for adopting the Plan. This formal adoption should take place every five years. Once the Plan has been adopted, the City of Capitola Community Development Department will be responsible for final submission to the Governor's Office of Emergency Services (CalOES). CalOES will then submit the Plan to the Federal Emergency Management Agency (FEMA) for final review and approval.

5.4 Implementation through Existing Programs

The effectiveness of the City's non-regulatory LHMP depends on the implementation of the Plan and incorporation of the outlined mitigation action items into existing City plans, policies, and programs. The Plan includes a range of action items that, if implemented, would reduce loss from hazard events in the City. Together, the mitigation action items in the Plan provide the framework for activities that the City can choose to implement over the next five years. The City has prioritized the plan's goals and identified actions that will be implemented (resources permitting) through existing plans, policies, and programs.

The Community Development Department has taken on the responsibility for overseeing the Plan's implementation and maintenance through the City's existing programs. The Community Development Director, or designated appointee, will assume lead responsibility for facilitating LHMP implementation and maintenance meetings. Although the Community Development Department will have primary responsibility for review, coordination, and promotion, plan implementation and evaluation will be a shared responsibility among all departments identified as lead departments in the mitigation action plan. The Community Development Department will continue to work closely with the Santa Cruz County Emergency Operations Manager to insure consistency with all relevant plans.

5.5 Incorporation into Existing Planning Mechanisms

The following planning mechanisms from the 2013 LHMP were implemented:

- Capitola Building Codes
- Monterey Bay Sea Level Rise studies (various)

The following planning mechanisms were not implemented:

- Santa Cruz County Emergency Management Plan
- Capitola Capital Improvement Program
- Capitola Storm Water Management Program
- Capitola Emergency Operations Plan

The information on hazards, risk, vulnerability, and mitigation contained in this Plan is based on the best information and technology available at the time the LHMP was prepared. As previously stated, the City's General Plan is considered to be an integral part of this plan. The City, through adoption of its 1994 General Plan (Safety Element) goals, has planned for the impact of natural hazards. The City's General Plan is currently being updated and the LHMP process has allowed the City to review and expand upon the policies contained within the General Plan Safety Element. The City views the General Plan and the LHMP as complimentary planning documents that work together to achieve the ultimate goal of the reduction of risk exposure to the citizens of Capitola. Many of the ongoing recommendations identified in the mitigation strategy are programs recommended by the General Plan and other adopted plans. The City will coordinate the recommendations of the LHMP with other planning processes and programs including the following:

5.6 Continued Public Involvement

The public will continue to be apprised of the LHMP actions through the City website and by providing copies of the annual progress report to the media. Copies of the Plan will be distributed to the Santa Cruz Library System. Upon initiation of the LHMP update process, a new public involvement strategy will be developed based on guidance from the planning team. This strategy will be based on the needs and capabilities of the City at the time of the update. At a minimum, this strategy will include the use of local media outlets within the planning area and the City's website.

5.7 Point of Contact

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