

Watsonville Strawberry Festival 3



Capitola Makers Market 1



Capitola Makers Market 2



Capitola Makers Market 3



Capitola Makers Market (4)

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Stakeholder Listening Sessions

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SECTION 1. STAKEHOLDER LISTENING SESSIONS

This section provides a summary of the major themes identified through a series of eight stakeholder listening sessions. In addition to information gathered through other public and stakeholder engagement efforts, these themes were used in refining and aligning the mitigation strategy with community needs and priorities.

Themes from Stakeholder Listening Sessions	
Fire Safe Council	▪ **Top Concerns:** Evacuation road vulnerability; vegetation overgrowth and forest management; landslides; underserved, elderly, and farm worker populations ▪ **Lessons Learned:** Road and culvert failures expose infrastructure fragility; importance of inter-agency coordination ▪ **Successful Projects:** Firewise mentoring and support; fuel breaks; home hardening assessments; collaborative work with agencies ▪ **Barriers:** Lack of education/incentives; insufficient maintenance plans; gaps in coordination and treatment areas ▪ **Other Notes:** Emphasize large-scale, holistic planning and increasing visibility/education around mitigation
Zayante Fire Protection District	▪ **Top Concerns:** Lack of sustained mitigation funding; nonconforming development in high-hazard areas; evacuation route vulnerability; storm damage; emergency communication failures ▪ **Lessons Learned:** Integration issues with CAL FIRE post-CZU; need for extended fire response; value of Firewise programs; administrative support needed for disaster recovery ▪ **Successful Projects:** Firewise efforts; fuel reduction (limited); remote-access fire vehicles ▪ **Barriers:** Inadequate funding; bureaucratic delays; staffing shortages; community fatigue ▪ **Other Notes:** Suggested scalable staffing ("surge specialties"); highlighted dispatch communication overhaul needs
CAL FIRE	▪ **Top Concerns:** Wildfire suppression; unregulated development; public water vulnerability; inadequate access ▪ **Lessons Learned:** Evacuation communication gaps during CZU; debris removal inadequacies ▪ **Successful Projects:** Fuel breaks and vegetation management on public lands; some success with small landowner coordination ▪ **Barriers:** Regulatory hurdles (CEQA, endangered species); maintenance funding gaps; local government leniency on rebuilding ▪ **Other Notes:** Emphasized enforcing land use codes; better development permitting; and managed retreat

keholder Listening Sessions Summary 1

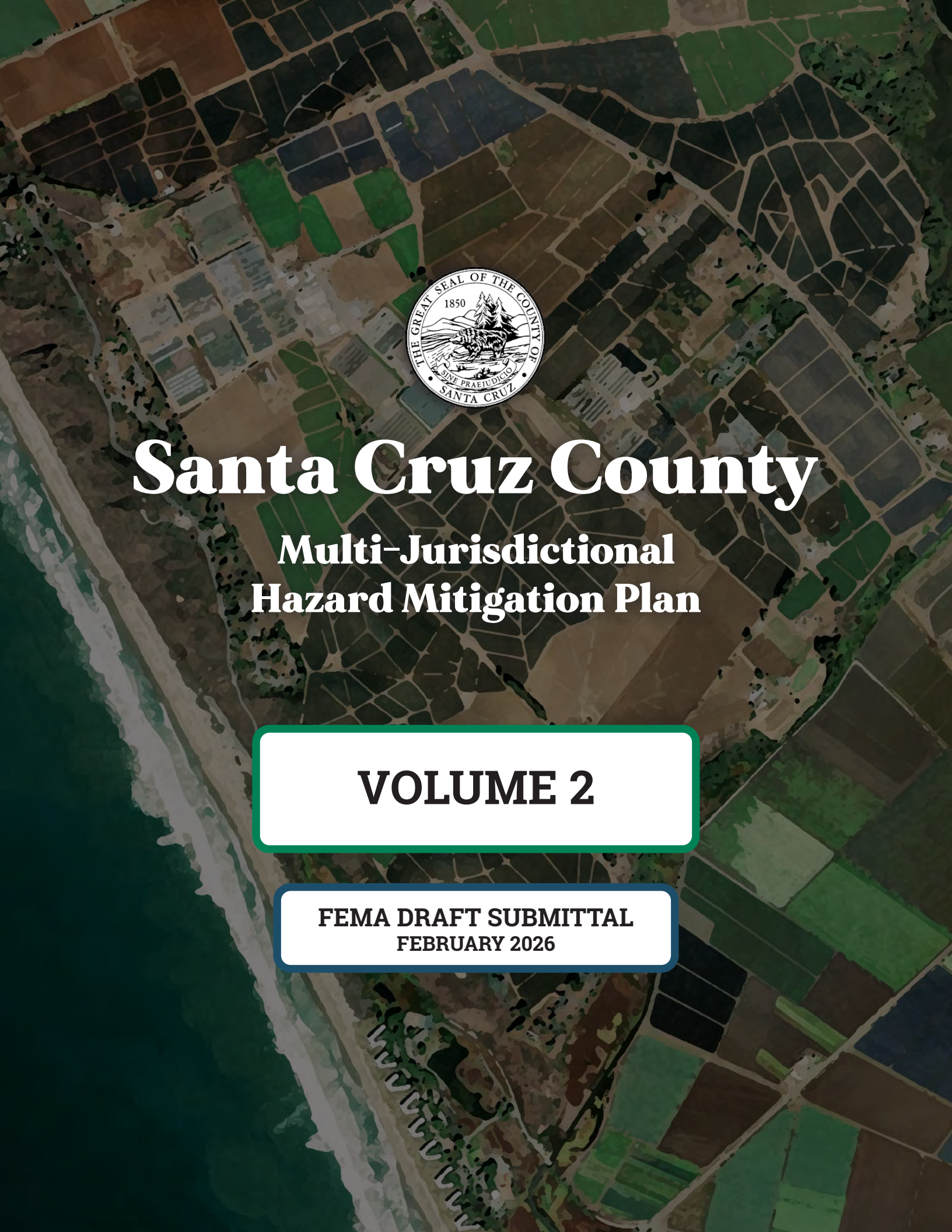
Themes from Stakeholder Listening Sessions	
Pajaro Regional Flood Management Agency	▪ **Top Concerns:** Flood risk in Pajaro/Watsonville; aging and vulnerable levees; farmworker vulnerability; community trust and outreach ▪ **Lessons Learned:** Importance of coordination and legislative support ▪ **Successful Projects:** Pajaro River Levee project; legislative CEQA exemptions; regional partnerships; upstream mitigation efforts ▪ **Barriers:** Political and administrative changes; staff capacity; inter-agency coordination; jurisdictional boundary challenges; language barriers ▪ **Other Notes:** Building public trust and culturally competent outreach is central; PRFMA will be doing its own HMP
San Lorenzo Valley Water District	▪ **Top Concerns:** Wildfire; earthquakes; climate change; drought; infrastructure vulnerability; cybersecurity ▪ **Lessons Learned:** CZU fire caused infrastructure failure and contamination; emphasized infrastructure hardening ▪ **Successful Projects:** Fuel clearance; fireproofing sites (CalOES-funded); conservation planning ▪ **Barriers:** Capacity limitations; administrative burdens of grants; reliance on costly contractors ▪ **Other Notes:** Cybersecurity and endangered species are emerging mitigation issues
Encompass Community Services	▪ **Top Concerns:** Flooding; power outages; evacuation complications for vulnerable groups ▪ **Lessons Learned:** Communication and readiness has improved but still challenged by housing constraints ▪ **Successful Projects:** Shelter coordination; levee improvements; engagement strategies for unhoused populations ▪ **Barriers:** Outreach resource limitations; HUD housing coordination issues ▪ **Other Notes:** Advocates for human-centered mitigation; addressing root causes like housing insecurity
Community Bridges	▪ **Top Concerns:** Wildfire; flooding; inadequate communication infrastructure; delayed emergency response ▪ **Lessons Learned:** Plain-language alerts; need for county-wide communication uniformity; trust in local messengers ▪ **Successful Projects:** Local radio alerts; door-to-door evacuation outreach ▪ **Barriers:** Limited staffing; reliance on neighboring counties; poor access roads; infrastructure gaps ▪ **Other Notes:** Emphasized transit and shelter coordination for vulnerable residents

keholder Listening Sessions Summary 2

Themes from Stakeholder Listening Sessions	
USDA Natural Resources Conservation Service	▪ **Top Concerns:** Complacency and unpreparedness among residents; substandard slope stabilization, drainage, and erosion control measures; mixed messages from authorities; access routes and lack of defensible space; critical need for early warning systems and community-level planning ▪ **Lessons Learned:** Past storms (e.g., 1982) highlight need for public education; incentives and outreach more effective than mandates; "one size fits all" approaches don't work; poorly designed or temporary fixes often create more hazards; disasters offer opportunities to educate residents and rebuild better ▪ **Successful Projects:** "Erosion Control Month" campaigns in 1980s; winter preparedness clinics, floodplain outreach, and Local Assistance Centers; wildfire preparedness outreach; collaborative programs with RCD, OES, and NRCS ▪ **Barriers:** Complex, expensive, and delayed permitting processes discourage compliance; homeowners often lack awareness or underestimate risks; county and agency practices sometimes model poor responses; funding limitations and lack of consistent incentives; poor maintenance of mitigation measures undermines resilience ▪ **Other Notes:** Community-scale planning and drills are essential; neighborhood-level Firewise programs and coordination with HOAs can build resilience; mitigation practices should not trade one hazard for another; monitoring and maintenance are critical for all mitigation projects

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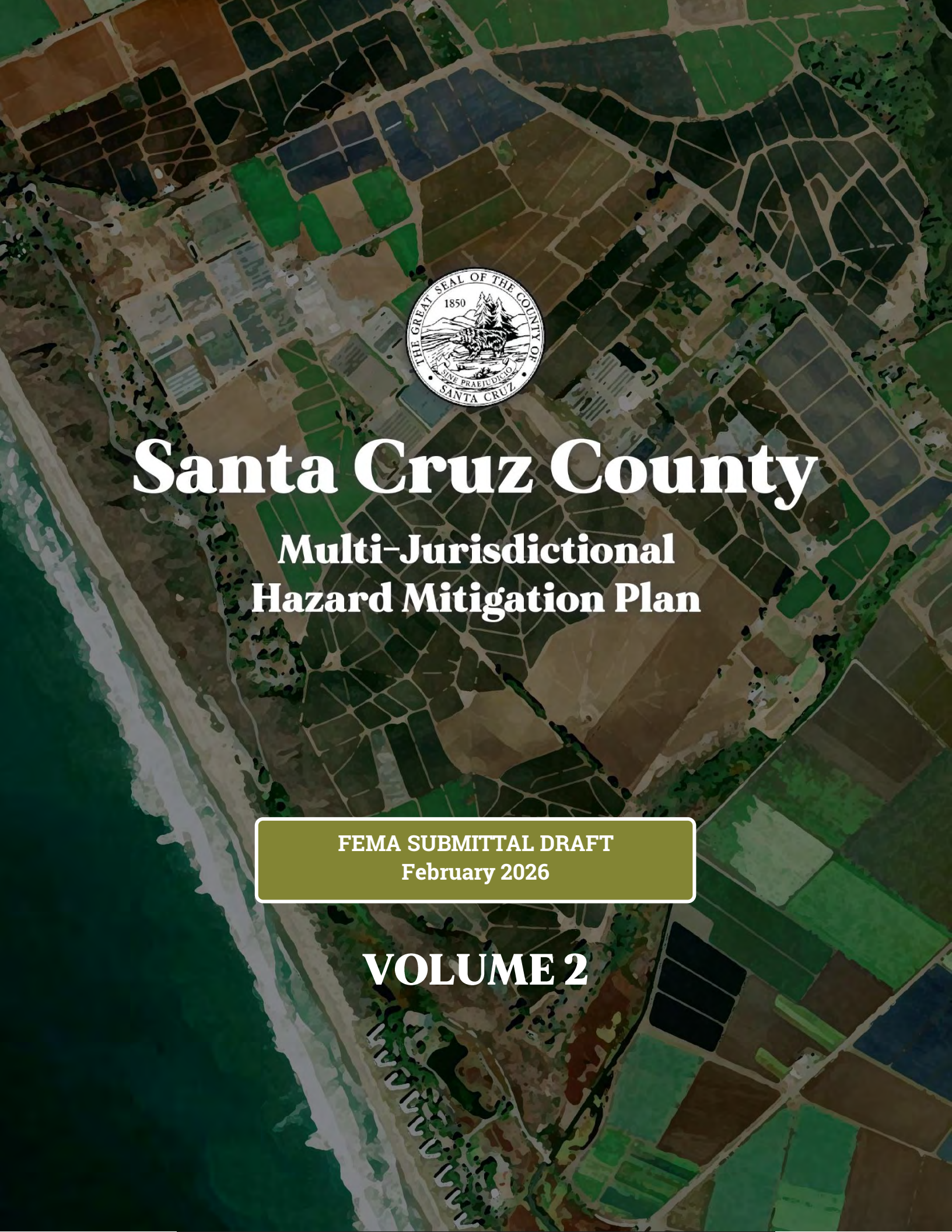
Santa Cruz County

Multi-Jurisdictional Hazard Mitigation Plan

VOLUME 2

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Santa Cruz County

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SANTA CRUZ COUNTY
MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN

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Santa Cruz County

2025 Multi-Jurisdictional Hazard Mitigation Plan

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Introduction

The 2025 Santa Cruz County Multi-Jurisdictional Hazard Mitigation Plan (MJHMP) includes Santa Cruz County, three municipalities, and six special districts and agencies, collectively referred to as "participating jurisdictions." Any local government or agency with the authority to regulate building or infrastructure development can participate in the hazard mitigation planning process; however, to receive Federal Emergency Management Agency (FEMA) approval, participating jurisdictions must also meet FEMA's planning requirements detailed in the Code of Federal Regulations (CFR). (44 CFR § 201.6 *et seq.*) Throughout the development of this plan, all participating jurisdictions adhered to FEMA's recommended process and fulfilled the necessary requirements for FEMA approval, as outlined in Volume 1 and in the individual jurisdiction annexes of Volume 2.

Volume 1 serves as the umbrella plan developed collaboratively by the participating jurisdictions and covers all federally required elements of a hazard mitigation plan that apply to the entire planning area. This includes:

- **Section 1 – Introduction:** Describes the overall purpose of the MJHMP, its structure, and characteristics of the county-wide planning area, and provides an overview of previous hazard mitigation efforts conducted and highlights updates made in this plan.
- **Section 2 – Planning Process:** Details how the plan was developed according to FEMA's four-step process, including stakeholder engagement and public involvement strategies, and outlines procedures for updating and maintaining the plan over time.
- **Section 3 – County-Wide Hazard Risk Assessment:** Provides an assessment of the natural hazards affecting the entire planning area and the unincorporated county specifically, including their characteristics and potential impacts.
- **Section 4 – County-Wide Mitigation Strategy:** Presents mitigation goals, strategies, and actions aimed at reducing risks and enhancing resilience across the entire planning area and for the unincorporated county specifically, matched with local capabilities.
- **Section 5 – Works Cited**
- **Appendix A – Analysis Methodology:** Details the methods used for hazard and risk assessments.
- **Appendix B – Planning Process Documentation:** Provides documentation of the planning process, including meeting summaries and stakeholder input.

Volume 2 of the 2025 MJHMP provides detailed information specific to all the other participating jurisdictions within the planning area besides the county, which is covered in Volume 1. These jurisdiction-specific annexes document jurisdictional peculiarities and elements mandated by state and federal regulations for each jurisdiction, such as tailored hazard profiles and risk assessments; relevant supporting documentation and maps; jurisdiction-specific mitigation strategies and actions; and implementation schedules and responsibilities. This ensures that all relevant parties are committed to the strategies outlined in the mitigation efforts.

Each jurisdiction crafted its own annex, complete with hazard identification and prioritization, risk and vulnerability assessment, hazard problem statements, capabilities assessment, and mitigation strategy, by following the extensive planning process described in Volume 1, Section 2.

To comply with the Federal Disaster Mitigation Act of 2000 (DMA 2000), the decision-making authorities for all participating jurisdictions officially adopted this 2025 MJHMP, including Volume 1 in its entirety as well as their respective jurisdictional annex in Volume 2. The adoption of the MJHMP recognizes the jurisdictions' commitment to reducing the impacts of natural hazards within Santa Cruz County. Adoption records for all jurisdictions are summarized in Table 1.

Table 1: Adoption Records

Jurisdiction	Adoption Record	Date of Adoption	Document Reference
Santa Cruz County	Resolution No. XXXXX	XX/XX/2025	Executive Summary, Page 9
City of Capitola	Resolution No. XXXXX	XX/XX/2025	Volume 2, Section 1
City of Scotts Valley	Resolution No. XXXXX	XX/XX/2025	Volume 2, Section 2
City of Watsonville	Resolution No. XXXXX	XX/XX/2025	Volume 2, Section 3
Soquel Creek Water District	Resolution No. XXXXX	XX/XX/2025	Volume 2, Section 4
Scotts Valley Water District	Resolution No. XXXXX	XX/XX/2025	Volume 2, Section 5
Pajaro Valley Water Management Agency	Resolution No. XXXXX	XX/XX/2025	Volume 2, Section 6
Resource Conservation District of Santa Cruz County	Resolution No. XXXXX	XX/XX/2025	Volume 2, Section 7
Santa Cruz Port District	Resolution No. XXXXX	XX/XX/2025	Volume 2, Section 8
Cabrillo College	Resolution No. XXXXX	XX/XX/2025	Volume 2, Section 9

Importantly, once Volume 1 and the Volume 2 annexes were completed and approved by CalOES and FEMA and adopted by the participating jurisdictions, all jurisdictions became eligible to apply for funding through FEMA's Hazard Mitigation Assistance (HMA) Program and its subprograms, including Hazard Mitigation Grant Program (HMGP), the Flood Mitigation Assistance (FMA) Program, and the Pre-Disaster Mitigation (PDM) Program. Additional federal, state, and local funding opportunities are identified in Volume 1, Section 3.5.2.

PLANNING PROCESS LIBRARY

During the update process for this MJHMP, each jurisdictional planning team engaged in and completed five different exercises to assess risk, prioritize hazards, identify areas of concern and hazard problems, assess existing capabilities and opportunities for improvement, and develop the mitigation strategy. These exercises, facilitated by the Steering Group and Consultant Team, were integral components of the planning team meetings described in Volume 1, Section 2.1.1. The outcomes of the five exercises are organized and documented in the form of a Planning Process Library (Table 2).

Table 2: Planning Process Library

Jurisdiction	Exercise No. / Title		Library Links
County-Wide	**1**	**Risk Assessment**	**County-Wide Demographics Report**
	5	**Strategy Development**	**County-Wide Mitigation Action Plan**
Local Governments			
Santa Cruz County	1	Risk Assessment	Hazard & Demographics Maps
	2	Hazard Prioritization	Risk Matrix
	3	Areas of Concern	Problem Statements
	4	Capabilities Assessment	Capabilities Assessment
	5	Strategy Development	Mitigation Action Plan / Alternatives Considered
City of Capitola	1	Risk Assessment	Hazard & Demographics Maps
	2	Hazard Prioritization	Risk Matrix
	3	Areas of Concern	Problem Statements
	4	Capabilities Assessment	Capabilities Assessment
	5	Strategy Development	Mitigation Action Plan / Alternatives Considered
City of Scotts Valley	1	Risk Assessment	Hazard & Demographics Maps
	2	Hazard Prioritization	Risk Matrix
	3	Areas of Concern	Problem Statements
	4	Capabilities Assessment	Capabilities Assessment
	5	Strategy Development	Mitigation Action Plan / Alternatives Considered
City of Watsonville	1	Risk Assessment	Hazard & Demographics Maps
	2	Hazard Prioritization	Risk Matrix
	3	Areas of Concern	Problem Statements
	4	Capabilities Assessment	Capabilities Assessment
	5	Strategy Development	Mitigation Action Plan / Alternatives Considered
Special Districts and Agencies			
Soquel Creek Water District	1	Risk Assessment	Hazard & Demographics Maps
	2	Hazard Prioritization	Risk Matrix
	3	Areas of Concern	Problem Statements
	4	Capabilities Assessment	Capabilities Assessment
	5	Strategy Development	Mitigation Action Plan / Alternatives Considered
Scotts Valley Water District	1	Risk Assessment	Hazard & Demographics Maps
	2	Hazard Prioritization	Risk Matrix

Jurisdiction	Exercise No. / Title		Library Links
	3	Areas of Concern	Problem Statements
	4	Capabilities Assessment	Capabilities Assessment
	5	Strategy Development	Mitigation Action Plan / Alternatives Considered
Pajaro Valley Water Management Agency (PV Water)	1	Risk Assessment	Hazard & Demographics Maps
	2	Hazard Prioritization	Risk Matrix
	3	Areas of Concern	Problem Statements
	4	Capabilities Assessment	Capabilities Assessment
	5	Strategy Development	Mitigation Action Plan / Alternatives Considered
Resource Conservation District (RCD) of Santa Cruz County	1	Risk Assessment	Hazard & Demographics Maps
	2	Hazard Prioritization	Risk Matrix
	3	Areas of Concern	Problem Statements
	4	Capabilities Assessment	Capabilities Assessment
	5	Strategy Development	Mitigation Action Plan / Alternatives Considered
Santa Cruz Port District	1	Risk Assessment	Hazard & Demographics Maps
	2	Hazard Prioritization	Risk Matrix
	3	Areas of Concern	Problem Statements
	4	Capabilities Assessment	Capabilities Assessment
	5	Strategy Development	Mitigation Action Plan / Alternatives Considered
Cabrillo College	1	Risk Assessment	Hazard & Demographics Maps
	2	Hazard Prioritization	Risk Matrix
	3	Areas of Concern	Problem Statements
	4	Capabilities Assessment	Capabilities Assessment
	5	Strategy Development	Mitigation Action Plan / Alternatives Considered

MUNICIPAL JURISDICTIONS



Municipalities hold the most extensive authority, financial resources, and services among participating jurisdictions for hazard mitigation. In California, this power is derived from Article XI, § 7 of the state constitution, granting them the ability to enact local laws, manage public works and utilities, and oversee municipal property and finances. Municipalities can be charter or general law, with charter cities and counties having greater autonomy over municipal affairs, as outlined in Article XI, § 5(a). Regardless of type, municipalities have significant authority, particularly in mitigating hazards. (League of California Cities) Four municipal jurisdictions participated in the 2025 MJHMP, including:

- **Santa Cruz County – Volume 1**
- **City of Capitola – Section 1**
- **City of Scotts Valley – Section 2**
- **City of Watsonville – Section 3**

Section 1. City of Capitola

Municipal Annex

SANTA CRUZ COUNTY
MULTI-JURISDICTIONAL
HAZARD MITIGATION PLAN

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Santa Cruz County

2025 Multi-Jurisdictional Hazard Mitigation Plan

Volume 2, Section 1: City of Capitola (CPT)

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Adoption Record

To comply with the Federal Disaster Mitigation Act of 2000 (DMA 2000), the City of Capitola City Council has officially adopted this 2025 Santa Cruz County Multi-Jurisdictional Hazard Mitigation Plan, including Volume 1 in its entirety as well as this Volume 2 municipal annex. The adoption of the MJHMP recognizes the city's commitment to reducing the impacts of natural hazards within its jurisdiction and across Santa Cruz County.

A copy of the city's adoption record is provided on the following pages. Adoption records for all jurisdictions are summarized in Volume 1, Table ES-1.

INSERT City of Capitola adoption record

Section 1. City of Capitola

1.1 Scope & Purpose

This annex details the elements specific to the City of Capitola in the 2025 Santa Cruz County Multi-Jurisdictional Hazard Mitigation Plan (MJHMP). This annex is not intended to be a standalone document but appends to and supplements the information contained in the umbrella plan document (Volume 1). As such, all sections of the umbrella plan, including the planning process and other procedural requirements apply to and were met by the City of Capitola. This annex provides additional information specific to the City of Capitola, with a focus on providing additional details on the planning process, risk assessment, and mitigation strategy for this jurisdiction.

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1.2 Jurisdictional Setting

The City of Capitola is located in coastal Santa Cruz County in Central California, at the northern shore of the Monterey Bay approximately 70 miles southeast of San Francisco. Capitola bounded by developed unincorporated areas of Santa Cruz County (west), State Route 1 (north), New Brighton State Beach (east), and Monterey Bay (south). Capitola is best described as a small beach town with historic charm.

The City of Capitola encompasses approximately 1.7 square miles, with an average elevation of 13 feet above sea level. The City's coastal location and low elevation make it particularly vulnerable to coastal hazards, including flooding, sea level rise, and tsunami inundation zones, which are further explored in later sections of this plan. The City of Capitola's location within Santa Cruz County and the State of California are shown in Figure 1-1.

- **Date of Incorporation**: January 11, 1949
- **2023 Population**: 9,813 (ACS 5-Year, 2018-2023)
- **Population Growth**: The city has experienced an estimated population decrease of 1.7% between 2013 and 2023. (ACS 5-Year, 2018-2023)

1.2.1 Geography & Climate

The City of Capitola is located on the north shore of Monterey Bay and at the mouth of Soquel Creek, which plays a central role in its hydrology and has influenced both coastal development patterns and floodplain management. Figure 1-1 provides a regional location map.

The terrain of Capitola varies from sandy beaches, costal bluffs, knolls, and valleys. Residential uses occupy 52 percent of the land within the Capitola city limits, followed by commercial and industrial at 21 percent, and then open space and recreation uses at 14 percent.

Capitola's climate is Mediterranean, with warm to hot, dry summers and mild, wet winters. Average high temperatures in the summer can reach the 80s to low 90s degrees Fahrenheit (°F), while winter lows typically range from the upper 30s to mid-50s°F. Most precipitation falls between November and March, with minimal rainfall during the summer months. Snowfall is virtually nonexistent due to the city's low elevation of just above sea level. Figure 1-2 depicts the average annual precipitation in Capitola between 1991 and 2020. While Capitola's geography and climate support a thriving tourism industry, they also pose hazard risks such as coastal hazards (e.g., coastal erosion, wave run-up, and tsunami), flooding, drought, and wildfire in surrounding areas.

1.2.2 Historical Overview

Capitola began its transformation into a built community in the early 1870s with the establishment of Camp Capitola, California's first seaside resort, on land acquired by Frederick A. Hihn. Originally a seasonal tent encampment, the resort evolved into a permanent coastal village featuring iconic structures such as Hotel Capitola, which opened in the 1890s, and the Venetian Court Apartments, constructed in 1924 as the state's first seaside condominium complex. These developments laid the foundation for Capitola's enduring identity as a coastal retreat.

Following its formal incorporation on January 11, 1949, Capitola experienced substantial residential growth during the 1950s and 1960s, especially in the Jewel Box neighborhood, where streets bear gemstone-inspired names. According to the 2024 Housing Element, approximately 88 percent of the city's housing units were built before 1980, reflecting this mid-century expansion. While these homes contribute to the city's architectural character, they also present challenges related to aging infrastructure, seismic vulnerability, and energy efficiency, highlighting the need for reinvestment and rehabilitation programs.

Today, Capitola's built environment reflects a blend of historic resort-era structures, mid-20th-century suburban housing, and more recent infill and redevelopment projects. The Hihn Building (1883), listed on the National Register of Historic Places, remains the city's oldest commercial structure and a prominent symbol of Capitola's development history. Several historic structures stand today as testaments to Capitola's heritage. The Hihn Building (built in 1883) is the city's oldest commercial edifice, characterized by distinct Classical architecture and listed on the National Register of Historic Places.

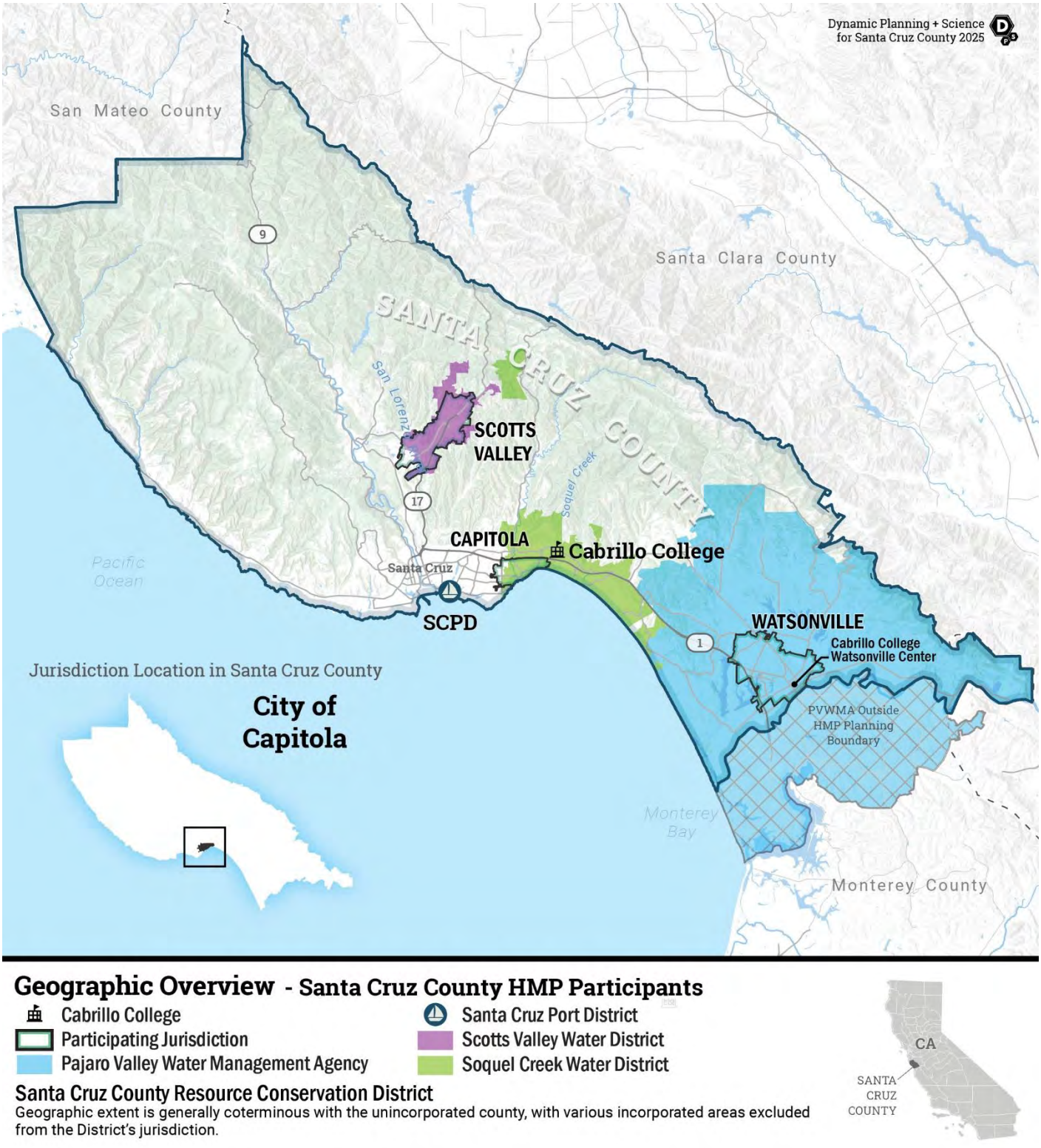


Figure 1-1: City of Capitola Sphere of Influence

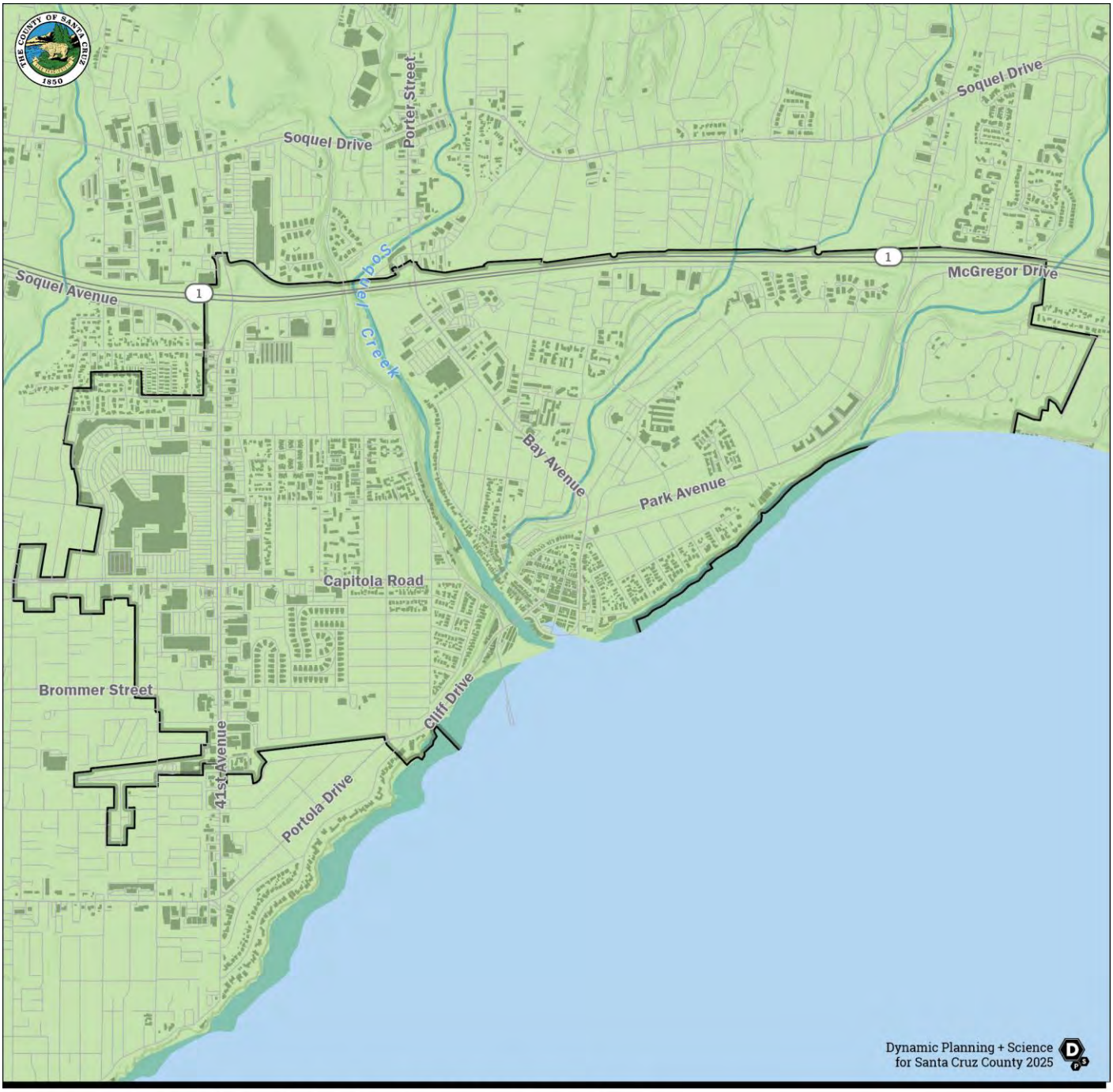


Figure 1-2: City of Capitola Average Annual Precipitation Map

1.2.3 Demographics & Vulnerable Populations

This section describes the demographic characteristics of the City of Capitola to guide hazard mitigation planning efforts. Natural disasters affect communities both physically and socially, with demographic composition playing a central role in determining how impacts are distributed, particularly among vulnerable groups facing greater challenges in preparedness, response, and recovery. Understanding the area's social and economic landscape also helps assess potential social costs from infrastructure damage, including housing, industry, public facilities, essential services, and transportation.

Exploring local demographic data may help to identify groups and geographic areas with specific vulnerability to hazard events. In the context of all-hazards preparedness and response planning, at-risk individuals (often used interchangeably with "vulnerable populations") are defined federally as "children, pregnant women, senior citizens, and other individuals who have access or functional needs in the event of a public health emergency." (42 U.S.C. § 2802(b)(4)(B) (2019)) These populations may include, but are not limited to, individuals who are economically disadvantaged, living with disabilities, dependent on caregivers, from historically marginalized communities, have limited English proficiency or are non-English speaking, lack access to transportation, are experiencing homelessness, or have chronic medical conditions.

Certain populations face greater risk following a natural hazard event due to age, economic mobility, physical disability, geographic location, or a combination of factors. Vulnerability in the face of a hazard event is not a fixed characteristic; the same individual may be at risk for some hazards but not at risk for others. Planning for vulnerable populations in the context of hazard mitigation can help communities to prioritize limited resources where they will be the most effective. Refer to Volume 1, Section 1.4.3, for a more in-depth discussion of planning for vulnerable populations, at-risk individuals with access and functional needs, and environmental justice.

The total population, total number of households, and average household size of the City of Capitola are presented in Table 1-1, compared to the other municipalities and Santa Cruz County. The city has the smallest population of all the incorporated municipalities.

Table 1-1: Population and Housing Summary

Jurisdiction	Total Population	Total Households	Average Household Size
City of Capitola	**9,813**	**5,086**	**1.89**
Santa Cruz County	266,021	106,635	2.36

Source: ACS 5-Year, 2018-2023

1.2.3.1 Income & Housing

Economic mobility is one of the most important predictors of natural hazard vulnerability. Low-income residents are more likely to occupy housing which is inadequately maintained or otherwise poorly built to withstand extreme events. For example, mobile or modular homes are more susceptible to damage in earthquakes and floods than other types of residences and are less likely to contain A/C units to cope with high heat events. In urban areas, low-income residents are more likely to occupy older homes and apartment complexes with unreinforced masonry, which is particularly susceptible to seismic damage.

Low-income households and communities face disproportionate financial burden from costs associated with disaster preparedness, response, and recovery. Disasters create unexpected expenses which may serve as "tipping points" for families and individuals living on the edge of poverty or homelessness. Recovery costs may be higher for those without resources to conduct hazard mitigation activities ahead of time. Families and individuals who lack access to transportation may be unable to evacuate ahead of an emergency. (Krause & Reeves, 2017)

Low-income residents and renters are also less likely to purchase insurance, meaning that those with the most to lose during an event are also the least prepared to deal with potential losses. Major hurricane events in recent history such as Harvey, Irma, and Katrina all demonstrate that low-income and/or historically marginalized communities face increased vulnerability to hazard events and struggle the most to recover.

Median household income in the City of Capitola was $96,412, with an overall poverty rate of 13.9%. By comparison, median income and poverty rates for Santa Cruz County were $109,266 and 11.2%, respectively. (see Table 1-2) Median income and poverty rates are also shown on the block group level in Figure 1-3 and Figure 1-4.

Table 1-2: Household Income and Poverty Levels

Jurisdiction	Median Income	Poverty Rate
City of Capitola	**$96,412**	**13.9%**
Santa Cruz County (Total)	$109,266	11.2%

Source: ACS 5-Year, 2018-2023

Renters are also more vulnerable to natural hazards, as they are less likely to take out property insurance and the decision to make major structural improvements typically lies with the property owner. Federal disaster recovery services can exacerbate inequality between renters and homeowners; payout amounts are significantly higher for homeowners applying through FEMA's Individual Assistance (IA) program; from 1999 to 2013 U.S. homeowners saw their wealth increase with local hazard damages, whereas renters' wealth decreased. (Howell, Junia; Elliot, James, 2019)

Approximately 50% of occupied housing units in City of Capitola are renters, compared to 40% for Santa Cruz County as a whole; refer to Table 1-3. Apartments, condominiums, and mobile homes represent 64% of Capitola's housing stock, while single-family residential dwelling units represent 36%. Hence, Capitola has a much higher percentage of renter occupied dwelling units than Santa Cruz County has a whole. Figure 1-5 depicts housing occupancy in Capitola.

Table 1-3: Owner- and Renter Occupied Households

Jurisdiction	# Occupied Housing Units	# Renter Occupied	% Renter Occupied	# Owner Occupied	% Owner Occupied
City of Capitola	**4,506**	**2,241**	**49.7%**	**2,265**	**50.3%**
Santa Cruz County	96,873	38,771	40.0%	58,102	60.0%

Source: ACS 5-Year, 2018-2023

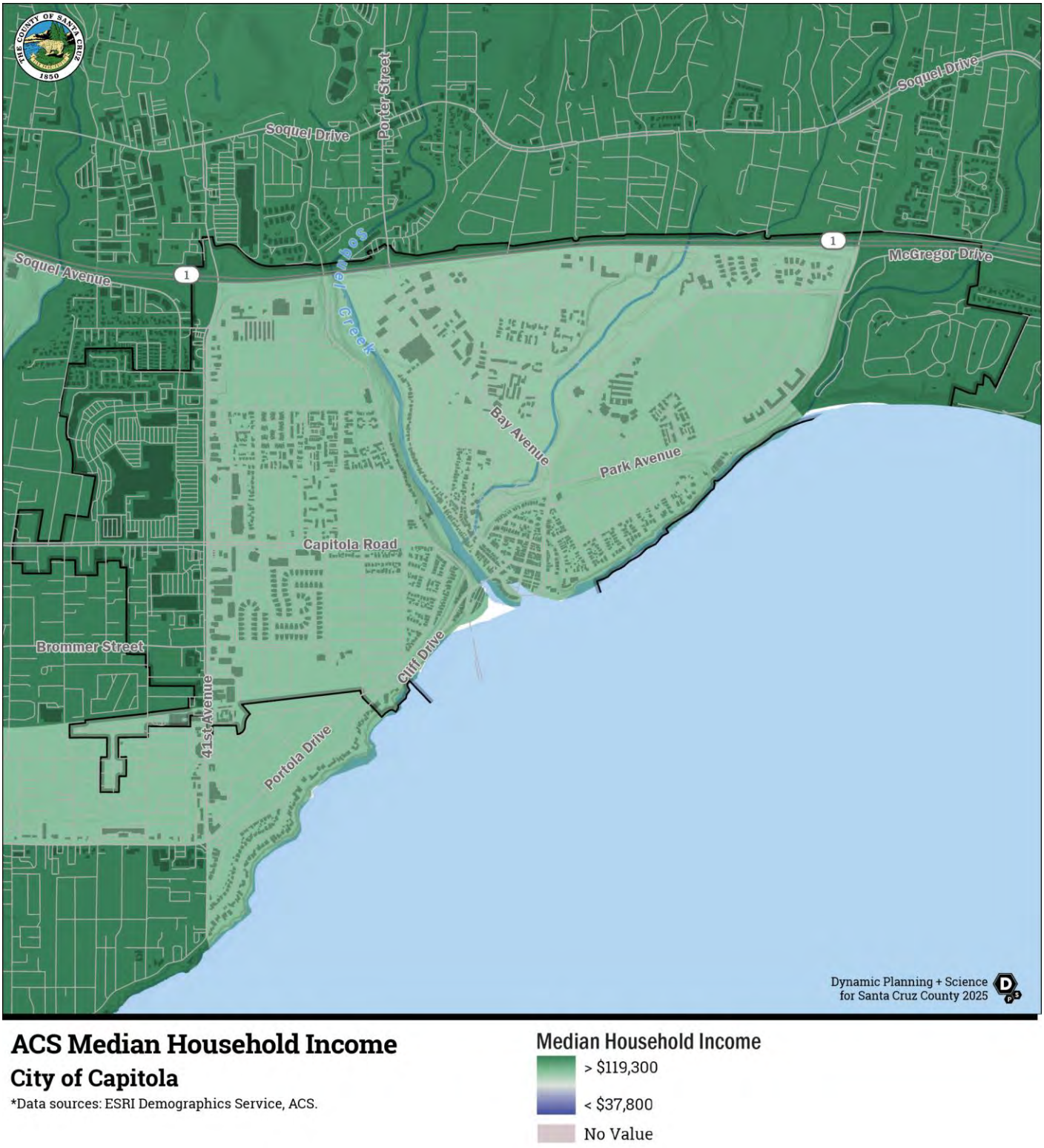


Figure 1-3: City of Capitola Median Household Income Map

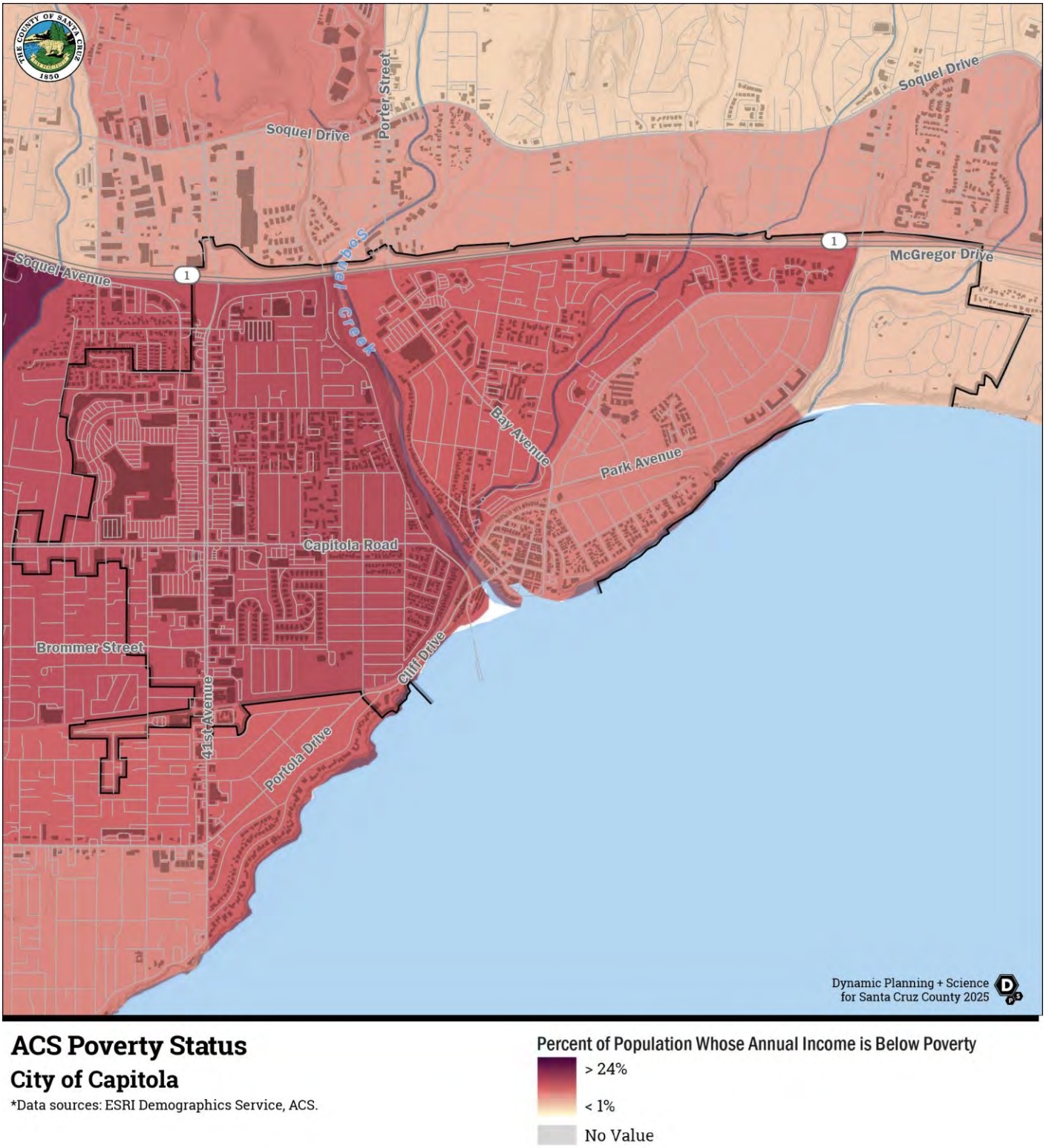


Figure 1-4: City of Capitola Poverty Status Map

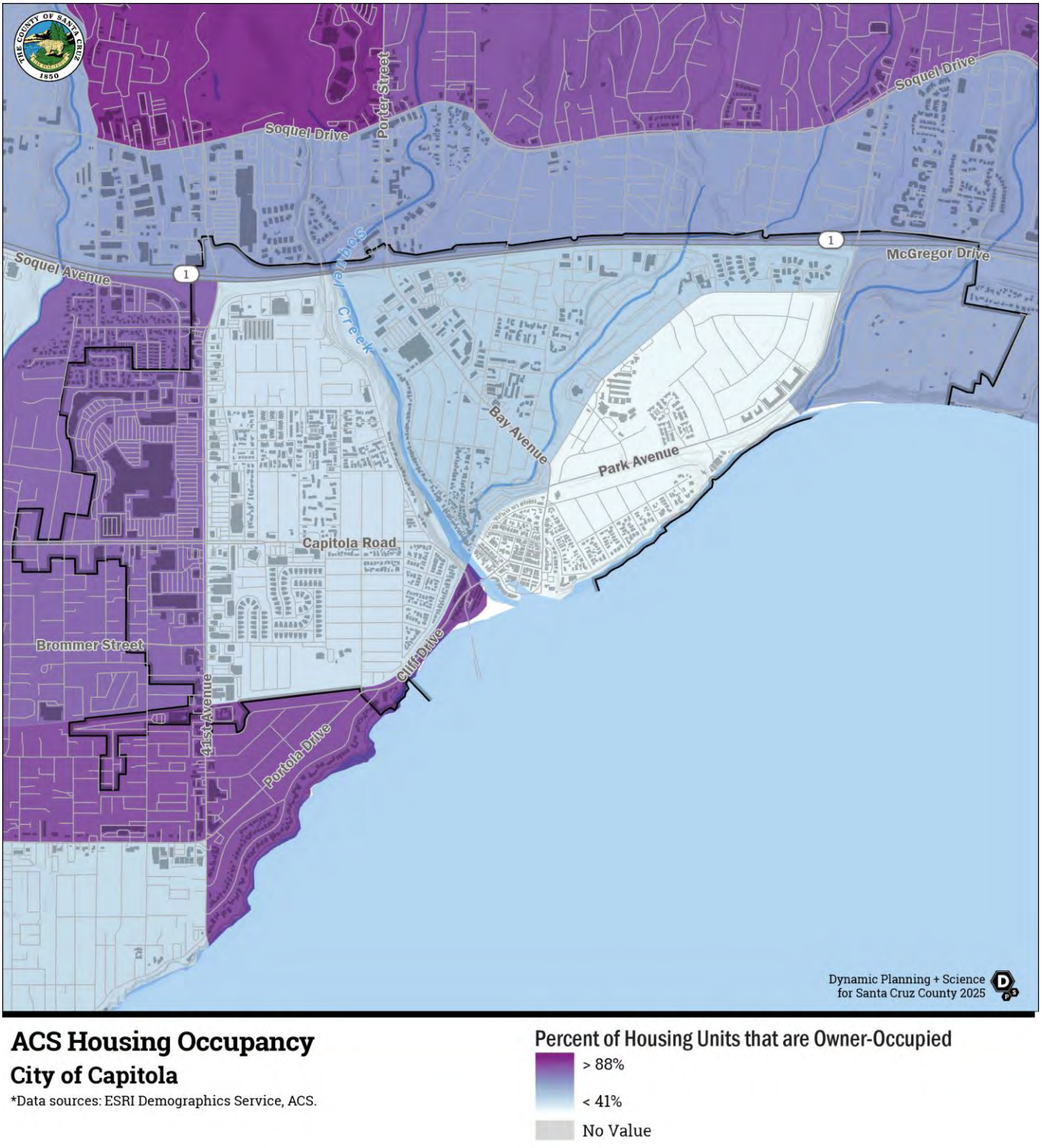


Figure 1-5: City of Capitola Occupied Housing Units Map

1.2.3.2 Dependent & Disabled Populations

Age is a significant factor in assessing vulnerability to natural hazards. Both older adults and children are considered dependent populations due to their reliance on caregivers for safety, mobility, and support during emergency events. These populations face heightened risks during disasters such as floods, wildfires, and earthquakes, particularly when compounding factors such as poverty, disability, or social isolation are present.

In the City of Capitola, approximately 35.3% of households include at least one individual over the age of 65, and 10.4% of all households consist of seniors living alone. While only 2.3% of senior households live below the poverty line (Table 1-4), seniors—particularly those who are low-income or socially isolated—remain among the most vulnerable populations in disaster situations. Challenges for older adults may include limited mobility, chronic health conditions, reduced digital literacy, and lack of access to real-time emergency alerts. Seniors living alone may require additional assistance during evacuations or power outages, and assisted living facilities necessitate advanced coordination to ensure continuity of care and safety during emergencies.

Children represent another dependent population requiring special consideration. In Capitola, 19.4% of households include individuals under the age of 18, with 7.3% of these households headed by a single caregiver. During emergencies, children are entirely dependent on caregivers for decision-making, transportation, and access to essential resources. Disruptions to schools, childcare, and youth services can result in significant emotional, educational, and developmental impacts. Families with limited means or single caregivers may also face greater challenges in securing housing, supplies, and recovery assistance.

Figure 1-6 highlights areas within Capitola with higher concentrations of economically dependent age groups, informing targeted outreach and response strategies during emergencies.

Table 1-4: Economically Dependent Age Groups

Jurisdiction	% Households 65+	% Households 65+ Living Alone	% Households 65+ in Poverty	% Households <18	% Households <18 w Single Caregiver
City of Capitola	**35.3%**	**10.4%**	**2.3%**	**19.4%**	**7.3%**
Santa Cruz County	33.4%	7.9%	2.7%	24.8%	6.0%

Source: ACS 5-Year, 2018-2023

Elderly populations face increased risks during disaster events due to age-related health conditions, mobility limitations, and potential social isolation. In Capitola, approximately 16% of the non-institutionalized population lives with a disability, a slightly higher rate than the countywide average of 11.1% (Table 1-5).

Table 1-5: County-Wide Non-Institutionalized Disabled Population

Jurisdiction	# Persons w Disability	% Persons w Disability
City of Capitola	**1,631**	**16.6%**
Santa Cruz County	29,557	11.1%

Source: ACS 5-Year, 2018-2023

Among those with access and functional needs, elderly individuals with disabilities represent a highly vulnerable subpopulation when it comes to disaster preparedness, response, and recovery. This group includes seniors living with physical or cognitive impairments such as hearing or vision loss, reduced mobility, reliance on assistive medical devices, neurodivergence, or chronic health conditions that may be exacerbated by hazard events (e.g., exposure to wildfire smoke or extreme heat).

illustrates the distribution of elderly individuals (age 65+) with disabilities across the City of Capitola. The data shows notable concentrations—exceeding 47% of the elderly population—in several distinct neighborhoods, primarily located in the northern, eastern, and southeastern portions of the city. These include areas around East Lake Avenue, Green Valley Road, Airport Boulevard, and Freedom Boulevard, as well as pockets near the Pajaro River.

The combination of advanced age and disability can present significant challenges not only during emergency response but also in implementing hazard mitigation measures. Elderly individuals with disabilities may face physical, financial, or logistical barriers to undertaking activities such as seismic retrofitting, anchoring fuel tanks, installing foundation bracing, or implementing residential flood-proofing techniques. Many live in older housing stock that is more vulnerable to earthquake damage or repetitive flooding and may lack the resources or support networks needed to complete mitigation upgrades.

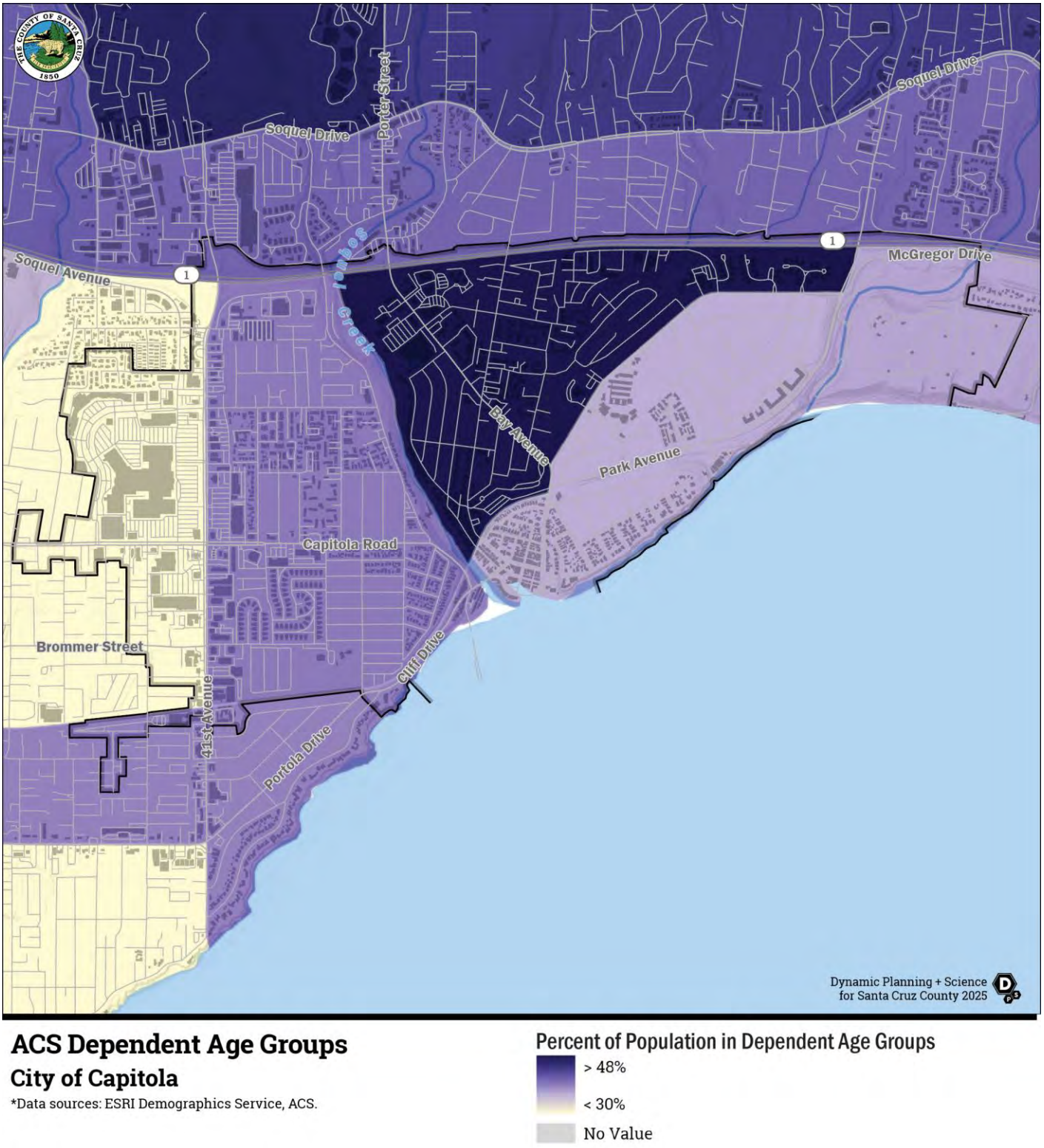


Figure 1-6: City of Capitola Economically Dependent Age Groups Map

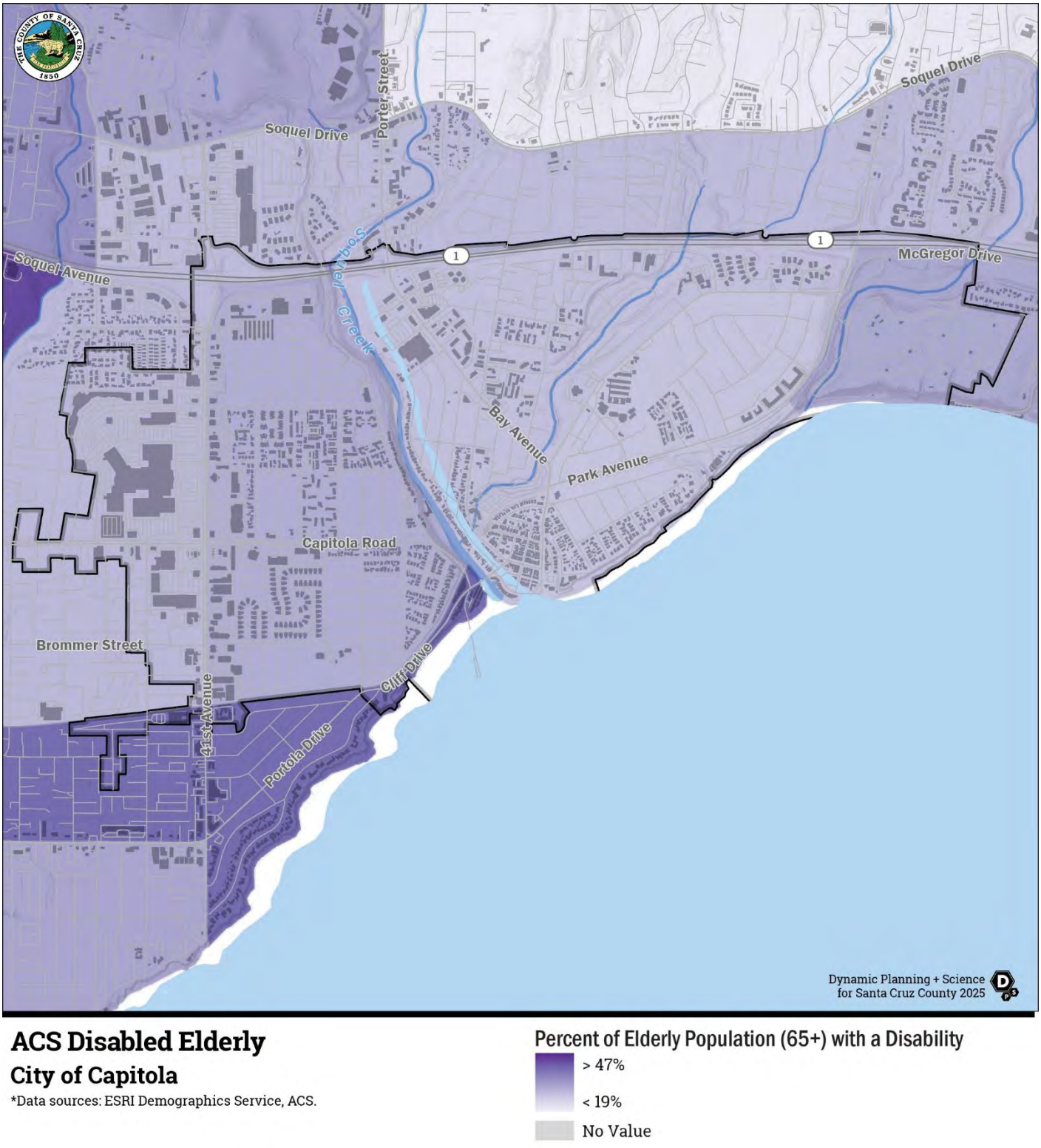


Figure 1-7: City of Capitola Disabled Elderly Map

1.2.3.3 Race, Ethnicity & Language

Natural disasters compound racial disparities; non-white individuals and communities receive less recovery aid from FEMA than their white counterparts, even where the amount of damage is the same. (Howell, Junia; Elliott, James R., 2019) (National Advisory Council, 2020) These disparities are evidence of the complicated relationship between disaster recovery and overlapping social vulnerabilities including race, income, language, and health. Black and Latinx residents are more likely to be low income and renters, conditions which create barriers to navigating FEMA's Individual Assistance programs. Communities with more non-white residents may have lower tax revenue and property values, which means less investment in mitigation and rebuilding efforts before and after an emergency.

Figure 1-8 depicts the racial and ethnic composition of the City of Capitola. According to ACS data, the city is predominantly White, non-Hispanic, with smaller proportions of Hispanic or Latino, Asian, and other racial or ethnic groups distributed throughout the community. Unlike neighboring Watsonville, Capitola does not have a single predominant minority group across most census tracts, reflecting a more demographically homogenous population base.

Residents with limited English proficiency (LEP) face heightened barriers to understanding emergency alerts, accessing preparedness resources, and navigating post-disaster recovery programs. In Capitola, approximately 10% of households speak Spanish, but only 1% report limited English proficiency, both rates significantly lower than the countywide average (Table 1-6). Figure 1-9 highlights where Spanish-speaking populations are concentrated in Capitola.

Table 1-6: County-Wide Household Languages

Jurisdiction	# Spanish Speaking Households	% Spanish Speaking Households	# Limited English Households	% Limited English Households	# Other Language Households
City of Capitola	511	10.0%	49	1.0%	0
Santa Cruz County (Total)	18,325	17.2%	3,354	3.1%	90

Source: ACS 5-Year, 2018-2023

While Capitola's LEP population is relatively small, considerations for inclusive communication remain important. Hazard mitigation planning should ensure that translated materials and culturally relevant outreach are available where needed, while also addressing the needs of seniors, renters, and other vulnerable groups who may face barriers to preparedness and recovery. Integrating equity-focused strategies will help ensure that all residents of Capitola, regardless of language or cultural background, have equitable access to life-safety information and mitigation resources.

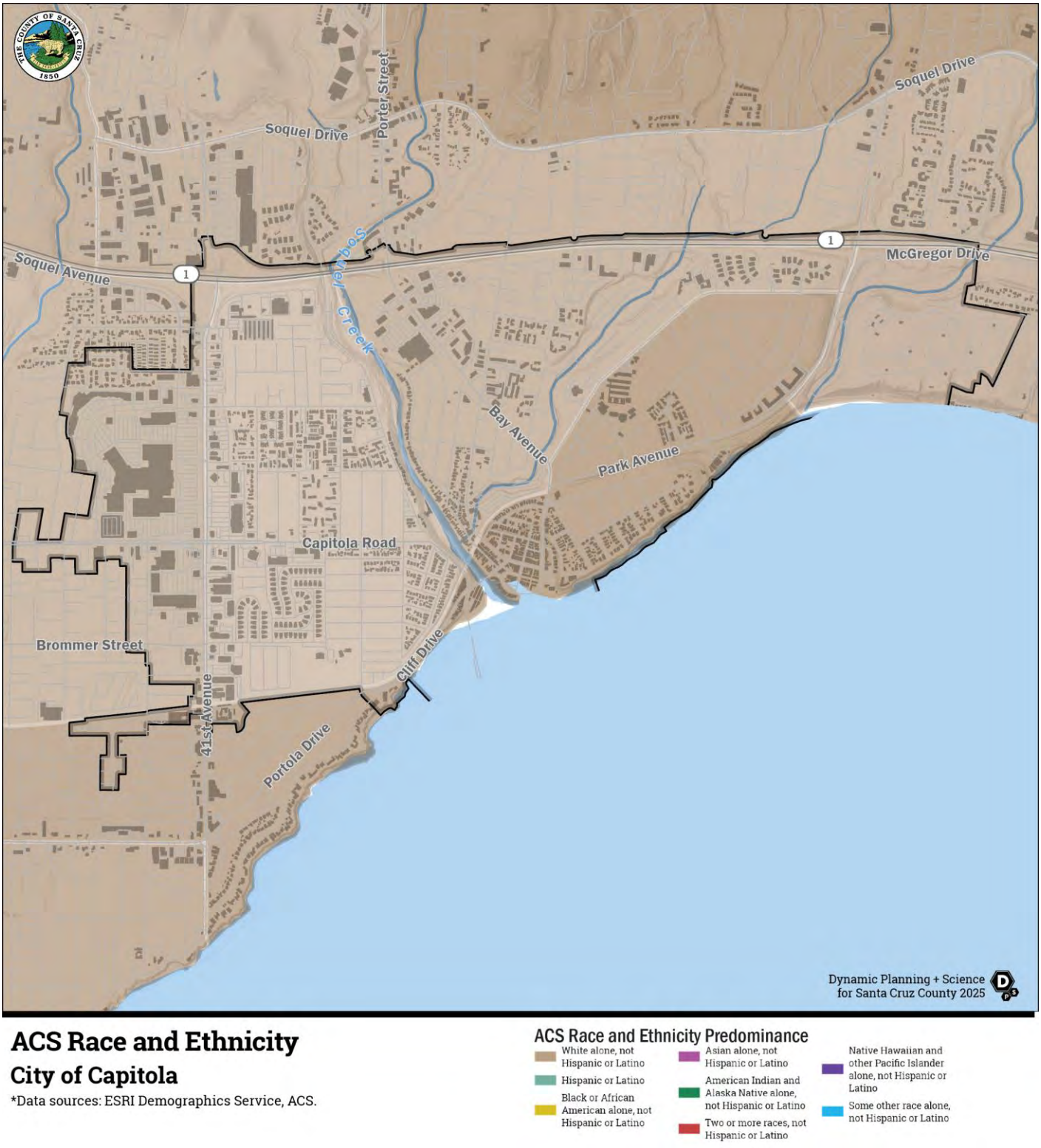


Figure 1-8: City of Capitola Race and Ethnicity Predominance Map

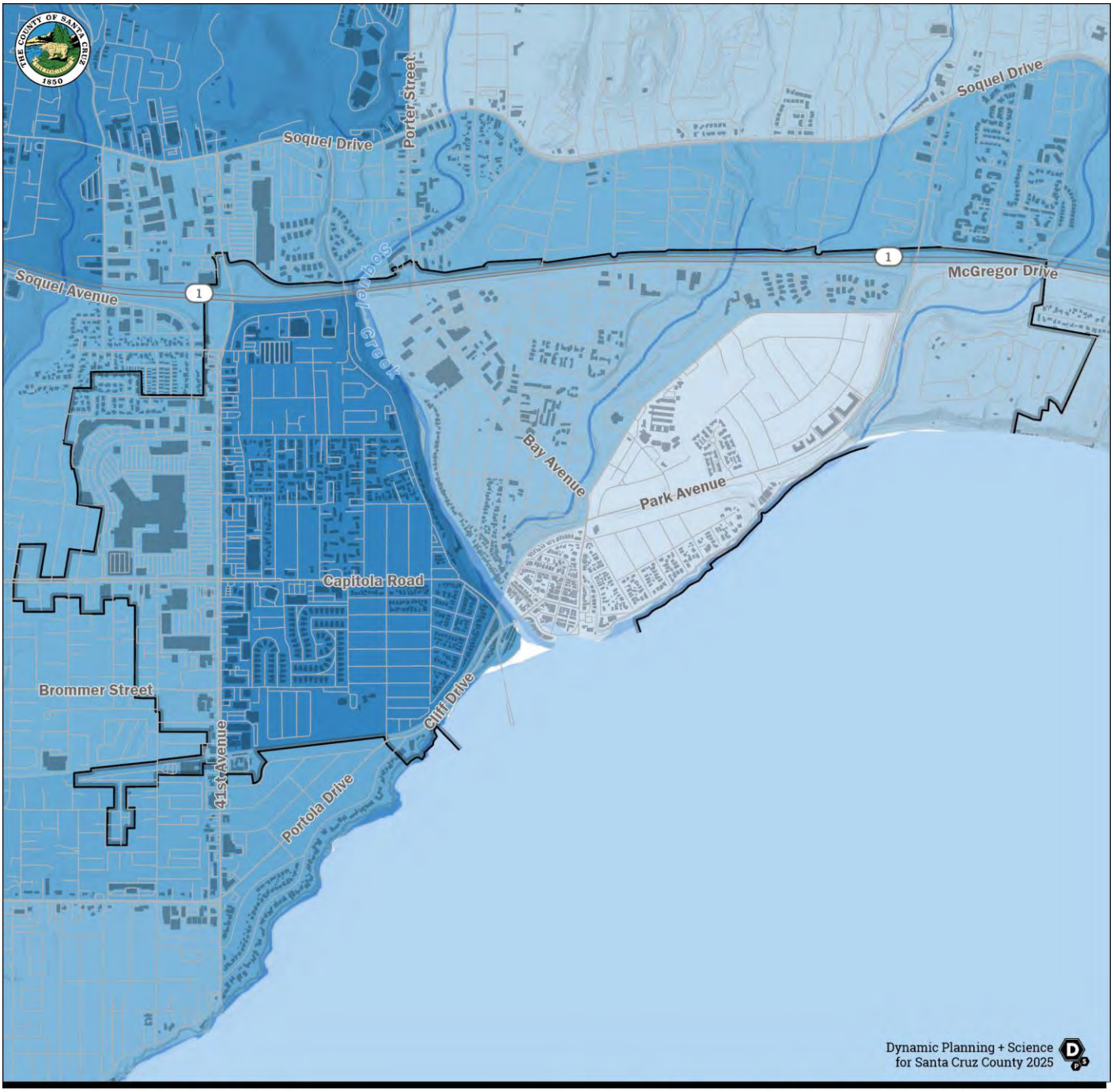


Figure 1-9 City of Capitola Spanish-Speaking Population Map

1.2.3.4 Social Vulnerability Index (SVI)

The Centers for Disease Control and Prevention (CDC) Social Vulnerability Index (SVI) for City of Capitola reveals important spatial and demographic patterns that have direct implications for equitable hazard mitigation planning. As discussed in detail in Volume 1, Section 1.4.3.6, the SVI is a composite measure developed by the CDC to identify communities that are more likely to require support before, during, and after a disaster. It incorporates a range of factors across four key dimensions: socioeconomic status, household composition and disability, minority status and language, and housing type and transportation access. The resulting index score ranges from 0 (lowest vulnerability) to 1 (highest vulnerability).

For the City of Capitola, the SVI reveals a moderate to high level of social vulnerability among its population; all areas within the city's incorporated boundaries have an SVI of 0.75 or less (Figure 1-10). Most of the city falls within the 0.5001 to 0.7500 SVI range, indicating populations that may be more impacted by natural hazards such as coastal flooding or earthquakes. This suggests that while residents may have some capacity to prepare for, respond to, and recover from disasters, there are still significant segments of the population that could face challenges, particularly during major hazard events.

Neighborhoods in the eastern and western parts of Capitola generally exhibit lower levels of social vulnerability (SVI range: 0.2501 to 0.5000), reflecting comparatively greater community resilience due to stronger indicators such as higher income, better educational attainment, more stable housing, and improved access to transportation..

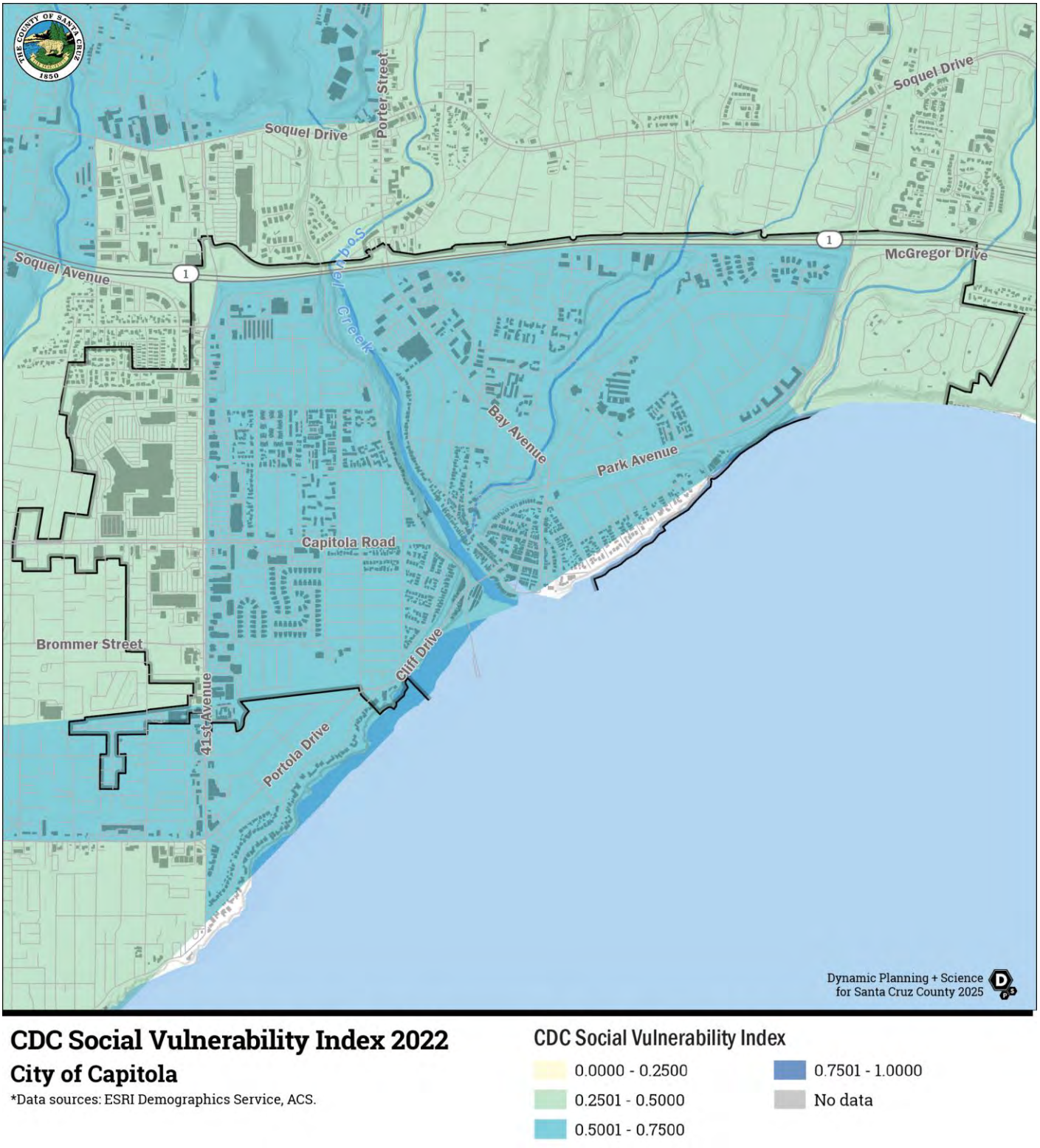


Figure 1-10 City of Capitola Social Vulnerability Index Map

1.2.4 Economy

Capitola's economy is largely driven by tourism, hospitality, and retail. Lodging, dining, and entertainment venues cater to a steady stream of visitors and generate substantial local revenue through both sales tax and transient occupancy tax (TOT). According to the City of Capitola's Annual Comprehensive Financial Report for Fiscal Year 2022/2023, TOT alone accounts for 14% of the City's general fund revenue.

The city also supports a strong commercial retail sector. The Capitola Mall, located on 41st Avenue, serves as the largest retail hub and is anchored by major retailers including Macy's, Target, Kohl's, and Ross. Additional well-known establishments include Whole Foods Market, Outdoor Supply Hardware, and New Leaf Community Markets. Capitola is also home to two automobile dealerships: Santa Cruz Subaru and Santa Cruz Toyota. The General Plan highlights that Capitola generates retail sales five to six times greater than what would be expected based solely on local resident demand. This strength is reflected in the Fiscal Year 2022/2023 financial report, which found that sales tax contributes 56% of the City's general fund revenue. Notably, 41st Avenue is the most heavily trafficked roadway in Santa Cruz County, underscoring the area's commercial significance.

Employment data from the Association of Monterey Bay Governments estimates Capitola's 2025 workforce at 12,902, with 25% employed in retail trade and 15% in hospitality sectors such as hotels and restaurants. The remaining workforce is largely employed in healthcare, education, and professional services. Capitola is considered "jobs-rich," with more people working in the city than residing there.

Overall, Capitola enjoys a vibrant and resilient economy for a city of its size. Its regional draw is fueled by a mix of visitor spending and consumer activity from neighboring communities. The General Plan summarizes Capitola's economic advantages as a combination of regionally oriented retail centers, excellent highway access, a family-friendly beach town identity, a strong presence of locally owned businesses, and a small-town character that appeals to both residents and visitors alike.

1.2.5 Growth Trends & Future Development

As of 2023, the City of Capitola had an estimated population of 9,613, accounting for approximately 4% of Santa Cruz County's total population. Over the past decade, Capitola experienced a modest population decline of 1.3% between 2013 and 2023.

The city is largely built out and bounded by existing development to the west and north, New Brighton State Beach to the east, and Monterey Bay to the south. Located entirely within the California Coastal Zone, Capitola's development is subject to additional regulatory oversight and local land use decisions may be appealed to the California Coastal Commission, potentially delaying or halting projects. As a result, future growth is expected to occur primarily through infill and redevelopment of underutilized or aging properties rather than new large-scale development.

As shown in Table 1-7, Capitola's total population is expected to grow by around 1,800 people between 2023 and 2050. Population growth will be relatively modest, with new residents primarily housed in compact, walkable neighborhoods close to transit and services.

Table 1-7: Capitola Population Growth Projections

Jurisdiction	Projected Population					
	2023	2030	2035	2040	2045	2050
City of Capitola	**9,558**	**10,070**	**10,635**	**11,029**	**11,262**	**11,395**
Santa Cruz County	263,338	268,914	274,095	278,258	280,258	281,399

Source: AMBAG, 2025

As shown in Table 1-8, Capitola's total housing inventory is expected to grow by approximately 1,200 units between 2023 and 2050. Housing growth is directed toward the Village, Bay Avenue/Capitola Road corridor, and other underutilized parcels, with a focus on mixed-use and higher-density residential projects to support affordability and reduce pressure on coastal and hillside areas.

Table 1-8: Capitola Housing Growth Projections

Jurisdiction	Projected Housing Units					
	2023	2030	2035	2040	2045	2050
City of Capitola	**5,507**	**5,887**	**6,242**	**6,491**	**6,634**	**6,715**
Santa Cruz County (Total)	107,165	111,820	115,389	117,570	119,124	120,092

Source: AMBAG, 2025

As shown in Table 1-9, Capitola's total employment is expected to grow by more than 500 jobs between 2023 and 2050. Employment growth is expected to concentrate in commercial corridors, particularly around 41st Avenue, Capitola Mall, and the Village, where retail, services, and tourism-related businesses remain strong. The General Plan also encourages adaptive reuse of older commercial spaces and more flexible zoning to support small businesses and professional services.

Table 1-9: Capitola Employment Growth Projections

Jurisdiction	Projected Jobs					
	2023	2030	2035	2040	2045	2050
City of Capitola	**12,169**	**12,485**	**12,559**	**12,622**	**12,662**	**12,689**
Santa Cruz County	139,092	143,371	144,527	145,611	146,509	147,302

Source: AMBAG, 2025

Without intentional and hazard-aware planning, population growth and redevelopment could exacerbate local exposure to hazards with flooding and wildfire posing particular concerns in areas designated for increased density or change. However, under the established local and state planning mechanisms and regulations discussed in Sections 1.5.3, Capitola can effectively manage and mitigate the risks associated with new development and changing hazard conditions.

1.3 Planning Process

The City of Capitola followed the planning process detailed in Volume 1, Section 2, including participating in the county-wide Hazard Mitigation Planning Team (HMPT) and formulating their own internal planning team to support the broader planning process.

The city's representatives in the Steering Group led stakeholder and public engagement efforts alongside the Consultant Team, with assistance from the county-wide HMPT and their internal planning team. This engagement process is described in Volume 1. Specifically, for the City of Capitola, this included postings to the city website and social media, outreach events, and public presentations, as documented in Appendix B. Examples of Key Stakeholders engaged by Santa Cruz County on behalf of the city with relevance to the development of Capitola's mitigation strategy include the USDA and other federal agencies; CAL FIRE and other state agencies; the City of Santa Cruz and other neighboring jurisdictions; community-based organizations such as Community Bridges; utility providers like AT&T and Soquel Creek Water District; UC Santa Cruz and other academia; and local businesses.

All Key Stakeholders that were invited to participate in the planning process are listed in Volume 1, Section 2, and the input received from stakeholders was integrated into the city's annex, as described in Volume 1 Table 2-9. The city's internal planning team participants, their positions, and how they participated in the planning process are shown in Table 1-10.

Table 1-10: City of Capitola Planning Team and Steering Group Members

Planning Group Members	Title	Description of Involvement
Jessica Kahn	Public Works Director	Lead Point-of-Contact
Katie Herlihy	Community Development Director	Alternate Point-of-Contact
Chloe Woodmansee	Assistant to the City Manager	Participating Stakeholder, HMPT #1, #2, and #4, BO #1 and #2
Jamie Goldstein	City Manager	Participating Stakeholder, BO #1
Jorge Melgoza	Building Services Technician	Participating Stakeholder, HMPT #1,#3; BO#1

Planning Group Members	Title	Description of Involvement
Matt Kotila	Operations Maintenance Supervisor	Participating Stakeholder, HMPT #2, BO#1
Nikki Bryant	Director	Participating Stakeholder, HMPT #1, BO#1
Robin Woodman	Building Official	Participating Stakeholder and HMPT #1

City of Capitola participated in a comprehensive hazard mitigation planning process as part of the 2025 Santa Cruz County MJHMP update. This included a series of breakout meetings, listed in Table **1-11** that engaged the district's planning team, which included key city personnel and stakeholders in evaluating hazards, identifying local vulnerabilities, and prioritizing mitigation strategies

The kickoff meeting held on January 27, 2025, launched the planning process by introducing the project scope and clarifying the roles of the Steering Group and participating jurisdictional teams. In the months that followed, a series of structured meetings addressed foundational elements of the plan, including a review of key changes since the 2021 Local Hazard Mitigation Plan, an overview of hazard mitigation principles, and exercises to prioritize local hazards.

On July 30, 2025, participants engaged in a hexagon mapping activity designed to visually identify mitigation actions that could benefit from or require inter-jurisdictional coordination. These collaborative efforts helped shape a refined set of mitigation alternatives, establish shared planning goals, and align local strategies with FEMA's Hazard Mitigation Assistance (HMA) funding framework.

Throughout the series of breakout meetings, the City of Capitola engaged in a structured and collaborative planning process focused on assessing hazard risks, identifying vulnerabilities, and developing targeted mitigation strategies. The meetings began with recaps of the county-wide HMPT meetings to ensure alignment of goals and progress.

During the May 12, 2025, breakout out meeting, discussions concentrated on community engagement outcomes, initial risk assessments, and the integration of demographic data to better understand vulnerable populations. Jurisdictional teams reviewed their specific hazard exposures using the Risk Assessment Mapping Platform (RAMP) and participated in prioritization exercises to identify their top hazards.

The July 23, 2025, breakout meeting shifted toward reviewing local capabilities and defining specific areas of concern, which informed the drafting of problem statements. Teams worked collaboratively to refine mitigation alternatives, align actions with FEMA guidelines, and develop a shortlist of priority mitigation actions and inter-jurisdictional collaboration opportunities.

The meetings also included consensus-building activities around hazard rankings, capabilities, and planned actions, while providing regular updates on the overall project schedule.

Table 1-11: City of Capitola Planning Team Meetings

Meeting & Date	Agenda / Topics	Goals / Key Inputs
County-Wide Steering Group and HMPT Meetings #1 & #2 January 27, 2025 – March 27, 2025		
CPT Planning Team Breakout Meeting #1 May 12, 2025	▪ County-wide HMPT meetings #1 and #2 recaps ▪ Community engagement progress and results ▪ Risk assessment and community vulnerability ▪ Demographics and vulnerable populations ▪ Overview of jurisdiction-specific hazard risks and exposure ▪ Introduction to Risk Assessment Mapping Platform (RAMP) ▪ Jurisdiction-specific hazard risk ranking exercise ▪ Project schedule updates and next steps	▪ Consensus on jurisdiction-specific priority hazards ▪ Identify capabilities and potential mitigation actions ▪ Community engagement volunteers
County-Wide HMPT Meeting #3 June 2, 2025		
CPT Planning Team Breakout Meeting #2 July 23, 2025	▪ Breakout Meeting #1 and HMPT #3 recaps ▪ Review capabilities assessment ▪ Review areas of concern and define problem statements ▪ Principles of effective mitigation strategies and actions, and mitigation alternatives ▪ Refine and align jurisdiction-specific mitigation actions exercise ▪ Project schedule updates and next steps	▪ Consensus on jurisdiction-specific capabilities ▪ Consensus on jurisdiction-specific areas of concern ▪ Consensus on priority mitigation actions and collaboration opportunities ▪ Community engagement volunteers
County-Wide HMPT Meeting #4 August 4, 2025		

1.3.1 Public Input & Draft Review

As detailed in Volume 1, Section 2, the draft plan was available for public review and comment from September 29 to October 20, 2025. Public comments received during that time were similar to those gathered throughout the public engagement process, including the need for more equity in the distribution of mitigation activities and funding and the need for enhanced cooperation among jurisdictions, utility providers, and state agencies. These comments were incorporated into the city's mitigation strategy, as appropriate; although, most were already addressed by the Mitigation Action Plan which was based on previous public input.

Public and stakeholder input was gathered and incorporated throughout the plan development process, before the public review period, such as from the online public survey (see Volume 1, Section 2.1.2 and Appendix B, for details). During the review period, jurisdictional staff and stakeholders that participated in the plan development also reviewed the public draft and provided comments on minor corrections and revisions, which were addressed in the final plan.

1.4 What's New

This section provides an overview of hazard mitigation planning efforts for the planning area and highlights the updates made in the 2025 MJHMP. The City of Capitola previously maintained its own standalone Local Hazard Mitigation Plan, which guided resilience planning and hazard mitigation actions at the city level. For the first time, Capitola is now participating in the countywide MJHMP process. This integration reflects the City's ongoing commitment to regional resilience and acknowledges that many hazards such as coastal flooding, severe storms, and earthquakes cross jurisdictional boundaries.

Through participation in the MJHMP, Capitola has identified its highest priority hazards, developed hazard specific problem statements, and proposed actionable strategies to reduce risks. By aligning with countywide partners and leveraging regional resources, Capitola has strengthened its capacity to prepare for, withstand, and recover from disasters while continuing to protect its unique coastal community character.

1.4.1 Mitigation Activities

The city has successfully implemented several initiatives aimed at addressing identified vulnerabilities. Some of these accomplishments are highlighted in this section and have directly contributed to reducing risks from hazards such as flooding, all hazards, and severe weather. These completed projects showcase Capitola's ability to effectively plan, fund, and execute measures that protect its residents and infrastructure.

In addition, Capitola has systematically reviewed and adjusted its mitigation actions, exemplifying adherence to FEMA's Planning Policy Guide principles and emphasizing the importance of dynamic and adaptive mitigation planning. By fostering partnerships, leveraging funding opportunities, and prioritizing equity in implementation, the city aligns with best practices to build resilience against natural disasters. This ongoing effort is a testament to the city's commitment to the principles of risk-informed decision-making, equitable resource allocation, and integration with broader regional and state hazard mitigation objectives.

Adjustments to Previous Mitigation Actions

A significant portion of the city's mitigation efforts remain ongoing or in the pipeline. These actions, ranging from infrastructure upgrades to community outreach initiatives, represent the city's proactive approach to addressing hazards as resources become available.

Recognizing constraints such as limited funding and shifting priorities, the city has reevaluated certain initiatives, leading to their reprioritization or canceling of mitigation actions. Factors such as feasibility, cost-effectiveness, and emerging risks informed these decisions, ensuring alignment with the city's updated hazard mitigation goals. Adjustments to previous mitigation actions are documented as part of the City of Capitola's Mitigation Action Plan in Table 1-19, and more specific status updates are provided in Table 1-20.

1.4.2 Mitigation Successes

Capitola Wharf Master Plan

The City of Capitola embarked on the Capitola Wharf Master Plan in 2025. The Master Plan seeks to guide the future of the wharf and its resiliency to coastal hazards. The Wharf was initially constructed in 1857 and has been damaged by coastal hazards in recent years. The Master Plan offers seven concepts for the Wharf than range from keeping it entirely open to the public (no leased space) to new mobile and permanent commercial vendor facilities.

Cliff Drive Resiliency Project

The City of Capitola initiated the Cliff Drive Resiliency Project in 2023 after major storm events caused significant erosion along the bluff southwest of Hooper Beach. The project is focused on stabilizing the bluff, protecting infrastructure, and maintaining public access along this critical coastal corridor. At the same time, the City is proposing targeted updates to coastal policies to support the project and ensure long-term resilience.



Figure 1-11: Cliff Drive Resiliency Project - City of Capitola

Capitola Wharf Resiliency Project

Capitola has undertaken robust repairs to its iconic Wharf, including structural reinforcement, replacement of 148 pilings, new decking and railing, utility upgrades, and permanent public restroom facilities. The project began in September 2023. These improvements have not only restored the Wharf but enhanced its climate resilience with pilings that can be adjusted as sea levels rise are part of the design.

This effort has received attention for its forward-looking engineering: the Wharf will be rebuilt to endure larger waves and sea level changes expected from climate shifts, reinforcing its cultural value and role as a community anchor.



Figure 1-12: Capitola Wharf Resiliency and Public Access Improvement Project

1.5 Risk Assessment

This section focuses on profiling hazards specific to the City of Capitola and assessing their vulnerability independent of the broader county-wide planning area, which has been evaluated in Section 3 of Volume 1. The hazard profiles in Volume 1 discuss overall impacts to the planning area and describe relevant plans, policies, and regulations; past events; location; frequency and probability of future occurrences; severity and extent; warning time; secondary hazards; and climate change impacts. For more information on risk assessment methodologies, see Volume 1, Appendix A.

This section includes a tailored vulnerability assessment, analyzing assets at risk such as population, property, and critical facilities and infrastructure unique to the city, and information on city-specific differences in hazard vulnerability across the planning area. It also identifies total city assets at risk, including people, property, and critical facilities and infrastructure within the city. In addition, this section presents growth and development trends for the community, offering insights into vulnerabilities and risks that represent the broader context of assets at risk.

1.5.1 Hazard Screening & Prioritization

Members of the planning team from each participating jurisdiction came together to collaboratively decide which county-wide hazards would be included in the MJHMP and which would be excluded. Hazard screening and prioritization took place early in the process and integrated historic data, local knowledge, and consensus opinions to create a risk assessment matrix for the county as well as for each participating jurisdiction. These matrices indicate the priority of hazards prior to further refinement. Details about this process, the results of the discussion, and in-depth profiles for county-wide hazards can be found in Volume 1, Sections 2 and 3.

The final results of the hazard screening and prioritization exercises are summarized in Table 1-13, including which specific subhazards were selected by Capitola's Planning Team.

The City of Capitola's internal planning group used the same hazard identification and prioritization process as the county-wide Planning Team. They reviewed previously prepared hazard mitigation plans and other relevant documents to determine the realm of natural hazards that have the potential to affect the city. Table 1-12 provides a crosswalk of hazards identified in select planning documents, including the 2021 Santa Cruz County Local HMP, 2019 City of Capitola General Plan Safety Element, and 2023 State of California HMP. The crosswalk was used to develop a preliminary hazards list, providing a framework for the group to evaluate which hazards were truly relevant to the City of Capitola and which ones were not.

The internal planning group then ranked hazards based on their probability of affecting City of Capitola and potential impacts on the community. Figure 1-13 displays the results of the hazard risk ranking exercise that was performed before further refinement. All hazards have been profiled in Volume 1 of this document. The purpose of this annex is to specifically address the city's vulnerability to specifically identified hazards.

Table 1-12: City of Capitola Document Review of Potential Hazards

Hazard	2019 Capitola General Plan Safety Element	Santa Cruz County LHMP 2021	2023 California SHMP
Agricultural Pests			■
Avalanche			■
Climate Change	■	■	■
Coastal	■	■	■
Dam Failure		■	■
Drought		■	■
Earthquake / Liquefaction		■	■
Extreme Cold		■	■
Extreme Heat		■	■
Extreme Weather / Storms	■	■	■
Flood	■	■	■
Geologic / Mass Movement		■	■
Human-Caused	■		■
Insects			■
Levee Failure			■
Pandemic Disease			■
Sea Level Rise	■		■
Soil			■
Subsidence			■
Tornado			■
Tsunami / Seiche Wave	■		■
Volcano			■
Wildfire	■	■	■

Risk Assessment Matrix Definitions

PROBABILITY RATING

The likelihood of a hazard event occurring within a time period?

PROBABILITY

Highly Likely	**Highly likely** - 100% annual probability. Or Likely to occur every year in your lifetime.
Likely	**Likely** - between 10 & 100% annual probability. Or will occur several times in your lifetime.
Possible	**Possible** - between 1 & 10% annual probability. Or Likely to occur some time in your lifetime.
Unlikely	**Unlikely** - less than 1% annual probability. Or unlikely but possible to occur in your lifetime.

IMPACT RATING

In terms of injuries, damage, or death, would you anticipate impacts to be minor, limited, critical, or catastrophic when a significant hazard event occurs? The impact could be in terms of one hazard event (flooding from a culvert failure) or a large-scale event (multiple rivers flooding) in the same jurisdictional boundary.

IMPACT

Minor	Limited	Critical	Catastrophic

Minor - very few injuries, if any. Only minor property damage & minimal disruption on quality of life. Temporary shutdown of critical facilities.

Limited - minor injuries only. Approx. 10% or less of property in disaster footprint damaged or destroyed. Complete shutdown of critical facilities for more than one day.

Critical - multiple deaths/injuries possible. Between 25% and 50% of property in disaster footprint is damaged or destroyed. Complete shutdown of critical facilities for more than one week.

Catastrophic - high number of deaths/injuries possible. More than 50% of property in affected area damaged or destroyed. Complete shutdown of critical facilities for 30 days or more.

To concentrate resources, the jurisdictional planning team will focus on "High" and "Extreme" risk hazards. These hazards have the higher probability and greater impact as it relates to the jurisdictions planning area.

Hazard definitions are included in **Vol. 1** of this plan. Some hazards are discussed as subset hazards– e.g., "Dam Failure" within the "Flood" hazard profile. If a hazard is not present on the risk matrix or are grey in color, the jurisdictional planning team felt the hazard had a minimal footprint within their planning area and was not ranked.

Hazard Information / Legend:



Climate Change impacts will be addressed at the end of each hazard section and as a stand alone section for each jurisdiction.
For County and Municipal governments you will be required to address climate change impacts in the Safety Element of your General Plan. Climate change may change the frequency, duration and intensity of hazards listed above.

City of Capitola Risk Matrix

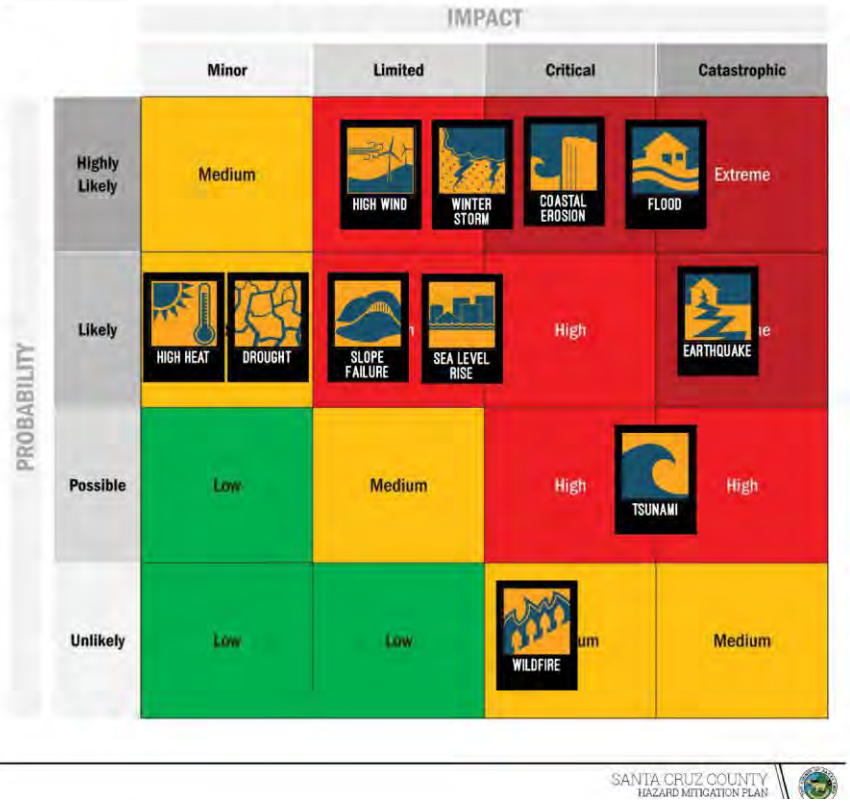


Figure 1-13: City of Capitola Risk Assessment Matrix

Table 1-13: City of Capitola Hazards Prioritization Summary

Hazard	Priority	Explanation
Wildfire	**Medium**	Profiled in Volume 1, Section 3.2.1, and Section 1.5.2.1 in this annex
Flood	**Extreme**	Profiled in Volume 1, Section 3.2.2, and Section 1.5.2.2 in this annex (not including Levee Failure due to no exposure)
Earthquake	**Extreme**	Profiled in Volume 1, Section 3.2.3, and Section 1.5.2.3 in this annex, including Liquefaction
Severe Weather	**High**	Profiled in Volume 1, Section 3.2.4, and Section 1.5.2.4 in this annex, including High Wind and Heavy Rain (not including Winter Weather due to low probability and impact)
Coastal Hazards	**Extreme**	Profiled in Volume 1, Section 3.2.5, and Section 1.5.2.5 in this annex, including Coastal Storm, Coastal Erosion, Wave Run-Up and Surge, and Tsunami
Slope Failure	**High**	Profiled in Volume 1, Section 3.2.6, and Section 1.5.2.6 in this annex
Dam Failure	-	Not a priority due to no exposure
Drought	**Medium**	Profiled in Volume 1, Section 3.2.8, and Section 1.5.2.7 in this annex
Extreme Heat	**Medium**	Profiled in Volume 1, Section 3.2.9, and Section 1.5.2.8 in this annex
Climate Change	**High**	Profiled in Volume 1, Section 3.2.10, and Section 1.5.2.9 in this annex, including Sea-Level Rise

1.5.2 Vulnerability to Specific Hazards

Assessing vulnerabilities exposes the unique characteristics of individual hazards and begins the process of narrowing down which areas within the city are vulnerable to specific hazard events. The vulnerability assessment considered unique local knowledge of hazards and impacts and a GIS overlaying method for examining such vulnerabilities in more depth. Using these methods, the city's planning group estimated vulnerable populations, properties, and assets, and potential losses, primarily to coastal hazards. In addition, the exposure of city assets to drought, geological, earthquake, wildfire and flood hazards were also considered.

Many of the hazard profiles include a snapshot map and damage estimation tables that illustrate the city's vulnerabilities to those specific hazards. These maps assisted the planning group in understanding the hazard exposure of populations, parcels, and critical facilities and infrastructure. Each snapshot map contains an exposure summary that displays the percentage of the population, the improvement and content value of parcels, and the amount of critical infrastructure that is exposed. For hazards without

geospatial extents, such as drought and severe weather, narratives are provided instead of exposure maps and tables.

Based on the hazard prioritization exercise, this vulnerability assessment focuses on nine hazards for the City of Capitola, some of which encompass subhazards such as Liquefaction, Heavy Rain, and Coastal Erosion.

Wildfire
SECTION 1.5.2.1



Flood
SECTION 1.5.2.2



Earthquake
SECTION 1.5.2.3



Severe Weather
SECTION 1.5.2.4



Coastal Hazards
SECTION 1.5.2.5



Slope Failure
SECTION 1.5.2.6



Drought
SECTION 1.5.2.7



Extreme Heat
SECTION 1.5.2.8



Climate Change
SECTION 1.5.2.9



1.5.2.1 Wildfire Hazard

Although Capitola is a primarily built-out coastal city, it is not entirely free from wildfire risk. Figure 1-14 shows that most of the city is classified as non-hazardous for wildfire, apart from moderate hazard areas along the northeastern boundaries near Park Avenue and McGregor Drive. These zones align with the wildland–urban interface (WUI), where hillside vegetation and open space border residential neighborhoods. Importantly, the Exposure Summaries map (Figure 1-14) indicates that no parcels, population centers, or critical infrastructure within Capitola fall into Cal Fire's "Very High Fire Hazard Severity Zones," meaning that the direct wildfire threat to the city's core remains low.

However, the Mean Fire Return Interval (MFRI) map (Figure 1-15) illustrates that surrounding hillsides and adjacent jurisdictions have relatively short fire return intervals, with many areas projected to experience wildfire activity within 6–35 years. This proximity creates indirect risks for Capitola, including degraded air quality from regional smoke events, potential utility shutoffs during high fire danger conditions, and strain on the transportation network if regional evacuations are required.

Within Capitola itself, heavily vegetated corridors, particularly those with eucalyptus stands along key routes such as Wharf Road and Park Avenue, could complicate emergency access and evacuation during a fire event. Drainage areas like Soquel Creek and coastal bluffs near New Brighton also present localized risks where unmanaged vegetation and steep slopes increase the potential for fire spread to adjacent homes and infrastructure.

Looking ahead, climate change is expected to heighten these risks by producing hotter, drier conditions that stress vegetation and increase flammability. While Capitola's dense urban fabric limits direct wildfire exposure, the city remains vulnerable to secondary impacts and must continue investing in vegetation management, evacuation planning, and regional coordination to enhance community resilience.

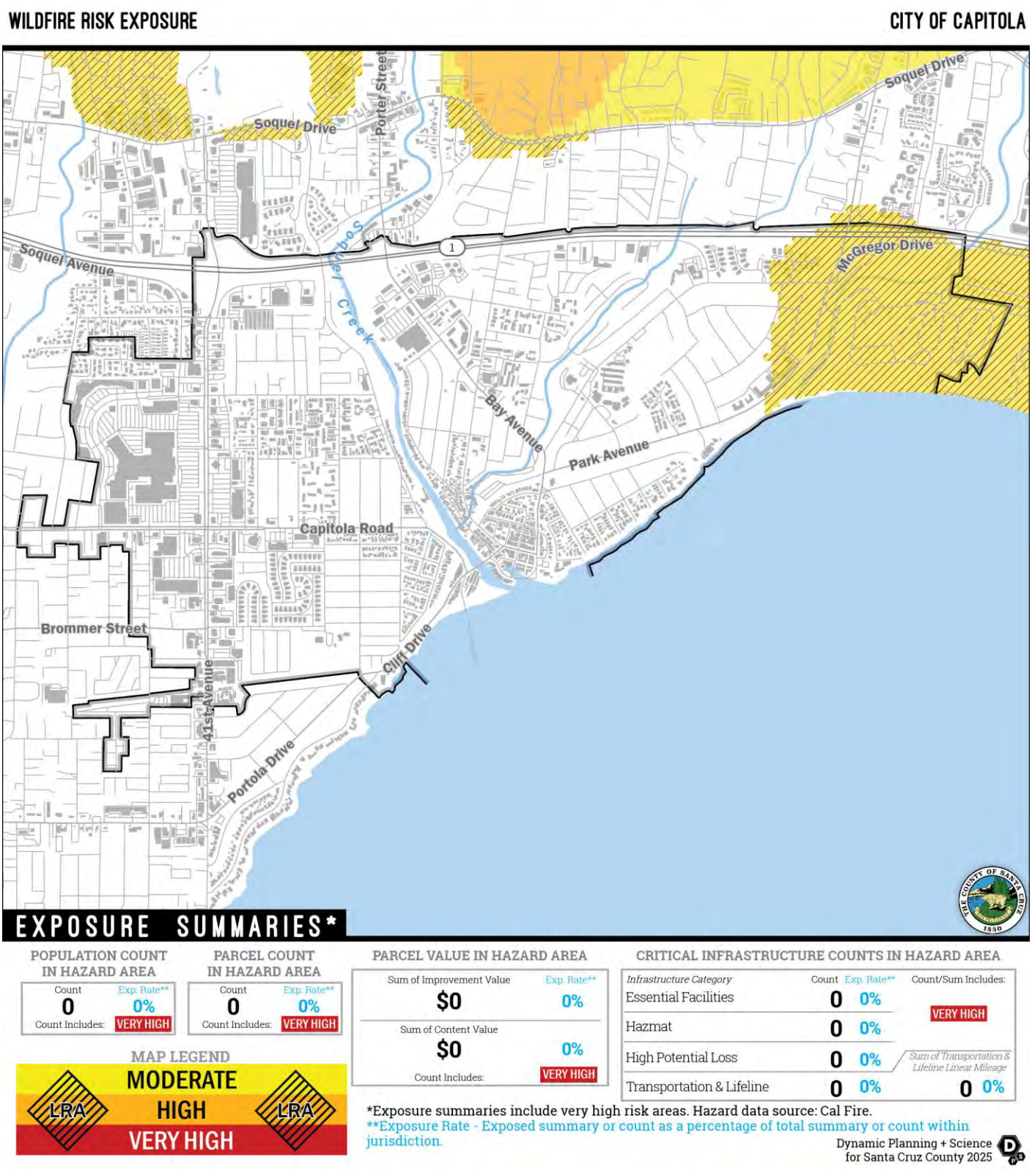
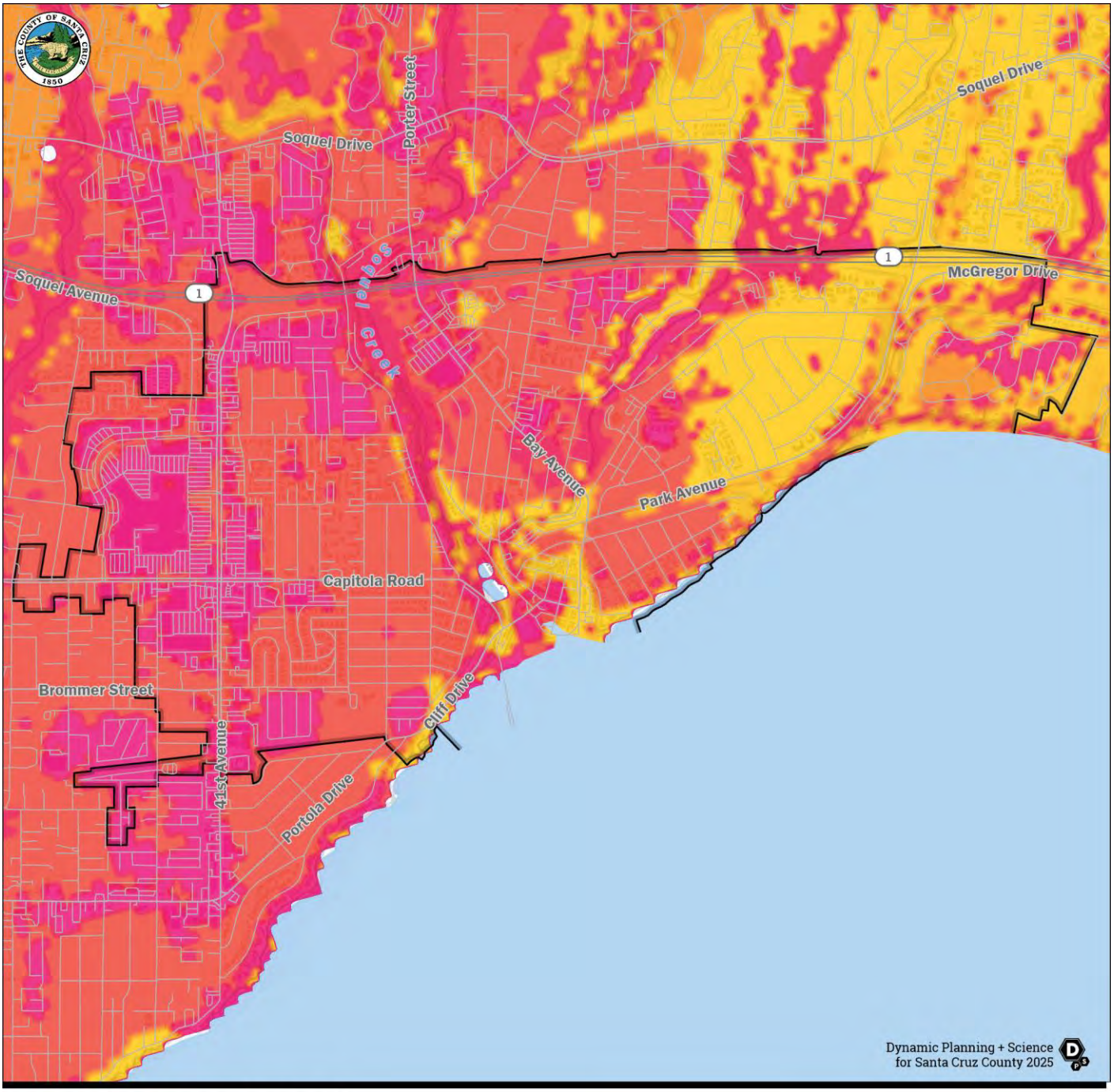


Figure 1-14: Exposure Summary – City of Capitola Wildfire Risk



Mean Fire Return Interval

City of Capitola

*Data sources: USGS LANDFIRE.

average period between fires (Years)

0-5	6-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-60	61-70	71-80	81-90	91-100	101-125	126-150	151-200	201-300	301-500	501-1000	>1000

Figure 1-15 City of Capitola Mean Fire Return Interval Map

1.5.2.2 Flood Hazard

Flooding represents a significant hazards facing the City of Capitola due to its coastal location, proximity to Soquel Creek, and concentration of development in low-lying areas. The FEMA Flood Risk Exposure maps, Figure 1-16 highlight areas of high concern along Soquel Creek, Noble Gulch, and the Capitola Village waterfront, where both the 100-year floodplain and designated floodways overlap with commercial, residential, and tourism-serving land uses. Coastal flooding hazards also extend along the shoreline, exposing beachside properties and infrastructure to wave run-up, tidal surge, and sea level rise.

Figure 1-16 shows approximately 600 residents (8% of the city's population) and 300 parcels (8% of total) fall within FEMA-designated flood hazard zones. The estimated improvement value at risk is over $215 million, with an additional $146 million in contents value. Several critical facilities lie within these zones, including two essential facilities (67% of total), two hazardous material sites, and six transportation and lifeline assets, underscoring the community-wide implications of flood events.

National Flood Insurance Program

The National Flood Insurance Program (NFIP) makes federally backed flood insurance available to homeowners, renters, and business owners in participating communities. FEMA has prepared a detailed Flood Insurance Study (FIS) for Santa Cruz County and municipalities. The study presents water surface elevations for floods of various magnitudes, including the 1% annual chance flood (100-YR flood) and the 0.2% annual chance flood (500-YR flood). Base flood elevations and the boundaries of the 100- and 500-YR floodplains are shown on Flood Insurance Rate Maps (FIRMs), which are the principal tools for identifying the extent and location of the flood hazard. FIRMs are the most detailed and consistent data source available, and for many communities they represent the minimum area of oversight under their floodplain management program. See Section 3 of Volume 1 for general information on the NFIP.

The City of Capitola has participated in the NFIP since 1977 and has adopted the most recent FIRMs and FIS issued by FEMA (dated September 29, 2011) as well as local floodplain development regulations in compliance with the minimum NFIP standards (Capitola Municipal Code Chapter 15.20). These minimum standards include procedures and provisions for substantial improvements and substantial damages to existing structures, the latter of which are employed by the floodplain administrator and city building inspectors following any hazard event affecting structures located in the flood hazard area in accordance with NFIP requirements. Regulations for substantial improvements are enforced via permitting procedures. Implementation and enforcement of the city's floodplain regulations are assigned to the City Building Official, who serves as the floodplain administrator out of the Building and Safety Department.

The City of Capitola is currently in good standing with the provisions of the NFIP. Compliance is monitored by FEMA regional staff and by the California Department of Water Resources under a contract with FEMA. Maintaining compliance under the NFIP is an important component of flood risk reduction. See Table 1-14 for more information on the City's policies and historic flood insurance claims.

Table 1-14: City of Capitola National Flood Insurance Program Information

City of Capitola NFIP Status and Flood Insurance Statistics	
NFIP Status	Participating Since 1984
Community Identification (CID)	060354
CRS Class (Entry Date)	N/A
Policies in Force (Total Coverage)	60 Policies ($16,481,000 in Coverage)
Policies Inside SFHA / Outside SFHA	48 Inside / 12 Outside
Policies in Coastal Zones (Total Coverage)	1 Policy ($220,000 in Coverage)
Total Claims (Total Paid)	98 Claims ($1,775,003 Paid)
Repetitive Loss (RL) / Severe Repetitive Loss (SRL) Properties	11 RL / 4 SRL
Repetitive Loss Payments	$1,070,626 for Buildings / $60,800 for Contents

Note: The number of policies is by property and does not count policies for individual buildings. The Privacy Act of 1974 (5 USC 522a) restricts the release of certain types of data to the public. Flood insurance policy and claims data is included in the list of restricted information. FEMA can only release such data to state and local governments, and only if the data is used for floodplain management, mitigation, or research purposes. Therefore, this plan does not identify the repetitive loss properties or include claims data for any individual property.

Principal Flooding Sources

Soquel Creek is the principal flood source within Capitola. The creek's 100-year and 500-year floodways overlap with several developed areas of Capitola. The City of Capitola General Plan noted that Capitola Village is particularly susceptible to flooding and experienced a major food event in March 2011. Figure 1-16 depicts 100-year and 500-year floodways within Capitola. As shown on the figure, nearly 600 people, more than 300 parcels, and two essential facilities are within a 100-year or 500-year floodway.

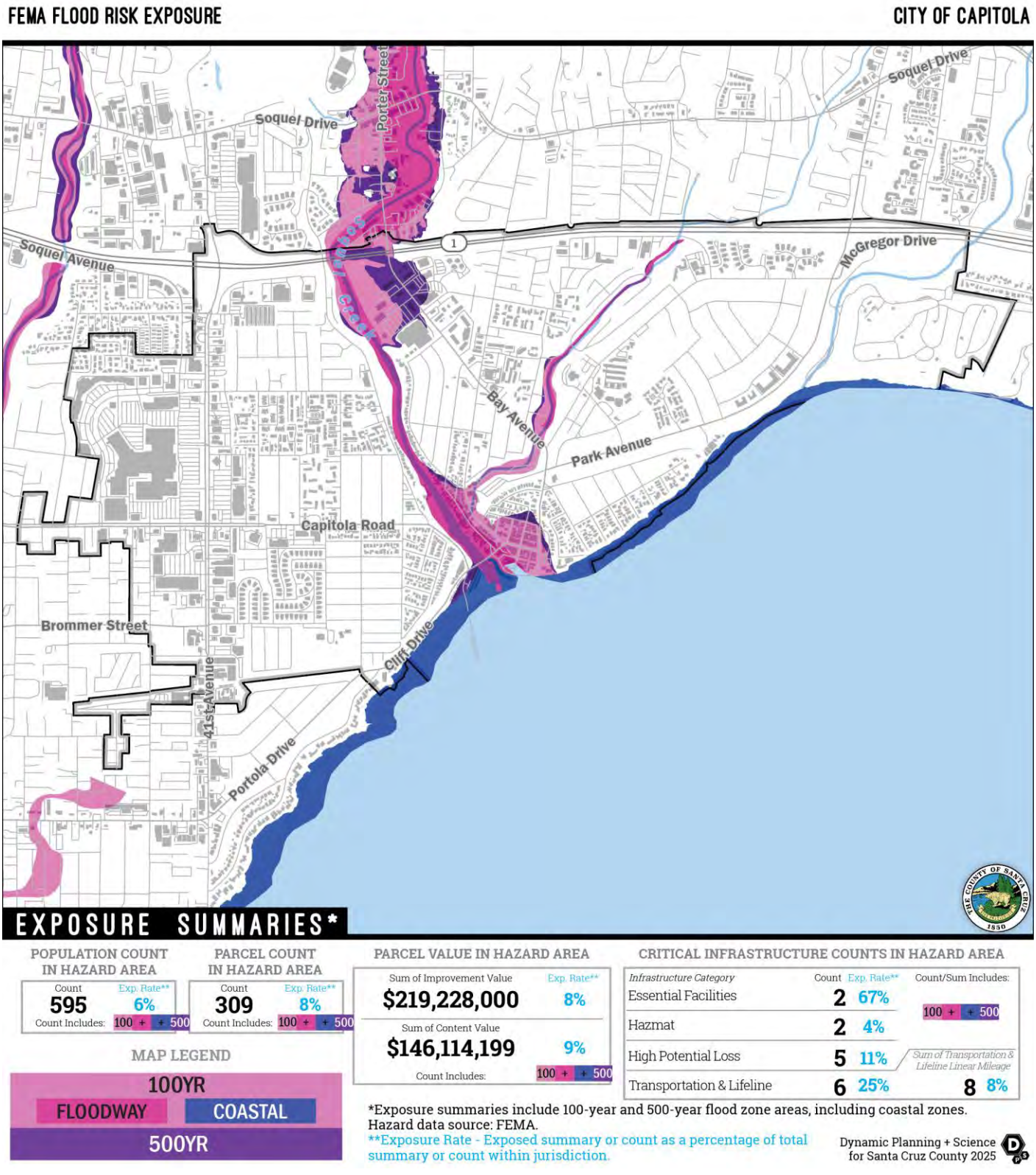


Figure 1-16 Exposure Summary – City of Capitola Flood Risk (FEMA Zones)

1.5.2.3 Earthquake Hazard

Capitola lies in a seismically active region of coastal California, near the San Andreas Fault system. The N. San Andreas – Santa Cruz Mountains Earthquake Scenario (M7.1) maps, Figure 1-17, show that nearly the entire city would experience very strong shaking during such an event. Exposure summaries shown in Figure 1-17, indicate that approximately 8,000 residents (81% of the city's population) and 3,000 parcels (76% of total) would be affected. The estimated value at risk is more than $2.2 billion in improvements and $1.4 billion in contents. Critical infrastructure is also heavily exposed, with over 50 hazardous materials sites (98%), 30 high potential loss facilities (77%), and nearly 20 transportation and lifeline facilities (79%) located in the strong shaking zones. This demonstrates that an earthquake of this magnitude would have widespread and severe consequences for Capitola's built environment and economy.

Capitola does not contain any state-mapped active fault traces within its city limits, meaning the risk of surface fault rupture is low. However, the city's proximity to the San Andreas and related fault systems means it is highly susceptible to regional seismic activity. In addition to ground shaking, secondary hazards such as liquefaction, landslides, and coastal bluff failures pose ongoing concerns during earthquake events.

Liquefaction

Beyond shaking intensity, ground failure hazards are a major concern. The liquefaction susceptibility maps show high and very high liquefaction potential along Soquel Creek, the Capitola Village area, and coastal lowlands as depicted in Figure 1-18. These areas overlap with some of Capitola's most important commercial and tourism centers. Approximately 1,500 residents (15%) and 760 parcels (19%) are located in liquefaction-prone zones, representing over $510 million in improvement value and $310 million in contents value at risk. Liquefaction could cause ground settlement, damage to foundations, rupture of underground utilities, and long-term service disruptions in the city's historic and economic core.

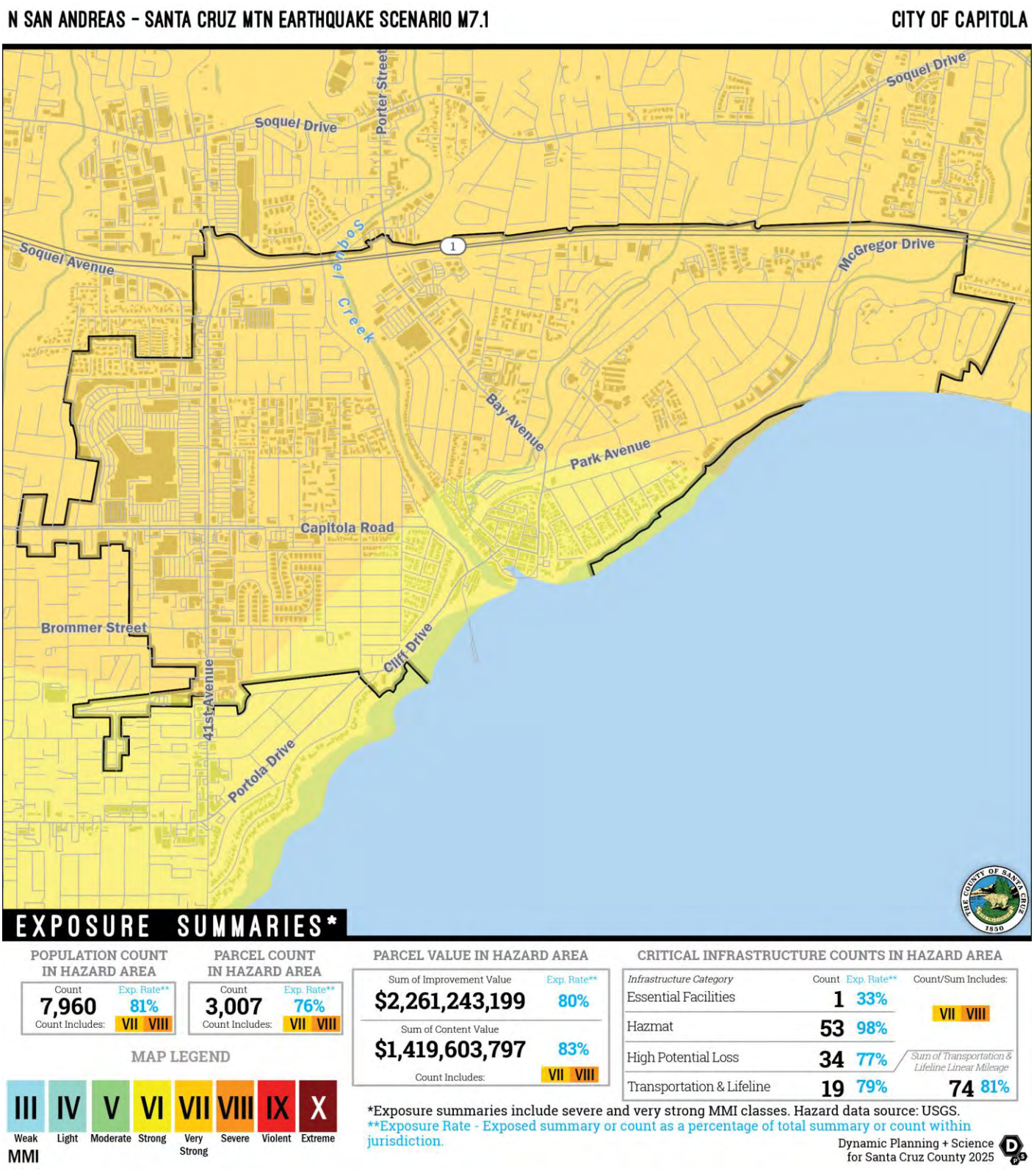


Figure 1-17 Exposure Summary – City of Capitola Earthquake Risk (M7.1 San Andreas Shaking)

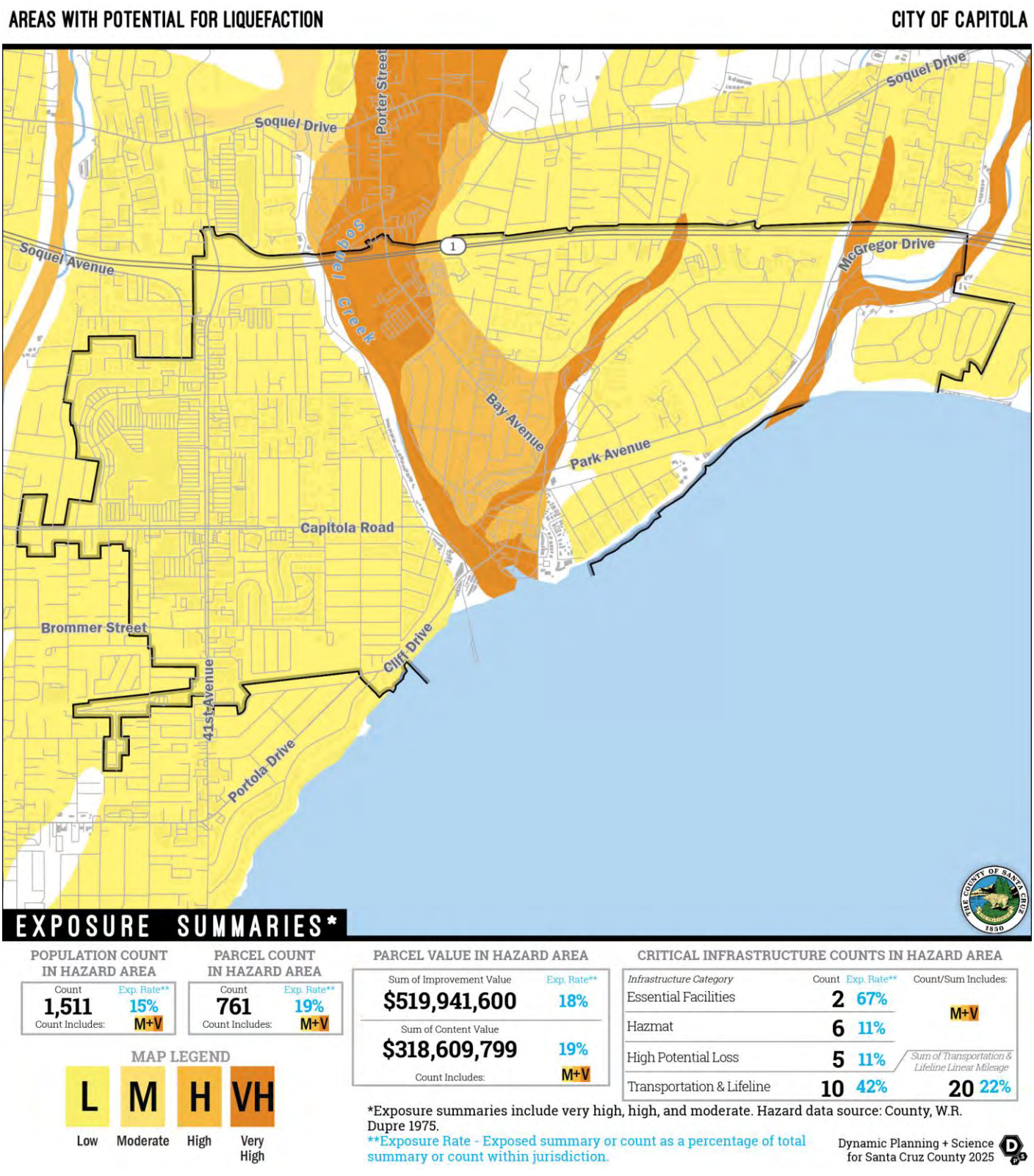


Figure 1-18 Exposure Summary – City of Capitola Liquefaction Risk

1.5.2.4 Severe Weather Hazard

Severe weather hazards, including heavy rainfall and high winds mostly from winter storms, pose recurring risks to the City of Capitola. These events can cause flooding, landslides, coastal bluff failures, utility disruptions, and damage to buildings and infrastructure. The 2020 Local Hazard Mitigation Plan (LHMP) documents a history of severe winter storms impacting Capitola, particularly when heavy rainfall coincides with high tides and strong winds, amplifying flood and erosion impacts.

Heavy Rain

Capitola's exposure to the Pacific coast makes it vulnerable to intense winter storm systems that bring heavy rainfall and coastal wave action. The General Plan identifies winter storms as a critical hazard, noting that extreme precipitation can overwhelm Soquel Creek, compromise storm drain systems, and trigger landslides on saturated slopes. The 2011 storm drain failure in Capitola Village, which flooded homes and businesses, remains a key example of the city's vulnerability. More recently, January 2023 atmospheric river storms caused significant damage to Capitola's waterfront businesses and public spaces, underscoring the increasing severity of these events under climate change.

Climate change will intensify the frequency and magnitude of severe storm events, increasing risks of coastal flooding, bluff erosion, and infrastructure damage. These projections align with state-level assessments that identify the Central Coast as highly vulnerable to stronger atmospheric rivers and storm surges.

High Wind

High winds often accompany winter storm systems, compounding damage. Strong winds can down trees, damage roofs, cause extended power outages, and block critical transportation routes. Wind-driven waves also amplify coastal erosion hazards, particularly along Capitola Wharf and the bluffs adjacent to Cliff Drive. Capitola's older building stock and coastal utilities are especially vulnerable to high-wind damage.

1.5.2.5 Coastal Hazards

The City of Capitola faces growing risks from coastal hazards including coastal storms, wave run-up and surge, coastal erosion, and tsunami events. These threats are intensified by the city's location on the Monterey Bay shoreline and climate change and sea level rise, as discussed in Section 1.5.2.8.

Coastal Storms, Wave Run-Up & Coastal Erosion

Coastal erosion is a critical hazard for Capitola. The city's bluffs, particularly along Cliff Drive and the Capitola Village waterfront, are highly susceptible to storm surge, wave run-up, and accelerated erosion under projected sea level rise scenarios. Capitola's shoreline location makes it highly vulnerable to coastal erosion. Natural wave action, storm surge, and tidal processes continually reshape the city's beaches and bluffs, while climate change and sea level rise are expected to accelerate the rate of retreat. Coastal bluff erosion and beach loss as among the city's primary hazards, with Capitola Village, the Wharf, and the bluffs along Cliff Drive being particularly at risk. Other notable areas at risk or Stockton Avenue Bridge, Cliff Drive, Park Avenue, the Capitola Pump Station in Esplanade Park, Lawn Way Storm Drain Pump Station, and Grand Avenue. Collectively, these facilities have a potential loss value of approximately $18 million.

Additionally, the historic rate of bluff retreat in Santa Cruz County is approximately 0.9 feet per year. If this rate continues, the pedestrian pathway along the cliff area in the Depot Hill neighborhood of Capitola would be unusable within 10 to 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.

Climate change will exacerbate erosion hazards, as higher seas increase wave energy reaching the base of bluffs. This process undermines protective retaining walls and threatens coastal access routes, including Cliff Drive, Esplanade Park, and public beach areas. Long-term projections indicate that erosion could reduce the usable width of Capitola Beach, compromising the city's tourism economy and recreational identity.

Coastal storms in January 2023 caused major bluff failures along Cliff Drive, undermining a retaining wall built in the 1990s. These damages prompted the initiation of the Cliff Drive Resiliency Project, which is studying adaptation strategies such as engineered bluff stabilization, managed retreat, and hybrid "living shoreline" approaches. Similarly, the Capitola Wharf Resiliency Project integrates erosion and storm damage repairs to preserve one of the city's most important cultural and economic assets. These efforts reflect recognition that coastal erosion not only threatens property and infrastructure but also the city's tourism economy and cultural identity.

Tsunami

Capitola's location makes it highly vulnerable to tsunami inundation. The Tsunami Run-Up Map Figure 1-19 show that extensive areas of Capitola's waterfront and Soquel Creek corridor are exposed to potential

tsunami inundation. The exposure summary indicates that approximately 1,300 residents (13% of the city's population) and 760 parcels (19%) lie within the mapped tsunami hazard zone. The parcel improvement value at risk is nearly $500 million, with an additional $290 million in contents value.

Other notable areas susceptible to wave run-up, surge, and tsunami in Capitola include City Hall, the Capitola Police Station, Central Fire Station No. 4, the Stockton Avenue Bridge, the Capitola Wharf, the Capitola Beach Sea Wall, Cliff Drive, Noble Gulch Storm Pipe, the Capitola Pump Station in Esplanade Park, Lawn Way Storm Drain Pump Station, the Capitola Beach Flume, and Capitola Beach Jetty. Collectively, these facilities have a potential loss value of approximately $51.6 million.

Tsunamis in this region would likely be generated by distant subduction zone earthquakes, such as those occurring along the Aleutian or Cascadia Subduction Zones. These events could provide limited warning time for evacuation, with inundation depths and flow velocities capable of sweeping away structures, vehicles, and above-ground utility assets. Communities such as Capitola and the surrounding urbanized coastal corridors are especially at risk due to their concentration of residential and commercial development near beaches, estuaries, and the mouths of creeks and rivers.

The California Geological Survey (CGS) and National Tsunami Hazard Mitigation Program (NTHMP) provide updated inundation modeling and maps, which inform local emergency planning, evacuation signage, and community outreach.

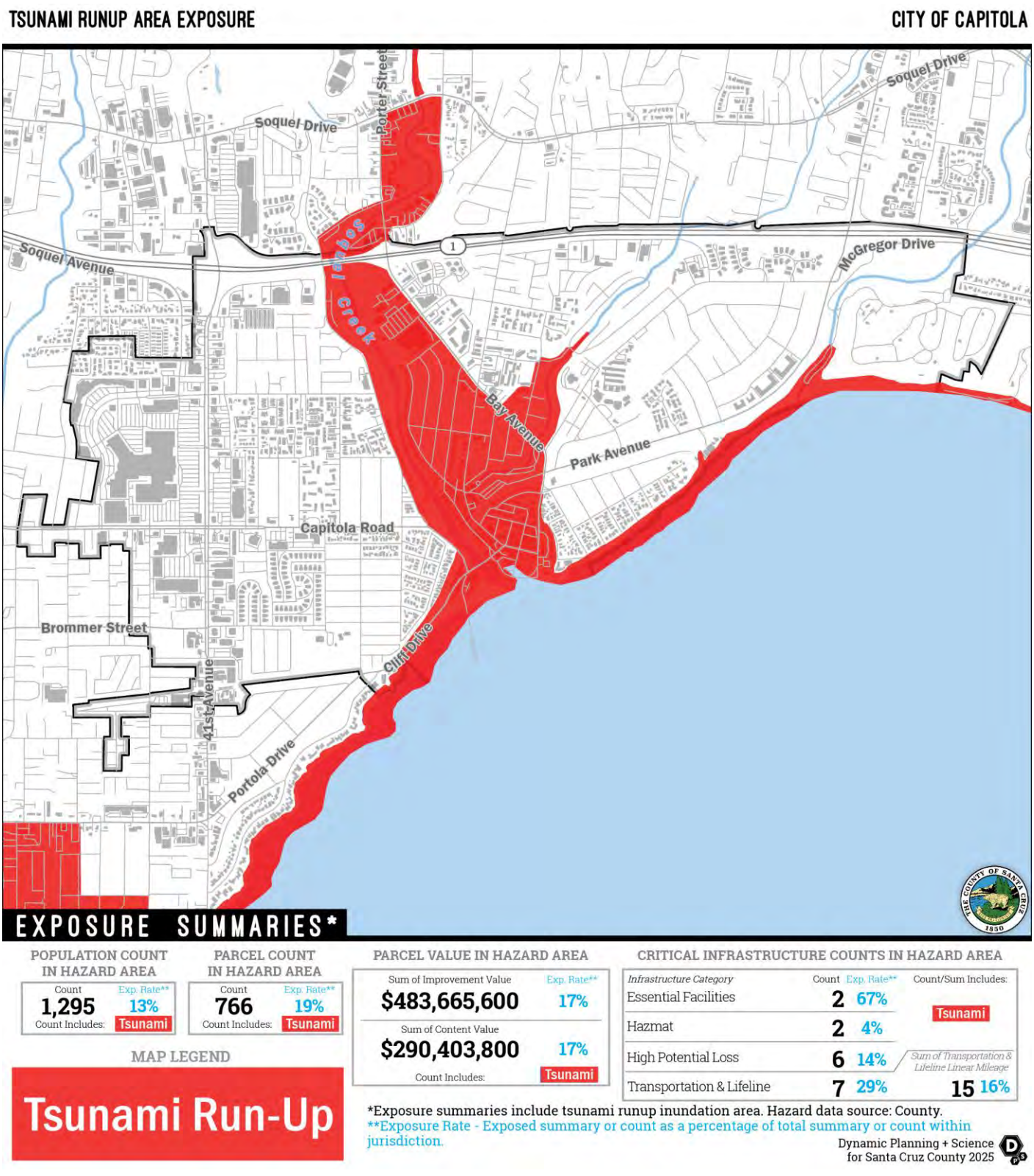


Figure 1-19 : Exposure Summary – City of Capitola Tsunami Risk

1.5.2.6 Slope Failure Hazard

The City of Capitola is vulnerable to slope failure hazards, particularly along its coastal bluffs, steep hillsides, and creek corridors. The Landslide Risk Exposure map, Figure 1-20, indicates that areas of high susceptibility are concentrated along the shoreline bluffs overlooking Monterey Bay, the steep slopes near Soquel Creek, and hillside neighborhoods near Park Avenue and McGregor Drive. These areas coincide with some of the city's most densely developed residential and commercial zones, as well as major transportation routes that connect Capitola to surrounding communities.

The exposure summary in Figure 1-20, highlights that approximately 770 residents (8% of the city's population) and 160 parcels (4% of total) fall within high landslide susceptibility zones. The estimated improvement value at risk is nearly $120 million, with an additional $63 million in contents value. While relatively modest compared to Capitola's total asset base, these figures underscore the significant localized risk where steep slopes intersect with developed property. Importantly, six transportation and lifeline facilities (25% of the city's total) are located in high-risk zones, meaning that landslides could disrupt emergency response routes, utility corridors, and access to coastal areas.

Slope failure hazards are particularly relevant for Capitola because of its geologic setting and coastal conditions. Intense rainfall, seismic activity, and coastal erosion all act as triggers for landslides and bluff failures. For example, heavy winter storms and prolonged saturation of soil can destabilize slopes near Soquel Creek or along bluffs above Capitola Village. The 2011 Soquel Creek flood and drainage failure demonstrated how cascading hazards can damage infrastructure and businesses in Capitola Village. Earthquakes, such as a San Andreas Fault event, could also trigger slope failures in these same areas, compounding seismic impacts.

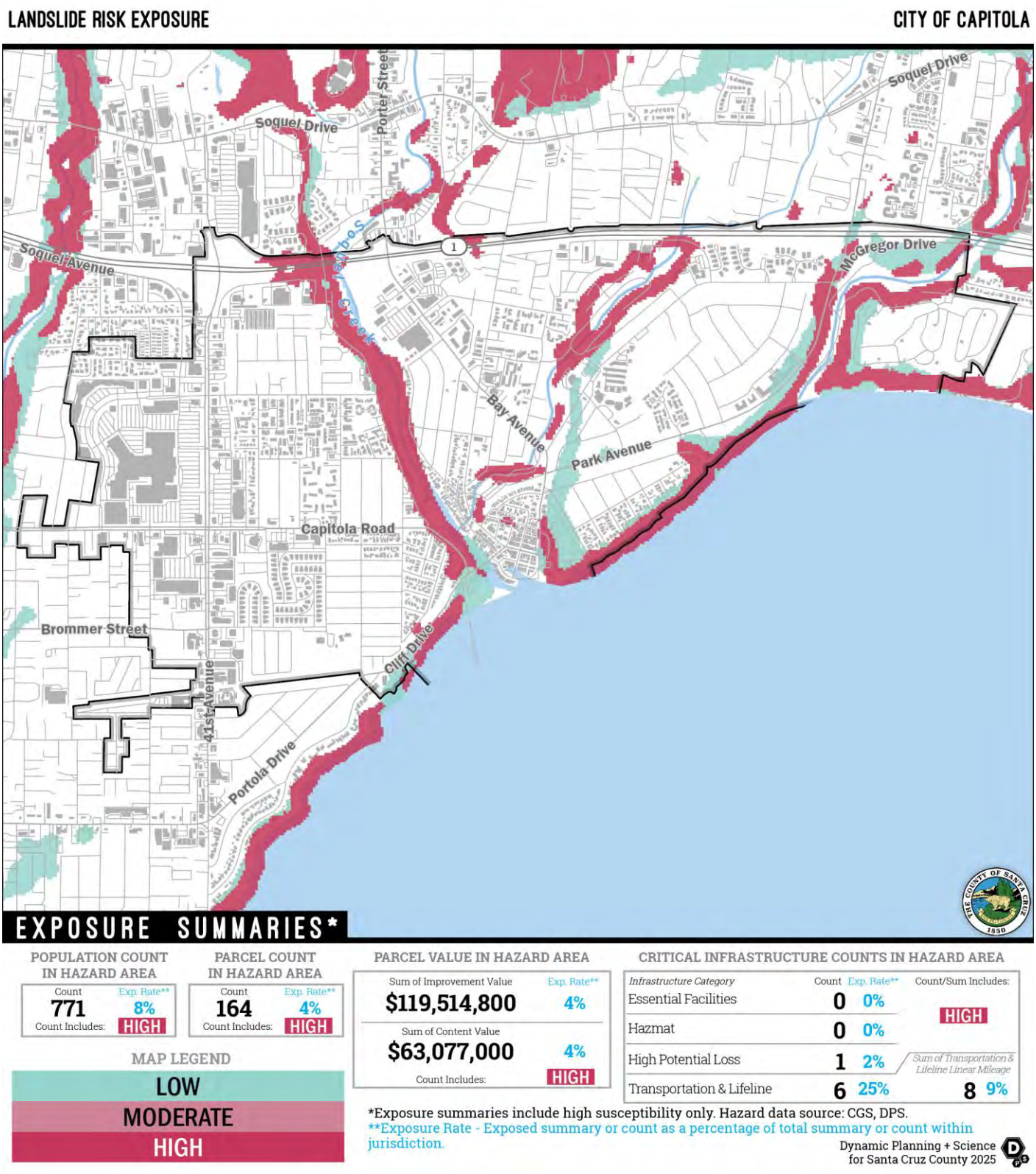


Figure 1-20 Exposure Summary – City of Capitola Slope Failure Risk

1.5.2.7 Drought Hazard

The National Drought Monitor provides drought data and maps nationally and on a localized, watershed scale. The National Drought Monitor is the product of 11 agencies, including the NDMC, NOAA and USDA, and is available at http://droughtmonitor.unl.edu/. The National Drought Monitor categorizes the level of drought from D0 through D4, with D4 being the highest "exceptional drought." Table 1-15 depicts drought classifications and impacts from the level of drought occurrence in California, while Figure 1-21 shows a time series of the level of drought in Santa Cruz County from 2000 to 2025 according to the National Drought Monitor.

While Capitola is a coastal city and not a major agricultural hub, it remains vulnerable to drought hazards because of regional water supply constraints, reliance on groundwater basins, and the cascading impacts of prolonged dry conditions. Drought is a hazard that affects water supply, public health, and wildfire risk, even though its impacts on Capitola are more indirect than in inland communities

Capitola's water service is provided by the Soquel Creek Water District, which relies on the Santa Cruz Mid-County Groundwater Basin, a basin historically in overdraft and vulnerable to seawater intrusion. During drought periods, reduced recharge intensifies stress on groundwater levels and increases the risk of saltwater contamination. Drought can constrain water availability for both residential and commercial uses, potentially limiting new development and raising costs for existing residents.

The CAP projects that climate change will result in more variable precipitation patterns, with longer dry spells punctuated by intense storm events. This variability increases the likelihood of multi-year droughts, which can reduce groundwater recharge, strain local supplies, and elevate regional competition for water resources.

The impacts of drought in Capitola extend beyond water supply including:

- Wildfire Risk – Prolonged drought dries vegetation in the surrounding Santa Cruz Mountains, increasing wildfire risk in areas adjacent to Capitola. While direct wildfire exposure within the city is limited, smoke, air quality degradation, and potential utility shutoffs affect residents and businesses.
- Economic Impacts – Capitola's tourism economy is tied to its coastal amenities and quality of life. Drought-driven water restrictions (e.g., for landscaping, recreational facilities, or visitor-serving uses) can reduce the city's attractiveness to visitors.
- Environmental Stress – Drought contributes to lower streamflows in Soquel Creek, impacting riparian habitat, recreation, and ecological health.
- Social Vulnerability – Lower-income households may be disproportionately affected by rising water rates during drought periods, reducing their adaptive capacity.

Table 1-15: Drought Classifications and Impacts

Category	Description	Possible Impacts
D0	Abnormally Dry	▪ Soil is dry; irrigation delivery begins early ▪ Dryland crop germination is stunted ▪ Active fire season begins
D1	Moderate Drought	▪ Dryland pasture growth is stunted; producers give supplemental feed to cattle ▪ Landscaping and gardens need irrigation earlier; wildlife patterns begin to change ▪ Stock ponds and creeks are lower than usual
D2	Severe Drought	▪ Producers increase water efficiency methods and drought-resistant crops ▪ Grazing land inadequate ▪ Fire season is longer, with high burn intensity, dry fuels, and large fire spatial extent; more fire crews on staff ▪ Lake- and river-based tourism declines; boat ramps close ▪ Trees are stressed; plants increase reproductive mechanisms; wildlife diseases increase ▪ Water temperatures increase; programs to divert water to protect fish begin ▪ River flows decrease; reservoir levels are low and banks are exposed
D3	Extreme Drought	▪ Federal water not adequate to meet irrigation contracts; extracting supplemental groundwater is expensive ▪ Fire season lasts year-round; fires occur in typically wet parts of the state; burn bans are implemented ▪ Ski and rafting business is low; mountain communities suffer ▪ Low water levels impede fish migration and cause lower survival rates ▪ Wildlife encroach on developed areas; little native food and water is available for bears, which hibernate less ▪ Water sanitation is a concern; reservoir levels drop significantly; surface water is nearly dry, flows are very low; water theft occurs ▪ Livestock need supplemental feed, cattle and horses are sold; little pasture remains ▪ Well and aquifer levels decrease; homeowners drill new wells
D4	Exceptional Drought	▪ Fire season is very costly; number of fires and areas burned are extensive ▪ Many recreational activities are affected ▪ Fields are left fallow; orchards are removed; vegetable yields are low; honey harvest is small; agricultural unemployment is high, food aid is needed ▪ Fish rescue and relocation begins; pine beetle infestation occurs; forest mortality is high; wetlands dry up; wildlife death is widespread; algae blooms appear ▪ Poor air quality affects health; greenhouse gas emissions increase as hydropower production decreases; West Nile outbreaks rise ▪ Water shortages are widespread; surface water is depleted; federal irrigation water deliveries are curtailed; water prices are extremely high; wells are dry, more and deeper wells are drilled; water quality is poor

Source: Adapted from U.S. Drought Monitor Drought Classifications and Impacts

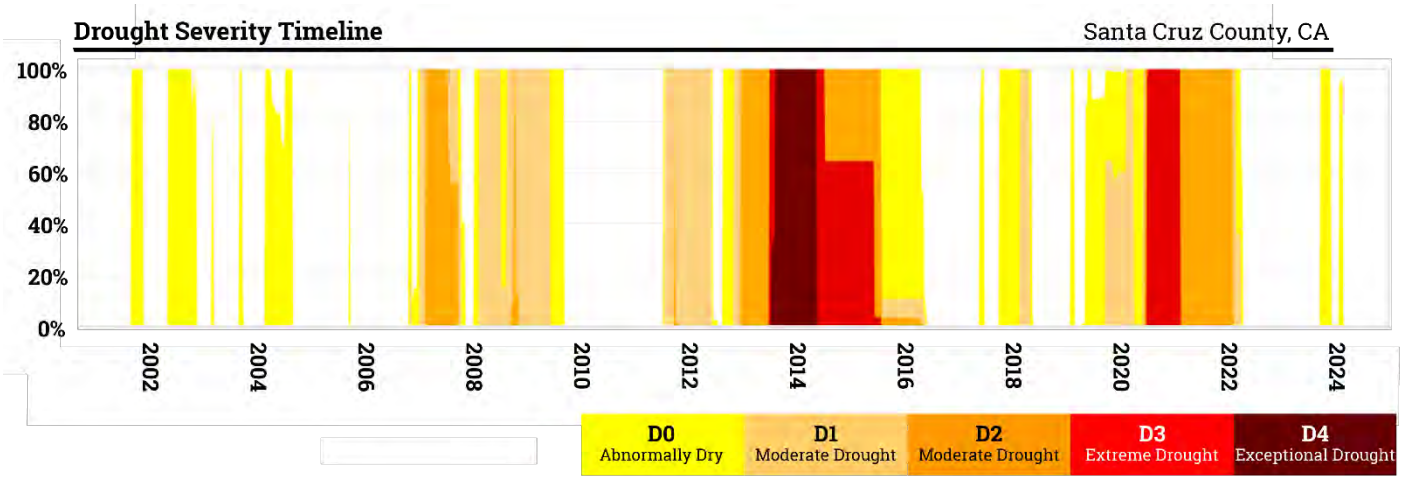


Figure 1-21: Drought Severity Timeline 2000-2024

1.5.2.8 Extreme Heat Hazard

Average annual temperatures across most of California have already increased by more than 1°F, with some areas experiencing rises of over 2°F when comparing the 1901 to 1960 average to that of 1986 to 2016. Daily maximum temperatures—a key indicator of extreme heat—are projected to increase by 4.4°F to 5.8°F by 2050 and by 5.6°F to 8.8°F by 2100. Heat waves that impact public health, known as heat-health events, are also expected to intensify across the state. By 2050, these events are projected to last up to two weeks longer in the Central Valley and occur four to ten times more often in the Northern Sierra region (California Natural Resources Agency, 2022).

According to the Cal-Adapt extreme heat days and warm nights tool using a medium emissions scenario (RCP 4.5), the City of Capitola will likely experience a climate change-driven increase in extreme heat days from two days per year to seven days per year by the end of the century. Over the same time period, the city is also likely to see an increase in warm nights from five days per year to 50 days per year. Table 1-16 explains the extreme heat event thresholds for Capitola.

Table 1-16: Cal-Adapt Extreme Heat Thresholds

Term	Cal-Adapt Definition	Thresholds for City of Capitola
Extreme Heat Day	Defined as a day in a year when the daily maximum/minimum temperature exceeds the 98th percentile of daily maximum/minimum temperatures based on observed historical data from 1961-1990 between April and October.	**92.2°F**
Warm Night	Defined as a day in April through October when daily minimum temperature exceeds the 98th historical percentile of daily minimum temperatures, based on observed data from 1961-1990 between April and October.	**57.6°F**

Term	Cal-Adapt Definition	Thresholds for City of Capitola
Heat Wave	Defined as four consecutive days or nights above the extreme heat / warm night threshold.	**3 days ≥ 92.2°F** or **4 nights ≥ 57.6°F**

Source: Cal-Adapt Extreme Heat Days and Warm Nights Tool

1.5.2.9 Climate Change Hazard

California is already experiencing significant impacts from climate change, including prolonged drought, a lengthened wildfire season, increased coastal flooding and erosion, and widespread tree mortality. The state has observed rising average temperatures, more extreme heat days, fewer cold nights, a longer growing season, and shifts in the water cycle, with less winter precipitation falling as snow. In addition, summertime fog has declined by approximately 33%, and both snowmelt and rainwater runoff are occurring earlier in the year (Cal OES, 2018).

Long-term trends indicate a 12% to 20% decline in fog across California from 1900 through projections to 2070. Climate experts suggest that warming temperatures reduce the ability of air masses to cool enough to produce fog, which plays a critical role in supporting California's ecosystems (Grantham, Teodore; University of California, Berkeley, 2018).

The City of Capitola faces significant challenges from climate change due to its coastal setting, historic village core, and reliance on tourism. Rising sea levels, intensified storm surge, and accelerated bluff erosion are expected to threaten shoreline infrastructure, including the iconic Capitola Wharf, coastal bluffs, and low-lying areas such as Capitola Village. These hazards increase the likelihood of flooding and storm damage, compounding risks to homes, businesses, and critical facilities.

In 2015, Capitola adopted a Climate Action Plan establishing a baseline inventory of community greenhouse gas emissions and reduction targets aligned with state goals, five percent below 2010 levels by 2020 and 81 percent below by 2050. Transportation and energy use are the city's largest emissions sources, and reduction strategies emphasize sustainable mobility, energy efficiency, and resource conservation. The 2019 General Plan further integrates climate considerations into land use and safety policies, directing development toward sustainable patterns and requiring hazard-aware planning in areas at risk of flooding, bluff erosion, and other climate-related impacts.

According to the Climate Action Plan and General Plan, climate change is expected to accelerate coastal erosion, increase tidal flooding frequency, and magnify the impacts of storm surge. Higher seas allow storm waves to penetrate further inland, undermining bluffs, damaging coastal infrastructure, and increasing the likelihood of compound flooding events when high tides align with riverine flooding from Soquel Creek. The

2020 LHMP emphasizes that Capitola's tourism economy and historic Village are disproportionately exposed to these risks, given their direct location on the waterfront.

The City of Capitola incorporates several state mandates, including California Environmental Quality Act (CEQA), SB 375 – Sustainable Communities and Climate Protection Act, AB 32 and SB 32 – Global Warming Solutions Act and Amendments, and AB 168 into local planning, leveraging the General Plan and hazard mitigation strategies to prepare for increasing wildfire risks, flooding, and extreme heat caused by climate change. By aligning with state goals, the city ensures its development contributes to a sustainable and resilient future.

Sea Level Rise

Sea level rise is a long-term hazard with direct consequences for Capitola's shoreline bluffs, beaches, and historic Village core. Rising seas are expected to exacerbate coastal erosion, tidal flooding, and storm surge, placing both public infrastructure and private property at increasing risk. The Sea Level Rise Exposure Map (Figure 1-22) shows that areas along Capitola Village, Soquel Creek, and the city's shoreline are vulnerable to inundation under a scenario of 0.5 meters of sea level rise with a 100-year storm event. The exposure summaries in Figure 1-22 indicate that approximately 55 residents (1% of the population) and 39 parcels (1%) would be directly affected, representing nearly $20.4 million in improvement value and $11.6 million in contents value at risk. While this represents a relatively small percentage of Capitola's overall assets, the geographic concentration of impacts in Capitola Village and critical beachfront areas amplifies the potential consequences.

Critical facilities such as the Capitola Wharf, Beach Flume, and nearby pump stations face heightened vulnerability during compounding coastal storm and flood events. Damage or loss of function at these sites could disrupt essential services and require millions of dollars in repair or replacement costs. In recent years, severe winter storms have already demonstrated the fragility of Capitola's waterfront, causing major structural damage to the Wharf and adjacent businesses. Future sea level rise will intensify these risks, underscoring the need for long-term resilience investments.

In addition to infrastructure, Capitola's beaches and bluffs are also at risk of erosion and permanent loss as sea levels rise. The reduction of beach area will not only diminish natural storm buffering capacity, but also negatively impact the city's tourism economy and local coastal ecosystems. Loss of iconic amenities such as Capitola Beach and Esplanade Park would have outsized effects on both community identity and economic stability, given their central role in recreation and visitor activity.

According to the LHMP and General Plan, the areas most at risk include Capitola Village commercial district, Soquel Creek corridor, Capitola Wharf, Esplanade Park, Capitola Beach, and Cliff Drive and adjacent bluffs. Together, these vulnerabilities highlight the dual challenge facing Capitola: protecting critical public infrastructure while also preserving the coastal assets and economic drivers that define the community.

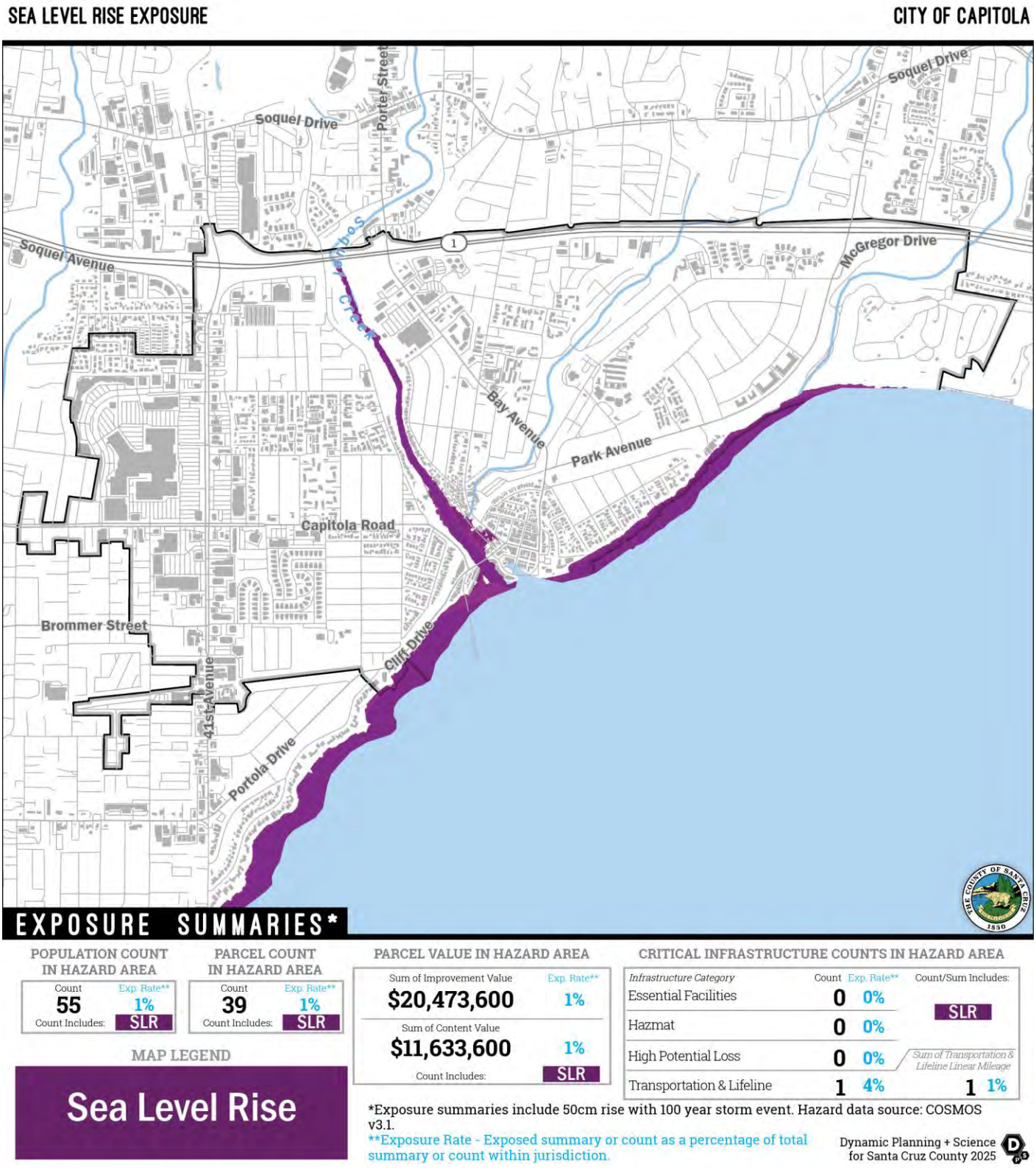


Figure 1-22 City of Capitola - Sea Level Rise Exposure

1.5.3 Planning for Hazards & Growth

As a general law city, Capitola manages growth within the framework of California's rigorous planning, zoning, subdivision, and environmental regulations. Capitola is largely built out and surrounded by urban development, Monterey Bay, and state parklands, meaning future growth will occur mainly through infill development and redevelopment of underutilized properties. This growth pattern places development directly within areas already exposed to hazards, such as flooding along Soquel Creek, bluff erosion near Cliff Drive, and coastal inundation in Capitola Village.

By coordinating with the General Plan Safety and Noise Element, hazard vulnerability is factored into land use decisions, infrastructure investments, and redevelopment approvals. This integration also satisfies state and federal requirements for hazard mitigation planning, positioning Capitola to pursue disaster recovery and resilience funding.

Climate change will intensify flooding, storm surge, coastal erosion, extreme heat, and drought conditions. For Capitola, where growth is concentrated in hazard-prone areas like the Village and waterfront, this means that every new project must be designed with resilience in mind. Growth management therefore focuses on sustainable building standards, water conservation, and integration of sea level rise adaptation strategies to ensure that redevelopment does not amplify existing risks.

Long-Range Planning & Growth Management

Planning for future growth in the City of Capitola requires a proactive approach that balances development needs with hazard awareness and risk reduction. As the city evolves, careful planning and regulatory compliance are essential to safeguard public safety, protect infrastructure, and minimize vulnerabilities. By embedding hazard mitigation into long-range planning and growth management, Capitola strengthens its overall resilience to natural hazards.

The General Plan is the city's overarching blueprint for growth and community priorities, addressing land use, circulation, utilities, housing, open space, resource conservation, noise, and public safety. Within it, the Safety Element establishes policies to address hazards such as flooding, wildfire, and earthquakes, and coordinates closely with the HMP. The Land Use Element further guides where future development will occur both within city limits and within the Sphere of Influence (SOI). At the time of this plan update, Capitola is actively updating its Safety Element to more fully integrate hazard mitigation policies.

The SOI, as approved by the Local Agency Formation Commission (LAFCO) of Santa Cruz County, defines the city's probable physical boundaries and future service area, including potential annexations. In addition to the SOI and General Plan, the city relies on specific area plans, policy plans, and master plans to manage growth in smaller geographic areas, for individual projects, or for major capital improvements. These plans often include detailed hazard analyses to ensure consistency with the General Plan and state regulatory standards. For example, the Urban Water Management Plan assesses the adequacy of Capitola's water

supply over a 25-year horizon, considering both current conservation efforts and long-term drought conditions.

As part of its planning framework, Capitola has incorporated—and will continue to incorporate—hazard data and other findings directly from its hazard mitigation plan into the General Plan as well as other long-range planning mechanisms such as the Climate Action and Stormwater Management Plans. The 2025 update expands on this integration by introducing new mapping and analytical tools, such as the Risk Assessment and Mitigation Planning (RAMP) platform, see Volume 1 Section 2.2.1, which supports more data-driven decision-making about where and how development should occur. By applying these updated tools and policies, the city ensures that future growth is planned in a way that is resilient, sustainable, and responsive to emerging hazard challenges.

Building Codes & Development Standards

Capitola's development strategies combine comprehensive planning frameworks with robust regulatory measures to guide growth while reducing risks from natural hazards. Building codes play a central role in this approach. Nationally, continual improvements to building codes since 1990 have added only about one percent to construction costs while greatly improving disaster resilience (National Institute of Building Sciences, 2019). In California, building codes are among the most stringent in the world, setting minimum standards that safeguard against hazards such as earthquakes, flooding, wildfire, landslides, and severe weather. Capitola enforces these standards locally, providing a strong foundation for resilient construction.

The city is required to regularly update its development regulations to reflect the California Building Code (CBC), which is revised every three years and was most recently updated in 2025. The CBC establishes some of the world's highest construction standards, ensuring occupant safety in the face of natural hazards. Climate change is also addressed through adoption and updating of the California Green Building Standards (CALGreen) and Energy Codes, which integrate energy efficiency, sustainable design, and climate adaptation measures. In addition, Capitola participates in the National Flood Insurance Program (NFIP), requiring that all new development in designated flood hazard areas meet FEMA's minimum flood protection standards.

Through these building and development regulations, Capitola ensures that new development in hazard-prone areas is either restricted or subject to strict hazard-mitigation requirements. Where development is allowed, codes emphasize reducing exposure and vulnerability through appropriate siting, advanced construction techniques, emergency access, and defensible space. For example, new construction in the wildland–urban interface (WUI) must comply with fire-resistant building materials and vegetation management requirements under the California Fire Code.

Beyond code enforcement, Capitola integrates these mandates into broader local planning frameworks, including the General Plan and HMP This alignment ensures that growth management, environmental review, and hazard mitigation strategies collectively address emerging risks from wildfire, drought, flooding, extreme heat, and severe weather intensified by climate change.

California Environmental Quality Act (CEQA) & Hazard Mitigation

The California Environmental Quality Act (CEQA) requires General Plans, Specific Plans, and major development projects to evaluate hazards such as coastal flooding, bluff erosion, seismic risk, and wildfire. Environmental documents must identify these risks and propose mitigation measures, which may include setbacks from hazard-prone areas, infrastructure upgrades, evacuation planning, or restrictions on development in high-risk zones.

In Capitola, CEQA is particularly relevant for projects along Soquel Creek, the coastal bluffs, and Capitola Village, where development is exposed to flooding, storm surge, and coastal erosion. For example, a proposed redevelopment project in the Village would undergo CEQA review to assess hazard risks and could require elevated design standards, erosion protection, or enhanced emergency access to reduce vulnerabilities.

By integrating hazard analysis into the development review process, CEQA helps ensure that future growth in Capitola is designed with resilience and long-term community safety in mind.

1.5.3.1 Development & Hazard Considerations

The City of Capitola covers just 1.7 square miles and is effectively built-out. It is bounded by urban development to the west and north, New Brighton State Beach to the east, and Monterey Bay to the south. As a result, future development will primarily occur through infill and redevelopment of underutilized parcels rather than large-scale expansion.

Capitola's regulatory framework ensures that new development complies with California's strict planning and building codes, thereby limiting additional hazard exposure. Citywide hazards such as earthquakes and extreme weather affect all areas similarly and are not expected to worsen significantly under new conforming development. However, population densities are increasing most in the eastern, western, and southwestern portions of the city. These areas are attractive for growth due to their proximity to key infrastructure, transportation routes, and residential opportunities, but they also overlap with hazard-prone areas, particularly those exposed to flooding, wildfire, and drought-related water supply concerns.

Flood Hazards: Flood risks are concentrated near Soquel Creek, Monterey Bay, and seasonal drainage corridors, with FEMA Flood Insurance Rate Maps (FIRMs) identifying the most vulnerable areas. Low-lying regions, especially in the western part of the city, are prone to overbank flooding and poor drainage during heavy rainfall or storm events. As infill development increases in these areas, new construction will be required to incorporate flood mitigation and stormwater management measures to reduce damage risk.

Wildfire Hazards: Growth along the city's outer boundaries intersects with areas at greater wildfire risk, particularly where grasslands, abandoned orchards, and unmanaged fuel loads have accumulated. Although Capitola's overall wildfire exposure is lower than inland jurisdictions, infill near these hazard areas presents challenges. New development, however, will be subject to modern fire-resistant building standards and

vegetation management requirements, reducing long-term wildfire vulnerability and improving conditions compared to existing undeveloped or unmanaged parcels.

Drought: Population growth will continue to place pressure on Capitola's water supply, particularly during multi-year droughts. According to the Housing Element and 20-year water planning documents, existing and planned infrastructure is expected to provide adequate water through both wet and dry years. As part of this strategy, the city anticipates securing up to nine new well sites through developer dedications and required infrastructure improvements during subdivision approvals. The cost of these improvements will be borne by developers through impact fees or direct construction of new facilities, ensuring that the financial burden of expanded water supply capacity does not fall on existing residents.

1.5.4 Hazard Problem Statements

As part of the mitigation action identification process, the Planning Committee for each jurisdiction identified areas of concern (aka problem statements) for their respective facilities based on the risk assessment and vulnerability analysis, utilizing the RAMP mapping and static snapshot maps. Problem statements focused on the impact, victim, or threat that the hazard could create in the jurisdiction, as described in Table 1-17. Identifying common issues and weaknesses through these problem statements assisted the planning group in understanding the realm of resources needed for mitigation.

The goal is to have at least one mitigation action for every problem statement. Projects or actions have been developed to mitigate each problem identified. See Table 1-19 for a full list of mitigation actions and corresponding problem statements that they address. Each problem statement is coded with a problem number for cross-referencing between Table 1-17 and Table 1-19

Table 1-17: City of Capitola Hazard Problem Statements

Hazard	Sub-Hazard	Area of Concern	Problem IS	Description	Related Mitigation Actions
Climate Change		Victim	ps-CC-CPT-01	Residents, visitors, and businesses located in the Capitola Village and along the Esplanade are increasingly exposed to climate-driven sea level rise and compounding coastal hazards that may cause displacement, injury, property damage, or economic disruption.	ma-CC-CPT-01
Climate Change		Impact	ps-CC-CPT-02	The City's stormwater and sewer infrastructure may be overwhelmed by sea level rise-induced backflow and climate change-driven atmospheric river events, heightening the risk of overflows and environmental damage.	ma-CC-CPT-01

Hazard	Sub-Hazard	Area of Concern	Problem IS	Description	Related Mitigation Actions
Climate Change		Threat	ps-CC-CPT-03	Climate change-driven sea level rise and compounding coastal hazards pose chronic, escalating threats to Capitola?s entire coastline, with projections estimating several feet of rise by 2100 and erosion impacts by 2030.	ma-CC-RCD-01
Coastal Hazards	Coastal Erosion	Impact	ps-CE-CPT-01	Millions of dollars of damage is projected to critical infrastructure and transportation routes if erosion continues unchecked, including the Stockton Avenue Bridge, Cliff Drive, and Park Avenue.	ma-CE-CPT-01
Coastal Hazards	Coastal Erosion	Threat	ps-CE-CPT-02	Coastal bluff erosion is accelerating due to sea level rise and climate-driven precipitation, with top bluff erosion estimated to exceed 10 feet by 2030 in some areas along Grand Avenue and Cliff Drive, increasing risk of collapse from long-term and episodic failures.	ma-CE-CPT-01, ma-CE-SCW-01
Coastal Hazards	Coastal Erosion	Victim	ps-CE-CPT-03	Residents along Depot Hill, Cliff Drive, and Park Avenue are exposed to landslide and bluff failure risk due to steep coastal slopes and decomposed rock formations.	ma-CE-CPT-01
Coastal Hazards	All	Threat	ps-CH-CPT-01	Coastal armoring efforts to protect existing infrastructure are leading to ?coastal squeeze,? accelerating beach loss.	ma-CH-CPT-01, ma-CH-SCC-01
Coastal Hazards	Coastal Storm	Impact	ps-CS-CPT-01	Historic coastal storms have caused seawall failures, overtopped roads, and damaged the Capitola Wharf, resulting in business closures and economic losses during single events.	ma-AH-CPT-01
Drought		Victim	ps-DR-CPT-01	Prolonged droughts place a disproportionate burden on vulnerable populations who may not have the resources to adapt to water use restrictions or install water-conserving improvements.	ma-DR-CPT-02
Drought		Impact	ps-DR-CPT-02	Groundwater overdraft in the Soquel-Aptos Basin?which supplies 90% of Capitola?has led to seawater intrusion, impacting long-term water supply reliability.	ma-DR-SCW-01

Hazard	Sub-Hazard	Area of Concern	Problem IS	Description	Related Mitigation Actions
Drought		Impact	ps-DR-CPT-03	During past droughts, water restrictions and conservation mandates limited development potential and commercial operations in Capitola and surrounding areas, impacting local economic activity.	ma-DR-SCC-02, ma-DR-CPT-02
Drought		Threat	ps-DR-CPT-04	Climate change is projected to intensify both the frequency and severity of droughts in Capitola, leading to longer periods of water scarcity and increased reliance on overdrafted groundwater, which will worsen seawater intrusion risks.	ma-DR-CPT-02
Extreme Heat		Impact	ps-EH-CPT-01	Extreme heat events lead to higher peak electricity demand from air conditioning, increasing risk of brownouts and service interruptions.	ma-EH-SCC-01
Extreme Heat		Threat	ps-EH-CPT-02	Although Capitola has not experienced major impacts from past heatwaves, climate change is expected to increase the frequency, duration, and intensity of extreme heat events, elevating future risks.	ma-EH-WTS-01
Extreme Heat		Impact	ps-EH-CPT-03	People are increasingly visiting Capitola to escape extreme heat events in other parts of the state, adding additional strain on city infrastructure and services during peak tourist season.	ma-EH-SCC-01
Extreme Heat		Victim	ps-EH-CPT-04	Seniors, individuals with chronic health issues, low-income households, and people experiencing homelessness are more vulnerable to extreme heat, especially when outdoors or living in older homes that lack insulation or air conditioning.	ma-ET-CPT-01
Earthquake		Victim	ps-EQ-CPT-01	Many residents, especially low-income households, live in mobile home parks and older structures vulnerable to ground shaking and liquefaction, posing high risk of injury or displacement from a seismic event.	ma-EQ-CPT-02
Earthquake		Impact	ps-EQ-CPT-02	Critical access routes and water, sewer, storm drains, and power lines across Capitola are at risk of rupture due to ground shaking and secondary liquefaction, disrupting essential services for extended periods and severing crucial transportation connections.	ma-EQ-SVW-03

Hazard	Sub-Hazard	Area of Concern	Problem IS	Description	Related Mitigation Actions
Earthquake		Impact	ps-EQ-CPT-03	Mobile homes in Capitola are particularly vulnerable to shifting off foundations during strong seismic events, as demonstrated during the 1989 Loma Prieta earthquake.	ma-EQ-CPT-02, ma-EQ-PVW-01
Earthquake		Threat	ps-EQ-CPT-04	Capitola is within close proximity to major fault systems (e.g., San Andreas, Zayante, San Gregorio) capable of producing large-magnitude earthquakes with a high probability of an event in the next 30 years.	ma-EQ-CPT-03
Flood		Victim	ps-FL-CPT-01	Nearly 1,000 residents live within the 1% annual chance floodplain along Soquel Creek and Noble Gulch, placing them at elevated risk of injury, displacement, and property loss during major flood events.	ma-FL-CPT-01
Flood		Impact	ps-FL-CPT-02	Flooding at Noble Gulch and Soquel Creek may cause structural damage to roadways, bridges (e.g., Stockton Ave Bridge), and Village commercial and residential properties.	ma-FL-CPT-01
Flood		Impact	ps-FL-CPT-03	Flood-related blockages at storm drains and the limited capacity in the Noble Gulch pipe have led to overtopping and damage during past events, including 2011 and 1995 floods.	ma-FL-CPT-01
Flood		Threat	ps-FL-CPT-04	Some of Capitola?s most critical facilities?including City Hall, Police Station, Fire Station #4, and major pump stations?are located in flood hazard areas and could be rendered inoperable during storm events.	ma-FL-CPT-02, ma-FL-WTS-02
Flood		Threat	ps-FL-CPT-05	More intense rainfall events due to climate change are expected to increase Soquel Creek flood stage by up to 2 feet by 2060, affecting over 230 structures and thousands of feet of roadway.	ma-FL-CPT-03
Flood		Threat	ps-FL-CPT-06	The combination of fluvial flooding and high tides (compound flooding) will increase the frequency and depth of inundation events in the Capitola Village, compromising long-term resilience.	ma-FL-PVW-03
Severe Weather	Heavy Rain	Impact	ps-HR-CPT-01	Heavy rain events can exceed stormwater infrastructure capacity, especially in low-lying areas such as Capitola Village, leading to localized flooding and infrastructure damage.	ma-HR-SCC-01, ma-HR-CPT-01

Hazard	Sub-Hazard	Area of Concern	Problem IS	Description	Related Mitigation Actions
Severe Weather	High Wind	Impact	ps-HW-CPT-01	Windstorms have historically caused widespread power outages blocked roads due to downed trees and limbs, and damage to municipal buildings, communications equipment, and private property, affecting emergency response and public safety services throughout the city.	ma-HW-CPT-01
Liquefaction		Impact	ps-LQ-CPT-01	Critical infrastructure?including the Police Station, Central Fire Station #4, and City Hall/EOC?is located within very high liquefaction zones and may be rendered inoperable after an earthquake.	ma-AH-CPT-01
Liquefaction		Threat	ps-LQ-CPT-02	Several areas of Capitola are built over water-saturated alluvium or creek-adjacent soils, which significantly increases long-term liquefaction risk as climate-related groundwater levels rise.	ma-AH-CPT-01
Slope Failure		Victim	ps-SF-CPT-01	Residents and businesses along Soquel Creek, Noble Gulch, and Tannery Gulch face increased risk of damage from slope instability during and after prolonged or intense rainfall events.	ma-SF-CPT-02
Slope Failure		Impact	ps-SF-CPT-02	Slope failure events could damage or block transportation infrastructure like Wharf Road or the Stockton Avenue Bridge, cutting off access to neighborhoods or emergency facilities.	ma-SF-WTS-02
Slope Failure		Threat	ps-SF-CPT-03	Climate change is projected to increase storm intensity, resulting in faster soil saturation and erosion along steep drainages.	ma-SF-CPT-02
Sea Level Rise		Impact	ps-SLR-CPT-01	Sea level rise will impact critical infrastructure?including pump stations, the Wharf, and the Beach Flume?leading to potential loss of public services and millions in damages during compounding coastal and flood hazard events.	ma-SLR-CPT-01
Sea Level Rise		Impact	ps-SLR-CPT-02	Beach loss due to sea level rise and erosion will severely reduce storm buffering capacity and local tourism revenue, affecting the City?s economy and coastal ecosystems.	ma-SLR-SCW-02

Hazard	Sub-Hazard	Area of Concern	Problem IS	Description	Related Mitigation Actions
Severe Weather	All	Threat	ps-SW-CPT-01	Capitola is expected to experience more frequent and intense storms and atmospheric river events, exacerbated by location, topography, and climate change, increasing the likelihood of compounding heavy rain and high wind hazards.	ma-SW-CBC-02
Coastal Hazards	Tsunami	Victim	ps-TS-CPT-01	Over 1,600 Capitola residents?including those in Capitola Village, Venetian Court, and Lower Riverview?live within the tsunami inundation zone and may face injury, displacement, or death in an event.	ma-TS-CPT-01
Coastal Hazards	Tsunami	Impact	ps-TS-CPT-02	A significant tsunami would likely destroy or severely damage critical facilities and infrastructure, including the Police Station, Fire Station #4, Wharf, Stockton Avenue Bridge, and multiple pump stations.	ma-TS-CPT-01
Coastal Hazards	Tsunami	Threat	ps-TS-CPT-03	Capitola is vulnerable to tsunamis from nearby and distant sources (e.g., Monterey Canyon and Aleutian trench), with flow depths projected as high as 30 feet in some scenarios.	ma-TS-CPT-01
Wildfire		Impact	ps-WF-CPT-01	Fire access and emergency response could be compromised along the Wharf Road, Park Ave, and other critical evacuation corridors in heavily vegetated areas, especially with eucalyptus.	ma-WF-CPT-01
Wildfire		Threat	ps-WF-CPT-02	Vegetated areas within drainage corridors like Soquel Creek and along bluffs like New Brighton pose fire risks to adjacent homes and structures due to unmanaged fuel buildup and high flammability, especially from eucalyptus.	ma-WF-CPT-01
Wildfire		Threat	ps-WF-CPT-03	Future wildfire hazards are expected to increase due to hotter, drier conditions and increased vegetation stress caused by climate change.	ma-WF-CPT-02
Coastal Hazards	Wave Run-Up & Surge	Impact	ps-WV-CPT-01	Wave surge caused by coastal storm events consistently erode areas like Capitola Beach, exposing underlying utility infrastructure and damaging trails and access points along the coastline.	ma-WV-SPD-02

1.5.4.1 Climate Change Impacts & Vulnerable Populations

The City of Capitola's vulnerable populations face heightened risks from the impacts of climate change, particularly flooding, coastal hazards, and aging infrastructure. Certain residents are at greater risk following a hazard event due to age, health, income, housing type, language access, or mobility limitations. Vulnerability is not uniform; an individual may be more at risk from one hazard, such as extreme heat, but less from another.

Flooding and Coastal Hazards: Nearly 1,000 residents live within the 1 percent annual chance floodplain along Soquel Creek and Noble Gulch, placing them at elevated risk of displacement and property damage. Flood risks are compounded by climate change-driven sea level rise, atmospheric river events, and limited stormwater capacity in areas such as Capitola Village. Low-income households and renters, many of whom do not have flood insurance, face disproportionate challenges in recovery. Residents and businesses along Depot Hill, Cliff Drive, and Park Avenue are also exposed to bluff failure and erosion risks, which are expected to worsen as storms intensify and sea levels rise.

Extreme Weather, Extreme Heat, and Infrastructure Stress: Capitola is expected to experience more frequent and severe coastal storms, heavy rain, and high winds, which threaten critical facilities such as City Hall, the Police Station, and Fire Station 4. Power outages pose particular risks for seniors, individuals with chronic health conditions, and residents dependent on medical equipment. Visitors who come to Capitola during peak tourist season, often to escape extreme heat in inland areas, increase demand for services during hazard events and complicate emergency response.

Earthquake and Liquefaction: Although not impacted by climate change, many Capitola residents live in mobile homes and older structures that are especially vulnerable to seismic shaking. Critical facilities, including the Police Station and Fire Station 4, are located in areas of very high liquefaction risk, raising the possibility of service disruption during a major earthquake. Renters and lower-income households face additional barriers in retrofitting or insuring their homes against seismic hazards.

Drought and Water Supply: Capitola relies heavily on the Soquel-Aptos groundwater basin, which has already experienced seawater intrusion from overdraft. Extended droughts worsen water scarcity and increase reliance on a stressed resource. Low-income households are disproportionately affected by water restrictions and may lack the resources to implement conservation measures or adapt to water shortages.

Wildfire and Secondary Hazards: While Capitola is not within designated very high fire hazard severity zones, heavily vegetated corridors such as Soquel Creek and nearby bluff areas pose localized wildfire risks. Eucalyptus and other flammable vegetation near evacuation routes such as Wharf Road and Park Avenue could compromise access during an event. Smoke and poor air quality from regional wildfires also create health risks for seniors, children, and those with respiratory conditions.

Tsunami and Wave Run-up: Over 1,600 Capitola residents, including those in Capitola Village, Venetian Court, and Lower Riverview, live within the tsunami inundation zone. A large event could cause extensive damage to housing, businesses, and critical facilities such as the Wharf and multiple pump stations.

Similarly, wave surge from coastal storms continues to erode Capitola Beach, threatening utilities and recreation access.

The cascading impacts of climate change on vulnerable populations require a targeted and equitable approach to mitigation. Prioritizing resilient infrastructure, affordable housing protections, and accessible emergency communications will help Capitola reduce disparities and strengthen community-wide preparedness.

1.6 Mitigation Strategy

This section provides the framework for how the City of Capitola will reduce hazard risk within its jurisdiction while supporting the broader goals of the Santa Cruz County MJHMP. It includes an overview of existing capabilities, opportunities to strengthen resilience, and the City's prioritized mitigation actions. Together, these elements demonstrate how Capitola integrates hazard awareness into its planning and development processes while contributing to a coordinated countywide approach.

Within the Santa Cruz County MJHMP, the mitigation strategy serves as the roadmap for future hazard mitigation efforts. For Capitola, the strategy outlined in this annex reflects the outcomes of the countywide planning process while also addressing the City's unique risks, priorities, and community needs. The strategy is designed to reduce vulnerabilities identified in the risk assessment, including the problem statements developed for flooding, earthquakes and liquefaction, slope failure, wildfire, drought, severe storms, extreme heat, and climate change.

Mitigation actions identified in this annex include both policy-based and project-based initiatives, with an emphasis on integrating resilience into land use planning, infrastructure investments, and community programs. Actions are structured to align with FEMA's requirements and to coordinate with existing city, county, and regional planning mechanisms. Each action identifies responsible parties, potential funding sources, and the resources needed for implementation.

For Capitola, this strategy provides a framework for strengthening resilience by combining city-led initiatives—such as infrastructure improvements, building code enforcement, and community preparedness—with regional coordination through the MJHMP. By advancing these efforts in alignment with the General Plan and other local planning documents, Capitola enhances its ability to reduce hazard risk while supporting long-term community safety, sustainability, and economic stability.

The subsections that follow describe these elements in detail:

- **Section 1.6.1 Aligning Action Planning** with Capabilities provides a summary of the City's capacity to address natural hazards.
- **Section 1.6.3 Mitigation Action Plan** presents Capitola's prioritized actions to guide implementation in coordination with countywide strategies.

1.6.1 Aligning the Action Plan

This section connects Capitola's mitigation actions with its existing capabilities and areas for growth. Capability assessments are a required element of hazard mitigation planning under the Disaster Mitigation Act of 2000 and FEMA's 2023 guidance, ensuring that actions are realistic, achievable, and aligned with available resources.

The section begins with a summary of Capitola's capabilities across four areas: planning and regulatory, administrative and technical, fiscal, and education and outreach. This overview highlights the tools and strengths that the district already uses to reduce hazard risk. The section then provides a detailed analysis of each capability area, identifying both current practices and opportunities to expand resilience.

1.6.1.1 Capabilities & Opportunities Assessment

To develop a realistic and actionable mitigation strategy, it must account for existing jurisdictional capabilities and what future opportunities there are to enhance those capabilities for purposes of hazard mitigation. This section provides an assessment of the City of Capitola's existing capabilities and future opportunities, including planning and regulatory, administrative and technical, fiscal, and public outreach and education capabilities. This assessment also identifies opportunities to integrate this MJHMP into future planning, policies, or programs to weave mitigation efforts into daily operations and address hazard problems wholistically. Capabilities are categorized into four groups and include various mechanisms.

- **Planning and Regulatory Capabilities:** Existing long-range plans, emergency response plans, hazard-specific plans, land use policies, and building and development standards.
- **Administrative and Technical Capabilities:** Available expertise in emergency services, engineering, grant management, and community planning.
- **Fiscal Capabilities:** Budgetary capacity, taxing authority, grants, and other funding mechanisms that can support mitigation projects.
- **Outreach and Education Capabilities:** Existing programs for providing technical assistance, community education, public warnings, and stakeholder engagement.

A full description of the process used to develop the capabilities assessment is provided in Volume 1, Section 2.3.3.

This capabilities and opportunities assessment for Capitola lists the various types of capabilities along with how they have been, currently are, or will in the future be integrated into hazard mitigation planning efforts. The three "HMP Integration" columns that identify the capability's status and usage are color-coded with green, yellow, or orange shading to communicate the following:

- **Status:** If the capability is present at all and what level of use it has generally.
- **Current Mitigation Use:** If the capability is currently being used in mitigation efforts, specifically, and at what level.

- **Future Opportunity:** If there is a future opportunity to integrate the capability into mitigation efforts and at what level.

Planning & Regulatory Capabilities

Capitola has a strong foundation of planning and regulatory tools to manage hazard risk. The City adopts and enforces the 2022 California Building Code (Municipal Code Chapter 15.04) and integrates hazard-specific ordinances, including Floodplain Management (Chapter 15.20) and Geological Hazards (Chapter 17.68). Development is guided by the 2019 General Plan, which incorporates Land Use, Safety, and Economic Development Elements, and reinforced by the 2024 Housing Element. Subdivision and zoning ordinances (Titles 16 and 17) regulate growth and restrict development in hazard-prone areas such as bluff erosion zones. Capitola also maintains a Floodplain Management Plan, an Urban Greening Plan, and a Climate Action Plan (2015, update planned for 2025–2026). The 2017 Coastal Climate Change Vulnerability Report and participation in the regional Community Wildfire Protection Plan (CWPP) further strengthen hazard-specific planning. Opportunities remain in seismic risk management, as Capitola has no dedicated unreinforced masonry or soft-story retrofit ordinance, and it does not yet participate in FEMA's Community Rating System (CRS), though future participation is identified as a priority.

Future integration of the MJHMP will occur through various processes and mechanisms outlined across multiple mitigation actions (Table 1-19). Key opportunities for future hazard mitigation integration with the city's existing planning mechanisms are to integrate climate resilience and accessibility criteria into capital improvement and adaptation funding decisions (ma-CC-CPT-01); revise Capitola's floodplain development regulations to address climate-adjusted rainfall, drainage system deficiencies, sea level rise, and coastal hazards data (ma-FL-CPT-03); and update the stormwater master plan to integrate atmospheric river storm frequency/intensity projections into design standards and capital planning (ma-HR-CPT-02).

Administrative & Technical Capacity

The City's Building, Planning, and Economic Development Department provides planning, engineering, and permitting support, while the Public Works Department manages stormwater, erosion control, and infrastructure maintenance. Capitola has a designated Building Official who also serves as the Floodplain Administrator. Fire inspection and development review are conducted by the Central Fire District of Santa Cruz County, and emergency management responsibilities are coordinated by the City Manager and Police Department in partnership with County OES. Staff expertise includes planners, engineers, and natural hazard specialists, although dedicated resiliency planning and GIS staffing are limited, with support largely provided throughout the County. Transportation planning, resilience planning, and grant writing are managed on an as-needed basis, typically through contracts or internal assignment.

Warning Systems & Services

Capitola participates in the regional CruzAware emergency alert system, which provides residents with notifications for floods, wildfires, geological hazards, and other threats. These warnings are integrated with

countywide systems, ensuring consistency and broad reach. Alerts are hazard-specific, including flooding, wildfire, and tsunami readiness, and are accessible to residents who register. While the City benefits from the County's designation as both StormReady and TsunamiReady, Capitola itself is not currently certified under these programs. Expanding local capacity for redundant alert systems, enhancing public enrollment in CruzAware, and pursuing StormReady or Firewise certification represent key opportunities to strengthen the City's warning capabilities.

Fiscal Capabilities

Capitola has several financial mechanisms to support hazard mitigation. Regular sources include capital improvement funds, system development fees, stormwater service fees, and Community Development Block Grants. Special taxes can be levied with voter approval, and funds have been directed to wharf and coastal infrastructure resilience projects. While the City can issue general obligation bonds and special tax bonds, it does not currently use these tools for hazard mitigation but could consider them for major capital resilience projects. Benefit assessments are also not in current use but represent a future opportunity. Spending is restricted in hazard-prone areas, particularly bluff erosion zones, through land use policies and zoning.

Education & Outreach Capabilities

Public outreach is conducted through multiple channels, though capacity remains limited. Hazard information is provided upon request through planning and building staff, and the City distributes a biweekly digital newsletter and biannual mailer with public safety information. The Police Department hosts National Night Out, and the Central Fire District regularly conducts safety events. Capitola participates in the regional CruzAware alert system for multi-hazard emergency notifications and supports CERT training through County OES. Partnerships with the Fire Safe Council and Resource Conservation District provide community-based engagement on fire safety, climate adaptation, and natural resource management. However, the city does not currently maintain a dedicated hazard-focused website, social media accounts, or Firewise certification, all of which are identified as future opportunities to expand community awareness and preparedness.

CAPABILITY ASSESSMENT LEGEND

HMP Integration

Status	Current Mitigation Use	Future Opportunity
Currently in use or present.	Used widely for mitigation.	Opportunity to expand and integrate.
(Sort of) Seldomly used or limited presence.	Limited use in mitigation planning.	Limited opportunity to expand and integrate.
(No) Not present or available.	Not used in mitigation planning.	No opportunity to expand or integrate.

Table 1-18: City of Capitola Capabilities and Opportunities Assessment

	HMP Integration			
Resource	Status	Current Mitigation Use	Future Opportunity	**Notes / Additional Detail**
Planning and Regulatory Capabilities				
Construction and Future Development Regulations				
Building Codes				City Municipal Code Chapter 15.04, Building Code, which adopts the 2022 California Building Code (California Code of Regulation, Title 24)
Public Protection (ISO Class)				Class 2
Hazard-Related Development Standards				City Municipal Code Title 16, Subdivisions, and Title 17, Zoning
Zoning Ordinance				City Municipal Code Title 17, Zoning
Hazard-Specific Ordinance				City Municipal Code Chapter 15.20, Floodplain Management, and Chapter 17.68, Geological Hazards District
Growth Management Ordinance				2019 City of Capitola General Plan (including Land Use and Safety Elements, and 2024 Housing Element)
Hazard Reduction Programs (Annually Conducted)				
Capital Improvements Program (CIP) or Plan				2014 City of Capitola Five Year Capital Improvement Program
Erosion/Sediment Control Program				City Municipal Code Chapter 15.28, Excavation and Grading
Hazard-Related Public Outreach Program				2019 City of Capitola General Plan Safety Element and 2025 City of Capitola Strategic Plan
Urban Water Management Plan				2014 Santa Cruz Integrated Regional Water Management Plan

Resource	HMP Integration: Status	HMP Integration: Current Mitigation Use	HMP Integration: Future Opportunity	Notes / Additional Detail
Stormwater Management Program (Annual Inspections)				City of Capitola 2010 Stormwater Management Plan and City Municipal Code Chapter 15.28, Excavation and Grading; large conveyances in the city also part of Flood Control and Water Conservation District, Zone 5, which is current under a master plan update; regular inspections performed in known problem areas
Seismic Safety Program (Non-structural)				City Municipal Code Chapter 15.04, Building Code; however, no separate unreinforced masonry ordinance or soft story retrofit program
Earthquake Modernization Plan (Building Safety)				City Municipal Code Chapter 15.04, Building Code; however, no separate earthquake modernization plan
Hazard Plans				
General Plan Safety Element				2019 City of Capitola General Plan Safety Element
Site Plan Review Requirements				City Municipal Code Chapter 17.120, Design Permits
General Plan Environmental Justice Element				No standalone element, but environmental justice goals are addressed under Housing and Land Use Elements
Community Wildfire Protection Plan (CWPP)				2022 Santa Cruz County and San Mateo County CWPP (Santa Cruz Central Planning Area)
Economic Development Plan				2019 City of Capitola General Plan Economic Development Element
Floodplain Management Plan				2019 City of Capitola General Plan Safety Element and City Municipal Code Chapter 15.20, Floodplain Management
Stormwater Management Plan				City of Capitola 2010 Stormwater Management Plan; large conveyances in the city are also part of Flood Control and Water Conservation District – Zone 5 which is current under a master plan update
Emergency Operations Plan				Currently Under Santa Cruz County Operational Area Emergency Management Plan; City plan to be developed in collaboration with County, per 2025 City of Capitola Strategic Plan
Climate Action Plan				2015 City of Capitola Climate Action Plan; to be updated in 2025-2026
Climate Vulnerability Assessment				2017 Coastal Climate Change Vulnerability Report to be updated 2026-27; covered under 2022 Santa Cruz County Climate Vulnerability Technical Compendium; to be included in next Safety Element update
Urban Greening Plan				2015 City of Capitola Climate Action Plan and City Municipal Code Chapter 12.12, Community Tree and Forest Management
Ground Water Management Planning / Plans				2014 Santa Cruz Integrated Regional Water Management Plan
National Flood Protection Program (NFIP)				

Resource	HMP Integration: Status	HMP Integration: Current Mitigation Use	HMP Integration: Future Opportunity	Notes / Additional Detail
Floodplain Management Regulations				City Municipal Code Chapter 15.20, Floodplain Management
Flood Insurance Education and Technical Assist.				Provided informally through city planning and building staff on request; future opportunity
Flood Insurance Study				2017 FEMA Flood Insurance Studies Adopted by Reference in City Municipal Code Chapter 15.20, Floodplain Management
Elevation Certificates				Maintained by Building, Planning, and Economic Development Department
Flood Hazard Mapping / Re-Mapping				2017 FEMA Flood Insurance Rate Maps Adopted by Reference in City Municipal Code Chapter 15.20, Floodplain Management
Community Rating System (CRS)				Not currently participating; will participate in the future, per 2019 City of Capitola General Plan Safety Element
Administrative and Technical				
Community Planning and Development Services				
Community Planner				Staff in Building, Planning, and Economic Development Department
Planner/Engineer (Land Development)				Staff in Building, Planning, and Economic Development Department
Engineer/Professional (Construction)				Staff in Public Works Department
Planner/Engineer/Scientist (Natural Hazards)				Staff in Public Works Department
Transportation Planner				No dedicated staff, but work completed by contract as needed
Resiliency Planner				No dedicated staff, but Public Works staff perform these functions
Building Official (Full time or Augmented)				Building Official housed in Building, Planning, and Economic Development Department
Floodplain Administrator				Building Official is designated Floodplain Administrator
Fire Marshal				Central Fire District of Santa Cruz County conducts development reviews and inspections
Dedicated Public Outreach Personnel				No dedicated staff, but City Manager's Office coordinates most outreach
GIS Specialist and Capability				No dedicated staff and limited capability; however, City utilizes Santa Cruz County GIS support
Emergency Manager				Emergency management responsibilities fall under City Manager and Police Department coordination with County OES
Dedicated Grant Manager, Writer, or Specialist				Building Official housed in Building, Planning, and Economic Development Department
Other	N/A	N/A	N/A	

Resource	HMP Integration: Status	HMP Integration: Current Mitigation Use	HMP Integration: Future Opportunity	Notes / Additional Detail
Warning Systems and Services				
General				Participates in Santa Cruz County's regional emergency alert system CruzAware
Flood				CruzAware alerts
Tornado				CruzAware alerts
Wildfire				CruzAware alerts
Geological Hazards				CruzAware alerts
Fiscal Capabilities				
Financial Resources (for Hazard Mitigation)				
Levy Taxes for Specific Purposes				Can levy special taxes via voter approval (e.g., wharf resiliency and jetty/flume rehabilitation projects)
Utilities Fees	N/A	N/A	N/A	Not a utility provider
Benefit Assessments				Not currently, future opportunity
Community Development Block Grants (CDBG)				City of Capitola Adopted Budget FY 2024-2025, CDBG Funding
System Development Fee				Collected on new housing development
General Obligation Bonds to Incur Debt				Bond issuance is authorized but not currently used for hazard mitigation; may be considered for public infrastructure protection/resilience for large capital projects, bridges, arterial roads, etc.
Special Tax Bonds to Incur Debt				No special tax bonds for hazard mitigation; may be considered for public infrastructure protection/resilience for large capital projects, bridges, arterial roads, etc.
Withheld Spending in Hazard-Prone Areas				Development is constrained in high-risk zones via managed retreat policies, zoning, and development standards (e.g., bluff erosion in Depot Hill/Grand Avenue area)
Stormwater Service Fees				City of Capitola Fee Schedule FY 2024-2025, Stormwater Development Review Fee
Capital Improvement Project Funding				City of Capitola Adopted Budget FY 2024-2025, Capital Improvement Fund
Education / Outreach Capabilities				
Education/Outreach Resources				
Website Dedicated to Hazard Topics				Not currently, future opportunity
Dedicated Social Media				Not currently, future opportunity
Local Citizen Groups That Communicate Hazard Risks				Fire Safe Council of Santa Cruz County
Hazard Info. Avail. at Library/ Planning Desk				Not currently, future opportunity
Annual Public Safety Events				Police Department hosts National Night Out and Central Fire District of Santa Cruz County conducts additional public safety events regularly

Resource	HMP Integration: Status	HMP Integration: Current Mitigation Use	HMP Integration: Future Opportunity	Notes / Additional Detail
Ability to Field Public Tech. Assistance Requests				Requests related to hazard information, code enforcement, and stormwater handled via general service request system
Public Safety Newsletters or Printed Outreach				Biweekly digital newsletters and biannual mailer often include hazard and public safety information
Community Emergency Response Team (CERT)				Participants in Santa Cruz County CERT hosted through County OES with local training options
Fire Safe Councils				Covered by Fire Safe Council of Santa Cruz County
Firewise				Not currently, future opportunity
StormReady				City does not participate, but Santa Cruz County is both StormReady and TsunamiReady
Resource Conservation Districts				Resource Conservation District of Santa Cruz County supports groundwater recharge, fire fuel management, and climate education
Other	N/A	N/A	N/A	

1.6.2 City of Capitola Mitigation Action Plan

Capitola's mitigation actions were developed through a collaborative process informed by the updated risk assessment, local priorities, and extensive stakeholder engagement. As part of this 2025 MJHMP update, the City reviewed mitigation actions from its prior Local Hazard Mitigation Plan to determine which actions to carry forward, which to consolidate, and where entirely new strategies were required. This careful evaluation ensured that the updated action plan builds upon past commitments while also responding to current risks and future challenges.

The plan addresses Capitola's most significant hazards, including flooding, earthquakes, severe storms, drought, wildfire, extreme heat, and climate change. Each mitigation action is designed to align with FEMA's hazard mitigation guidance and the requirements of the Disaster Mitigation Act of 2000. Where appropriate, overlapping or

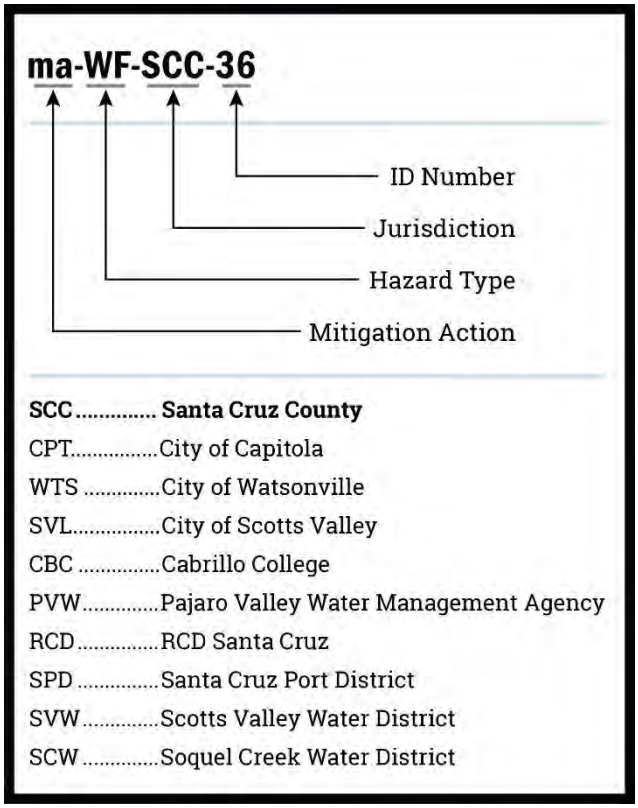


Figure 1-23: Mitigation Action Number Key

redundant actions were consolidated into broader, more comprehensive strategies that improve clarity, increase feasibility, and strengthen regional coordination.

The mitigation action prioritization method used by all participating jurisdictions is described in Volume 1, Section 4. Each action specific to Capitola is documented in Table 1-19, which identifies the responsible department, implementation timeframe, potential funding sources, and resources required to complete the action. Each action is also assigned a unique alphanumeric identifier (see Figure 1-23) that links the strategy to its associated hazard and supports consistent monitoring and reporting.

Capitola's approach recognizes that some hazards are most effectively addressed through regional efforts. Flood protection, drought resilience, and wildfire risk reduction often extend beyond the city's boundaries and require collaboration with county, regional, and state partners. By aligning local actions with regional strategies, Capitola helps to consolidate resources, maximize funding opportunities, and ensure that mitigation projects achieve the greatest benefit for the Pajaro Valley and the wider Santa Cruz County community.

Collectively, these mitigation actions provide a roadmap for reducing hazard risk, protecting vulnerable populations, and strengthening the long-term resilience of Capitola.

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Table 1-19: City of Capitola Mitigation Action Plan

Hazard	Action ID	Action Title	Description	FEMA Mitigation Alternative	Timeline	Responsibility	Cost	Benefit	Internal Funding Source	External Funding Source	Priority (Based on Criteria)	Problems Addressed
All Hazard	**ma-AH-CPT-01**	Emergency Shelter Activation Plan	In partnership with the County and Cities of Santa Cruz, Scotts Valley, and Watsonville, expand formal procedures and funding for activating, staffing, and advertising emergency shelters for all types of hazard events.		Short 1-3 Years	City Community Services & Recreation + County, City of Santa Cruz, City of Scotts Valley, City of Watsonville, and other regional partners	Low	High	General Fund – Community Services & Recreation Department	FEMA HMGP; Cal OES Emergency Management Performance Grant (EMPG); County OES; CDBG-DR	High	ps-EH-WTS-04, ps-AH-SCC-02, ps-CS-CPT-01, ps-CS-SPD-02, ps-FL-WTS-01, ps-LQ-CPT-01, ps-LQ-CPT-02, ps-LQ-WTS-01, ps-EH-CPT-01, ps-EH-CPT-03, ps-EH-CPT-04, ps-FL-CPT-01
Climate Change	**ma-CC-CPT-01**	Equity-Based Adaptation	Integrate climate resilience and accessibility criteria into capital improvement and adaptation funding decisions, prioritizing projects that reduce risk to essential infrastructure, coastal and flood-prone areas, and facilities serving vulnerable populations.	PRV	Short 1-3 Years	City Planning, Sustainability, and City Council	Low	Medium	General Fund, CIP	Cal OES Hazard Mitigation Grant Program (HMGP); FEMA BRIC; Coastal Conservancy Climate Ready; Caltrans SB1 Adaptation Planning; OPC SB1	High	ps-CC-SCC-03, ps-CC-CPT-01, ps-CC-CPT-02, ps-DR-CPT-01, ps-EH-CPT-03, ps-EH-CPT-04, ps-WV-CPT-01
Coastal Hazards (Coastal Erosion)	**ma-CE-CPT-01**	Coastal Bluff Stabilization	Implement a phased stabilization plan along Cliff Drive and other high-risk bluff areas using erosion-resistant materials, drainage improvements, and revegetation to reduce bluff collapse risk.	SP, NRP	Medium 3-5 Years	City Public Works + Coastal Commission	High	High	CIP	FEMA HMGP; FEMA BRIC; Coastal Conservancy; Cal OES 406 Mitigation; OPC SB1; Prop 68; USACE CAP Section 103	High	ps-CE-CPT-01, ps-CE-CPT-02, ps-CE-CPT-03, ps-CE-SCW-01, ps-CE-CPT-01, ps-CC-CPT-02, ps-CH-CPT-01, ps-SF-CPT-01, ps-WV-CPT-01
Coastal Hazards (All)	**ma-CH-CPT-01**	Beach, Wharf & Esplanade Protections	Retrofit, harden, elevate, or install other protections for vulnerable portions of the Capitola Beach, the Wharf, the Esplanade, and critical infrastructure to withstand storm surge and wave run-up, including both natural and built mitigation measures that limit "coastal squeeze."	SP, PPRO, NRP	Long 5-10 Years	City Public Works + Coastal Commission	High	High	CIP	FEMA BRIC; Coastal Conservancy; HUD CDBG-MIT; Cal OES HMGP; NOAA Coastal Resilience; OPC SB1; Prop 68	Very High	ps-CH-CPT-01, ps-CC-CPT-02, ps-CC-CPT-03, ps-CE-CPT-01, ps-CH-CPT-01, ps-SLR-CPT-01, ps-SLR-CPT-02, ps-SW-CPT-01, ps-WV-CPT-01
Drought	**ma-DR-CPT-01**	Water Conservation Incentives Program	Provide incentives and permitting assistance for plumbing and irrigation upgrades, drought-tolerant landscaping, graywater systems, and other conservation measures that offset water demand from residential and industry uses.	PE&A, NRP	Long 5-10 Years	City Planning + County, Santa Cruz Water, SCWD	High	High	Planning Department Budget; General Fund	DWR Water Use Efficiency Grant; Cal OES HMGP; CAPP; Prop 1 Integrated Regional Water Management (IRWM)	Medium	ps-DR-CPT-01, ps-DR-CPT-02,ps-DR-CPT-03, ps-DR-CPT-04
Drought	**ma-DR-CPT-02**	Drought Resilience Education	In collaboration with regional partners, provide ongoing outreach on water conservation, drought contingency planning, and resources available through Capitola, the RCD, and water providers.	PE&A	Short 1-3 Years	City Public Works + RCD, County, Water Providers	Medium	Medium	Staff Time / General Fund	DWR Urban Drought Grant; Cal OES HMGP; State Water Resources Control Board; IRWM Program	High	ps-DR-CPT-03, ps-DR-CPT-01, ps-DR-CPT-04, ps-DR-CPT-02
Earthquake	**ma-EQ-CPT-01**	Critical Facility Seismic Protection	Assess seismic vulnerability and retrofit critical facilities such as City Hall/EOC, Fire Station #4, and the Police Station to ensure operational continuity after a major earthquake.	PPRO, SP	Short 1-3 Years	City Public Works and Facilities	High	High	Facilities Reserve Fund; Public Works CIP	FEMA HMGP; FEMA BRIC; Cal OES Earthquake Mitigation Program; CDBG-MIT; USGS Earthquake Hazards Program	Medium	ps-EQ-CPT-02, ps-EQ-SVL-04, ps-EQ-SCC-04, ps-EQ-CPT-04, ps-LQ-CPT-01, ps-LQ-CPT-02
Earthquake	**ma-EQ-CPT-02**	Seismic Safety Assistance Program	In collaboration with the state and county, develop incentives and technical assistance for seismic evaluation and retrofitting of mobile homes, older multifamily buildings, and soft-story structures at high risk.	PPRO	Long 5-10 Years	City Building and Housing + County	Medium	Medium	PLHA	FEMA BRIC; Cal OES Earthquake Mitigation; Cal HCD Multifamily Retrofit Pilot; State Seismic Retrofit Grant Program	High	ps-EQ-CPT-01, ps-EQ-CPT-03, ps-EQ-SVL-04, ps-EQ-WTS-07, ps-EQ-SCC-02, ps-EQ-SCC-05, ps-EQ-CPT-04, ps-LQ-CPT-02

Hazard	Action ID	Action Title	Description	FEMA Mitigation Alternative	Timeline	Responsibility	Cost	Benefit	Internal Funding Source	External Funding Source	Priority (Based on Criteria)	Problems Addressed
Earthquake	**ma-EQ-CPT-03**	Lifeline Infrastructure Seismic Assessment	Conduct a seismic vulnerability assessment for roads, pipelines, bridges, communications systems, and other lifeline infrastructure in high-risk zones.	PRV	Short 1-3 Years	City Public Works and Utilities	Medium	Medium	CIP	FEMA BRIC; Caltrans Planning Grant; Cal OES HMGP; USGS NEHRP	High	ps-EQ-CPT-02, ps-EQ-CBC-02, ps-EQ-SVL-03, ps-EQ-CPT-04, ps-EQ-SCC-03, ps-EQ-WTS-05, ps-LQ-CPT-01, ps-LQ-CPT-02
Earthquake	**ma-EQ-CPT-04**	Earthquake Resilience Campaign	Launch a multilingual outreach effort about earthquake preparedness, home safety checks, development regulations, retrofit resources, and evacuation protocols.	PE&A	Short 1-3 Years	City Planning and Police + Fire District, County, CBOs	Medium	Medium	General Fund – Police & Planning	Cal OES Earthquake Education & Awareness; FEMA Ready Campaign	High	ps-EQ-SVL-01, ps-EQ-CPT-01, ps-EQ-CPT-03, ps-EQ-CPT-04, ps-LQ-CPT-02
Extreme Heat	**ma-ET-CPT-01**	Home Weatherization Incentives Program	In coordination with 3CE and federal assistance programs, conduct outreach and provide incentives and permitting assistance for residential improvements to energy efficiency, especially for older homes and mobile homes vulnerable to heat.	PE&A	Short 1-3 Years	City Planning, Sustainability, and Housing + PG&E, County	Low	Medium	Staff Time / General Fund	Central Coast Community Energy (3CE); LIHEAP; CPUC Empower Program; Cal OES BRIC; DOE Weatherization Assistance Program	Medium	ps-EH-CPT-01, ps-EH-CPT-04, ps-EH-SVL-01, ps-EH-SVL-02, ps-EH-WTS-02, ps-EH-CPT-02, ps-EH-CPT-03, ps-EH-CPT-04
Flood	**ma-FL-CPT-02**	Critical Facility Flood Protection	Elevate, floodproof, or relocate essential City facilities (e.g., Police Station, City Hall/EOC) located in flood hazard areas to maintain continuity of operations.	PPRO, SP	Medium 3-5 Years	City Public Works and Planning	High	High	Facilities Reserve Fund, Public Works, CIP	FEMA HMGP; FEMA FMA; CDBG-MIT; Cal OES 406 Mitigation; State FloodSAFE Program	Medium	ps-FL-CPT-04, ps-CS-CPT-01, ps-FL-CPT-02
Flood	**ma-FL-CPT-01**	Soquel Creek Floodplain Restoration	Improve drainage infrastructure and use nature-based adaptations along Soquel Creek and Noble Gulch to reduce flood risk and protect downstream assets.	NRP	Medium 3-5 Years	City Public Works + Resource Agencies	High	High	PLHA	FEMA FMA; FEMA HMGP; CDFW Prop 1; Coastal Conservancy; OPC SB1; NOAA Habitat Restoration	High	ps-FL-CPT-01, ps-FL-CPT-02, ps-FL-CPT-03, ps-FL-CPT-05
Flood	**ma-FL-CPT-03**	Flood Hazard Mapping & Policy Updates	Revise Capitola's flood hazard maps and update development regulations to address climate-adjusted rainfall, drainage system deficiencies, sea level rise, and coastal hazards data.	PRV	Long 5-10 Years	City Planning and Public Works + County	Medium	High	Planning Department Budget	NOAA Climate Adaptation Program; Cal OES HMGP; Coastal Conservancy	High	ps-FL-WTS-08, ps-FL-CPT-05, ps-CS-CPT-01, ps-FL-CPT-01, ps-FL-CPT-02, ps-SW-CPT-01
Severe Weather (Heavy Rain)	**ma-HR-CPT-01**	Village Drainage Improvements	Upgrade drainage infrastructure in and around Capitola Village, including installation of backflow prevention and capacity upgrades.	SP	Medium 3-5 Years	City Public Works	High	High	CIP Fund, Zone 5	FEMA FMA; State Prop 1 Stormwater Grant; Cal OES HMGP; Coastal Conservancy	High	ps-HR-CPT-01, ps-CS-CPT-01, ps-FL-CPT-01, ps-FL-CPT-02, ps-FL-CPT-03, ps-FL-CPT-06, ps-SW-CPT-01
Severe Weather (Heavy Rain)	**ma-HR-CPT-02**	Stormwater Master Plan & Policy Update	Update stormwater master plan for county Zone 5 to integrate atmospheric river storm frequency/intensity projections into drainage design standards and capital planning.	PRV	Short 1-3 Years	City Planning and Public Works	Low	High	Public Works Operations Budget, Zone 5	FEMA HMGP; Cal OES Planning Grant; State Prop 1 Technical Assistance; NOAA Climate Program	High	ps-HR-WTS-01, ps-HR-WTS-02, ps-FL-CPT-02, ps-FL-CPT-03, ps-HR-CPT-01, ps-SW-CPT-01
Severe Weather (High Wind)	**ma-HW-CPT-01**	Windstorm Infrastructure Protection	Conduct a citywide inventory of trees along critical corridors susceptible to windstorms and trim or remove high-risk trees near powerlines, access routes, and other critical facilities and infrastructure. Conduct regular maintenance thereafter.	NRP	Medium 3-5 Years	City Public Works	Medium	High	Public Works Operations, Tree Fund	PG&E Vegetation Management Partnership; FEMA HMGP; Cal Fire Urban Forestry Grant	Medium	ps-HW-SCC-01, ps-HW-CPT-01
Sea Level Rise	**ma-SLR-CPT-01**	Coastal Adaptation Planning	Identify and assess high-hazard areas exposed to seal level rise and increasingly frequent and severe coastal hazards, and establish criteria to prioritize public investments in public infrastructure for integration into capital improvements planning.	PRV	Medium 3-5 Years	City Planning and Public Works	Low	Medium	Planning & Public Works Budgets; CIP fund	Coastal Conservancy; FEMA BRIC; OPC SB1; Cal OES Adaptation Planning	Medium	ps-SLR-CPT-01, ps-SLR-CPT-02, ps-CC-CPT-02, ps-CC-CPT-03, ps-CE-CPT-01, ps-CE-CPT-02, ps-CE-CPT-03, ps-CH-CPT-01, ps-CS-CPT-01, ps-FL-CPT-06, ps-WV-CPT-01

Hazard	Action ID	Action Title	Description	FEMA Mitigation Alternative	Timeline	Responsibility	Cost	Benefit	Internal Funding Source	External Funding Source	Priority (Based on Criteria)	Problems Addressed
Slope Failure	**ma-SF-CPT-02**	Slope Failure Risk Assessment & Monitoring	In collaboration with partner agencies, conduct slope stability modeling and risk mapping for Soquel Creek, Noble and Tannery Gulches, and other steep drainage areas susceptible to failure, especially during heavy rain events. Install mitigation measures and geotechnical monitoring (e.g., tiltmeters) for the highest risk slopes to detect early signs of instability.	PRV	Long 5-10 Years	City Planning and Public Works + County, RCD, NRCS, and geotechnical consultants	High	High	CIP Fund	FEMA HMGP; Cal OES Planning Grant; USGS Landslide Hazard Program; Coastal Conservancy	High	ps-SF-CPT-01, ps-SF-CPT-02, ps-SF-CPT-03, ps-CE-CPT-03, ps-WV-CPT-01
Coastal Hazards (Tsunami)	**ma-TS-CPT-01**	Tsunami Evacuation Signage & Drills	Install updated tsunami evacuation signage and regularly conduct tabletop drills with partner agencies (e.g., schools, businesses, CBOs) in high-risk areas.	PE&A	Short 1-3 Years	City Emergency Management and Police + Fire District, County	Low	Medium	General Fund – Police & Emergency Management	FEMA HMGP; Cal OES TsunamiReady; NOAA Tsunami Hazard Mitigation	High	ps-TS-CPT-01, ps-TS-CPT-02, ps-TS-CPT-03
Wildfire	**ma-WF-CPT-01**	Park Avenue Fuel Management	Implement a city-led vegetation management program focused on heavily vegetated areas along Park Ave (e.g., eucalyptus), in partnership with Central Fire, CAL FIRE, the RCD, and private landowners.	NRP	Short 1-3 Years	City Public Works + RCD, CAL FIRE	Medium	High	Public Works Operations, Measure Q	Cal Fire Prevention Grant; FEMA HMGP; Cal OES BRIC; RCD Grants; Fire Safe Council	Medium	ps-WF-CPT-01, ps-WF-CPT-02, ps-WF-CPT-03
Wildfire	**ma-WF-CPT-02**	Wildfire Awareness & Education	Develop and distribute multilingual outreach materials and digital tools about fire-safe landscaping, home hardening, and climate-driven wildfire risk.	PE&A	Short 1-3 Years	City Planning and Sustainability + Fire District, County	Low	Medium	Staff Time / General Fund	Cal Fire Prevention Grant; FEMA HMGP; Firewise USA; Cal OES Public Education Grants	High	ps-WF-CPT-01, ps-WF-CPT-02, ps-WF-CPT-03

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1.6.3 Status of Previous Mitigation Actions

In 2020, the City of Capitola adopted its previous FEMA-approved HMP. This 2025 MJHMP represents a comprehensive update from that previous plan, as discussed in Volume 1, Section 1.5. Table 1-20 provides status updates for all of the previous mitigation actions in the 2020 City of Capitola HMP, from which many of the mitigation actions in Table 1-19 were sourced and revised.

Table 1-20: Status of 2020 City of Capitola Mitigation Actions

Action ID	Description	Status
1-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.	Combined and revised into ma-EQ-CPT-02, ma-EQ-CPT-04
1-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.	Combined and revised into ma-EQ-CPT-02, ma-EQ-CPT-04
1-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.	Combined and revised into ma-EQ-CPT-01, ma-EQ-CPT-03
1-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.	Combined and revised into ma-EQ-CPT-03
1-E	Continue training appropriate plan check staff on seismic requirements for new and existing structures.	Combined and revised into ma-EQ-CPT-02, ma-EQ-CPT-04
2-A	Evaluate the likelihood of debris flow impacts to the Stockton Avenue bridge during a catastrophic flooding event.	Combined and revised into ma-FL-CPT-03
2-B	Improve the Noble Gulch storm drain facilities to protect against flooding within the Capitola Village.	Combined and revised into ma-FL-CPT-01, ma-HR-CPT-01
2-C	Relocate or elevate critical facilities (e.g. City hall, police, fire, etc.) above the level of the 100-year flood elevation.	Combined and revised into ma-FL-CPT-02
2-D	Continue to implement the Soquel Creek Lagoon Management Plan.	Cancelled, ongoing baseline mitigation activity
2-E	Participate in the National Weather Service (NWS) Storm Ready Program	Cancelled, reprioritized toward direct mitigation activities

Action ID	Description	Status
2-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).	Combined and revised into ma-FL-CPT-01, ma-HR-CPT-01
2-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.	Combined and revised into ma-FL-CPT-03
2-H	Limit development and monitor conditions of development and grading permits to prevent sedimentation in natural channels and wetlands.	Combined and revised into ma-FL-CPT-01
2-I	Develop more accurate GIS maps of the City's drainage system in coordination with future updates of the Capitola Stormwater Management Program.	Combined and revised into ma-FL-CPT-03
2-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.	Combined and revised into ma-FL-CPT-03
2-K	Continually monitor and review FEMA's National Flood Insurance Program (NFIP) requirements to ensure the City's floodplain management regulations are in compliance.	Combined and revised into ma-FL-CPT-03
2-L	Participate in the FEMA NFIP Community Rating System (CRS).	Cancelled, being implemented under General Plan
2-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.	Cancelled, ongoing baseline mitigation activity
2-N	Review and update the city's existing ordinances as they relate to storm / flooding hazards, consistent with the risks identified in this LHMP.	Combined and revised into ma-FL-CPT-03
2-O	Adopt policies to limit municipal capital improvements that would be at risk.	Combined and revised into ma-FL-CPT-02, ma-SLR-CPT-01
2-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).	Combined and revised into ma-FL-CPT-01
2-Q	Investigate natural habitat buffering to reduce coastal flooding such as beach and kelp management.	Combined and revised into ma-CH-CPT-01
2-R	Upgrade vulnerable storm drains with tidal flap gates and pumps, as appropriate.	Combined and revised into ma-FL-CPT-01, ma-HR-CPT-01
2-S	Investigate various opportunities for beach nourishment and replenishment in concert with rebuilding the City's groin located at the east end of the main beach.	Combined and revised into ma-CE-CPT-01, ma-CH-CPT-01

Action ID	Description	Status
2-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.	Combined and revised into ma-CE-CPT-01, ma-CH-CPT-01, ma-SF-CPT-02, ma-SLR-CPT-01
2-U	Prioritize coastal protection structures for upgrade and replacement including the sea wall along The Esplanade and coastal revetments.	Combined and revised into ma-CH-CPT-01
2-V	Consider resiliency improvements to protect and maintain critical vehicular and non-vehicular coastal access ways.	Combined and revised into ma-CE-CPT-01, ma-CH-CPT-01, ma-SF-CPT-02, ma-SLR-CPT-01
2-W	Adopt policies to limit municipal capital improvements that would be at risk.	Combined and revised into ma-FL-CPT-02, ma-SLR-CPT-01
2-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.	Combined and revised into ma-FL-CPT-01, ma-HR-CPT-01
2-Y	Identify priority areas for future protection accounting for costs, structural feasibility and secondary implications (flood wall, seawall or revetment).	Combined and revised into ma-CE-CPT-01, ma-CH-CPT-01, ma-SF-CPT-02, ma-SLR-CPT-01
2-Z	Investigate long-term options to manage sea level rise and coastal erosion such as living shorelines, soft armoring techniques, and relocation of development within coastal hazard zones. As part of this investigation, consider the preparation of a comprehensive, long-term proactive management plan to protect Depot Hill in a way that preserves the natural coastline and avoids hard armoring.	Combined and revised into ma-CE-CPT-01, ma-CH-CPT-01 ma-SF-CPT-02, ma-SLR-CPT-01
3-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.	Combined and revised into ma-DR-CPT-01, ma-DR-CPT-02
3-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	Combined and revised into ma-DR-CPT-01
3-C	Coordinate with the Soquel Creek Water District and City of Santa Cruz to inform public of water conservation restrictions and drought conditions.	Combined and revised into ma-DR-CPT-01, ma-DR-CPT-02
4-A	Coordinate with Pacific Gas & Electric to implement an ongoing tree trimming program for trees located in close proximity to overhead power lines.	Combined and revised into ma-HW-CPT-01
4-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.	Cancelled, ongoing baseline mitigation activity

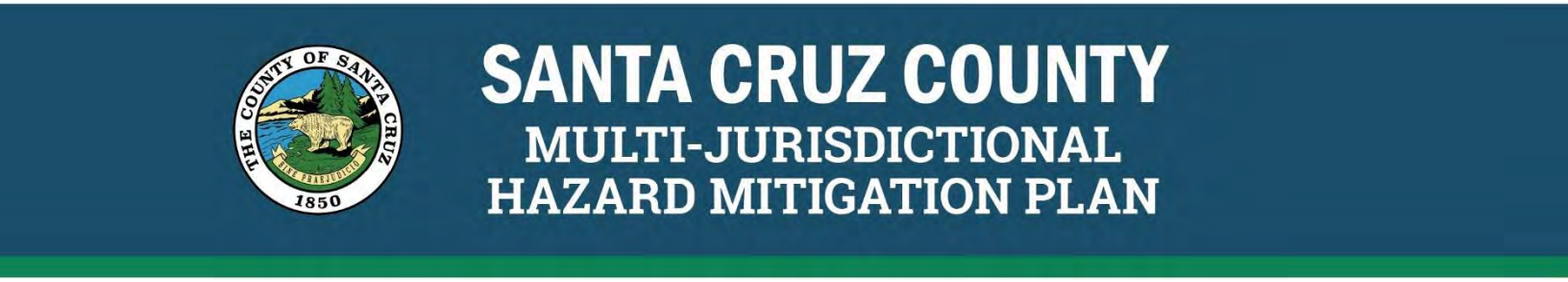
Action ID	Description	Status
5-A	Work in close coordination with state and local agencies and organizations to protect and preserve the coastline and its coastal bluffs through restoration efforts to help ensure safe coastal access and the protection of adjacent infrastructure and facilities. These efforts may include beach replenishment, coastal bluff protection, seawall construction, and other appropriate measures.	Combined and revised into ma-CE-CPT-01, ma-CH-CPT-01, ma-SF-CPT-02, ma-SLR-CPT-01
6-A	Continue implementation of Tsunami Ready Program	Combined and revised into ma-TS-CPT-01
6-B	Maintain a public communication system to warn the public of a potential tsunami threat.	Combined and revised into ma-TS-CPT-01
6-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	Cancelled, reprioritized toward direct mitigation activities
6-D	Continue to work collaboratively with relevant agencies and organizations to investigate tsunami threat to the City based on the best available information.	Combined and revised into ma-TS-CPT-01
7-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.	Cancelled, reprioritized toward natural hazards and implemented by other plans
7-B	Support staff training and education requirements regarding emergency response procedures associated with transportation-based hazardous materials releases.	Cancelled, reprioritized toward natural hazards and implemented by other plans
7-C	Continue to coordinate the Urban Area Security Initiative to enhance preparedness efforts.	Cancelled, reprioritized toward direct mitigation activities
8-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)	Combined and revised into ma-WF-CPT-01
8-B	Continue to maintain cooperative fire protection and fire prevention agreements with the Central Fire Protection District and other relevant agencies.	Cancelled, ongoing baseline mitigation activity
8-C	Identify inadequate access roadways. Develop a program to address inadequacies.	Combined and revised into ma-WF-CPT-01, ma-HW-CPT-01, ma-SLR-CPT-01, ma-EQ-CPT-03, ma-CE-CPT-01
8-D	Promote land use planning and implement building codes to reduce incidence of human-caused wildfires especially in very high fire hazard areas.	Combined and revised into ma-WF-CPT-02

Action ID	Description	Status
8-E	Implement building codes relevant to fire protection in new development or major renovations. (i.e. built-in fire extinguishing and fire alarm systems)	Combined and revised into ma-WF-CPT-02
8-F	Work cooperatively with Central Fire Protection District, CalFire, and other relevant agencies to promote the implementation and awareness of fire prevention programs.	Combined and revised into ma-WF-CPT-02
9-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.	Combined and revised into ma-SF-CPT-02
10-B	Coordinate hazard mitigation progress/efforts with the Santa Cruz County Office of Emergency Services and other agencies and cities within Santa Cruz County.	Cancelled, ongoing baseline mitigation activity
10-C	Continue to work with Santa Cruz 911 and other relevant agencies to maintain a coordinated and effective emergency communication system.	Combined and revised into ma-FL-CPT-03, ma-SF-CPT-02
10-D	Continue to update and enhance mapping data and the City's GIS for all hazards.	Cancelled, ongoing baseline mitigation activity
10-E	Verify the replacement value of Cityowned critical facilities and coordinate with other agencies for non city-owned facilities to improve the risk assessment within this plan.	Cancelled, reprioritized toward direct mitigation activities
10-F	Work with the appropriate cellular phone service providers to ensure there is always adequate cellular services to critical facilities within the City.	Cancelled, ongoing baseline mitigation activity
10-G	Reference and integrate the City's Local Hazard Mitigation Plan into the Safety Element of the General Plan.	Completed
10-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.	Completed
10-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.	Completed
10-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).	Cancelled, ongoing baseline mitigation activity
10-K	Review and update the city's existing ordinances as they relate to hazards and risks identified in this LHMP.	Combined and revised into ma-FL-CPT-03

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Section 2. City of Scotts Valley

Municipal Annex



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Santa Cruz County

2025 Multi-Jurisdictional Hazard Mitigation Plan

Volume 2, Section 2: City of Scotts Valley (SVL)

Municipal Annex

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Adoption Record

To comply with the Federal Disaster Mitigation Act of 2000 (DMA 2000), the City of Scotts Valley has officially adopted this 2025 Santa Cruz County Multi-Jurisdictional Hazard Mitigation Plan, including Volume 1 in its entirety as well as this Volume 2 Municipal annex. The adoption of the MJHMP recognizes the city's commitment to reducing the impacts of natural hazards within its jurisdiction and across Santa Cruz County.

A copy of the city's adoption record is provided on the following pages. Adoption records for all jurisdictions are summarized in Volume 1, Table ES-1.

RECORD TO BE ADDED UPON ADOPTION

Section 2. City of Scotts Valley

2.1 Scope & Purpose

This annex details the elements specific to the City of Scotts Valley in the 2025 Santa Cruz County Multi-Jurisdictional Hazard Mitigation Plan (MJHMP). This annex is not intended to be a standalone document but appends to and supplements the information contained in the umbrella plan document (Volume 1). As such, all sections of the umbrella plan, including the planning process and other procedural requirements, apply to and were met by the city. This annex provides additional information specific to the city, with a focus on providing additional details on the planning process, risk assessment, and mitigation strategy for this jurisdiction.

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2.2 Jurisdictional Setting

The City of Scotts Valley is an incorporated municipality located in northern Santa Cruz County, California, approximately six miles north of Santa Cruz and 30 miles southwest of San Jose, with an average elevation of 570 feet above sea level. The current population is approximately 12,183 and the Scotts Valley General Plan projects the city to grow to a population of 15,804 by 2045.

It lies within the coastal foothills of the Santa Cruz Mountains, and is bisected by State Route 17, a major regional corridor connecting Silicon Valley to Monterey Bay. The city was officially incorporated on August 2, 1966, in response to growing local interest in self-governance and land use control following postwar suburban expansion and proposals for annexation by the City of Santa Cruz.

Scotts Valley operates under a Council–Manager form of government, with a five-member City Council elected at-large and supported by a full-time City Manager. The city directly provides public services such as police protection, wastewater treatment, recreation, land use planning, and road maintenance. Fire protection services are provided by the independent Scotts Valley Fire Protection District (SVFPD), and water supply and groundwater management are provided by the Scotts Valley Water District (SVWD). These special districts serve the same general area as the city but are governed separately and play integral roles in hazard mitigation and response planning.

The incorporated boundary of Scotts Valley spans approximately 4.6 square miles, while its broader Planning Area covers around 8.3 square miles, extending into adjacent unincorporated areas that are influenced by or affect City operations and infrastructure. The Sphere of Influence, shown in Figure 2-1, established by the Santa Cruz County Local Agency Formation Commission (LAFCO) in 1985, defines the anticipated long-term boundary and service area of the City and includes areas that may be annexed in the future.

Topographically, Scotts Valley occupies a valley floor surrounded by steep forested hills and ridgelines, with key drainage corridors such as Carbonera Creek and Bean Creek traversing the urbanized core. The city's land use pattern is shaped by these natural features, with lower-density hillside residential neighborhoods such as Whispering Pines, Glen Canyon, and Hacienda/Cadillac developed on slopes, and higher-density residential, commercial, and civic uses concentrated in the valley floor. The primary commercial corridors are critical transportation and economic lifelines but are also highly exposed to traffic congestion and potential hazard impacts during emergencies.

Scotts Valley is largely built out, with future development expected to occur through infill and redevelopment. The Town Center is envisioned as a mixed-use, pedestrian-friendly downtown core, and its phased buildout represents one of the most significant planning and capital priorities for the city.

Scotts Valley continues to grow steadily, with ongoing efforts in urban planning, housing development, transportation improvements, and flood mitigation projects that reflect the city's forward-thinking approach to resilience and livability.

- **Date of Incorporation:** August 2, 1966
- **Current Population:** 12,183 (CAS 5-Year, 2018-2023)
- **Population Growth:** The city has experienced an estimated population increase of 8% between 2010 and 2023

2.2.1 Geography & Climate

The City of Scotts Valley is located in the central portion of Santa Cruz County, nestled within the Santa Cruz Mountains, a subrange of the Pacific Coast Ranges. The city's geography is defined by a narrow valley floor surrounded by steep, forested hillsides, with elevations ranging from approximately 500 to 1,200 feet above sea level. This rugged topography plays a central role in shaping land use patterns, development constraints, watershed function, and hazard exposure.

The valley itself is largely urbanized, with the densest development concentrated along Mount Hermon Road, Scotts Valley Drive, and adjacent residential neighborhoods. In contrast, the outer edges of the city, particularly in the western and southern hillsides, remain more sparsely developed and are characterized by extensive redwood forests, steep slopes, and natural drainage corridors such as Bean Creek and Carbonera Creek. Figure 2-1 provides a regional location map

Scotts Valley is typical of a mountain/alluvial environment. The alluvial valleys of Carbonera Creek and Camp Evers Creek form the historic and modern core of the urban area, which is bordered by mountains. most of the Scotts Valley uplands have steep hillsides, some of which are over 40% slope. Steep banks near the area's creeks are often evidence of the erosive force of floodwaters and may be hazardous. Limited areas of moderately steep slope (25%-40%) exist within the Scotts Valley planning Area. Gentle slopes (0%-25%) are found on mountain ridges in the Granite Creek, Glenwood, and Carbonera Creek valley, lower Bean Creek Road, Whispering Pines, and La Cuesta Drive areas and in most of the Mount Hermon Road area.

Scotts Valley experiences a mild Mediterranean climate with cool, wet winters and warm, dry summers. The average monthly temperature ranges from 54.3 degrees Fahrenheit (°F) in December to 67.7 °F in September. The city receives substantial annual rainfall due to its location within the orographic rainfall zone of the Santa Cruz Mountains. Figure 2-2 shows that the city receives between 35 and 50 inches of rainfall annually.

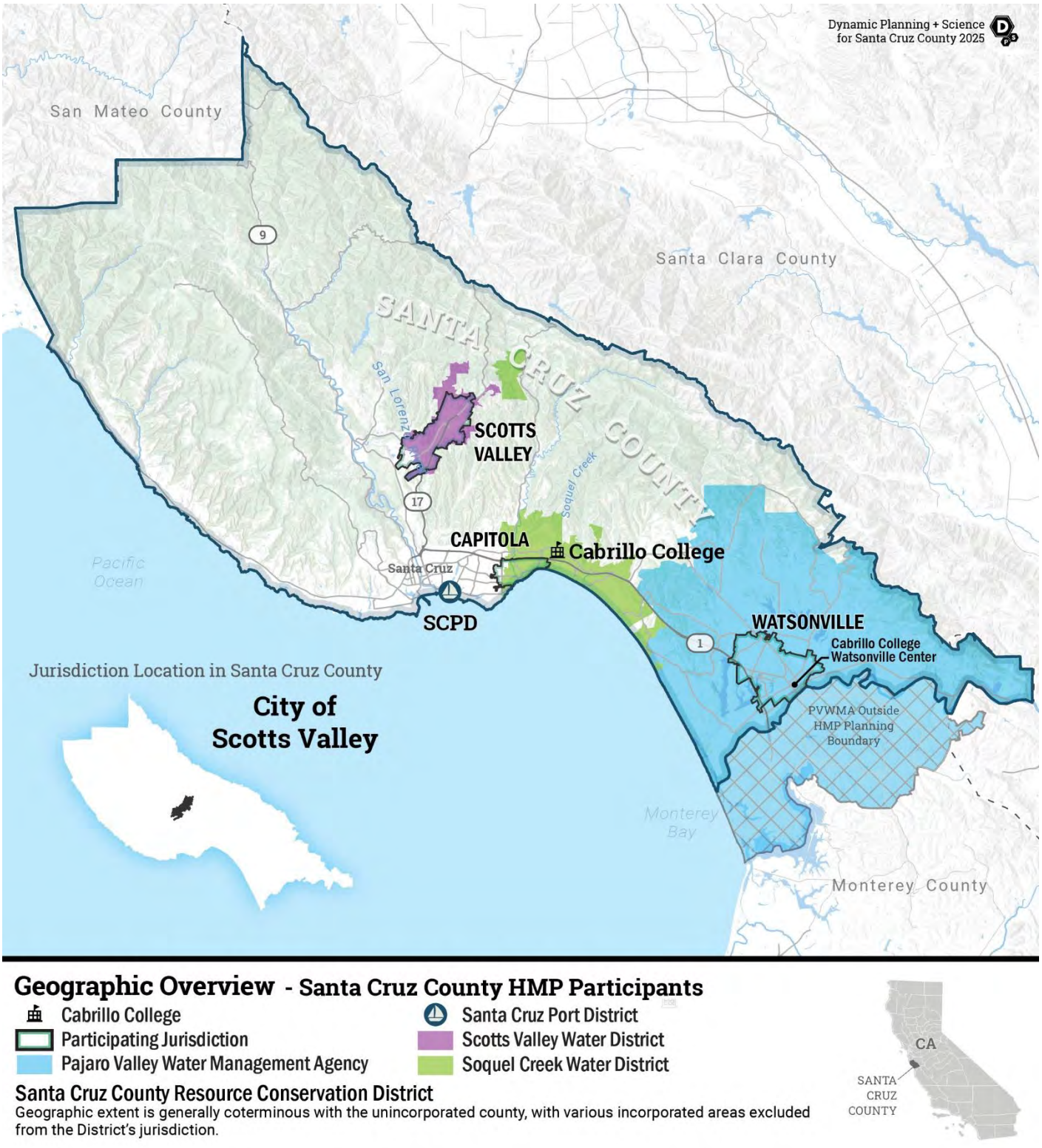


Figure 2-1: City of Scotts Valley Sphere of Influence

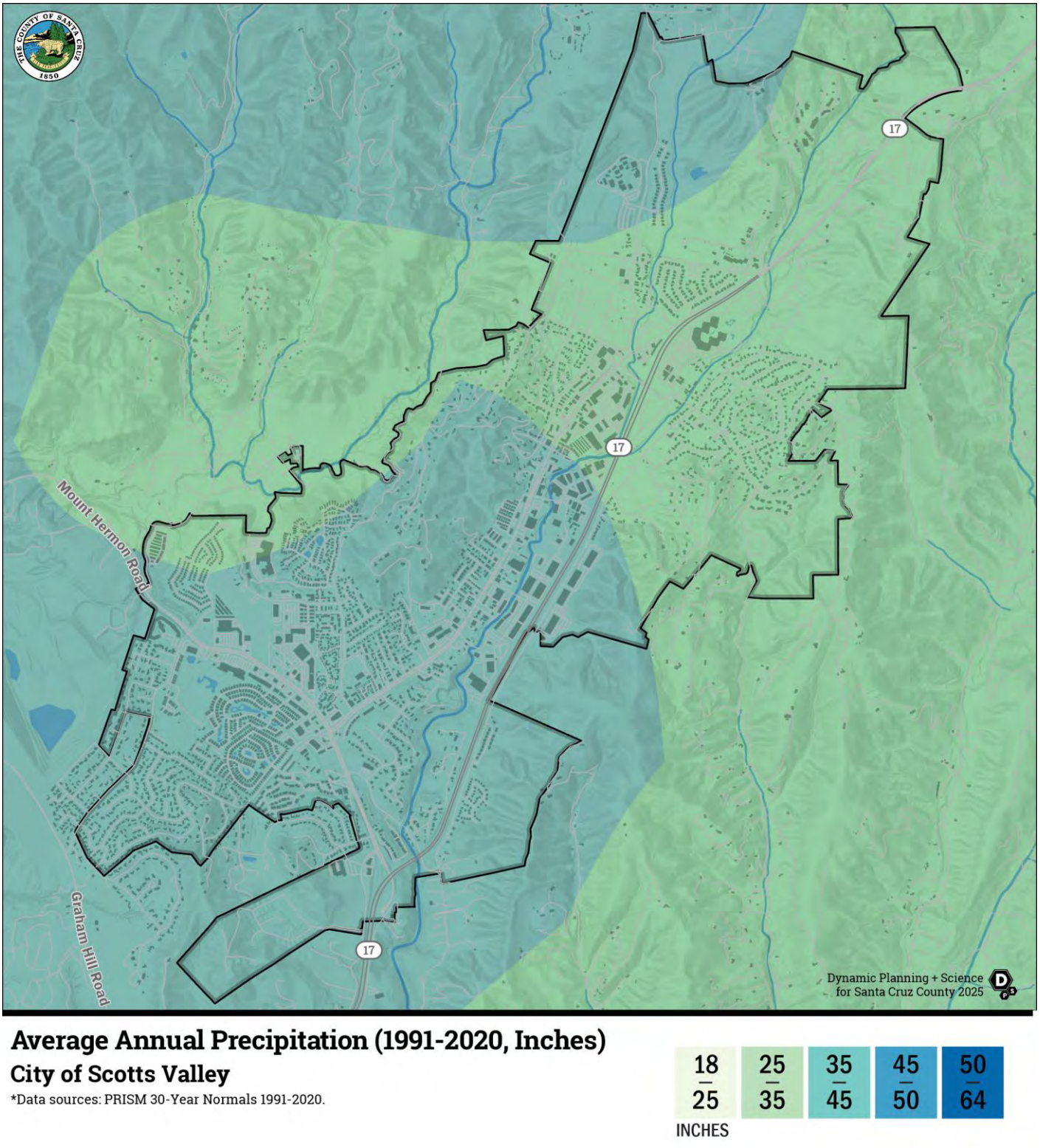


Figure 2-2: City of Scotts Valley Average Annual Precipitation Map

2.2.2 Historical Overview

The area now known as Scotts Valley has been inhabited for thousands of years, with archaeological evidence indicating that Paleo Indian peoples lived along the shores of an ancient lake that once occupied parts of the valley floor. Artifacts dating back 8,000 to 12,000 years have been discovered near the current location of City Hall, underscoring the long-standing human presence in this part of the Santa Cruz Mountains.

During the Spanish and Mexican periods of California history, the region formed part of the Rancho San Agustín, a 4,436-acre land grant. In 1833, the rancho was granted to José Antonio Bolcoff, a Russian sailor who had naturalized as a Mexican citizen and married into the Castro family of Santa Cruz. Bolcoff later transferred the land to his brother-in-law, Joseph Ladd Majors, an American trapper and veteran of the Rifleros Americanos, a group that supported Governor Juan Bautista Alvarado's 1836 revolution. Majors constructed a gristmill and adobe home on the rancho and became a prominent local figure, serving as alcalde (mayor) and county treasurer after California became part of the United States.

In the early 1850s, Majors sold the rancho to Hiram Scott, a Maine seaman who had arrived in California during the Gold Rush. Scott established a homestead and built the Scott House in 1853, a Greek Revival–style residence that still stands today and is listed on the National Register of Historic Places. Over the following decades, Scott and his family sold off parcels of the rancho, which were acquired by a variety of settlers, including British and American immigrants. These early residents engaged in dairy farming, grain milling, and lumber production, taking advantage of the valley's fertile soils and abundant tanbark oak trees.

By the late 19th and early 20th centuries, Scotts Valley had developed into a small agricultural community, with dairies, poultry farms, and apple orchards dominating the local economy. Stagecoach routes connected the valley to Santa Cruz and San Jose, and key roads like Glenwood Drive served as important regional transportation links. In the 1930s and 1940s, the area began attracting recreational and tourism uses, with the development of gardenia farms, mushroom cultivation, blueberry farms, and even a polo stable built by Marion Hollins, a pioneering woman in American sports and real estate.

The mid-20th century brought more dramatic changes. The opening of Highway 17 in the 1950s led to the decline of some older businesses along Scotts Valley Drive but also made the community more accessible to Bay Area travelers. Tourism-oriented attractions like Santa's Village (opened in 1957), a mini-zoo, and the Tree Circus attracted families traveling to the coast. Concerns about land use and the proposed annexation by the City of Santa Cruz prompted local residents to pursue incorporation. After several years of debate and organizing, Scotts Valley was officially incorporated on August 2, 1966, with Bill Graham as the city's first Mayor and Friend Stone as its first City Administrator.

Since incorporation, Scotts Valley has grown into a family-oriented suburban community, with a balance of residential, commercial, and light industrial development. The city's topography and open space character have helped preserve its identity as a small town surrounded by natural beauty. While regional commuting and the Silicon Valley tech economy have shaped modern demographics and land use, the city continues

to maintain a distinct historical legacy that blends early Native American, Mexican Rancho, and pioneer American influences.

2.2.3 Demographics & Vulnerable Populations

This section describes the demographic characteristics of the city to guide hazard mitigation planning efforts. Natural disasters affect communities both physically and socially, with demographic composition playing a central role in determining how impacts are distributed, particularly among vulnerable groups facing greater challenges in preparedness, response, and recovery. Understanding the area's social and economic landscape also helps assess potential social costs from infrastructure damage, including housing, industry, public facilities, essential services, and transportation.

Exploring local demographic data may help to identify groups and geographic areas with specific vulnerability to hazard events. In the context of all-hazards preparedness and response planning, at-risk individuals (often used interchangeably with "vulnerable populations") are defined federally as "children, pregnant women, senior citizens, and other individuals who have access or functional needs in the event of a public health emergency." (42 U.S.C. § 2802(b)(4)(B) (2019)) These populations may include, but are not limited to, individuals who are economically disadvantaged, living with disabilities, dependent on caregivers, from historically marginalized communities, have limited English proficiency or are non-English speaking, lack access to transportation, are experiencing homelessness, or have chronic medical conditions.

Certain populations face greater risk following a natural hazard event due to age, economic mobility, physical disability, geographic location, or a combination of factors. Vulnerability in the face of a hazard event is not a fixed characteristic; the same individual may be at risk for some hazards but not at risk for others. Planning for vulnerable populations in the context of hazard mitigation can help communities to prioritize limited resources where they will be the most effective. Refer to Volume 1, Section 1.4.3 for a more in-depth discussion of planning for vulnerable populations, at-risk individuals with access and functional needs, and environmental justice.

The total population, total number of households, and average household size of the City of Scotts Valley are presented in Table 2-1, compared to the other municipalities and Santa Cruz County. The city has the second smallest population of all the incorporated municipalities.

Table 2-1: Population and Household Summary

Jurisdiction	Total Population	Total Households	Average Household Size
City of Scotts Valley	**12,138**	**5,440**	**2.18**
Santa Cruz County	266,021	106,635	2.36

Source: ACS 5-Year, 2018-2023

2.2.3.1 Income & Housing

Economic mobility is one of the most important predictors of natural hazard vulnerability. Low-income residents are more likely to occupy housing which is inadequately maintained or otherwise poorly built to withstand extreme events. For example, mobile or modular homes are more susceptible to damage in earthquakes and floods than other types of residences and are less likely to contain A/C units to cope with high heat events. In urban areas, low-income residents are more likely to occupy older homes and apartment complexes with unreinforced masonry, which is particularly susceptible to seismic damage.

Low-income households and communities face disproportionate financial burden from costs associated with disaster preparedness, response, and recovery. Disasters create unexpected expenses which may serve as "tipping points" for families and individuals living on the edge of poverty or homelessness. Recovery costs may be higher for those without resources to conduct hazard mitigation activities ahead of time. Families and individuals who lack access to transportation may be unable to evacuate ahead of an emergency. (Krause & Reeves, 2017)

Low-income residents and renters are also less likely to purchase insurance, meaning that those with the most to lose during an event are also the least prepared to deal with potential losses. Major hurricane events in recent history such as Harvey, Irma, and Katrina all demonstrate that low-income and/or historically marginalized communities face increased vulnerability to hazard events and struggle the most to recover.

Median household income in the City of Scotts Valley was $140,887, with an overall poverty rate of 4.8%. By comparison, median income and poverty rates for Santa Cruz County were $109,266 and 11.2%, respectively. In sum, Scotts Valley is a rather prosperous community with very little poverty; refer to Table 2-2. Median income and poverty rates are also shown on the block group level in Figure 2-4 and Figure 2-5.

Table 2-2: Household Income and Poverty Levels

Jurisdiction	Median Income	Poverty Rate
City of Scotts Valley	**$140,887**	**4.8%**
Santa Cruz County (Total)	$109,266	11.2%

Source: ACS 5-Year, 2018-2023

Renters are also more vulnerable to natural hazards, as they are less likely to take out property insurance and the decision to make major structural improvements typically lies with the property owner. Federal disaster recovery services can exacerbate inequality between renters and homeowners; payout amounts are significantly higher for homeowners applying through FEMA's Individual Assistance (IA) program; from 1999 to 2013 U.S. homeowners saw their wealth increase with local hazard damages, whereas renters' wealth decreased. (Howell & Elliot, 2019)

Approximately 27% of occupied housing units in City of Scotts Valley are renters, compared to 40% for Santa Cruz County as a whole; refer to Table 2-3. As a bedroom community, Scotts Valley has a much higher supply of owner-occupied, single-family residential dwelling units than other municipalities in Santa Cruz County. Figure 2-3 depicts housing occupancy in Scotts Valley.

Table 2-3: Owner- and Renter Occupied Households

Jurisdiction	# Occupied Housing Units	# Renter Occupied	% Renter Occupied	# Owner Occupied	% Owner Occupied
City of Scotts Valley	**5,008**	**1,377**	**27.5%**	**3,631**	**72.5%**
Santa Cruz County	96,873	38,771	40.0%	58,102	60.0%

Source: ACS 5-Year, 2018-2023

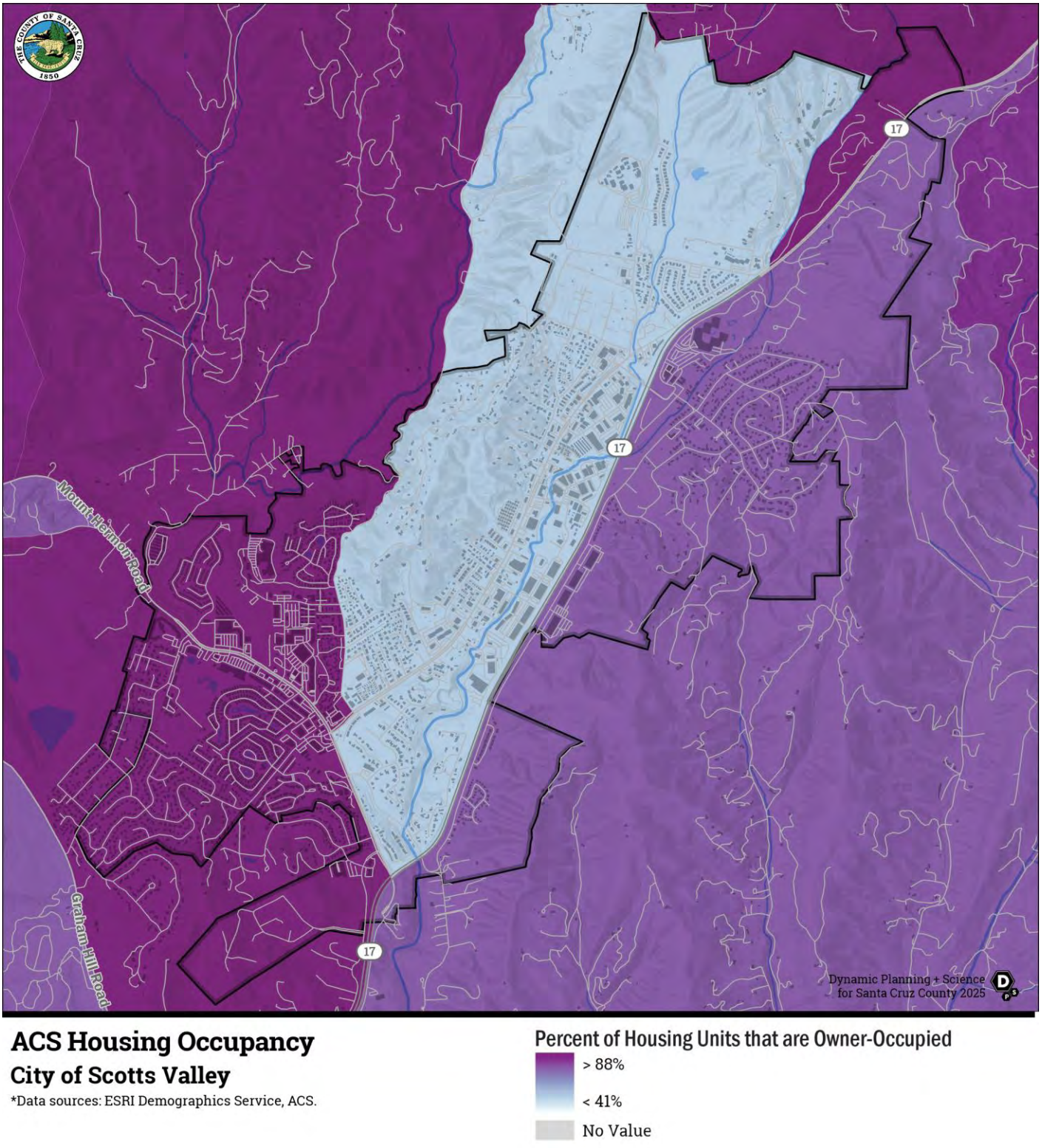


Figure 2-3: City of Scotts Valley Owner-Occupied Housing Units Map

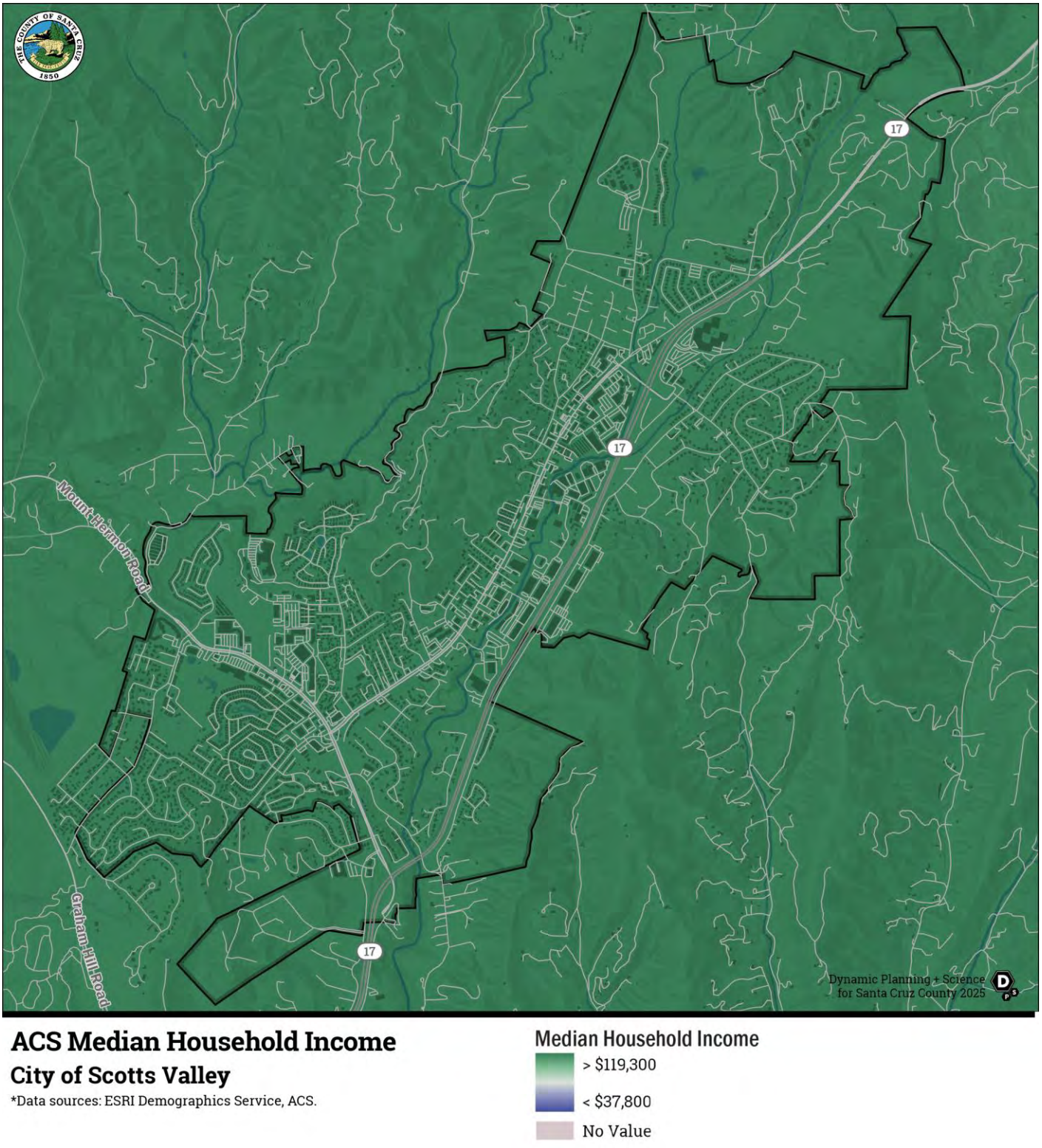


Figure 2-4: City of Scotts Valley Median Household Income Map

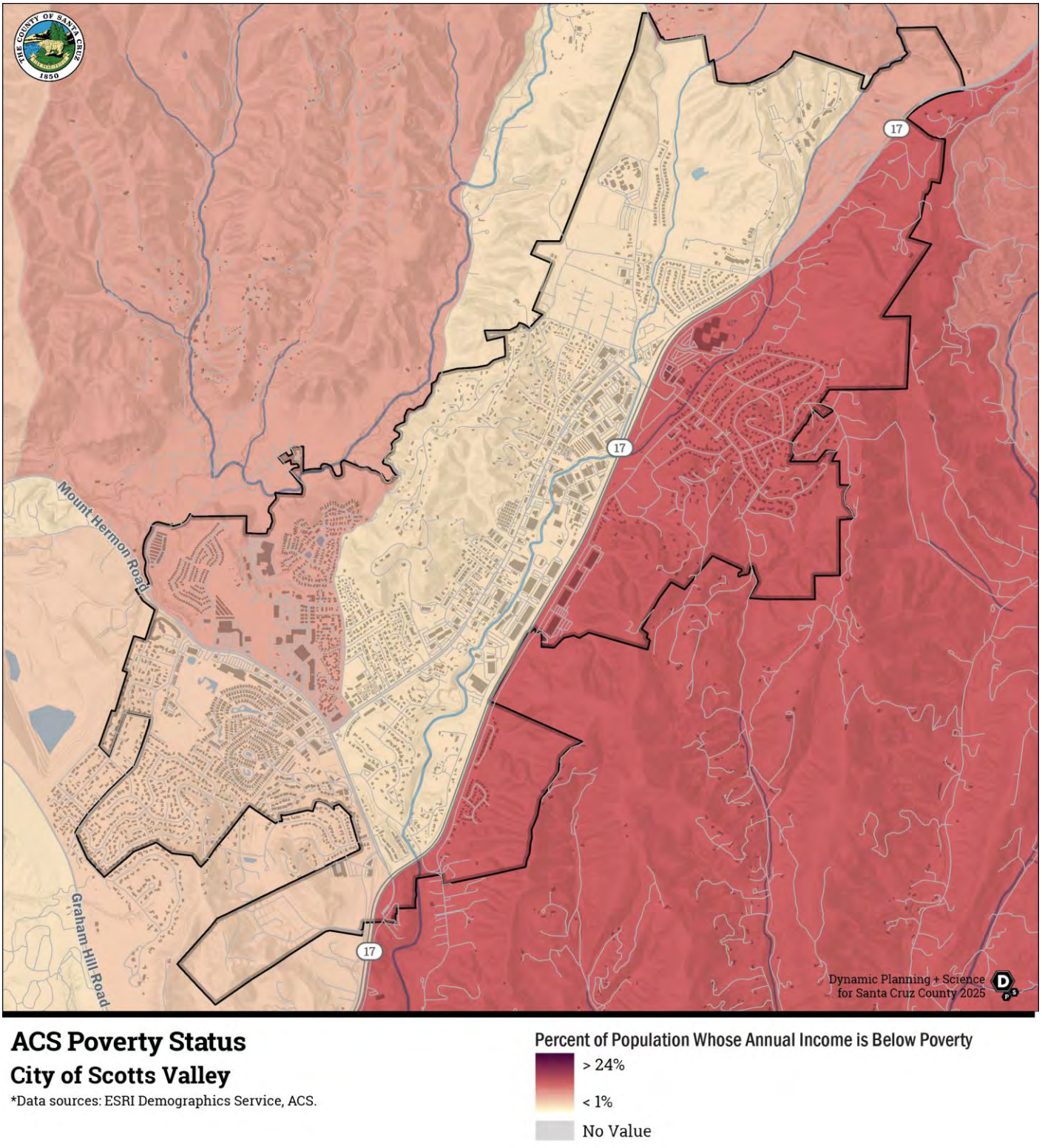


Figure 2-5: City of Scotts Valley Poverty Status Map

2.2.3.2 Dependent & Disabled Populations

Age plays a significant role in vulnerability to natural hazards, as both seniors and children are dependent populations who rely on caregiver networks for support and protection. Seniors may have mobility challenges and increased health concerns, necessitating assistance during evacuations and recovery. Similarly, children have limited ability to protect themselves and depend on caregivers to ensure their safety and well-being during emergencies. When combined with factors such as low-income status of a household, age vulnerabilities can be further compounded, highlighting the importance of targeted interventions to address the unique needs of these populations.

Approximately 40% of households in the City of Scotts Valley include at least one senior individual (over 65 years of age), over 2% of whom experience poverty; refer to Table 2-4 Additionally, seniors over 65 living alone constitute nearly 8% of total households in Scotts Valley. Seniors who live alone often face greater challenges in emergency situations, including difficulties with evacuation, limited access to real-time alerts due to digital literacy or lack of internet access, and chronic health conditions that require special care. These factors make seniors, especially those who are low-income or socially isolated, among the most vulnerable in a disaster context. Critical facilities such as assisted living centers require advanced coordination for evacuation and continuity of care and are therefore prioritized in emergency response plans.

Children are another key dependent population. In Scotts Valley, over 23%% of households include individuals under 18, with 5% of these households headed by a single caregiver (Table 2-4). Children rely entirely on caregivers for transportation, shelter, and decision-making during emergencies. The disruption of school systems, childcare, and social services during disasters can have significant emotional, developmental, and educational impacts on youth. Additionally, families with limited economic means or single caregivers may struggle to maintain access to necessary resources and recovery support.

Figure 2-6 highlights areas of the city with elevated concentrations of economically dependant age groups.

Table 2-4: Economically Dependent Age Groups

Jurisdiction	% Households 65+	% Households 65+ Living Alone	% Households 65+ in Poverty	% Households <18	% Households <18 w Single Caregiver
City of Scotts Valley	**40.1%**	**7.8%**	**2.4%**	**23.3%**	**5.3%**
Santa Cruz County	33.4%	7.9%	2.7%	24.8%	6.0%

Source: ACS 5-Year, 2018-2023

Elderly populations face increased risks during disaster events due to age-related health conditions, mobility limitations, and potential social isolation. In Scotts Valley approximately 11% of the non-institutionalized population lives with a disability, a similar to the countywide average of 11.1% (Table 2-5).

Table 2-5: City of Scotts Valley Non-Institutionalized Disabled Population

Jurisdiction	# Persons w Disability	% Persons w Disability
City of Scotts Valley	**1,318**	**10.9%**
Santa Cruz County	29,557	11.1%

Source: ACS 5-Year, 2018-2023

Among those with access and functional needs, elderly individuals with disabilities represent a highly vulnerable subpopulation when it comes to disaster preparedness, response, and recovery. This group includes seniors living with physical or cognitive impairments such as hearing or vision loss, reduced mobility, reliance on assistive medical devices, neurodivergence, or chronic health conditions that may be exacerbated by hazard events (e.g., exposure to wildfire smoke or extreme heat).

Figure 2-7 shows that there are notable geographic variations in where these vulnerable populations live. The highest concentrations of elderly residents with disabilities, where more than 47 percent of seniors report one or more disabilities, are found in the southwestern and western portions of the city, including the hillside neighborhoods near Whispering Pines, Glen Canyon, and west of Mount Hermon Road. Elevated proportions are also present in the southern neighborhoods along Bean Creek and near the city's boundary. By contrast, the central valley floor and northeastern portions of Scotts Valley, including areas along Scotts Valley Drive and near Highway 17, have lower concentrations of disabled elderly residents, with less than 19 percent of seniors in these census tracts reporting disabilities.

The combination of advanced age and disability can present significant challenges not only during emergency response but also in implementing hazard mitigation measures. Elderly individuals with disabilities may face physical, financial, or logistical barriers to undertaking activities such as seismic retrofitting, anchoring fuel tanks, installing foundation bracing, or implementing residential flood-proofing techniques. Many live in older housing stock that is more vulnerable to earthquake damage or repetitive flooding and may lack the resources or support networks needed to complete mitigation upgrades.

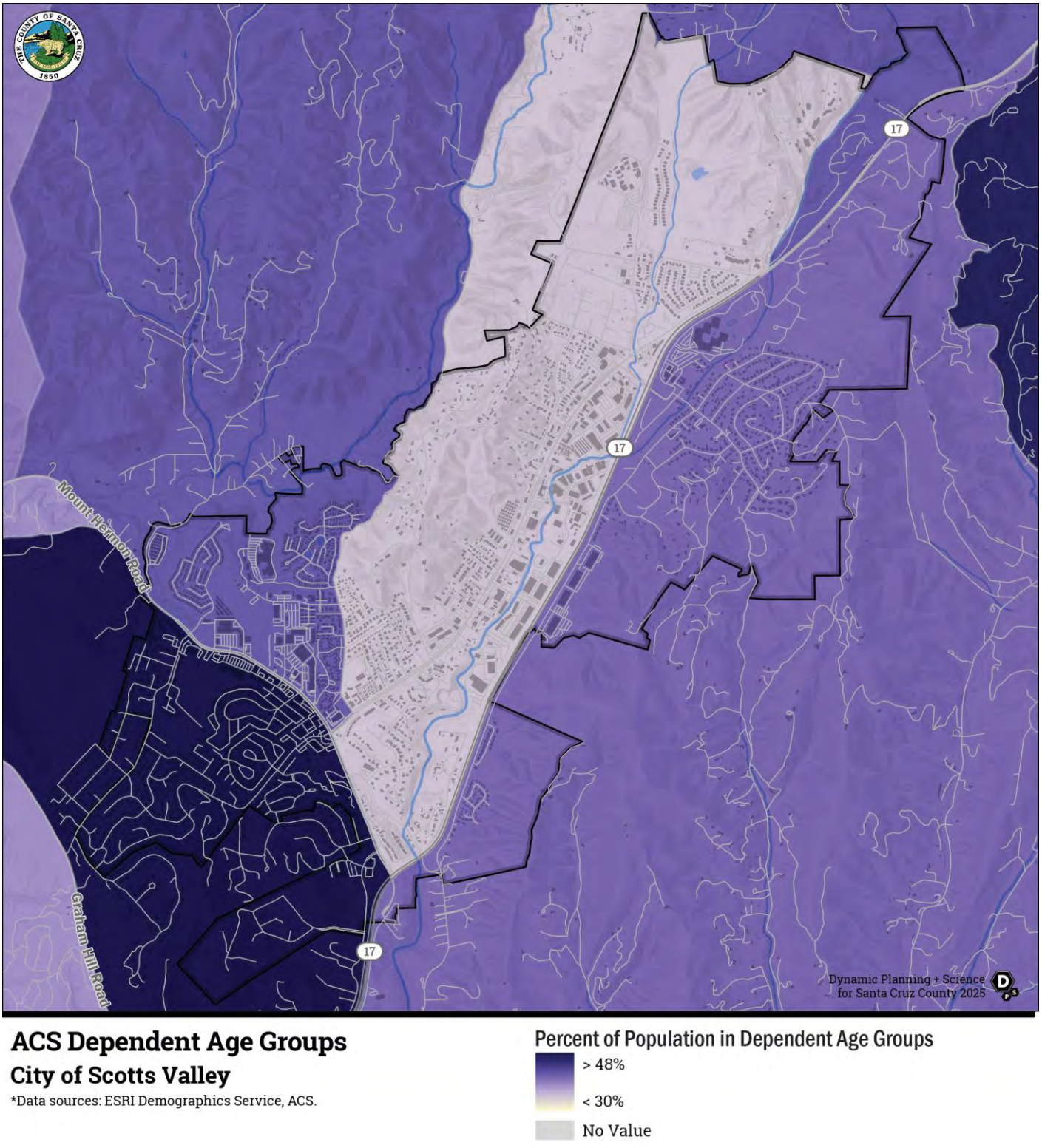


Figure 2-6: City of Scotts Valley Economically Dependent Age Groups Map

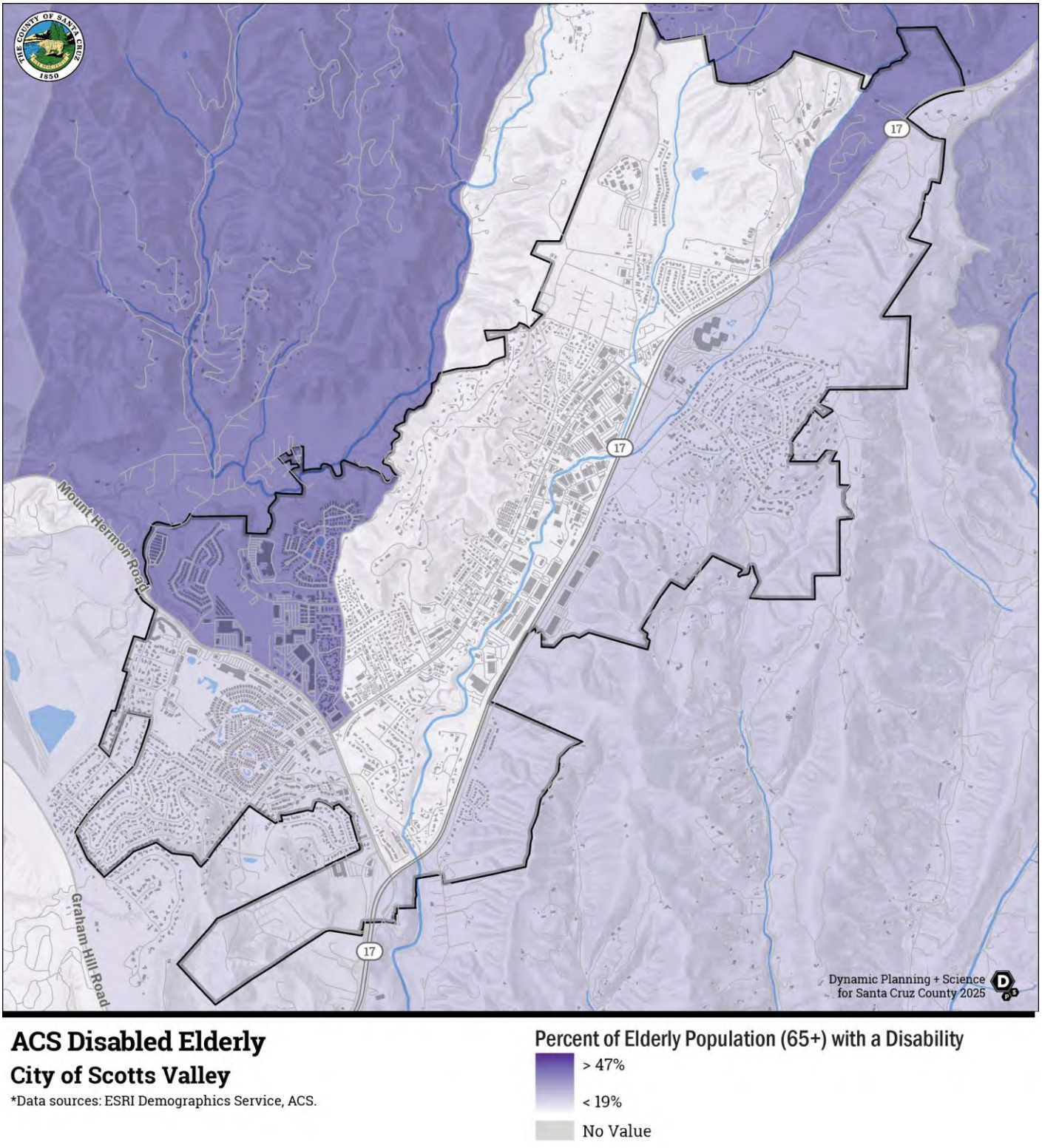


Figure 2-7: City of Scotts Valley Disabled Elderly Map

2.2.3.3 Race, Ethnicity & Language

Natural disasters compound racial disparities; non-white individuals and communities receive less recovery aid from FEMA than their white counterparts, even where the amount of damage is the same. (Howell, Junia; Elliott, James R., 2019) (National Advisory Council, 2020) These disparities are evidence of the complicated relationship between disaster recovery and overlapping social vulnerabilities including race, income, language, and health. Black and Latinx residents are more likely to be low income and renters, conditions which create barriers to navigating FEMA's Individual Assistance programs. Communities with more non-white residents may have lower tax revenue and property values, which means less investment in mitigation and rebuilding efforts before and after an emergency.

The City of Scotts Valley has historically been and remains a relatively homogeneous community in terms of race and ethnicity. Figure 2-8 indicates that the city is overwhelmingly predominantly White, non-Hispanic, with very limited variation across neighborhoods. Unlike more diverse nearby communities in Santa Cruz County, Scotts Valley does not exhibit large concentrations of Hispanic/Latino, Asian, Black/African American, or multi-racial populations according to the ACS estimates. The predominance of a single demographic group has implications for cultural representation, inclusiveness, and the need for targeted equity considerations in hazard mitigation planning, especially to ensure outreach efforts are effective for all residents, including those in smaller minority populations.

Figure 2-8 provides further insight into Scotts Valley's demographic profile. The map highlights that the vast majority of residents primarily speak English at home, with only very small portions of the population (fewer than 1 percent in most tracts) reporting Spanish as the primary household language. This contrasts with other jurisdictions in Santa Cruz County, where bilingual or Spanish-speaking populations are much more significant. The lack of large non-English-speaking communities reduces the scale of translation needs for the city compared to neighboring areas, but it does not eliminate the responsibility to provide linguistically accessible materials and emergency communications. Even a small percentage of residents who primarily speak Spanish at home may be disproportionately vulnerable in disaster situations if communication materials, warnings, or evacuation notices are not provided in multiple languages.

Residents with limited English proficiency (LEP) face heightened barriers to understanding emergency alerts, accessing preparedness resources, and navigating post-disaster recovery programs. In Scotts Valley, only around 6% of households speak Spanish and less than 1% report limited English proficiency, rates significantly lower than the county average (Table 2-6). Figure 2-9 shows where Spanish-speaking populations are concentrated in Scotts Valley.

Many LEP residents are renters or frontline workers living in high-risk areas, making it critical to provide translated preparedness materials, culturally competent outreach, and tailored emergency alerts. Partnering with trusted community organizations can enhance outreach effectiveness and help ensure equitable access to mitigation resources and life-safety information.

Table 2-6: County-Wide Household Languages

Jurisdiction	# Spanish Speaking Households	% Spanish Speaking Households	# Limited English Households	% Limited English Households	# Other Language Households
City of Scotts Valley	**319**	**5.9%**	**12**	**0.2%**	**0**
Santa Cruz County (Total)	18,325	17.2%	3,354	3.1%	90

Source: ACS 5-Year, 2018-2023

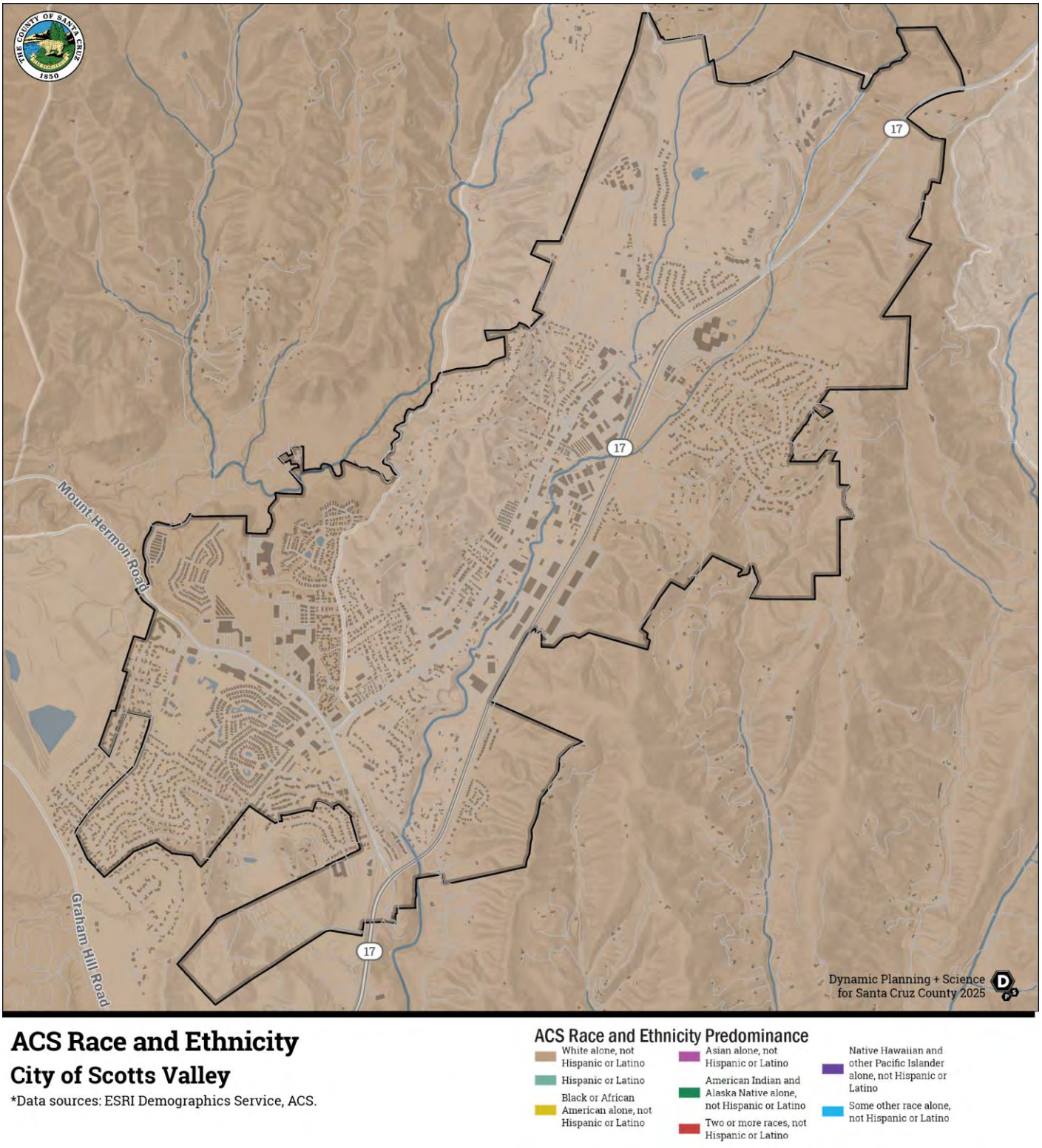


Figure 2-8: City of Scotts Valley Race and Ethnicity Predominance Map

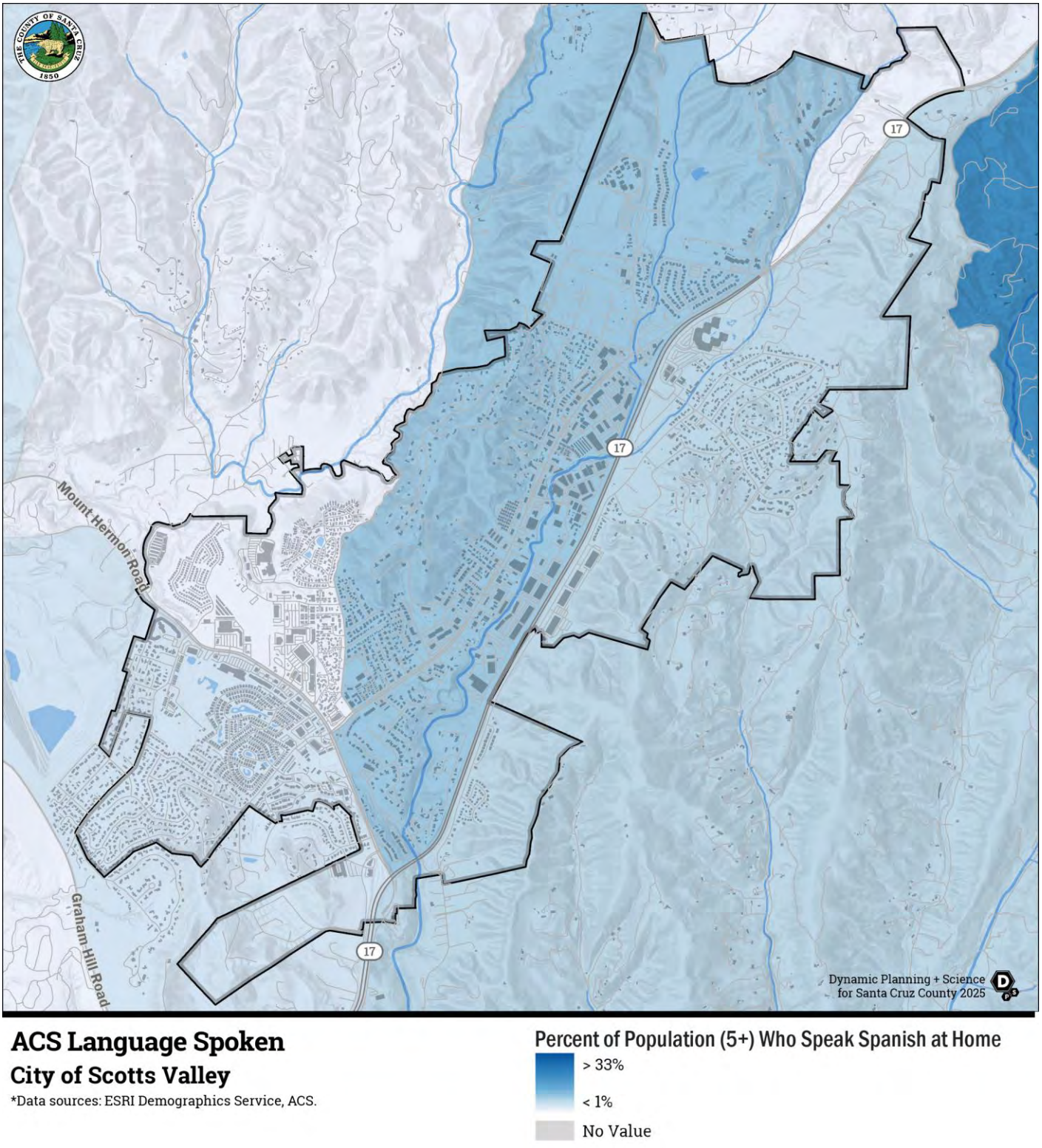


Figure 2-9: City of Scotts Valley Spanish-Speaking Population Map

2.2.3.4 Social Vulnerability Index (SVI)

The Centers for Centers for Disease Control and Prevention (CDC) Social Vulnerability Index (SVI) for the City of Scotts Valley reveals important spatial and demographic patterns that have direct implications for equitable hazard mitigation planning. As discussed in detail in Volume 1, Section 1.4.3.6 the SVI is a composite measure developed by the CDC to identify communities that are more likely to require support before, during, and after a disaster. It incorporates a range of factors across four key dimensions: socioeconomic status, household composition and disability, minority status and language, and housing type and transportation access. The resulting index score ranges from 0 (lowest vulnerability) to 1 (highest vulnerability).

Figure 2-10 provides a composite measure of community resilience and vulnerability to disasters. The SVI incorporates multiple demographic and socioeconomic factors, including poverty, age, disability, housing type, minority status, and language ability, to assess a community's ability to prepare for, respond to, and recover from hazards.

For Scotts Valley, the map shows that most census tracts fall within the lower ranges of social vulnerability, primarily in the 0.2501–0.5000 categories. This indicates that, on a relative scale, the city's population generally faces fewer socioeconomic barriers compared to other communities in Santa Cruz County or across California. The absence of census blocks in the higher ranges (0.7501–1.0000) reinforces that Scotts Valley is not identified as a high-vulnerability area under CDC criteria.

Despite these overall favorable indicators, there are still localized populations that experience elevated vulnerability. As highlighted in supporting demographic maps (elderly with disabilities, race/ethnicity, and language spoken at home), specific groups such as older adults in hillside neighborhoods, residents of age-restricted mobile home parks, and lower-income renters may not be fully reflected in the citywide SVI average. These groups remain disproportionately at risk during wildfire evacuations, storm-related power outages, and other hazard events. In addition, Scotts Valley's reliance on Highway 17 as its primary regional lifeline route creates a geographic vulnerability not directly measured by SVI but critical in disaster contexts.

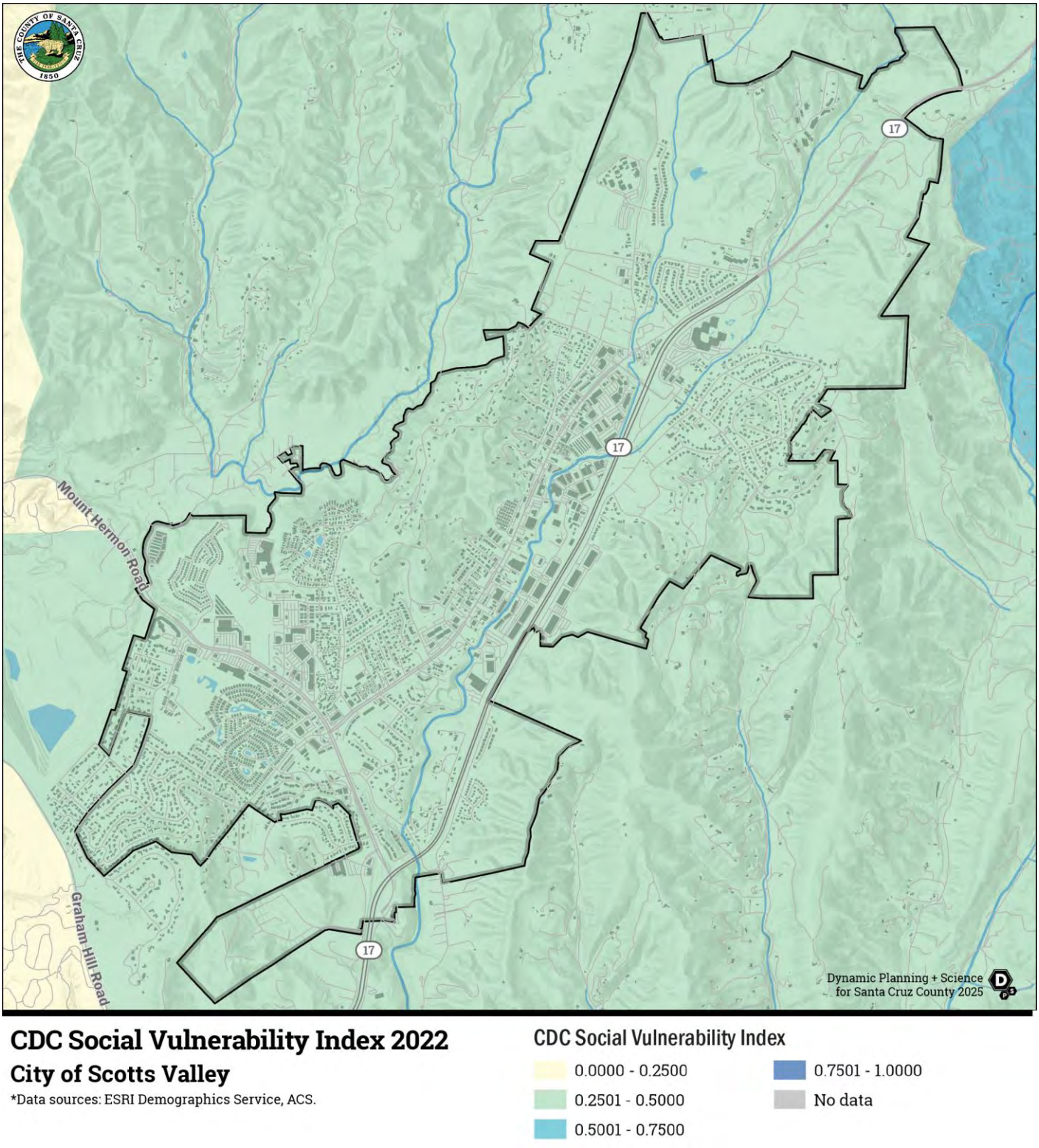


Figure 2-10: City of Scotts Valley Social Vulnerability Index Map

2.2.4 Economy

The City of Scotts Valley has developed a balanced but relatively small local economy that reflects its role as both a residential community and a regional employment hub in northern Santa Cruz County. Historically, the city's economy was shaped by agriculture, lumber, and tourism-oriented businesses. Since incorporation in 1966, the local economy has diversified significantly, shifting toward light industrial, professional services, and retail sectors.

Scotts Valley's economy today is built around a mix of technology, professional services, retail, hospitality, and light manufacturing. Several business parks and industrial areas provide space for high-tech and biotech firms, creative industries, and niche manufacturing. The city's location along Highway 17, just 30 miles from Silicon Valley, has historically made it attractive for businesses seeking proximity to the Bay Area without the same overhead costs. Local employment data show strong representation in the education, healthcare, retail, and professional services sectors. The Scotts Valley Unified School District, City of Scotts Valley, and local small businesses are also significant employers.

The primary economic corridors are Scotts Valley Drive and Mount Hermon Road, which host a mix of restaurants, retail stores, hotels, and service businesses. These corridors not only serve local residents but also attract visitors traveling between the Bay Area and Santa Cruz beaches. The city has long prioritized redevelopment of the Town Center project, envisioned as a mixed-use civic and commercial hub that will expand dining, retail, and housing options while strengthening community identity.

Tourism plays a supporting role in the local economy. Scotts Valley's location along Highway 17 makes it a natural stopping point for travelers. Local hotels, parks, and proximity to redwood forests and Santa Cruz beaches contribute to visitor spending. The city also promotes community events and cultural programs to enhance quality of life and attract visitors.

While Scotts Valley benefits from a relatively affluent residential base and a modest but diverse business community, the city faces ongoing fiscal challenges. The Strategic Work Plans and Goals highlight structural budget deficits tied to rising costs for essential services such as public safety, infrastructure, and wastewater management. In response, the city has pursued revenue diversification strategies, including modernization of the Business License Tax (Measure X, passed in 2024), exploration of utility tax reforms, and partnerships to support long-term economic development.

2.2.5 Growth Trends & Future Development

Scotts Valley's growth trajectory has historically been modest. Despite earlier projections in the 1990s anticipating a population of 16,000 and 12,000 jobs, the city's actual figures around 12,000 residents and well under that number of local jobs, fell short of those expectations. Current data illustrate a marked slowdown: recent estimates show the city's population declining slightly.

Nevertheless, Scotts Valley is preparing for measured growth. The 2023 General Plan is the guiding policy document that will shape land use, housing, economic development, mobility, and environmental preservation through mid-century.

A key strategy enabling this projected growth was the rezoning of parcels along Scotts Valley Drive and Mount Hermon Road to support denser mixed-use development, shifting requirements that previously mandated 50% commercial use down to 30%, thereby enhancing economic viability for proposed housing. These local policy adjustments reflect the city's response to regional housing needs and affordability goals.

One landmark project embodying this future direction is the long-awaited Town Center development—a mixed-use, walkable downtown envisioned on a 58-acre former gravel lot adjacent to Mount Hermon Road. In August 2025, the city celebrated the project's official groundbreaking, backed by $1 million in federal funding. The development will include housing (with at least 25% designated as affordable), commercial space, public gathering areas, and enhanced connectivity to adjacent commercial corridors and recreation zones like Skypark, as depicted in Table 2-1.

Beyond housing, the Strategic Planning Workshop held in early 2025 reaffirmed the city's focus on infrastructure, public safety, and economic vitality, which was enabled by having full staffing for the first time in decades and strengthened capacity to carry out long-term priorities.

In 2023, Scotts Valley had approximately 5,400 households with an average household size of 2.18 people, which is smaller than the countywide average of 2.36. See Table 2-1 for details. This lower figure suggests a higher proportion of single-person households, couples without children, and older adults living alone. From a hazard mitigation perspective, smaller household size may translate into greater vulnerability during disasters, as there are fewer built-in support systems for caregiving, evacuation, or recovery. Residents in smaller households may face increased risks of social isolation, particularly seniors, which can complicate response and recovery efforts.

At the same time, Scotts Valley's population is primarily concentrated in neighborhoods along the valley floor and major corridors such as Scotts Valley Drive and Mount Hermon Road, meaning that localized hazards could affect a large share of the community simultaneously.

Long Range Growth

Scotts Valley's long-term growth outlook is characterized by stability with only modest increases expected over the next several decades. According to the Association of Monterey Bay Area Governments (AMBAG) Final Draft 2026 Regional Growth Forecast, the city's population is projected to grow from approximately 12,000 residents in 2023 to about 13,235 by 2050. This represents an increase of over 1,000 people, or roughly 11 percent, spread across nearly three decades. Growth is projected to occur gradually, with the population reaching about 12,322 by 2030, 12,603 by 2035, and 13,094 by 2045 before leveling near the 2050 total.

Forecasts and trends suggest that Scotts Valley's population is unlikely to see rapid expansion. Instead, the city is expected to add between 1,000 and 1,400 residents by 2050, a modest increase in raw numbers that is

significant for a small city but not transformative in scale. This incremental growth means the community will remain relatively stable in size, but it also highlights the importance of housing development initiatives such as the Town Center project and infill redevelopment along key corridors, since achieving forecasted growth depends heavily on new housing supply.

2.3 Planning Process

The City of Scotts Valley followed the planning process detailed in Volume 1, Section 2, including participating in the county-wide Hazard Mitigation Planning Team (HMPT) and formulating their own internal planning team to support the broader planning process.

The city's representatives in the Steering Group led stakeholder and public engagement efforts alongside the Consultant Team, with assistance from the county-wide HMPT and their internal planning team. This engagement process is described in Volume 1. Specifically, for the City of Scotts Valley, this included postings to the city website and social media, outreach events, and public presentations, as documented in Appendix B. Examples of Key Stakeholders engaged by Santa Cruz County on behalf of the city with relevance to the development of Scotts Valley's mitigation strategy include USDA and other federal agencies; CAL FIRE and other state agencies; local Fire Safe Councils; the City of Santa Cruz and other neighboring jurisdictions; community-based organizations such as Community Bridges; utility providers like AT&T and Scotts Valley Water District; UC Santa Cruz and other academia; and local businesses.

All Key Stakeholders that were invited to participate in the planning process are listed in Volume 1, Section 2, and the input received from stakeholders was integrated into the city's annex, as described in Volume 1 Table 2-9. The city's internal planning participants, their positions, and how they participated in the planning process are shown in Table 2-7.

Table 2-7: City of Scotts Valley Planning Committee and Steering Group Members

Planning Group Members	Title	Description of Involvement
Carly Blanchard	Former Senior Administrative Analyst	Former Lead Point-of-Contact
Mindy Esqueda	Senior Administrative Analyst	Lead Point-of-Contact
Rodolfo Onchi	Public Works Director/City Engineer	Alternate Point-of-Contact
Erin Collins	Fire Marshal	BO#1 and #2
Jayson Rutherford	Captain	BO#1 and #2

Planning Group Members	Title	Description of Involvement
Jeremy Long	Wastewater Division Manager	BO#1 and #2
Joshua Wozynski	Associate Planner	BO#2
Mali LaGoe	City Manager	Kickoff,
Nelson Alfaro	Building Official	BO#1 and #2

The City of Scotts Valley participated in a comprehensive hazard mitigation planning process as part of the 2025 Santa Cruz County MJHMP update. This included a series of breakout meetings that engaged the city's planning team, which included key city personnel and stakeholders in evaluating hazards, identifying local vulnerabilities, and prioritizing mitigation strategies.

The kickoff meeting held on January 27, 2025, launched the planning process by introducing the project scope and clarifying the roles of the Steering Group and participating jurisdictional teams. In the months that followed, a series of structured meetings addressed foundational elements of the plan, including a review of key changes since the 2021 Local Hazard Mitigation Plan, an overview of hazard mitigation principles, and exercises to prioritize local hazards.

Throughout the series of breakout meetings, the city engaged in a structured and collaborative planning process focused on assessing hazard risks, identifying vulnerabilities, and developing targeted mitigation strategies. The meetings began with recaps of the county-wide HMPT meetings to ensure alignment of goals and progress.

During the May 27, 2025, breakout out meeting, discussions concentrated on community engagement outcomes, initial risk assessments, and the integration of demographic data to better understand vulnerable populations. Jurisdictional teams reviewed their specific hazard exposures using the Risk Assessment Mapping Platform (RAMP) and participated in prioritization exercises to identify their top hazards.

The July 21, 2025, breakout meeting shifted toward reviewing local capabilities and defining specific areas of concern, which informed the drafting of problem statements. Teams worked collaboratively to refine mitigation alternatives, align actions with FEMA guidelines, and develop a shortlist of priority mitigation actions and inter-jurisdictional collaboration opportunities.

The meetings also included consensus-building activities around hazard rankings, capabilities, and planned actions, while providing regular updates on the overall project schedule.

Throughout this planning process, the City of Scotts Valley has remained focused on aligning its goals with FEMA standards, maintaining eligibility for federal mitigation funding, and incorporating updated risk data into planning and policy documents. These localized efforts are documented in this annex as well as in

Volume 1, Appendix B of the 2025 MJHMP. Table 2-8 shows meeting records for the City of Scotts Valley Planning Team. Steering Group and county-wide HMPT meetings are documented in Volume 1, Section 2.

Table 2-8: Jurisdictional Breakout Meeting Records

Meeting & Date	Agenda / Topics	Goals / Key Inputs
County-Wide Steering Group and HMPT Meetings #1 & #2 January 27, 2025 – March 27, 2025		
SVL Planning Team Breakout Meeting #1 May 27, 2025	▪ Community engagement progress and results ▪ Risk assessment and community vulnerability ▪ Demographics and vulnerable populations ▪ Overview of jurisdiction-specific hazard risks and exposure ▪ Introduction to Risk Assessment Mapping Platform (RAMP) ▪ Jurisdiction-specific hazard risk ranking exercise	▪ Consensus on jurisdiction-specific priority hazards ▪ Identify capabilities and potential mitigation actions ▪ Community engagement volunteers
County-Wide HMPT Meeting #3 June 2, 2025		
SVL Planning Team Breakout Meeting #2 July 21, 2025	▪ Review capabilities assessment ▪ Review areas of concern and define problem statements ▪ Principles of effective mitigation strategies and actions, and mitigation alternatives ▪ Refine and align jurisdiction-specific mitigation actions exercise	▪ Consensus on jurisdiction-specific capabilities ▪ Consensus on jurisdiction-specific areas of concern ▪ Consensus on priority mitigation actions and collaboration opportunities ▪ Community engagement volunteers
County-Wide HMPT Meeting #4 August 4, 2025		

2.3.1 Public Input & Draft Review

As detailed in Volume 1, Section 2, the draft plan was available for public review and comment from September 29 to October 20, 2025. Public comments received during that time were similar to those gathered throughout the public engagement process, including the need for more equity in the distribution of mitigation activities and funding and the need for enhanced cooperation among jurisdictions, utility providers, and state agencies. These comments were incorporated into the city's mitigation strategy, as appropriate; although, most were already addressed by the Mitigation Action Plan which was based on previous public input.

Public and stakeholder input was gathered and incorporated throughout the plan development process, before the public review period, such as from the online public survey (see Volume 1, Section 2.1.2 and Appendix B, for details). During the review period, jurisdictional staff and stakeholders that participated in

the plan development also reviewed the public draft and provided comments on minor corrections and revisions, which were addressed in the final plan.

2.4 What's New

This section offers an overview of the hazard mitigation planning efforts for the planning area and highlights the updates made in this 2025 MJHMP. This is the first time the city has participated in the MJHMP process. While not included in the 2021 plan, the city has since strengthened its focus on resilience through key efforts. Through this MJHMP process, the city has identified its highest-priority hazards, developed hazard-specific problem statements, and proposed actionable mitigation strategies.

2.4.1 Mitigation Activities

Although the city has not previously adopted formal mitigation actions within a Hazard Mitigation Plan, the city has implemented a series of projects, programs, and policies that clearly function as hazard mitigation. These efforts reflect the City of Scotts Valley's long-standing commitment to hazard mitigation.

The City of Scotts Valley has long integrated hazard mitigation into its municipal infrastructure and planning efforts. One notable component is the City's hydromodification control standards, which are tailored to its unique topography and development pressures. Developed in collaboration with Santa Cruz County and neighboring jurisdictions, these standards ensure runoff management from new development and redevelopment projects maintains site hydrology and helps reduce erosion and flood impacts.

In addition, the Public Works Maintenance Division plays a central role in day-to-day mitigation through road repairs, storm drain maintenance, and routine upkeep of public infrastructures such as parks and buildings. These efforts support citywide resilience by ensuring critical systems remain functional during storm events and emergencies Scotts Valley.

As a first-time participant in a hazard mitigation plan, the City of Scotts Valley had no formally adopted mitigation actions from a previous plan. However, the City of Scotts Valley continues to advance a range of ongoing and planned efforts that support hazard mitigation, climate resilience, and long-term water security. These are highlighted in this section, reflecting the city's continued dedication to long-term risk reduction. These actions, ranging from mitigation to community outreach initiatives, represent the city's proactive approach to addressing hazards as resources become available.

2.4.2 Mitigation Successes

Although the city is participating in a formal hazard mitigation plan for the first time, multiple important mitigation actions and other efforts to increase the city's resilience to hazards have been completed. Some of these endeavors in which the city collaborated with Santa Cruz County are described in Volume 1, Section

1. This section describes additional city-specific success stories, which highlight the City of Scotts Valley's commitment to reducing risks and building a more resilient community in the face of natural hazards.

Bean Creek Road Erosion Control & Slope Stabilization

Scotts Valley has addressed erosion "hotspots" along Bean Creek Road and nearby slopes. The city coordinated with state and federal partners, including USDA, to stabilize creek banks and reduce landslide risk. These efforts protect road access and reduce the chance of slope failure impacting homes, utilities, and emergency evacuation routes.

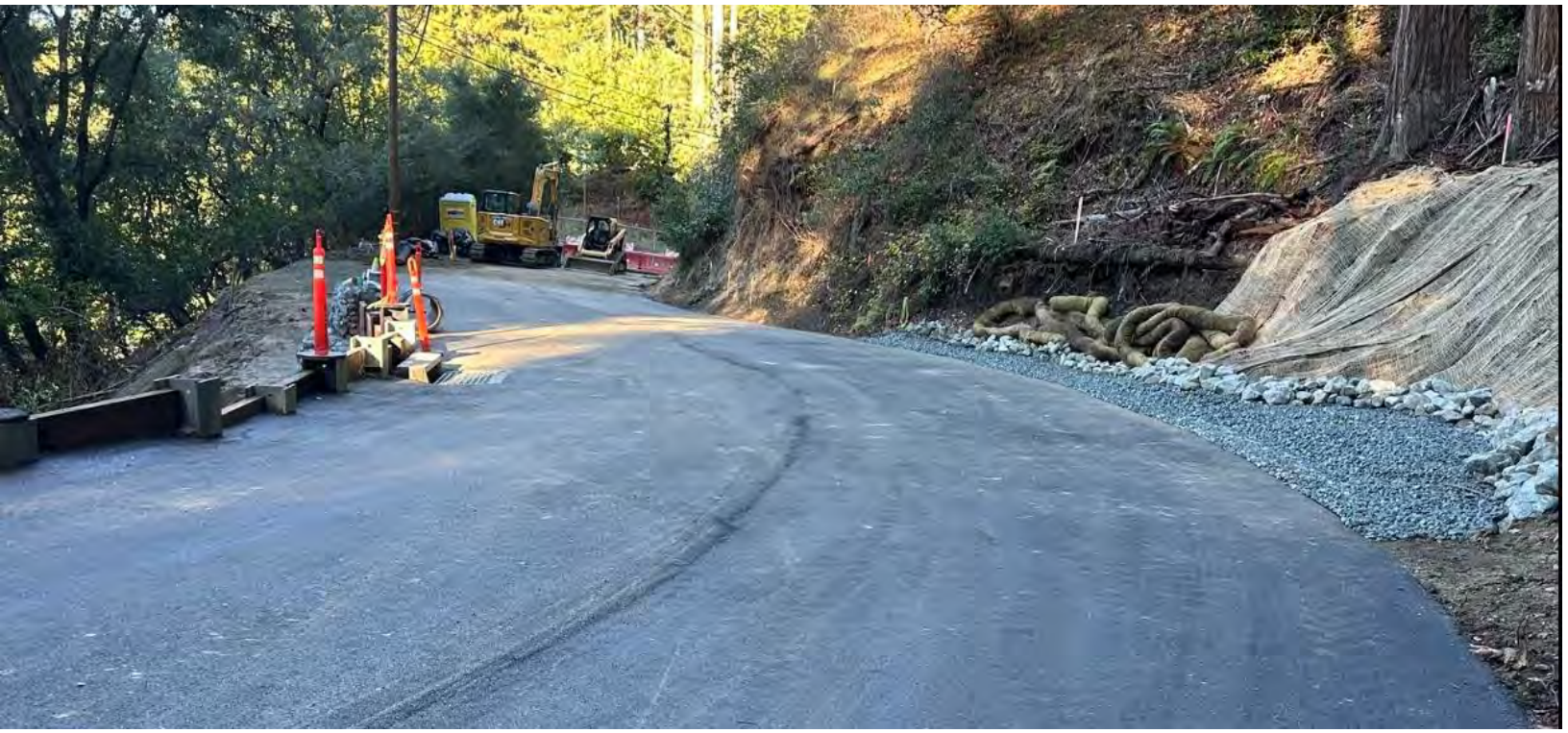


Figure 2-11: Bean Creek Road Erosion Control

Storm Drain & Culvert Repairs

The city has invested in upgrading critical storm drain and culvert infrastructure to manage localized flooding. Projects include culvert repairs on Scotts Valley Drive and Granite Creek Road, installation of trash capture systems, and targeted drainage extensions. These upgrades reduce flood risks during winter storms and protect key transportation corridors.

Wastewater Treatment Plant Modernization

Recognized as highly vulnerable during earthquakes, the Wastewater Treatment Plant (WWTP) has been prioritized for upgrades. Recent capital projects include clarifier superstructure replacements, effluent

pump replacements, lift station improvements, and membrane bioreactor (MBR) upgrades. These projects improve resilience to seismic shaking, flooding, and power disruption.

Wildfire Preparedness & Vegetation Management

Scotts Valley has coordinated closely with the Scotts Valley Fire Protection District to reduce wildfire risk in the Wildland–Urban Interface (WUI). Actions include vegetation management, community outreach events such as wildfire preparedness workshops, and enhanced enforcement of fire-safe building and defensible space standards. These efforts build directly on lessons from the 2020 CZU Lightning Complex Fire, which forced mass evacuations throughout the city including Mount Hermon Road and along Scotts Valley Road.

Capital Improvements

The City of Scotts Valley has substantially increased funding for capital improvements since 2024. These include road improvements that enhance circulation (including emergency response and evacuation) and storm drainage improvements that repair damaged or inoperable facilities, which reduce flooding risks. The city has budgeted close to $9 million dollars for capital improvements in Fiscal Year 2026.

Town Center Project (Resilient, Mixed-Use Redevelopment)

The long-anticipated Town Center Project broke ground in 2025 with support from $1M in federal funding. The mixed-use development will add housing, retail, and civic space while incorporating hazard mitigation design features such as modern stormwater infrastructure, climate-adaptive building codes, and redundant access connections. It also supports broader resilience by diversifying housing supply, creating public gathering areas, and strengthening the city's economic base.



Figure 2-12: Town Center Project Site

Community Wildfire & Insurance Workshop

The City of Scotts Valley held a free educational workshop for local residents about being prepared for fire season on May 14, 2024. The workshop addressed how homeowners who have lost their insurance coverage can mitigate their wildfire risks through creating defensible space, household evacuation planning, identifying evacuation routes, and monitoring weather and fire conditions. The workshop was held at the Performing Arts Theater and was described as being a "packed house."



Figure 2-13: Community Wildfire Preparedness Workshop Flyer

2.5 Risk Assessment

This section focuses on profiling hazards specific to the City of Scotts Valley and assessing their vulnerability independent of the broader county-wide planning area, which has been evaluated in Section 4 of Volume 1. The hazard profiles in Volume 1 discuss overall impacts to the planning area and describe relevant plans, policies, and regulations; past events; location; frequency and probability of future occurrences; severity and extent; warning time; secondary hazards; and climate change impacts. For more information on risk assessment methodologies, see Volume 1, Appendix A.

This section includes a tailored vulnerability assessment, analyzing assets at risk such as population, property, and critical facilities and infrastructure unique to the city, and information on city-specific differences in hazard vulnerability across the planning area. It also identifies total city assets at risk, including people, property, and critical facilities and infrastructure within the city. In addition, this section presents growth and development trends for the community, offering insights into vulnerabilities and risks that represent the broader context of assets at risk.

2.5.1 Hazard Screening & Prioritization

Members of the planning team from each participating jurisdiction came together to collaboratively decide which county-wide hazards would be included in the MJHMP and which would be excluded. Hazard screening and prioritization took place early in the process and integrated historic data, local knowledge, and consensus opinions to create a risk assessment matrix for the county as well as for each participating jurisdiction. These matrices indicate the priority of hazards prior to further refinement. Details about this process, the results of the discussion, and in-depth profiles for county-wide hazards can be found in Volume 1, Sections 2 and 3.

The final results of the hazard screening and prioritization exercises are summarized in Table 2-10, including which specific subhazards were selected by Scotts Valley's Planning Team.

The City of Scotts Valley's internal planning group used the same hazard identification and prioritization process as the county-wide Planning Team. They reviewed previously prepared hazard mitigation plans and other relevant documents to determine the realm of natural hazards that have the potential to affect the city. Table 2-9 provides a crosswalk of hazards identified in select planning documents, including the City of Scotts Valley's 2023 General Plan, 2021 Santa Cruz County Local HMP, and the 2023 State of California HMP. The crosswalk was used to develop a preliminary hazards list, providing a framework for the group to evaluate which hazards were truly relevant to the City of Scotts Valley and which ones were not.

The internal planning group then ranked hazards based on their probability of affecting City of Scotts Valley and potential impacts on the community. Figure 2-14 displays the results of the hazard risk ranking exercise that was performed. All hazards have been profiled in Volume 1 of this document. The purpose of this annex is to specifically address the city's vulnerability to specifically identified hazards.

Table 2-9: City of Scotts Valley Document Review Crosswalk

Hazard	City of Scotts Valley 2023 General Plan	Santa Cruz County 2021 LHMP	2023 California SHMP
Agricultural Pests			■
Avalanche			■
Climate Change	■	■	■
Coastal		■	■
Dam Failure		■	■
Drought		■	■
Earthquake / Liquefaction	■	■	■
Extreme Cold		■	■
Extreme Heat		■	■
Extreme Weather / Storms		■	■
Flood	■	■	■
Geologic / Mass Movement	■	■	■
Human-Caused	■		■
Insects			■
Levee Failure			■
Pandemic Disease			■
Sea Level Rise			■
Soil			■
Subsidence			■
Tornado			■
Tsunami / Seiche Wave			■
Volcano			■
Wildfire	■	■	■

Risk Assessment Matrix Definitions

PROBABILITY RATING

The likelihood of a hazard event occurring within a time period?

PROBABILITY

Highly Likely	**Highly likely** - 100% annual probability. Or Likely to occur every year in your lifetime.
Likely	**Likely** - between 10 & 100% annual probability. Or will occur several times in your lifetime.
Possible	**Possible** - between 1 & 10% annual probability. Or Likely to occur some time in your lifetime.
Unlikely	**Unlikely** - less than 1% annual probability. Or unlikely but possible to occur in your lifetime.

IMPACT RATING

In terms of injuries, damage, or death, would you anticipate impacts to be minor, limited, critical, or catastrophic when a significant hazard event occurs? The impact could be in terms of one hazard event (flooding from a culvert failure) or a large-scale event (multiple rivers flooding) in the same jurisdictional boundary.

IMPACT

Minor	Limited	Critical	Catastrophic

Minor - very few injuries, if any. Only minor property damage & minimal disruption on quality of life. Temporary shutdown of critical facilities.

Limited - minor injuries only. Approx. 10% or less of property in disaster footprint damaged or destroyed. Complete shutdown of critical facilities for more than one day.

Critical - multiple deaths/injuries possible. Between 25% and 50% of property in disaster footprint is damaged or destroyed. Complete shutdown of critical facilities for more than one week.

Catastrophic - high number of deaths/injuries possible. More than 50% of property in affected area damaged or destroyed. Complete shutdown of critical facilities for 30 days or more.

To concentrate resources, the jurisdictional planning team will focus on "High" and "Extreme" risk hazards. These hazards have the higher probability and greater impact as it relates to the jurisdictions planning area.

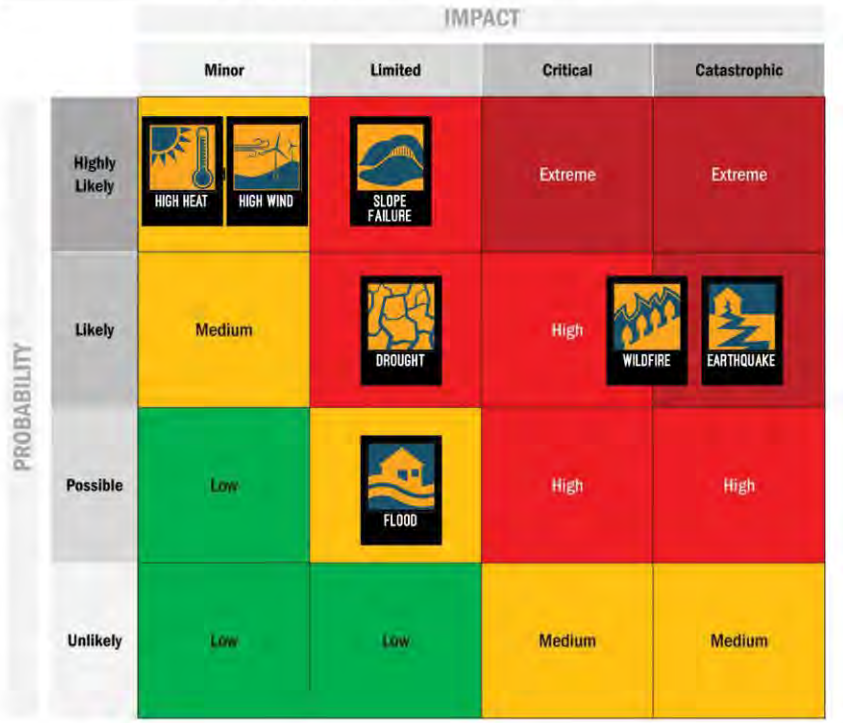
Hazard definitions are included in **Vol. 1** of this plan. Some hazards are discussed as subset hazards– e.g., "Dam Failure" within the "Flood" hazard profile. If a hazard is not present on the risk matrix or are grey in color, the jurisdictional planning team felt the hazard had a minimal footprint within their planning area and was not ranked.

Hazard Information / Legend:



Climate Change impacts will be addressed at the end of each hazard section and as a stand alone section for each jurisdiction.
For County and Municipal governments you will be required to address climate change impacts in the Safety Element of your General Plan. Climate change may change the frequency, duration and intensity of hazards listed above.

City of Scotts Valley Risk Matrix



SANTA CRUZ COUNTY
HAZARD MITIGATION PLAN

Figure 2-14: City of Scotts Valley Risk Assessment

Table 2-10: City of Scotts Valley Hazards Prioritization Summary

Hazard	Priority	Explanation
Wildfire	**Extreme**	Profiled in Volume 1, Section 3.2.1, and Section 2.5.2.1 in this annex
Flood	**Medium**	Profiled in Volume 1, Section 3.2.2, and Section 2.5.2.2 in this annex (not including Levee Failure due to no exposure)
Earthquake	**Extreme**	Profiled in Volume 1, Section 3.2.3, and Section 2.5.2.3 in this annex, including Liquefaction
Severe Weather	**Medium**	Profiled in Volume 1, Section 3.2.4, and Section 2.5.2.4 in this annex, including High Wind and Heavy Rain (not including Winter Weather due to low probability and impact)
Coastal Hazards	-	Not a priority due to no exposure
Slope Failure	**High**	Profiled in Volume 1, Section 3.2.6, and Section 2.5.2.5 in this annex
Dam Failure	-	Not a priority due to no exposure
Drought	**High**	Profiled in Volume 1, Section 3.2.8, and Section 2.5.2.6 in this annex
Extreme Heat	**Medium**	Profiled in Volume 1, Section 3.2.9, and Section 2.5.2.7 in this annex
Climate Change	**High**	Profiled in Volume 1, Section 3.2.10, and Section 2.5.2.8 in this annex (not including Sea-Level Rise due to no exposure)

2.5.2 Vulnerability to Specific Hazards

Assessing vulnerabilities exposes the unique characteristics of individual hazards and begins the process of narrowing down which areas within the city are vulnerable to specific hazard events. The vulnerability assessment considered unique local knowledge of hazards and impacts and a GIS overlaying method for examining such vulnerabilities in more depth. Using these methods, the city's planning group estimated vulnerable populations, properties, and assets, and potential losses, primarily to flood hazards. In addition, the exposure of city assets to drought, geological, earthquake, wildfire and slope failure were also considered.

Many of the hazard profiles include a snapshot map and damage estimation tables that illustrate the city's vulnerabilities to those specific hazards. These maps assisted the planning group in understanding the hazard exposure of populations, parcels, and critical facilities and infrastructure. Each snapshot map contains an exposure summary that displays the percentage of the population, the improvement and content value of parcels, and the amount of critical infrastructure that is exposed. For hazards without geospatial extents, such as drought and extreme weather, narratives are provided instead of exposure maps and tables.

Based on the hazard prioritization exercise, this vulnerability assessment focuses on eight hazards for the City of Scotts Valley, some of which encompass subhazards such as Liquefaction and High Wind.

Wildfire
SECTION 2.5.2.1



Flood
SECTION 2.5.2.2



Earthquake
SECTION 2.5.2.3



Severe Weather
SECTION 2.5.2.4



Slope Failure
SECTION 2.5.2.5



Drought
SECTION 2.5.2.6



Extreme Heat
SECTION 2.5.2.7



Climate Change
SECTION 2.5.2.8



2.5.2.1 Wildfire Hazard

The City of Scotts Valley is located within the Santa Cruz Mountains, a region characterized by dense forests, steep terrain, and a history of destructive wildfires. Although Scotts Valley's urban core is relatively compact and separated from some of the largest continuous wildland fuels, the city's wildland–urban interface (WUI) neighborhoods are directly exposed to wildfire hazards. This hazard is heightened by the city's reliance on limited evacuation routes, particularly Mount Hermon Road and Highway 17, which serve as critical lifeline corridors during emergencies.

Figure 2-15 shows that most of the land within and surrounding Scotts Valley is designated as Moderate to High Fire Hazard Severity Zone (FHSZ). Nearly the entire city contains Moderate FHSZs within Local Responsibility Areas (LRA), while High FHSZs are mapped in portions of the city, particularly along the western, southern, and eastern edges in neighborhoods such as Whispering Pines, Granite Creek, Glen Canyon, and the hillsides near Bean Creek. Although the exposure summary indicates that no parcels within Scotts Valley fall into the "Very High" Fire Hazard Severity Zone, the city is surrounded by Moderate and High FHSZs in adjacent State Responsibility Areas (SRA). This proximity places Scotts Valley firmly within the wildland urban interface (WUI), where residential development and infrastructure are directly exposed to wildfire risks originating in nearby wildland fuels.

While exposure summaries indicate that no critical infrastructure or essential facilities within the district are currently identified in the "very high" hazard zones, this does not diminish the systemic vulnerability Figure 2-15. The city includes areas designated as "High" wildfire hazard within both Local Responsibility Areas (LRA) and State Responsibility Areas (SRA). Approximately 6,300 residents live within these high-risk zones, primarily concentrated along the city's central boundary. Within this same hazard area, roughly 2,000 parcels are exposed, representing an estimated $3.2 billion in combined structure and content value. In addition, critical infrastructure is at risk, including around 150 key assets such as HWTS Facility, cell towers, schools, and water treatment facility, as well as approximately 80 miles of essential infrastructure lines located within the "High" wildfire hazard zones.

The Mean Fire Return Interval (MFRI) map, Figure 2-16, indicates that much of Scotts Valley lies within areas historically subject to fire every 35 to 100 years, with some surrounding areas experiencing fire more frequently (6 to 35 years). These statistics highlight that while Scotts Valley has not recently experienced catastrophic wildfire within city limits, the surrounding natural environment has a recurring fire ecology that poses a constant risk. The 2020 CZU Lightning Complex Fire, which burned more than 86,000 acres nearby, underscored the potential for Scotts Valley to be impacted by mass evacuations and poor air quality, even if flames did not directly burn the city.

The city, in collaboration with the Scotts Valley Fire Protection District (SVFPD), has pursued a range of wildfire mitigation activities. These include enforcing fire-safe building codes, conducting plan reviews for new development to ensure defensible space standards, and supporting vegetation management programs in WUI areas. In March 2025, the city, SVWD, and SVFPD co-hosted a Community Wildfire Preparedness Workshop, providing residents with hazard maps, fire safety guidance, and information on emergency planning.

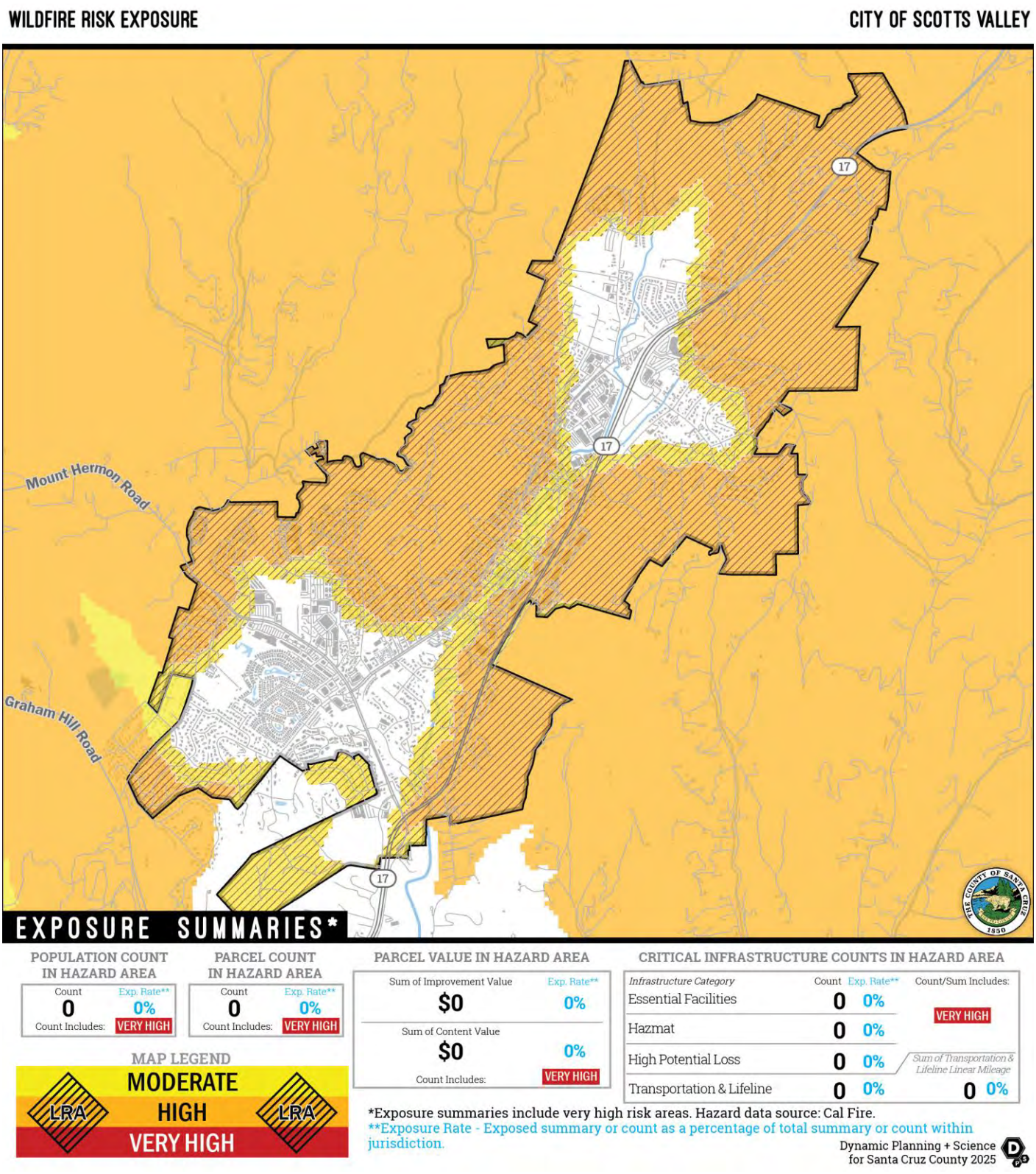


Figure 2-15: Exposure Summary – City of Scotts Valley Wildfire Risk

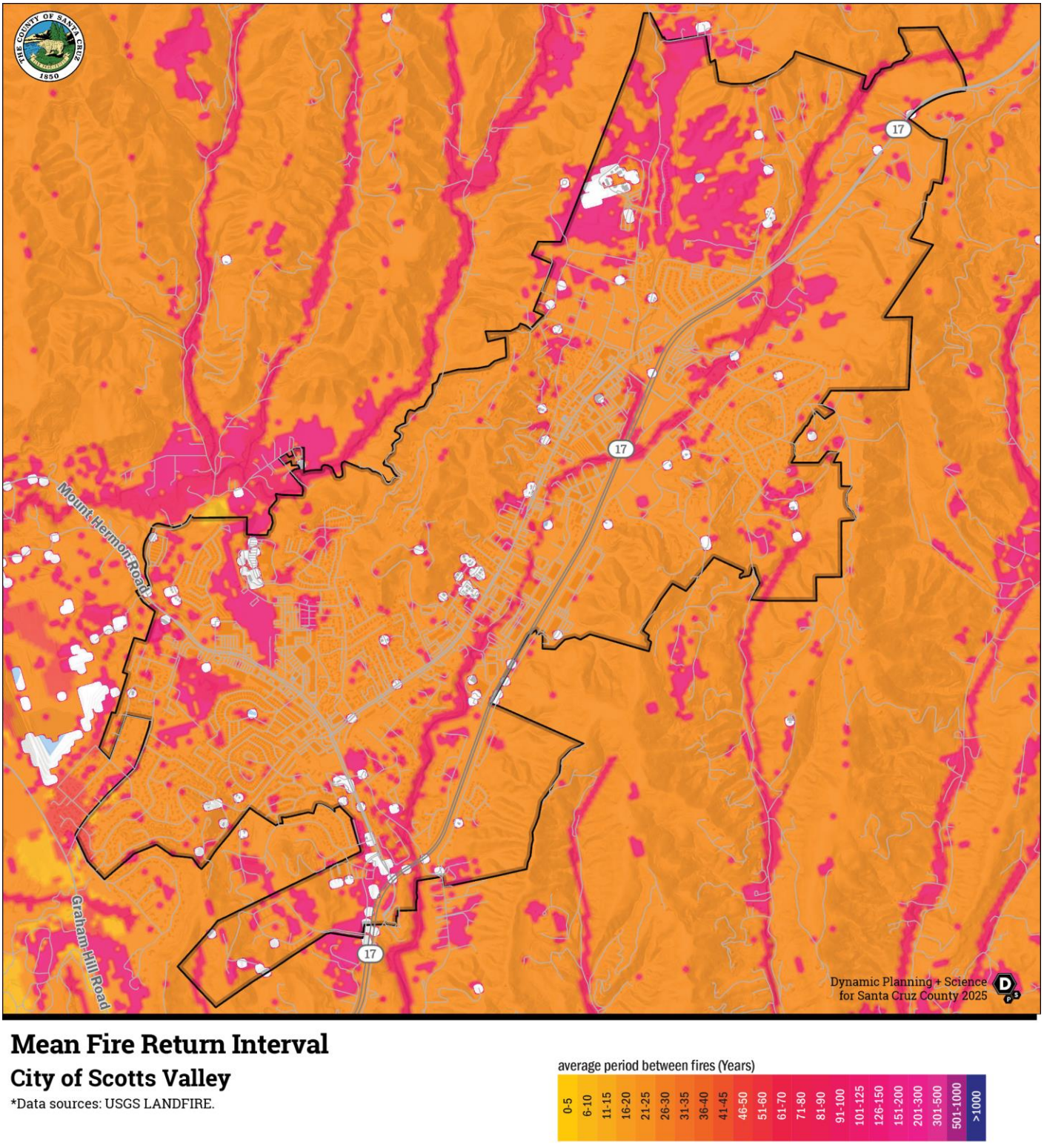


Figure 2-16: City of Scotts Valley Mean Fire Return Interval Map

2.5.2.2 Flood Hazard

Although Scotts Valley is a predominantly upland community in the Santa Cruz Mountains, localized flooding remains a significant hazard due to the city's valley-floor topography, small watersheds, and storm drain limitations. The city is bisected by Bean Creek and Carbonera Creek, which collect runoff from steep surrounding slopes and channel it through densely developed areas, including residential neighborhoods and key transportation corridors.

Figure 2-17 identifies several 100-year and 500-year floodplains within Scotts Valley. These areas are concentrated along Bean Creek in the southern and central parts of the city and Carbonera Creek in the northern section, which flows parallel to Highway 17. The exposure summary in Figure 2-17 indicates that approximately 401 residents live within mapped flood hazard zones, with 65 parcels exposed. Collectively, these parcels represent more than $107 million in improvement value and $101 million in content value at risk from a 100-year flood event. Critical infrastructure exposure is limited, though five hazardous materials sites, three high-potential-loss sites, and two transportation/lifeline assets are located in the mapped hazard area. This underscores the potential for both environmental and economic disruption from even localized flooding.

Beyond FEMA's regulatory floodplains, the DWR Awareness Zone mapping show additional areas susceptible to flooding outside the 100-year boundaries. These awareness zones, largely following smaller tributaries and steep drainage channels feeding into Bean and Carbonera Creeks, capture the potential for localized flash flooding and culvert overtopping during intense rainfall. Exposure summaries shown in Figure 2-18 for these areas identify 91 residents and 15 parcels, representing more than $18 million in improvement and content value, that could be impacted by flooding even outside mapped FEMA zones. This reflects Scotts Valley's broader vulnerability to stormwater-driven flooding, particularly as climate change increases the frequency of high-intensity rainfall events.

While Scotts Valley has not experienced catastrophic riverine flooding like larger coastal floodplains in Santa Cruz County, localized flooding has occurred in low-lying neighborhoods, road underpasses, and culvert bottlenecks. The city's aging storm drain infrastructure is a recurring issue noted in planning documents, with culverts on Scotts Valley Drive and Granite Creek Road identified as particular problem points. Additionally, the urbanized valley floor has limited space for stormwater absorption, increasing reliance on engineered conveyance systems. During major storm events, sedimentation and debris flows from surrounding hillsides further strain drainage capacity, raising risks of road closures and property damage.

Climate change poses a growing challenge for Scotts Valley's flood risk profile. Projections for the Central Coast region anticipate fewer total storms but more frequent extreme precipitation events, intensifying localized flooding in urbanized valleys like Scotts Valley. Coupled with wildfire risks in surrounding watersheds, post-fire debris flows could significantly increase sediment loading and downstream flood hazards. Planning for green infrastructure, upstream retention, and system redundancy will be critical for the city's long-term flood resilience.

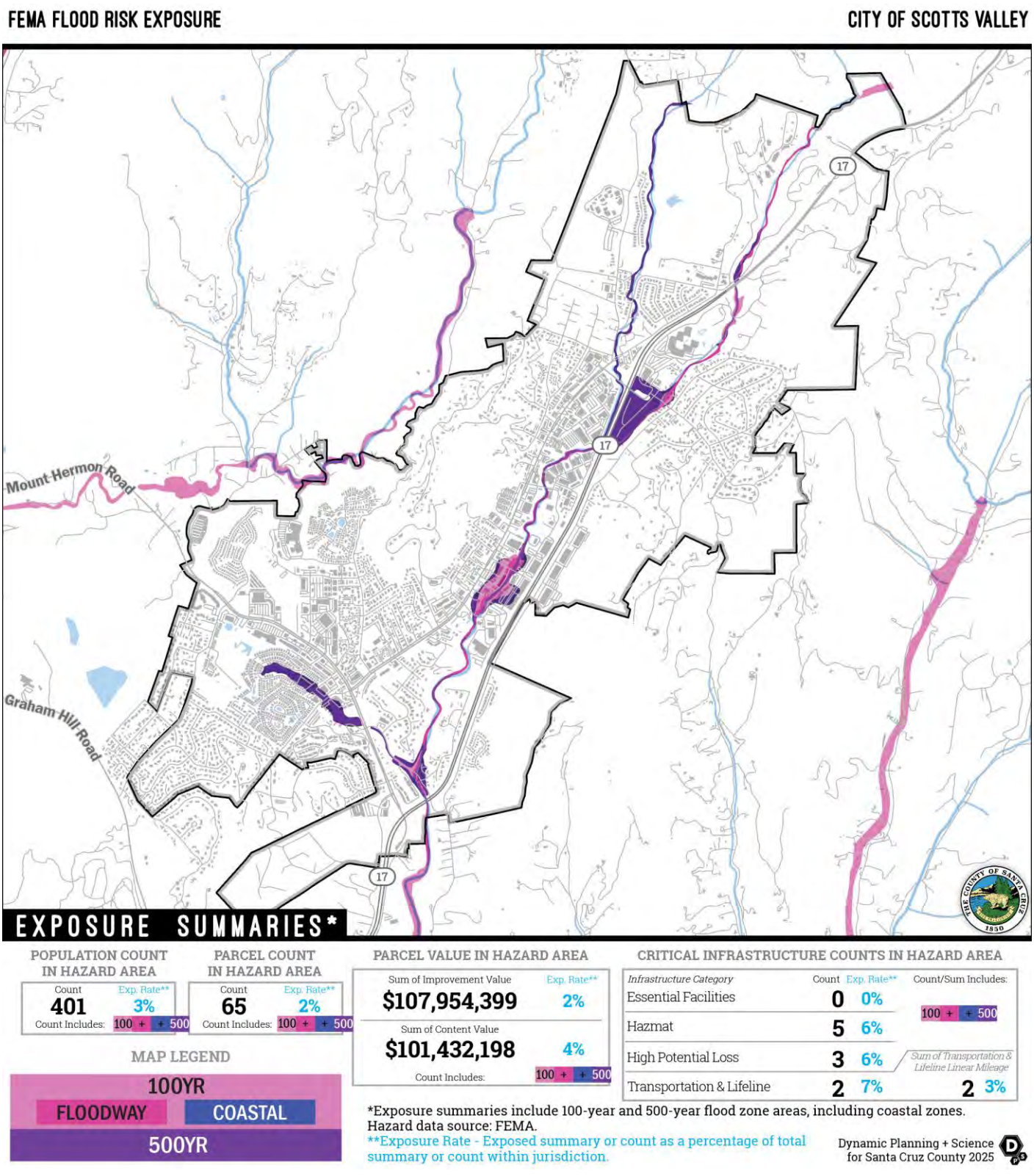


Figure 2-17: Exposure Summary – City of Scotts Valley Flood Risk (FEMA Zones)

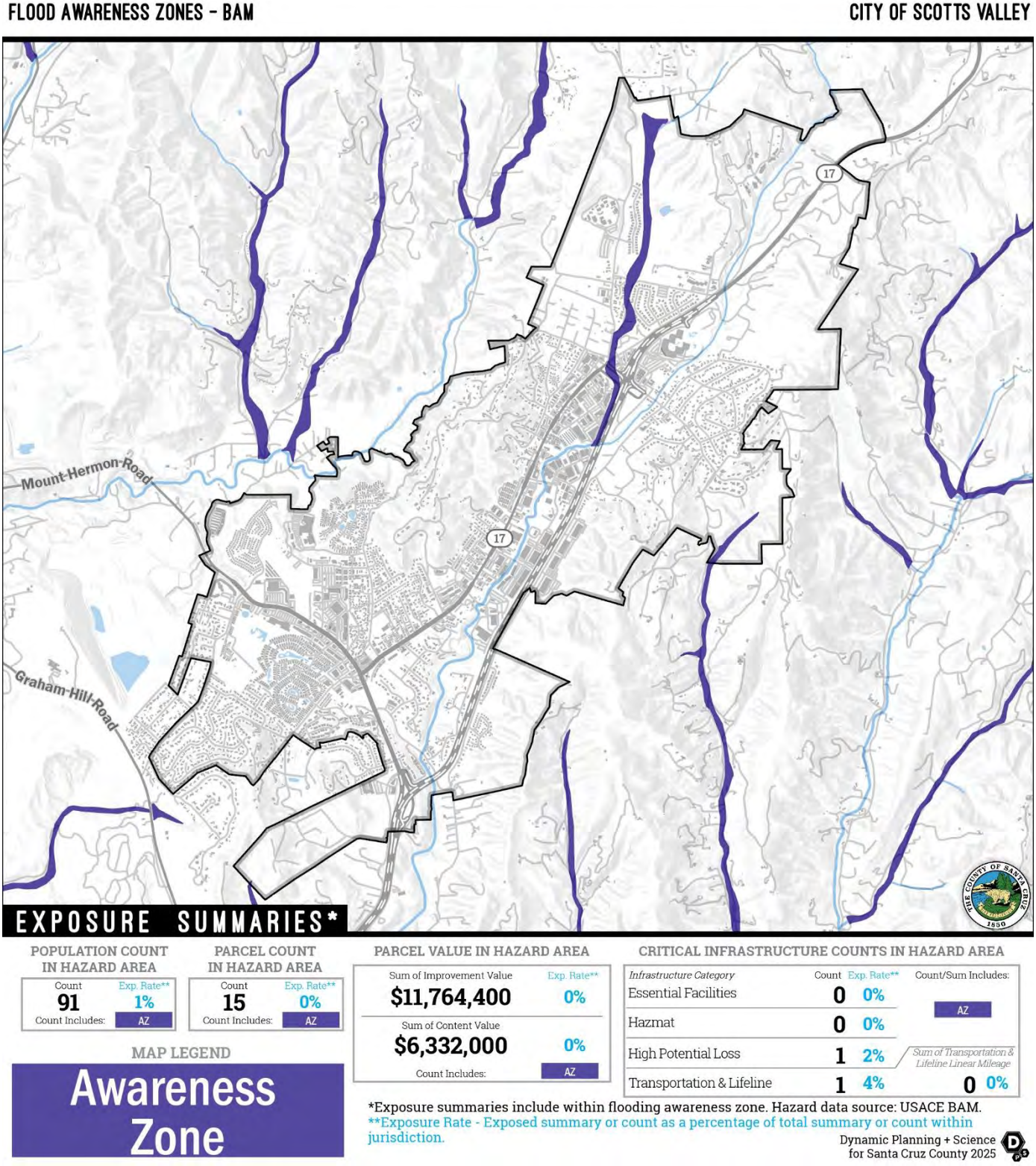


Figure 2-18: Exposure Summary – City of Scotts Valley Flood Risk (DWR Awareness Zones)

National Flood Insurance Program (NFIP)

The NFIP makes federally backed flood insurance available to homeowners, renters, and business owners in participating communities. FEMA has prepared a detailed Flood Insurance Study (FIS) for Santa Cruz County and municipalities. The study presents water surface elevations for floods of various magnitudes, including the 1% annual chance flood and the 0.2% annual chance flood (the 500-YR flood). Base flood elevations and the boundaries of the 100- and 500-YR floodplains are shown on Flood Insurance Rate Maps (FIRMs), which are the principal tools for identifying the extent and location of the flood hazard. FIRMs are the most detailed and consistent data source available, and for many communities they represent the minimum area of oversight under their floodplain management program. See Section 3 of Volume 1 for general information on the NFIP.

The City of Scott Valley has participated in the NFIP since 1983 and has adopted the most recent FIRMs and FIS issued by FEMA (effective May 16, 2012) as well as local floodplain development regulations in compliance with the minimum NFIP standards (Scotts Valley Municipal Code Chapter 15.16). These minimum standards include procedures and provisions for substantial improvements and substantial damages to existing structures, the latter of which are employed by the floodplain administrator and city building inspectors following any hazard event affecting structures located in the flood hazard area in accordance with NFIP requirements. Regulations for substantial improvements are enforced via permitting procedures. By code, implementation and enforcement of the city's floodplain regulations are assigned to the City Manager.

The City of Scotts Valley is currently in good standing with the provisions of the NFIP. Compliance is monitored by FEMA regional staff and by the California Department of Water Resources under a contract with FEMA. Maintaining compliance under the NFIP is an important component of flood risk reduction. See Table 2-11 for more information on the city's policies and historic flood insurance claims.

Table 2-11: City of Scotts Valley NFIP Summary

City of Scotts Valley NFIP Status and Flood Insurance Statistics	
NFIP Status	Participating Since 1983
Community Identification (CID)	060356
CRS Class (Entry Date)	N/A
Policies in Force (Total Coverage)	17 Policies ($5,256,000 in Coverage)
Policies Inside SFHA / Outside SFHA	5 Inside / 12 Outside
Total Claims (Total Paid)	21 Claims ($83,023 Paid)
Repetitive Loss (RL) / Severe Repetitive Loss (SRL) Properties	1 RL / 0 SRL
Repetitive Loss Payments	$10,815 for Buildings / $0 for Contents

Note: The number of policies is by property and does not count policies for individual buildings. The Privacy Act of 1974 (5 USC 522a) restricts the release of certain types of data to the public. Flood insurance policy and claims data is included in the list of restricted information. FEMA can only release such data to state and local governments, and only if the data is used for floodplain management, mitigation, or research purposes. Therefore, this plan does not identify the repetitive loss properties or include claims data for any individual property.

City of Scotts Valley Flood Damage Prevention Ordinance

Scotts Valley Municipal Code Chapter 15.16: Flood Damage Prevention establishes regulations for new development within flood hazard areas. New construction in flood hazard areas is required to elevate structures above the flood elevation and employ measures such as anchoring.

2.5.2.3 Earthquake Hazard

Scotts Valley is highly exposed to earthquake hazards due to its location in the Santa Cruz Mountains, near active faults associated with the San Andreas Fault system. The region has a well-documented history of seismic activity, most notably the 1989 Loma Prieta Earthquake (M6.9), which caused widespread damage across Santa Cruz County, including structural failures, utility disruptions, and major transportation impacts. Given Scotts Valley's dense residential neighborhoods, valley-floor infrastructure, and reliance on Highway 17 as its primary lifeline corridor, earthquakes remain one of the most significant natural hazards facing the community.

The USGS earthquake scenario for a M7.1 Santa Cruz Mountains event, Figure 2-19 shows that the entire population of Scotts Valley (approximately 12,138 residents) would experience shaking at Modified Mercalli Intensity (MMI) VII–VIII levels. These classifications correspond to "Very Strong to Severe Shaking," where significant structural damage, soil failure, and utility disruptions are likely. The exposure summaries in Figure 2-19 estimate that nearly 3,951 parcels, valued at over $4.3 billion in improvements and $2.9 billion in contents, could be directly affected. In addition, 77 hazardous material facilities, 47 high-potential-loss sites, and 27 transportation/lifeline assets are located in areas subject to severe shaking, underscoring the potential for cascading impacts across critical infrastructure systems.

Figure 2-20 identifies valley-floor neighborhoods along Bean Creek and Carbonera Creek as particularly vulnerable to liquefaction. Figure 2-20 shows approximately 4,322 residents (36% of Scotts Valley's population) and 1,368 parcels (35% of total parcels) are located in moderate to high liquefaction hazard zones. Parcel exposure in these areas accounts for $1.6 billion in improvements and $1.28 billion in contents. Liquefaction could cause structural settlement, road failures, and utility line ruptures, significantly affecting both residential neighborhoods and commercial corridors along Scotts Valley Drive and Mount Hermon Road. Critical infrastructure also faces heightened risk, with 62 hazardous materials facilities 23 high-potential-loss sites, and 13 transportation/lifeline facilities exposed to liquefaction-prone soils.

State regulatory maps show that no Alquist-Priolo Earthquake Fault Zones directly intersect the city limits of Scotts Valley, Figure 2-21. However, the proximity of mapped Quaternary faults in surrounding areas, combined with Scotts Valley's soil and slope conditions, means that ground shaking remains a citywide hazard. While no parcels fall directly within state-designated investigation zones, the potential for ground rupture, slope failure, and secondary hazards such as landslides remain significant in hillside areas surrounding the urban core.

A major earthquake would disrupt Scotts Valley's transportation networks, utilities, and emergency response systems. Highway 17, the city's critical north–south corridor, is highly vulnerable to landslides and structural failure in a strong seismic event, which could isolate Scotts Valley from Santa Cruz and the Bay Area. Water, sewer, and stormwater systems also face disruption risks, particularly along valley floors where liquefaction and soil settlement are most likely. Power outages and communication failures would further compound recovery challenges, leaving vulnerable populations at elevated risk.

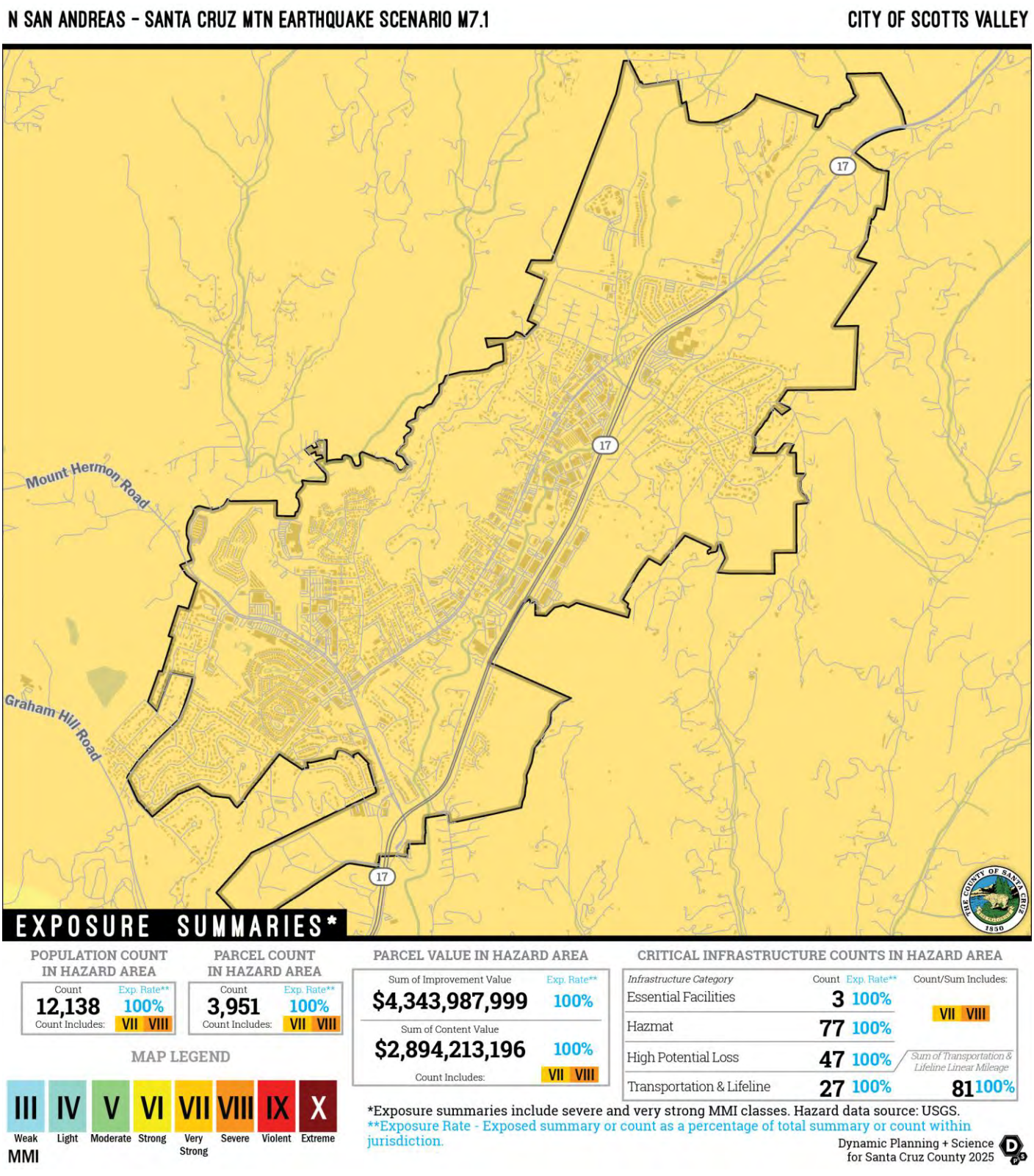


Figure 2-19: Exposure Summary – City of Scotts Valley Earthquake Risk (M7.1 San Andreas Shaking)

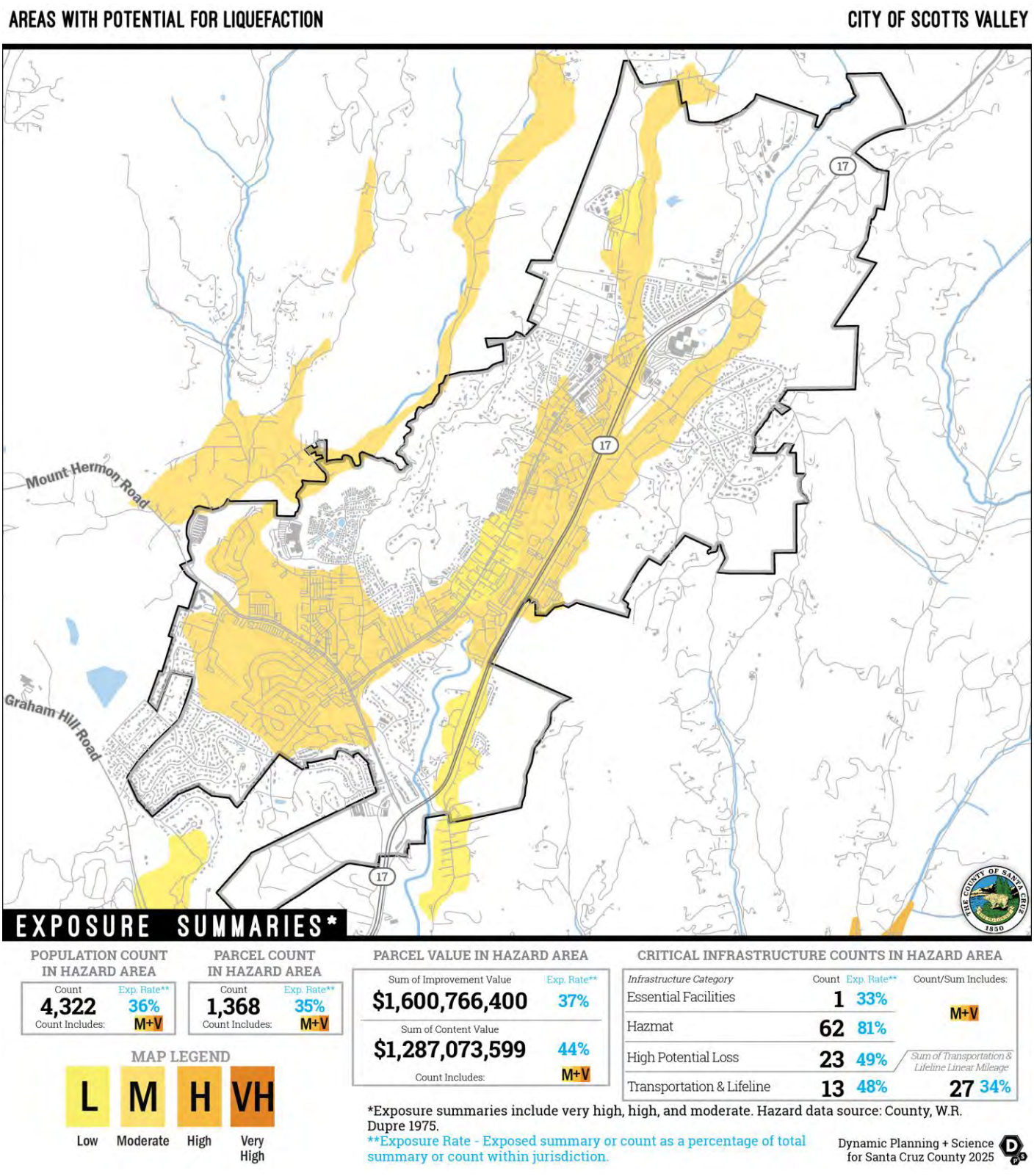


Figure 2-20: Exposure Summary – Scotts Valley Liquefaction Risk

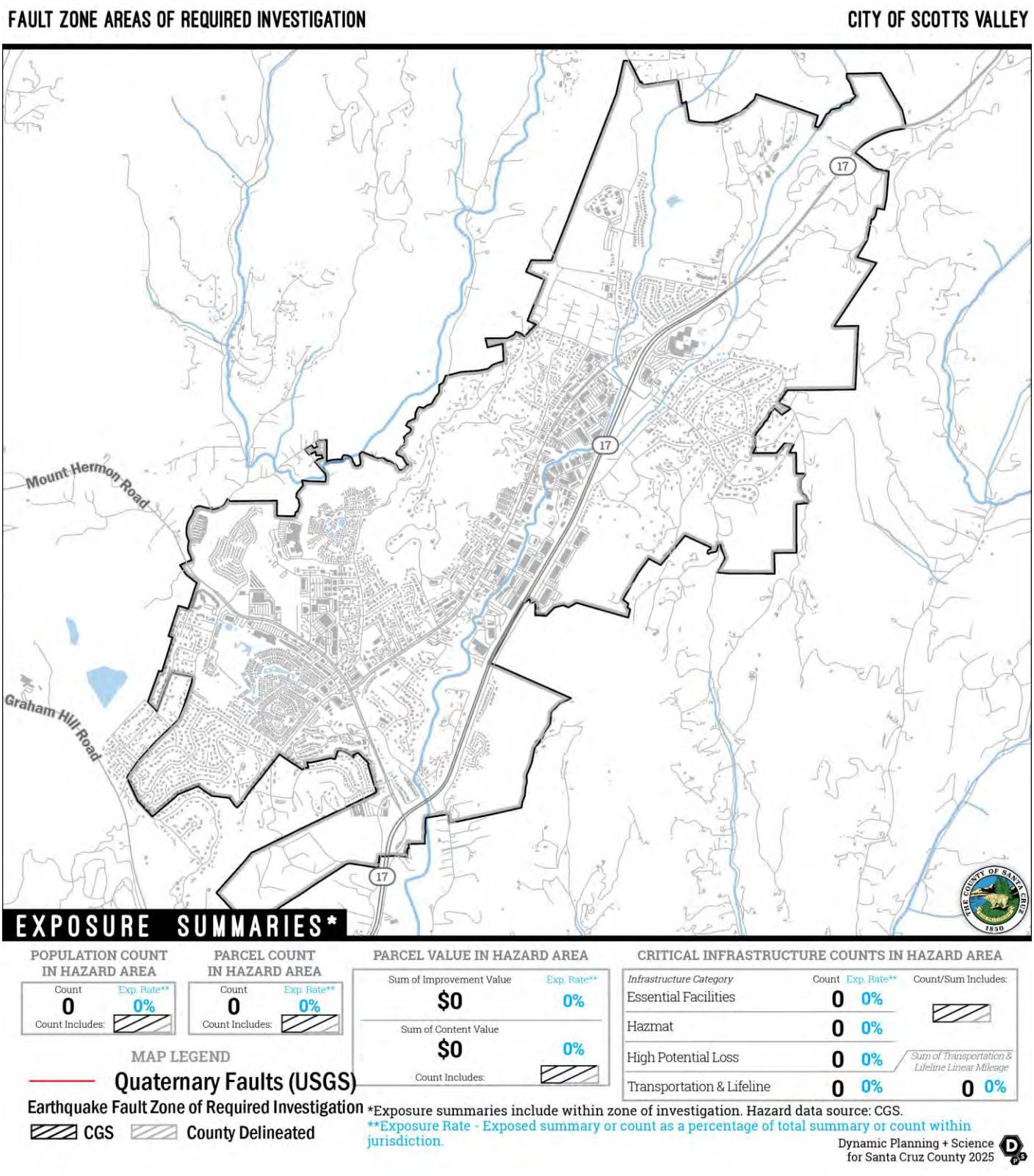


Figure 2-21: Exposure Summary – City of Scotts Valley Earthquake Risk (Fault Zones)

2.5.2.4 Severe Weather Hazard

Although Scotts Valley benefits from a generally mild coastal-influenced climate, the community remains vulnerable to a range of severe weather hazards, particularly extreme wind events, heavy rainfall, and winter storms. While these hazards may not occur as frequently or with the same intensity as wildfires or earthquakes, they can still cause significant damage to infrastructure, disrupt essential services, and affect vulnerable populations.

High Wind

High winds are among the most prominent severe weather risks for Scotts Valley. Strong winds funnel through the Santa Cruz Mountains, where the city's valley topography can amplify localized gusts. High wind events have the potential to down trees and power lines, leading to extended power outages, blocked evacuation routes, and property damage. Winds also exacerbate wildfire risk by rapidly spreading flames and embers, as seen during the 2020 CZU Lightning Complex Fire when strong winds complicated firefighting efforts and triggered widespread evacuations through Scotts Valley.

In addition to wildfire interactions, high winds alone pose risks to the built environment. Structures with aging roofs, mobile homes, and outdoor facilities such as parks and schools are especially vulnerable. Public safety concerns include the risk of falling trees in residential neighborhoods and along Highway 17, where high winds frequently contribute to traffic accidents and road closures. Businesses and schools may also face disruptions due to wind-related power outages and damage to overhead utilities.

Heavy Rain

Scotts Valley is also exposed to severe winter storms, which can bring heavy rain, localized flooding, and hazardous driving conditions. Storm systems frequently cause slope saturation, heightening the likelihood of landslides and debris flows in hillside neighborhoods and along lifeline corridors. Severe storms can also bring short-duration hail or lightning, creating safety risks and damaging property.

Severe weather impacts in Scotts Valley tend to cascade across multiple hazard categories. High winds and winter storms are closely linked to power system failures, compounding risks for seniors, medically dependent populations, and residents in mobile home parks. Storm-related downed trees often block key access routes, underscoring the importance of vegetation management and redundancy in emergency access. Planning efforts must also recognize that severe weather impacts can disproportionately affect low-income renters, mobile home residents, and those without reliable transportation, amplifying the need for equity-focused mitigation strategies.

2.5.2.5 Slope Failure Hazard

Scotts Valley faces a significant risk of slope failure due to its mountainous terrain, steep slopes, and location within the Santa Cruz Mountains. While the city's developed core lies in a relatively flat valley floor,

much of its surrounding residential development and infrastructure extend into hillside areas that are prone to landslides, debris flows, and slope instability, particularly during periods of heavy rainfall or seismic activity.

Landslide Risk Exposure

The landslide susceptibility maps, Figure 2-22 indicate that large portions of Scotts Valley's hillsides are classified as "High" susceptibility zones. These areas border the city's developed neighborhoods and lifeline corridors, including Highway 17, Mount Hermon Road, and Glen Canyon Road. Exposure summaries shown in Figure 2-22 estimate that approximately 3,892 residents (32% of Scotts Valley's population) live within mapped landslide hazard zones, along with approximately 934 parcels (24% of total). The value of improvements at risk is estimated at $824 million, with $417 million in content value also exposed.

Critical infrastructure exposure is also notable: one essential facility, two hazardous material sites, five high-potential-loss facilities, and 18 transportation or lifeline assets are located in high-susceptibility areas. Damage to these systems could severely disrupt emergency response, evacuation, and recovery efforts during major slope failures.

Triggers of Slope Failure

Slope failures in Scotts Valley are typically triggered by three primary factors: intense rainfall, earthquakes, and post-wildfire conditions. Heavy winter storms can saturate soils on steep terrain, destabilizing slopes and leading to shallow landslides or debris flows. Earthquake-induced failures are also a major concern, as a strong seismic event such as a rupture on the San Andreas Fault could trigger widespread landslides in the surrounding hillsides, compounding structural and infrastructure damage from shaking. In addition, wildfire and post-fire debris flows present another significant trigger. Following wildfire, vegetation loss and the formation of hydrophobic soils increase the likelihood of slope failures during subsequent storms, a hazard observed in nearby areas after the 2020 CZU Lightning Complex Fire.

Localized Areas of Concern

Within Scotts Valley, several localized areas of concern have been identified. The Highway 17 corridor is especially vulnerable, as slope instability along this critical north–south lifeline has the potential to block evacuation and supply routes, isolating the community. The Granite Creek and Bean Creek valleys present additional risks, where steep slopes and creek-adjacent neighborhoods make residential areas highly susceptible to debris flows. Finally, peripheral residential neighborhoods located on cut slopes or near steep canyon rims face heightened risks of slope instability, particularly during prolonged wet conditions. Together, these factors and localized vulnerabilities underscore the importance of slope stabilization, monitoring, and hazard-specific preparedness in Scotts Valley.

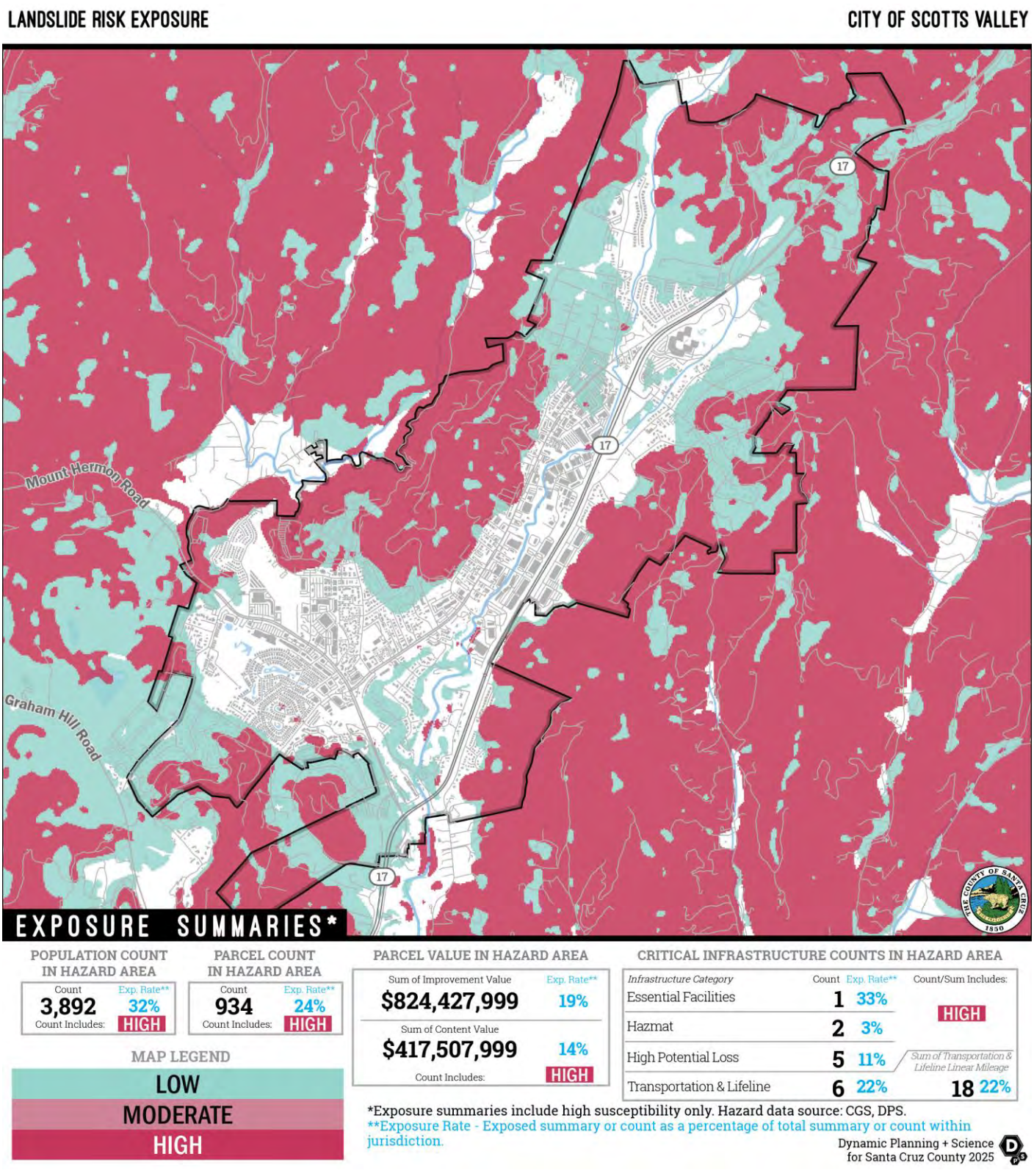


Figure 2-22: Exposure Summary – City of Scotts Valley Slope Failure Risk

2.5.2.6 Drought Hazard

Scotts Valley, like much of California, is highly vulnerable to drought conditions due to its reliance on local groundwater resources and the broader climatic variability of the Central Coast. Periods of prolonged drought have been a recurring hazard across the region, with significant events in 1976–77, 1987–92, 2007–09, and 2012–16, and again during the 2020–2022 drought. These droughts led to water shortages, groundwater overdraft, reduced surface flows in nearby creeks, and heightened stress on both natural and built systems.

Water Supply Dependence

The Scotts Valley Water District is the city's primary water provider for the city, and its system is almost entirely reliant on local groundwater wells. With no direct connections to imported surface water supplies such as the State Water Project or Central Valley Project, Scotts Valley is particularly susceptible to drought-related water shortages. Groundwater overdraft during extended drought periods can also contribute to land subsidence and long-term aquifer depletion, threatening the reliability of future supplies.

Impacts of Drought

Drought hazards affect Scotts Valley in multiple ways. For residents, water conservation mandates during drought emergencies can place economic and lifestyle burdens, particularly on households with extensive landscaping or those lacking access to recycled or non-potable water supplies. For businesses, especially those in hospitality, landscaping, or recreation sectors, drought can disrupt operations and increase costs. Drought also impacts the urban forest and landscaped public spaces, leading to tree mortality that increases wildfire fuel loads and safety hazards from falling branches. Schools, parks, and recreational facilities are similarly affected when irrigation is curtailed, reducing the quality of outdoor amenities.

From an environmental standpoint, reduced creek flows in Bean Creek and Carbonera Creek during drought stress aquatic ecosystems and degrade water quality. These conditions may also impact local recharge, further compounding long-term groundwater sustainability challenges.

Cascading Hazards

Drought is a compounding hazard in Scotts Valley because it worsens the risk of wildfire and public health emergencies. Extended dry periods increase the frequency and severity of wildfires in surrounding forests, as well as the potential for post-fire erosion and debris flows. Public health concerns during drought include increased vulnerability to extreme heat events, reduced availability of water for hygiene and cooling, and long-term impacts on mental health and community well-being as residents adapt to prolonged restrictions.

Table 2-12: Drought Classifications and Impacts

Category	Description	Possible Impacts
D0	Abnormally Dry	▪ Soil is dry; irrigation delivery begins early ▪ Dryland crop germination is stunted ▪ Active fire season begins
D1	Moderate Drought	▪ Dryland pasture growth is stunted; producers give supplemental feed to cattle ▪ Landscaping and gardens need irrigation earlier; wildlife patterns begin to change ▪ Stock ponds and creeks are lower than usual
D2	Severe Drought	▪ Producers increase water efficiency methods and drought-resistant crops ▪ Grazing land inadequate ▪ Fire season is longer, with high burn intensity, dry fuels, and large fire spatial extent; more fire crews on staff ▪ Lake- and river-based tourism declines; boat ramps close ▪ Trees are stressed; plants increase reproductive mechanisms; wildlife diseases increase ▪ Water temperatures increase; programs to divert water to protect fish begin ▪ River flows decrease; reservoir levels are low and banks are exposed
D3	Extreme Drought	▪ Federal water not adequate to meet irrigation contracts; extracting supplemental groundwater is expensive ▪ Fire season lasts year-round; fires occur in typically wet parts of the state; burn bans are implemented ▪ Ski and rafting business is low; mountain communities suffer ▪ Low water levels impede fish migration and cause lower survival rates ▪ Wildlife encroach on developed areas; little native food and water is available for bears, which hibernate less ▪ Water sanitation is a concern; reservoir levels drop significantly; surface water is nearly dry, flows are very low; water theft occurs ▪ Livestock need supplemental feed, cattle and horses are sold; little pasture remains ▪ Well and aquifer levels decrease; homeowners drill new wells
D4	Exceptional Drought	▪ Fire season is very costly; number of fires and areas burned are extensive ▪ Many recreational activities are affected ▪ Fields are left fallow; orchards are removed; vegetable yields are low; honey harvest is small; agricultural unemployment is high, food aid is needed ▪ Fish rescue and relocation begins; pine beetle infestation occurs; forest mortality is high; wetlands dry up; wildlife death is widespread; algae blooms appear ▪ Poor air quality affects health; greenhouse gas emissions increase as hydropower production decreases; West Nile outbreaks rise ▪ Water shortages are widespread; surface water is depleted; federal irrigation water deliveries are curtailed; water prices are extremely high; wells are dry, more and deeper wells are drilled; water quality is poor

Source: Adapted from U.S. Drought Monitor Drought Classifications and Impacts

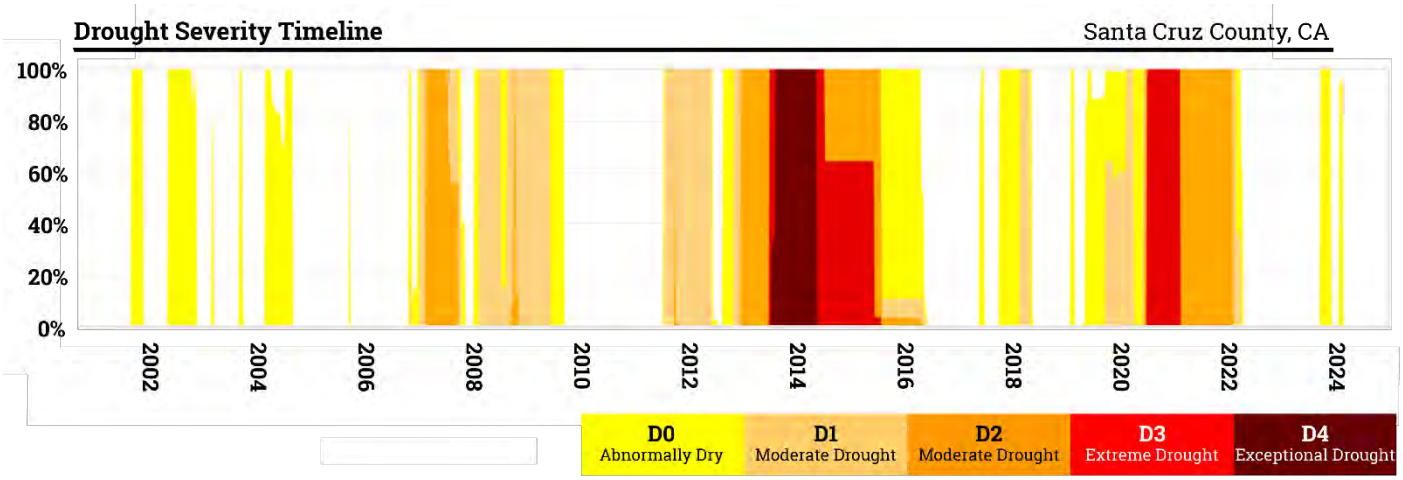


Figure 2-23: Drought Severity Timeline 2000-2024

Adapted from U.S. Drought Monitor Drought Classifications and Impacts

2.5.2.7 Extreme Heat Hazard

Scotts Valley's climate is strongly influenced by its position in the Santa Cruz Mountains and proximity to Monterey Bay, which typically moderates temperature extremes. However, despite this coastal influence, Scotts Valley has experienced increasing exposure to extreme heat events, a trend expected to worsen with climate change. Episodes of high temperatures lasting multiple days have become more common in recent decades, stressing vulnerable populations, utilities, and community services.

Historical & Regional Context

While Scotts Valley traditionally experiences mild summers, regional heat waves have demonstrated the city's vulnerability. For example, the 2017 and 2020 statewide heat waves caused prolonged temperatures exceeding 100°F in Santa Cruz County's interior valleys, including Scotts Valley. These events strained the local power grid, triggered rolling blackouts, and elevated health risks for seniors, children, outdoor workers, and those without access to air conditioning. Unlike coastal communities directly adjacent to the Pacific Ocean, Scotts Valley's inland valley geography can trap heat, making high-temperature events more pronounced locally.

Impacts on Residents & Infrastructure

Extreme heat hazards impact Scotts Valley in several ways. Public health risks are the most immediate concern, with vulnerable populations such as seniors, young children, outdoor workers, medically fragile residents, and mobile home communities at elevated risk of heat-related illnesses. The city's demographics,

particularly its older adult population and concentration of seniors with disabilities, increase sensitivity to prolonged high temperatures.

From an infrastructure perspective, heat waves stress the power grid, raising the likelihood of blackouts that can leave residents without cooling options. Prolonged extreme heat can also damage roads, rail, and utilities, as well as strain HVAC systems in schools, businesses, and critical facilities. Parks, athletic fields, and outdoor programs may face closures due to unsafe conditions, impacting community services and recreation.

Cascading Effects

Extreme heat often cascades into other hazard areas. Heat-dried vegetation increases wildfire risk and contributes to poor air quality, especially when combined with regional wildfire smoke. Heat events may also worsen drought conditions by accelerating evaporation and increasing water demand, further stressing Scotts Valley's groundwater-dependent supply system. Socially, low-income households and renters face disproportionate challenges during heat events, as they may lack reliable air conditioning or funds to absorb higher utility costs.

2.5.2.8 Climate Change Hazard

Average annual temperatures across most of California have already increased by more than 1°F, with some areas experiencing rises of over 2°F when comparing the 1901–1960 average to that of 1986–2016. Daily maximum temperatures—a key indicator of extreme heat—are projected to increase by 4.4°F to 5.8°F by 2050 and by 5.6°F to 8.8°F by 2100. Heat waves that impact public health, known as heat-health events, are also expected to intensify across the state. By 2050, these events are projected to last up to two weeks longer in the Central Valley and occur four to ten times more often in the Northern Sierra region (California Natural Resources Agency, 2022).

California is already experiencing significant impacts from climate change, including prolonged drought, a lengthened wildfire season, increased coastal flooding and erosion, and widespread tree mortality. The state has observed rising average temperatures, more extreme heat days, fewer cold nights, a longer growing season, and shifts in the water cycle, with less winter precipitation falling as snow. In addition, summertime fog has declined by approximately 33%, and both snowmelt and rainwater runoff are occurring earlier in the year (Cal OES, 2018).

Long-term trends indicate a 12% to 20% decline in fog across California from 1900 through projections to 2070. Climate experts suggest that warming temperatures reduce the ability of air masses to cool enough to produce fog, which plays a critical role in supporting California's ecosystems (Grantham, Teodore; University of California, Berkeley, 2018).

The City of Scotts Valley, located in the Santa Cruz Mountains, is increasingly vulnerable to the long-term impacts of climate change, which act as hazard multipliers across the region. While Scotts Valley benefits

from a mild coastal-influenced climate, future projections show significant shifts in temperature, precipitation, and seasonal patterns that will amplify existing risks such as wildfire, drought, extreme heat, flooding, and slope failure.

For Scotts Valley, which sits in an inland valley setting, heat can become trapped and linger, intensifying the impacts of heat waves compared to nearby coastal zones. Rising temperatures will disproportionately affect seniors, children, outdoor workers, and mobile home communities, as many residents lack access to cooling systems. These changes elevate risks of heat-related illness, increase demand on the energy grid, and place stress on public services and infrastructure.

Drought & Water Reliability

Scotts Valley is heavily reliant on local groundwater as its primary water supply, with no imported water connections. Climate change is expected to bring longer and more frequent drought cycles, reducing recharge to aquifers while increasing local demand. This not only strains water availability for residents and businesses but also exacerbates the health of creek ecosystems such as Bean Creek and Carbonera Creek, which support groundwater recharge and local biodiversity. Drought conditions also contribute to vegetation stress, elevating wildfire hazards and reducing the city's ability to sustain its urban tree canopy.

Precipitation, Storms & Flooding

Although total annual rainfall may decline, precipitation is projected to arrive in the form of fewer but more intense storm events. This shift increases the likelihood of localized flooding along Scotts Valley's creeks and storm drain corridors, especially in neighborhoods near Bean Creek, Carbonera Creek, and Granite Creek. Intense rainfall following drought or wildfire further raises the risk of debris flows and slope failures on the city's surrounding hillsides and along lifeline corridors such as Highway 17 and Mount Hermon Road. These cascading hazards can damage critical infrastructure, disrupt evacuation routes, and isolate residents during emergencies.

Wildfire & Vegetation Change

Warmer and drier conditions extend the wildfire season and intensify the risk of large-scale fires in the Santa Cruz Mountains. Scotts Valley's location in the wildland–urban interface (WUI) means that even moderate wildfires in surrounding hillsides can force evacuations, degrade air quality, and threaten property at the city's edges. The 2020 CZU Lightning Complex Fire highlighted this vulnerability, as Scotts Valley served as a key evacuation corridor and staging area despite not being directly burned. Climate-driven shifts in vegetation composition and tree mortality also increase long-term wildfire fuel loads.

Secondary & Cascading Impacts

Climate change will have far-reaching effects beyond direct hazards. Extended power shutoffs (PSPS) implemented during high fire risk conditions will increasingly disrupt households and businesses. Public health concerns, particularly for seniors and medically dependent residents, will rise as overlapping heat, smoke, and water shortages occur more frequently. Economic impacts may include higher costs for water, energy, and insurance, as well as increased pressure on small businesses and vulnerable renters.

2.5.3 Planning for Hazards & Sustainable Growth

The City of Scotts Valley has adopted a comprehensive approach to balancing growth with hazard mitigation, recognizing that its location in the Santa Cruz Mountains presents both development opportunities and natural hazard risks. Since incorporation in 1966, the city has emphasized careful land use planning to preserve its small-town character while adapting to pressures from nearby Santa Cruz and the greater San Jose metropolitan region.

Long-Range Planning & Growth Management

Scotts Valley's 2023 General Plan sets the framework for future growth, focusing on infill development and redevelopment rather than outward expansion. The city is largely built out within its 4.6-square-mile boundary, with remaining growth expected to occur along Scotts Valley Drive, Mount Hermon Road, and the planned Town Center project. The Housing Element of the General Plan identifies capacity for over 2,000 new housing units, exceeding state-mandated Regional Housing Needs Allocation (RHNA) targets. Much of this growth will be in the form of mixed-use and higher-density projects, supported by zoning changes that reduce commercial-use requirements and encourage residential development in key corridors.

The Town Center Project, which broke ground in 2025, represents the city's signature growth initiative. Envisioned as a pedestrian-oriented downtown, the project integrates housing, retail, public gathering spaces, and resilient design features such as modern stormwater infrastructure and climate-adaptive building standards. By consolidating growth in a centralized, mixed-use hub, the city is both addressing housing needs and reducing hazard exposure by avoiding sprawl into wildfire-prone hillsides.

As part of its planning framework, Scotts Valley can integrate hazard information from the MJHMP directly into land use and capital improvement planning. The 2025 MJHMP update expands on this integration by introducing new mapping and analytical tools, including the Risk Assessment and Mitigation Planning (RAMP) platform (see Volume 1, Section 2.2.1), which supports data-driven decisions about where and how development should occur. By applying these updated tools and policies, Scotts Valley ensures that future growth is resilient, sustainable, and responsive to the evolving challenges of climate change and natural hazards.

Building Codes & Development Standards

Scotts Valley's development strategies emphasize resilient growth management through integration of state building codes, local ordinances, and hazard-focused development standards. Like other California cities, Scotts Valley enforces some of the most stringent building regulations in the world, ensuring that new development meets high standards for safety, sustainability, and hazard resilience.

The City of Scotts Valley is required to regularly update its development regulations to conform with the California Building Code (CBC), which is revised on a three-year cycle and was most recently updated in 2025. The CBC sets minimum standards for structural safety, seismic resilience, fire resistance, and accessibility. Scotts Valley also enforces the California Fire Code, California Residential Code, and California Green Building Standards (CALGreen), which incorporate energy efficiency, sustainable design, and climate change adaptation into construction. Together, these codes provide the foundation for a comprehensive risk reduction strategy embedded in the city's-built environment.

The Scotts Valley Municipal Code outlines several key provisions that further reduce hazard risk:

- **Title 15 – Buildings and Construction**: Adopts the latest versions of the California Building, Fire, Plumbing, Mechanical, and Energy Codes, ensuring compliance with seismic, fire, and life-safety standards across all new construction and major remodels.
- **Title 16 – Subdivisions**: Establishes requirements for subdivision design, including safe access, utility provision, and grading standards to reduce risks from slope failure, erosion, and flooding.
- **Title 17 – Zoning**: Regulates land use to avoid or mitigate development in hazardous locations. Zoning restrictions incorporate hillside development controls, riparian setbacks, and requirements for geotechnical studies in liquefaction-prone or unstable slope areas.
- **Floodplain Management (Ord. 480.1, codified in Title 15)**: Implements FEMA-compliant floodplain management regulations, requiring finished floor elevations above base flood elevations, prohibiting encroachments that would raise flood levels, and regulating development within Bean Creek and Carbonera Creek floodplains.

In addition to these standards, Scotts Valley participates in the National Flood Insurance Program (NFIP), requiring new development in mapped flood hazard areas to meet or exceed FEMA's minimum flood protection standards. This participation ensures that residents and businesses remain eligible for flood insurance and supports community-wide flood resilience. Through these combined codes and standards, Scotts Valley ensures that new development is either restricted in hazard-prone areas or subject to robust hazard-mitigation requirements.

California Environmental Quality Act (CEQA)

The California Environmental Quality Act (CEQA) requires General Plans, Specific Plans, and major development projects to evaluate hazards such as flooding, wildfire, seismic risk, and slope instability.

Environmental documents must identify these risks and propose mitigation measures to reduce impacts, which may include infrastructure upgrades, evacuation planning, geotechnical design standards, or limits on development in high-risk areas.

CEQA plays an important role in Scotts Valley's planning and development framework, ensuring that growth decisions incorporate environmental and hazard considerations. Scotts Valley serves as the lead agency for local projects, meaning the city must prepare and certify environmental review documents before approving discretionary development. These include Initial Studies, Mitigated Negative Declarations (MNDs), and Environmental Impact Reports (EIRs) depending on the project's scope and potential impacts.

Scotts Valley recently integrated CEQA compliance into its 2023 General Plan update, which included a Draft Environmental Impact Report (DEIR) prepared pursuant to CEQA Guidelines. The DEIR evaluated the General Plan's potential impacts on topics such as geology and soils (earthquakes, slope failure), hydrology and water quality (flooding and stormwater), biological resources, wildfire hazards, greenhouse gas emissions, and climate change. By addressing these issues at the General Plan level, Scotts Valley is able to use a tiered CEQA review process for future projects, streamlining environmental review for developments that are consistent with General Plan policies while still requiring project-specific mitigation for issues not fully analyzed in the program EIR.

Through CEQA, Scotts Valley must identify significant impacts, consider alternatives, and adopt mitigation measures, such as slope stabilization, defensible space, stormwater controls, or floodproofing. The City's Safety Element and Municipal Code ensure these mitigation measures become enforceable project conditions. This process also enhances transparency, as CEQA requires public participation—residents, businesses, and stakeholders can review draft environmental documents and comment on hazard and environmental concerns before final approvals.

2.5.3.1 Development & Hazard Considerations

The City of Scotts Valley covers approximately 4.6 square miles and functions as a suburban community and regional connector between Santa Cruz County and the Silicon Valley. Unlike larger coastal jurisdictions, Scotts Valley is nearly built out, with limited vacant land available for development. Future growth is expected to occur primarily through infill development, redevelopment of commercial corridors such as Scotts Valley Drive and Mount Hermon Road, and the long-planned Town Center Project, which will introduce new mixed-use residential and commercial opportunities in the heart of the city. Additional incremental development is anticipated in hillside neighborhoods and through adaptive reuse of existing commercial and light industrial sites.

Scotts Valley's regulatory framework requires that new development conform to California's strict planning and building codes, as well as local hillside development, floodplain management, and wildfire safety standards. These measures reduce, but do not eliminate, exposure to natural hazards. As the city continues to pursue housing and economic development goals, hazard considerations remain central, since much of

the community is bordered by steep hillsides, wildfire-prone vegetation, and small but flood-sensitive creeks.

Wildfire Hazards: While the city's urban core lies in a valley bottom, Scotts Valley is encircled by wildland–urban interface (WUI) neighborhoods that are exposed to moderate to high wildfire hazard severity zones. Neighborhoods such as Whispering Pines, Glen Canyon, and areas west of Mount Hermon Road face the highest risk. New and redeveloped structures in these areas must comply with California Fire Code standards, including defensible space requirements, ember-resistant construction, and fire-safe landscaping. Scotts Valley's role as a regional evacuation hub during the 2020 CZU Lightning Complex Fire also highlights the need for future growth to be paired with evacuation planning and improved redundancy in access routes.

Flood Hazards: Flood risk in Scotts Valley is concentrated along Bean Creek and Carbonera Creek, which traverse the city's valley floor. FEMA Flood Insurance Rate Maps (FIRMs) identify residential neighborhoods, commercial parcels, and infrastructure corridors adjacent to these creeks within the 100-year and 500-year floodplains. While the overall extent of mapped flood hazard areas is smaller than in low-lying coastal cities, several hundred residents and millions of dollars in structures are at risk. Future redevelopment and infill in these areas will require compliance with FEMA standards, finished floor elevation requirements, and stormwater management investments to reduce localized flooding.

Liquefaction Hazards: The valley floor of Scotts Valley is underlain by alluvial soils with moderate to high liquefaction susceptibility, particularly in neighborhoods near Bean Creek, Carbonera Creek, and Scotts Valley Drive. Exposure estimates indicate that more than one-third of the city's parcels and residents lie within liquefaction hazard zones. A major earthquake could result in structural settlement, pipeline rupture, and damage to roadways. Future development in these areas must incorporate geotechnical investigations, soil stabilization measures, and resilient utility design to mitigate earthquake-induced ground failure.

Drought: Scotts Valley relies heavily on local groundwater for its water supply, with no imported surface water connections. This reliance places the community at elevated risk during drought cycles, which are expected to worsen with climate change. Growth will place additional demand on the groundwater basin, which is already stressed by overdraft and limited recharge. To address this, the Scotts Valley Water District has invested in recycled water infrastructure, conservation programs, and public outreach, but new development will need to integrate water-efficient design, drought-tolerant landscaping, and expanded recycled water use to maintain long-term supply reliability.

If limited development occurs within a hazard area, municipal codes will mandate measures to mitigate impacts and minimize potential losses from hazard events. To ensure community safety, emergency and evacuation planning must account for local demographics, such as the prevalence of seniors, and for anticipated local impacts, such as service interruptions and restricted access. As such, the city's anticipated growth (or lack thereof) is not expected to significantly increase its vulnerability to the identified priority hazards.

2.5.4 Hazard Problem Statements

As part of the mitigation action identification process, the internal planning group for each jurisdiction identified areas of concern (aka problem statements) for their respective facilities based on the risk assessment and vulnerability analysis. Problem statements focused on the impact, victim, and the threat that the hazard could create in the jurisdiction, as described in Table 2-13 Identifying common issues and weaknesses through these problem statements assisted the planning group in understanding the realm of resources needed for mitigation.

The goal is to have at least one mitigation action for every problem statement. Projects or actions have been developed to mitigate each problem identified. See Table 2-15 for a full list of mitigation actions and corresponding problem statements that they address. Each problem statement is coded with a problem number for cross-referencing between Table 2-13 and Table 2-15.

Table 2-13: City of Scotts Valley Hazard Problem Statements

Hazard	Sub-Hazard	Area of Concern	Problem IS	Description	Related Mitigation Actions
Climate Change		Victim	ps-CC-SVL-01	Seniors, renters, and households with limited English proficiency may be left out of climate adaptation planning or early warnings, increasing their risk during compounding, climate-driven hazard events.	ma-CC-SVL-01
Climate Change		Victim	ps-CC-SVL-02	Outdoor workers, children, and residents with health sensitivities are increasingly exposed to health risks from climate-driven extremes like wildfire smoke, poor air quality, and longer heatwaves.	ma-CC-RCD-01
Climate Change		Impact	ps-CC-SVL-03	Climate change amplifies impacts on critical facilities, infrastructure, and services, especially when multiple hazards (e.g., wildfire + heavy rain + landslide) occur in close succession.	ma-CC-SVL-01
Climate Change		Threat	ps-CC-SVL-04	Scotts Valley is projected to experience increasing frequency, intensity, and overlap of natural hazards as climate change progresses and currently lacks a formal climate resilience strategy that integrates adaptation planning into everyday operations.	ma-CC-SVL-01, ma-AH-RCD-02
Drought		Victim	ps-DR-SVL-01	Low-income households and renters in Scotts Valley may face disproportionate impacts from water use restrictions or rising utility costs during droughts, due to limited financial flexibility and lack of alternative water sources.	ma-DR-SVL-01

Hazard	Sub-Hazard	Area of Concern	Problem IS	Description	Related Mitigation Actions
Drought		Victim	ps-DR-SVL-02	Residents dependent on private wells or older plumbing systems may experience water availability or quality issues during prolonged drought, particularly in hillside and outlying areas.	ma-DR-CBC-03
Drought		Impact	ps-DR-SVL-03	Drought conditions limit the City?s ability to maintain recreational facilities and urban landscaping and places strain on the limited water supply, which reduces resilience for firefighting use and can lead to economic, quality-of-life, and public health impacts.	ma-DR-CBC-01
Drought		Threat	ps-DR-SVL-04	Reliance on the Santa Margarita Groundwater Basin heightens the city?s drought vulnerability, limiting flexibility in prolonged dry years and reducing water availability, and climate change is expected to increase the frequency, severity, and duration of droughts in Scotts Valley, placing long-term stress on water resources and reducing reliability.	ma-DR-PVW-02
Extreme Heat		Victim	ps-EH-SVL-01	Elderly residents and individuals with underlying health conditions are vulnerable to heat-related illness, especially those living alone or in homes without air conditioning or access to cooling centers.	ma-ET-CPT-01
Extreme Heat		Victim	ps-EH-SVL-02	Low-income households may be unable to afford increased energy costs during high heat events or may avoid using cooling appliances, increasing health risks during prolonged heatwaves.	ma-ET-CPT-01
Extreme Heat		Impact	ps-EH-SVL-03	Extreme heat increases demand on the electrical grid, risking brownouts and limiting the City?s ability to maintain essential services and indoor safety, particularly in public buildings or medical facilities.	ma-EH-SCC-01
Extreme Heat		Impact	ps-EH-SVL-04	Sustained high temperatures affect public health, school attendance, and outdoor recreational programming, impacting vulnerable populations and limiting community access to services.	ma-AH-SCC-03

Hazard	Sub-Hazard	Area of Concern	Problem IS	Description	Related Mitigation Actions
Extreme Heat		Threat	ps-EH-SVL-05	The number of extreme heat days is increasing in Scotts Valley due to climate change, with longer and more frequent heatwaves projected for inland areas, and the City lacks a formal heat emergency response plan for opening cooling centers and reaching at-risk populations.	ma-EH-WTS-01, ma-AH-WTS-01
Earthquake		Victim	ps-EQ-SVL-01	Renters, mobile home residents, and others with limited financial resources may lack earthquake insurance, emergency supplies, or the ability to recover from earthquake-related displacement or property damage.	ma-EQ-SCC-02, ma-EQ-CPT-04
Earthquake		Impact	ps-EQ-SVL-02	A major earthquake could severely damage the City?s highly vulnerable wastewater treatment plant, leading to regional service disruptions and potential environmental contamination.	ma-EQ-SVW-03
Earthquake		Impact	ps-EQ-SVL-03	Earthquake-induced shaking and ground deformation may damage critical lifeline infrastructure, including utilities and access routes such as Highway 17 and the Granite Creek and Mt Hermon bridges, isolating parts of the community, hindering emergency response during and after a seismic event, and compounding public health and safety challenges.	ma-EQ-CPT-03, ma-EQ-SVL-01
Earthquake		Threat	ps-EQ-SVL-04	Older residential structures and critical facilities in Scotts Valley are at elevated risk of structural failure during an earthquake and the City lacks a complete inventory of unreinforced masonry or soft-story buildings, leaving many potentially vulnerable structures unidentified and unretrofitted. City Hall and Police Department facilities may not be fully seismically retrofitted, jeopardizing continuity of operations and emergency response functions.	ma-EQ-CPT-01, ma-EQ-CPT-02, ma-EQ-SVL-03, ma-EQ-WTS-01
Earthquake		Threat	ps-EQ-SVL-05	Scotts Valley is located near active regional fault zones, including the San Andreas Fault, and is susceptible to strong ground shaking, with areas of soft alluvial soil posing elevated liquefaction and structural instability risks.	ma-EQ-SCC-01

Hazard	Sub-Hazard	Area of Concern	Problem IS	Description	Related Mitigation Actions
Flood		Victim	ps-FL-SVL-01	Renters and mobile home park residents may lack adequate flood insurance or savings to recover from even moderate flooding, making them more vulnerable to long-term housing instability.	ma-FL-PVW-03
Flood		Impact	ps-FL-SVL-02	Residents in low-lying neighborhoods near Carbonera Creek and its tributaries face recurring flood risk, including property damage and access disruption, particularly in older developments with limited flood protections.	ma-FL-SVL-01
Flood		Impact	ps-FL-SVL-03	Critical infrastructure such as pump stations and storm drain and sewer collection systems are at risk of damage or failure during flood events, jeopardizing water quality and community functionality. Flooding of the sewer system can also exceed capacity at the wastewater treatment plan, resulting in spills and environmental contamination.	ma-FL-SCC-06
Flood		Threat	ps-FL-SVL-04	Flooding along Carbonera Creek and other waterways is expected to increase in frequency and intensity due to climate change-driven atmospheric river events and shifting precipitation patterns.	ma-FL-WTS-01
Flood		Threat	ps-FL-SVL-05	The City?s flood hazard mapping and stormwater capacity assessments are outdated or incomplete, hindering proactive floodplain management and capital improvement planning. Outdated hydrology modeling in Storm Drain Master Plan limits proactive CIP prioritization.	ma-FL-CPT-02
Severe Weather	Heavy Rain	Impact	ps-HR-SVL-01	Heavy rainfall overwhelms culverts, the sewer collection system, and aging stormwater infrastructure, leading to flooding, erosion, road closures, and property damage, especially in low-lying areas and near drainage pinch points. Inflow and infiltration during into the sewer system during heavy rain can also exceed capacity at the wastewater treatment plan, resulting in spills and environmental contamination.	ma-HR-SVL-02
Severe Weather	Heavy Rain	Impact	ps-HR-SVL-02	Sediment and debris from upstream erosion during heavy rainfall events can clog storm drains and creeks, increasing localized flooding severity and straining maintenance resources.	ma-HR-WTS-01

Hazard	Sub-Hazard	Area of Concern	Problem IS	Description	Related Mitigation Actions
Severe Weather	High Wind	Victim	ps-HW-SVL-01	Low-income residents, renters, and those living in mobile homes and older buildings with aging roofs are more vulnerable to damage during high wind events, with limited resources for emergency repairs.	ma-HW-WTS-01
Severe Weather	High Wind	Impact	ps-HW-SVL-02	High winds have caused tree falls, road blockages, and damage to power infrastructure, resulting in extended outages and emergency response delays in Scotts Valley neighborhood.	ma-HW-SVL-01
Severe Weather	High Wind	Threat	ps-HW-SVL-03	Vegetation management and utility hardening are inconsistent across public and private property, increasing vulnerability to wind-driven outages and damage, especially near schools and evacuation routes.	ma-HW-WTS-01
Slope Failure		Victim	ps-SF-SVL-01	Renters and property owners with limited resources may be unable or unwilling to address slope instability on private land, increasing their risk and overall community vulnerability.	ma-SF-SVL-02
Slope Failure		Impact	ps-SF-SVL-02	Slope failures and debris flows can damage critical infrastructure such as storm drains, roadways, and culverts, leading to flooding, road closures, water quality degradation, and other public safety hazards during and after a triggering event.	ma-SF-SCC-01
Slope Failure		Threat	ps-SF-SVL-03	Residents living along steep hillsides and in areas near Granite Creek, Bean Creek, Green Hills, and other unstable slopes face increased risk of evacuation challenges and property damage during landslides or debris flows, especially during storms or after wildfire.	ma-SF-SCW-01
Slope Failure		Threat	ps-SF-SVL-04	Scotts Valley includes geologically sensitive areas highly prone to slope failure when saturated or disturbed and lacks a fully updated slope stability inventory and long-term slope monitoring program, limiting the ability to proactively address chronic slope hazards and prioritize capital investments.	ma-SF-SVL-01, ma-SF-SCC-01
Severe Weather		Victim	ps-SW-SVL-01	Elderly residents and those with limited mobility may experience health and safety impacts during prolonged power outages and other storm-induced service disruptions.	ma-SW-SCC-02

Hazard	Sub-Hazard	Area of Concern	Problem IS	Description	Related Mitigation Actions
Severe Weather		Threat	ps-SW-SVL-02	Scotts Valley experiences increasingly intense winter storms and atmospheric river events, with frequent red flag and high wind advisories and projected increases in rainstorm intensity under future climate scenarios.	ma-SW-CBC-02
Wildfire		Victim	ps-WF-SVL-01	Scotts Valley neighborhoods located in and around WUI areas, such as Granite Creek and Mount Hermon, are home to vulnerable populations?especially seniors and families?who face evacuation challenges due to limited ingress/egress and past wildfire impacts.	ma-WF-WTS-02
Wildfire		Impact	ps-WF-SVL-02	Post-wildfire recovery is hampered by funding gaps, landowner resistance, and the lack of streamlined restoration processes on private property, complicating erosion control and replanting efforts.	ma-WF-SCC-06, ma-WF-SVL-03
Wildfire		Threat	ps-WF-SVL-03	Privately maintained roads and parcels often have reduced vegetation management and inconsistent defensible space, increasing vulnerability to fast-spreading wildfire and limiting emergency response access.	ma-WF-SCC-09
Wildfire		Threat	ps-WF-SVL-04	Wildfire threatens critical infrastructure, including pump stations, the wastewater treatment plant, and community centers like the Sky Park staging area, many of which lie near or within high fire hazard severity zones.	ma-WF-SVL-02, ma-WF-SCW-01
Wildfire		Threat	ps-WF-SVL-05	Scotts Valley faces increasing wildfire risk from hotter, drier weather conditions, dense vegetation in surrounding open space areas, and lack of consistent defensible space practices.	ma-WF-SVL-01, ma-WF-SVL-02, ma-WF-SVW-01, ma-WF-RCD-02

2.5.4.1 Climate Change Impacts & Vulnerable Populations

The City of Scotts Valley's vulnerable populations face increasing risks from climate change–driven hazards, including drought, flooding, wildfire, slope failure, and extreme weather. Certain residents, such as seniors, renters, mobile home residents, low-income households, individuals with limited English proficiency, outdoor workers, and those with health sensitivities, are more likely to experience disproportionate impacts due to barriers in resources, mobility, housing conditions, or access to emergency information. Vulnerability is not uniform; residents may be more at risk from one hazard, such as wildfire smoke or slope failure, but less impacted by another.

Drought and Water Supply: Scotts Valley relies on the Santa Margarita Groundwater Basin, a limited and climate-sensitive resource. Prolonged droughts strain this supply, increasing risks of water scarcity, higher utility costs, and reduced firefighting capacity. Low-income households, renters, and residents dependent on private wells are particularly vulnerable, as they often lack the financial means to adapt to restrictions, repair infrastructure, or install water-saving improvements.

Flooding and Heavy Rain: Low-lying neighborhoods near Carbonera Creek and its tributaries face recurring flood risks that may damage property, disrupt access, and overwhelm stormwater and sewer systems. Heavy rain events can also cause inflow and infiltration at the wastewater treatment plant, leading to spills and environmental hazards. Renters and mobile home park residents are especially vulnerable, as they may lack flood insurance or the resources needed for recovery.

Earthquake and Seismic Hazards: Scotts Valley is located near the San Andreas Fault and other active fault systems, leaving residents and critical infrastructure highly vulnerable to seismic shaking. Mobile homes, older residential structures, and public facilities such as City Hall and the Police Department may be structurally at risk, particularly in liquefaction zones. Renters and low-income households face additional challenges due to low rates of earthquake insurance and limited capacity to retrofit structures or recover from damage.

Extreme Heat and Severe Weather: Scotts Valley is expected to experience more frequent and prolonged heatwaves. Seniors, individuals with health conditions, and low-income households without access to cooling systems are especially at risk of heat-related illness. Power outages during high heat or storm events further endanger those dependent on medical equipment. Extreme weather events, including high winds and atmospheric river storms, have historically caused widespread outages, blocked roads, and disrupted emergency response, placing vulnerable residents at greater risk of isolation.

Slope Failure and Landslides: Steep hillsides and geologically sensitive areas near Granite Creek, Bean Creek, and Green Hills are prone to slope failures and debris flows during intense rainfall. Such events can block critical roads, damage infrastructure, and isolate neighborhoods. Renters and households with limited resources often lack the means to stabilize slopes on private property, further increasing risk.

Wildfire and the Wildland Urban Interface (WUI): Scotts Valley is surrounded by wildland fuels and neighborhoods located within the WUI, such as Granite Creek and Mount Hermon, face elevated wildfire risk. Seniors, families, and households with limited mobility may face challenges evacuating due to constrained ingress and egress routes. Wildfire also threatens critical infrastructure including the wastewater treatment plant and pump stations. Post-wildfire recovery is further complicated by limited funding, landowner resistance, and inconsistent vegetation management practices on private lands.

The cascading effects of climate change will intensify these hazards and disproportionately impact Scotts Valley's vulnerable populations. Addressing these risks requires targeted strategies that prioritize resilient infrastructure, equitable access to emergency communication, proactive planning for vulnerable populations, and long-term adaptation measures to strengthen community-wide resilience.

2.6 Mitigation Strategy

This section provides the framework for how the City of Scotts Valley will reduce hazard risk within its jurisdiction while supporting the broader goals of the Santa Cruz County MJHMP. It includes an overview of existing capabilities, opportunities to strengthen resilience, and the City's prioritized mitigation actions. Together, these elements demonstrate how Scotts Valley integrates hazard awareness into its planning and development processes while contributing to a coordinated countywide approach.

Within the Santa Cruz County MJHMP, the mitigation strategy serves as the roadmap for future hazard mitigation efforts. For Scotts Valley, the strategy outlined in this annex reflects the outcomes of the countywide planning process while also addressing the city's unique risks, priorities, and community needs. The strategy is designed to reduce vulnerabilities identified in the risk assessment, including the problem statements developed for flooding, earthquakes and liquefaction, slope failure, wildfire, drought, severe storms, extreme heat, and climate change.

Mitigation actions identified in this annex include both policy-based and project-based initiatives, with an emphasis on integrating resilience into land use planning, infrastructure investments, and community programs. Actions are structured to align with FEMA's requirements and to coordinate with existing city, county, and regional planning mechanisms. Each action identifies responsible parties, potential funding sources, and the resources needed for implementation.

For Scotts Valley, this strategy provides a framework for strengthening resilience by combining city-led initiatives, such as infrastructure improvements, building code enforcement, and community preparedness, with regional coordination through the MJHMP. By advancing these efforts in alignment with the General Plan and other local planning documents, Scotts Valley enhances its ability to reduce hazard risk while supporting long-term community safety, sustainability, and economic stability.

The subsections that follow describe these elements in detail:

- **Section 2.6.1 Aligning Action Planning** with Capabilities provides a summary of the City's capacity to address natural hazards.
- **Section 2.6.3 Mitigation Action Plan** presents Scotts Valley's prioritized actions to guide implementation in coordination with countywide strategies.

2.6.1 Aligning the Action Plan

This section connects the Scotts Valley's mitigation actions with its existing capabilities and areas for growth. Capability assessments are a required element of hazard mitigation planning under the Disaster Mitigation Act of 2000 and FEMA's 2023 guidance, ensuring that actions are realistic, achievable, and aligned with available resources.

The section begins with a summary of the Scotts Valley's capabilities across four areas: planning and regulatory, administrative and technical, fiscal, and education and outreach. This overview highlights the

tools and strengths that the city already uses to reduce hazard risk. The section then provides a detailed analysis of each capability area, identifying both current practices and opportunities to expand resilience.

2.6.1.1 Capabilities & Opportunities Assessment

To develop a realistic and actionable mitigation strategy, it must account for existing jurisdictional capabilities and what future opportunities there are to enhance those capabilities for purposes of hazard mitigation. This section provides an assessment of the City of Scotts Valley's existing capabilities and future opportunities, including planning and regulatory, administrative and technical, fiscal, and public outreach and education capabilities. This assessment also identifies opportunities to integrate this MJHMP into future planning, policies, or programs to weave mitigation efforts into daily operations and address hazard problems wholistically. Capabilities are categorized into four groups and include various mechanisms.

- **Planning and Regulatory Capabilities:** Existing long-range plans, emergency response plans, hazard-specific plans, land use policies, and building and development standards.
- **Administrative and Technical Capabilities:** Available expertise in emergency services, engineering, grant management, and community planning.
- **Fiscal Capabilities:** Budgetary capacity, taxing authority, grants, and other funding mechanisms that can support mitigation projects.
- **Outreach and Education Capabilities:** Existing programs for providing technical assistance, community education, public warnings, and stakeholder engagement.

A full description of the process used to develop the capabilities assessment is provided in Volume 1, Section 2.3.3.

This capabilities and opportunities assessment for Scotts Valley lists the various types of capabilities along with how they have been, currently are, or will in the future be integrated into hazard mitigation planning efforts. The three "HMP Integration" columns that identify the capability's status and usage are color-coded with green, yellow, or orange shading to communicate the following:

- **Status:** If the capability is present at all and what level of use it has generally.
- **Current Mitigation Use:** If the capability is currently being used in mitigation efforts, specifically, and at what level.
- **Future Opportunity:** If there is a future opportunity to integrate the capability into mitigation efforts and at what level.

Planning & Regulatory Capabilities

Scotts Valley maintains a robust set of planning and regulatory tools that guide development while addressing hazard risks. The city adopts the California Building Code (CBC) and related codes through Municipal Code Title 15, ensuring that new construction meets stringent seismic, fire, and life-safety standards. Additional hazard-related development standards are included in local ordinances, such as Title 17 (Zoning Ordinance), which restricts high-risk hillside development, and floodplain regulations requiring finished floor elevations above base flood elevations for structures near Bean Creek and Carbonera Creek.

Hazard-specific ordinances supplement these rules by requiring defensible space in wildfire-prone areas and erosion control in steep terrain. Scotts Valley's Growth Management Ordinance, referenced in the 2023 General Plan, further limits sprawl and ensures that development occurs within infrastructure and hazard-mitigation capacity.

Future integration of the MJHMP will occur through various processes and mechanisms outlined across multiple mitigation actions (TABLE). Key opportunities for future hazard mitigation integration with the city's existing planning mechanisms are in updating the Stormwater Mast Plan to reflect new climate models and future flood risk (ma-HR-SVL-02) and to develop a cross-hazard climate adaptation and resilience strategy that incorporates mitigation measures into everyday city operations (ma-CC-SVL-01).

Administrative & Technical Capacity

The city has technical expertise across multiple departments, including planning, public works, and emergency management. Plan reviews are conducted to enforce hazard-related standards, while the Public Works Department oversees grading, stormwater, and drainage systems. The city partners closely with the Scotts Valley Fire Protection District for wildfire mitigation, fire-safe building reviews, and public education. While staffing is lean compared to larger jurisdictions, Scotts Valley leverages partnerships with regional agencies and consultants to supplement capacity for geotechnical, environmental, and hazard-specific assessments.

Warning Systems & Services

The City of Scotts Valley relies heavily on the regional emergency alert and warning infrastructure coordinated by County OR3. The CruzAware system serves as the city's primary platform for hazard alerts, providing residents with real-time notifications by text, phone, or email. CruzAware issues warnings for a broad range of hazards including floods, wildfires, geological hazards, and severe weather events, ensuring consistency across the countywide emergency management framework.

Although the City does not operate its own independent warning system, it actively supports dissemination of alerts through city-managed communication channels. This includes integration with the city's website, social media platforms (Facebook, Instagram, and Twitter/X), and coordination with the Fire and Police Departments, which amplify urgent messages during emergencies. The city also maintains a strong relationship with the National Weather Service Monterey Office, which provides storm forecasts, flood warnings, and coastal hazard alerts specific to the region.

Scotts Valley's emergency warning capacity is strengthened through participation in countywide systems, but there remain opportunities for expansion. For example, the city does not currently participate in FEMA's StormReady program, though Santa Cruz County has achieved StormReady and TsunamiReady status.

Fiscal Capabilities

Scotts Valley funds hazard reduction and resilience projects primarily through its CIP, which allocates resources for storm drain repairs, slope stabilization, and modernization of the wastewater treatment plant. The 2024–2029 CIP includes projects that directly reduce hazard vulnerability, such as culvert replacements and erosion control initiatives. Grant funding through FEMA's Hazard Mitigation Assistance programs and state sources also supplements the city's limited general fund, ensuring progress on resilience-focused capital projects.

Education & Outreach Capabilities

Public education and engagement are central to Scotts Valley's hazard reduction strategy. The city partners with the Scotts Valley Fire Protection District to deliver wildfire preparedness outreach, including community workshops and defensible space campaigns. Educational initiatives under the Storm Water Management Program target homeowners, businesses, and schools with materials on pollution prevention, drainage maintenance, and flood awareness. Outreach is further supported through city communications, social media, and partnerships with the Scotts Valley Water District to promote drought awareness and water conservation.

CAPABILITY ASSESSMENT LEGEND

HMP Integration

Status	Current Mitigation Use	Future Opportunity
Currently in use or present.	Used widely for mitigation.	Opportunity to expand and integrate.
(Sort of) Seldomly used or limited presence.	Limited use in mitigation planning.	Limited opportunity to expand and integrate.
(No) Not present or available.	Not used in mitigation planning.	No opportunity to expand or integrate.

Table 2-14: City of Scotts Valley Capabilities Assessment

Resource	HMP Integration: Status	HMP Integration: Current Mitigation Use	HMP Integration: Future Opportunity	Notes / Additional Detail
Planning and Regulatory Capabilities				
Construction and Future Development Regulations				
Building Codes				City Municipal Code Title 15 adopting the 2022 California Building Code (Part 2 of Title 24 of the California Code of Regulations)

Resource	HMP Integration: Status	HMP Integration: Current Mitigation Use	HMP Integration: Future Opportunity	Notes / Additional Detail
Hazard-Related Development Standards				
Zoning Ordinance				City Municipal Code Title 17, Zoning
Hazard-Specific Ordinance				City Municipal Code contains hazard-specific chapters, including 15.06, Excavation, Grading, Erosion and Sediment Control; 15.16 Flood Damage Prevention; 16.40, Soils Report; 17.40 HR Hillside Residential District; and 17.43 FW Floodway District
Growth Management Ordinance				2023 General Plan, Land Use Element, establishes growth management policies
Hazard Reduction Programs (Annually Conducted)				
Capital Improvements Program (CIP) or Plan				2024-2029 CIP allocates funds for infrastructure resilience, storm drain upgrades, and road stabilization
Erosion/Sediment Control Program				Regulated under City Municipal Code Chapter 15.06, Excavation, Grading, Erosion and Sediment Control
Hazard-Related Public Outreach Program				Partners with Scotts Valley Fire Protection District and Fire Safe Council to conduct outreach via multiple programs related to emergency preparedness, wildfire mitigation, and water conservation
Urban Water Management Plan				Not a water provider; however, Scotts Valley Water District (SVWD) maintains an Urban Water Management Plan for the City
Stormwater Management Program (Annual Inspections)				Covered under Phase II MS4 Permit; annual inspections conducted per NPDES reporting requirements
Seismic Safety Program (Non-structural)				No formal seismic safety or non-structural program currently; building safety follows minimum state regulations
Earthquake Modernization Plan (Building Safety)				No inventory or soft story retrofit program in place for unreinforced masonry or seismic hazards; building safety follows minimum state regulations
Hazard Plans				
General Plan Safety Element				Adopted 2023 General Plan Safety Element covers wildfire, flood, earthquake, landslide, and climate hazard considerations
Site Plan Review Requirements				Required under City Municipal Code Title 17, Zoning
General Plan Environmental Justice Element				No standalone element, but environmental justice goals are addressed under Housing and Land Use Elements
Community Wildfire Protection Plan (CWPP)				Covered under 2022 Santa Cruz County CWPP

Resource	HMP Integration: Status	HMP Integration: Current Mitigation Use	HMP Integration: Future Opportunity	Notes / Additional Detail
Economic Development Plan				Adopted 2023 General Plan Economic Element addresses employment, business attraction and retention, and fiscal stability
Floodplain Management Plan				No formal plan, but City Municipal Code Chapters 15.16 Flood Damage Prevention and 17.43 FW Floodway District apply floodplain development standards
Stormwater Management Plan				Adopted 2018 Storm Drain Master Plan studies and identifies high-priority capital improvement projects for stormwater infrastructure
Emergency Operations Plan				Adopted 2015 EOP; participates in the Santa Cruz County Operational Area Plan
Climate Action Plan				No formal plan, but 2023 General Plan Land Use, Safety & Noise, and Open Space & Conservation Elements address climate goals and policies
Climate Vulnerability Assessment				No city-specific plan, but covered under 2022 Santa Cruz County Climate Vulnerability Technical Compendium
Urban Greening Plan				No formal plan, but City Municipal Code Section 17.44.080 establishes tree protection regulations
Ground Water Management Planning / Plans				Not a water provider; however, Scotts Valley Water District (SVWD) participates in the Santa Margarita Groundwater Agency for SGMA compliance
National Flood Protection Program (NFIP)				
Floodplain Management Regulations				City Municipal Code Chapters 15.16 Flood Damage Prevention and 17.43 FW Floodway District apply floodplain development standards in accordance with NFIP minimums
Flood Insurance Education and Technical Assist.				Provided informally through city planning and building staff on request; future opportunity
Flood Insurance Study				Effective FEMA FIS adopted by reference in City Municipal Code Chapter 15.16, Flood Damage Prevention
Elevation Certificates				Maintained by Building Department
Flood Hazard Mapping / Re-Mapping				Effective FEMA FIRMs adopted by reference in City Municipal Code Chapter 15.16, Flood Damage Prevention
Community Rating System (CRS)				Does not currently participate; future opportunity
Administrative and Technical				
Community Planning and Development Services				
Community Planner				Staff in Planning Department
Planner/Engineer (Land Development)				Staff in Public Works Department
Engineer/Professional (Construction)				Staff in Public Works Department

Resource	HMP Integration: Status	HMP Integration: Current Mitigation Use	HMP Integration: Future Opportunity	Notes / Additional Detail
Planner/Engineer/Scientist (Natural Hazards)				No dedicated hazard scientist, but planning and public works staff review hazard risk and environmental compliance for new development
Transportation Planner				No dedicated staff, but Public Works Department performs transportation planning in coordination with regional agencies
Resiliency Planner				No dedicated staff
Building Official (Full time or Augmented)				Building Official housed in Building Department
Floodplain Administrator				City Manager is the designated Floodplain Administrator
Fire Marshal				Scotts Valley Fire Protection District (SVFPD), Fire Prevention Division, conducts development reviews and inspections
Dedicated Public Outreach Personnel				No dedicated staff, but outreach conducted by City Manager's office and departments
GIS Specialist and Capability				No dedicated staff: GIS functions are cross trained under various departments
Emergency Manager				City Manager is the designated Director of Emergency Services
Dedicated Grant Manager, Writer, or Specialist				No dedicated staff: however, staff in various departments manage grants as needed
Other	N/A	N/A	N/A	
Warning Systems and Services				
General				Participates in Santa Cruz County's regional emergency alert system CruzAware and uses Community Connect through SVFPD for additional notifications and assistance during emergencies
Flood				CruzAware alerts and Community Connect
Tornado				CruzAware alerts and Community Connect
Wildfire				CruzAware alerts and Community Connect
Geological Hazards				CruzAware alerts and Community Connect
Fiscal Capabilities				
Financial Resources (for Hazard Mitigation)				
Levy Taxes for Specific Purposes				Can levy special taxes via voter approval (e.g., Measure D for transportation projects)
Utilities Fees				Collected by City for sewer
Benefit Assessments				Not currently, future opportunity
Community Development Block Grants (CDBG)				Participates in federal CDBG programs for economic development
System Development Fee				Development impact fees are levied per project for infrastructure including fire, traffic, and sewer.
General Obligation Bonds to Incur Debt				Bond issuance is authorized but not currently used for hazard mitigation

Resource	HMP Integration: Status	HMP Integration: Current Mitigation Use	HMP Integration: Future Opportunity	Notes / Additional Detail
Special Tax Bonds to Incur Debt				No special tax bonds for hazard mitigation
Withheld Spending in Hazard-Prone Areas				No formal policies, but development is constrained in high-risk zones via zoning and development standards (e.g., floodplain)
Stormwater Service Fees				Fees collected under Stormwater Utility Program to support maintenance and improvements per MS4 permit compliance
Capital Improvement Project Funding				2024-2029 CIP allocates funds for infrastructure resilience, storm drain upgrades, and road stabilization
Education / Outreach Capabilities				
Education/Outreach Resources				
Website Dedicated to Hazard Topics				Emergency preparedness and hazard-specific webpages under Public Works and Police Departments and SVFPD; opportunity to centralize content
Dedicated Social Media				Facebook and Twitter accounts are used for emergency preparedness information and hazard alerts
Local Citizen Groups That Communicate Hazard Risks				Fire Safe Council of Santa Cruz County; other partner organizations like SVFPD conduct outreach
Hazard Info. Avail. at Library/ Planning Desk				Not currently, future opportunity
Annual Public Safety Events				Police Department and SVFPD host National Night Out, school visits, station tours, and other public safety activities
Ability to Field Public Tech. Assistance Requests				Requests related to hazard information, code enforcement, and stormwater handled via general service request system
Public Safety Newsletters or Printed Outreach				Limited seasonal outreach via flyers or mailers (e.g., storm prep), but no recurring hazard mitigation newsletter
Community Emergency Response Team (CERT)				Participates in Santa Cruz County CERT hosted through County OES with local training options
Fire Safe Councils				Covered by Fire Safe Council of Santa Cruz County
Firewise				Multiple Firewise neighborhoods within city limits
StormReady				City does not participate, but Santa Cruz County is both StormReady and TsunamiReady
Resource Conservation Districts				Resource Conservation District of Santa Cruz County supports groundwater recharge, fire fuel management, and climate education
Other	N/A	N/A	N/A	

2.6.2 City of Scotts Valley Mitigation Action Plan

Scotts Valley's mitigation actions were developed through a collaborative process informed by the updated risk assessment, local priorities, and extensive stakeholder engagement. The plan addresses the city's most significant hazards, including flooding, earthquakes, severe storms, drought, wildfire, extreme heat, and climate change. Each mitigation action is designed to align with FEMA's hazard mitigation guidance and the requirements of the Disaster Mitigation Act of 2000. Where appropriate, overlapping or redundant actions were consolidated into broader, more comprehensive strategies that improve clarity, increase feasibility, and strengthen regional coordination.

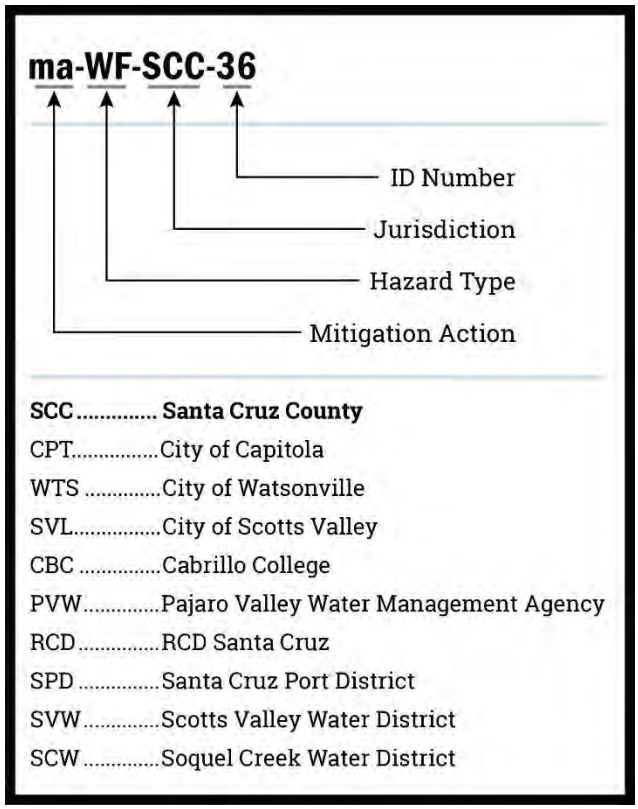


Figure 2-24: Mitigation Action Number Key

The mitigation action prioritization method used by all participating jurisdictions is described in Volume 1, Section 4. Each action specific to Scotts Valley is documented in Table 2-15, which identifies the responsible department, implementation timeframe, potential funding sources, and resources required to complete the action. Each action is also assigned a unique alphanumeric identifier (see Figure 2-24) that links the strategy to its associated hazard and supports consistent monitoring and reporting.

Scotts Valley's approach recognizes that some hazards are most effectively addressed through regional efforts. Flood protection, drought resilience, and wildfire risk reduction often extend beyond the city's boundaries and require collaboration with county, regional, and state partners. By aligning local actions with regional strategies, the city helps to consolidate resources, maximize funding opportunities, and ensure that mitigation projects achieve the greatest benefit for Scotts Valley and the wider Santa Cruz County community.

Collectively, these mitigation actions provide a roadmap for reducing hazard risk, protecting vulnerable populations, and strengthening the long-term resilience of Scotts Valley.

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Table 2-15: City of Scotts Valley Mitigation Action Plan

Hazard	Action ID	Action Title	Description	FEMA Mitigation Alternative	Timeline	Responsibility	Cost	Benefit	Internal Funding Source	External Funding Source	Priority (Based on Criteria)	Problems Addressed
All Hazard	**ma-AH-SVL-01**	All-Hazard Emergency Sheltering Plan	Develop formal procedures for activating and promoting emergency shelters with a focus on vulnerable groups, including identifying, retrofitting as needed, and creating operations plans for a variety of shelter types to address community needs during any potential hazard scenario.	PRV, PE&A	Medium 3-5 Years	City Parks + Fire District, County	Low	High	General Fund	EMPG/ HMA/ Cal OES/ Red Cross	High	ps-EQ-CBC-05, ps-CC-SVL-01, ps-CC-SVL-02, ps-EH-SVL-01, ps-EH-SVL-02, ps-EH-SVL-03, ps-EH-SVL-04, ps-EH-SVL-05, ps-SW-SVL-01
Climate Change	**ma-CC-SVL-01**	Climate Resilient Community Strategy	Develop a cross-hazard climate adaptation and resilience strategy that incorporates mitigation measures into everyday city operations using Cal-Adapt data and community input.	PRV	Medium 3-5 Years	City Planning and other departments	Low	Medium	General Fund	CA Natural Resources Agency/ NOAA	High	ps-CC-SVL-04, ps-CC-SVL-01, ps-CC-SVL-02, ps-CC-SVL-03, ps-DR-SVL-01, ps-DR-SVL-02, ps-DR-SVL-03, ps-DR-SVL-04, ps-EH-SVL-02, ps-EH-SVL-03, ps-EH-SVL-04, ps-EH-SVL-05, ps-FL-SVL-04, ps-HW-SVL-01, ps-SW-SVL-02, ps-WF-SVL-05
Drought	**ma-DR-SVL-01**	Water Conservation Program	Establish an incentive-based program that supports installation of xeriscaping, upgrades to low-flow plumbing fixtures, and other water conservation measures through outreach and education, tax credits, rebates, and other technical and financial assistance.	SP, PE&A	Short 1-3 Years	City Public Works + Scotts Valley Water District, County	High	High	General Fund	DWR/ SWRCB/ CPUC (Cal Public Util Commiss)	Medium	ps-DR-SVL-01, ps-CC-SVL-02, ps-CC-SVL-03, ps-DR-SVL-02, ps-DR-SVL-03, ps-DR-SVL-04
Earthquake	**ma-EQ-SVL-01**	WWTP Seismic Retrofit	Retrofit the WWTP to withstand seismic shaking and remain operational during an earthquake.	SP, PPRO	Long 5-10 Years	City Utilities	High	High	General Fund / Staff Time	HMGP/CWSRF/EPA	Medium	ps-EQ-SVL-02, ps-EQ-SVL-03, ps-EQ-SVW-01, ps-EQ-SVL-05
Earthquake	**ma-EQ-SVL-03**	Soft-Story & URM Retrofit Program	Inventory and create an incentivized retrofit program for soft-story and unreinforced masonry buildings citywide.	PRV, PPRO, PE&A	Short 1-3 Years	City Building	High	High	General Fund / Staff Time	HMA/Cal OES Earthquake Mitigation program	Medium	ps-EQ-SVL-04, ps-EQ-WTS-03, ps-EQ-WTS-07, ps-EQ-SVL-01, ps-EQ-SVL-05
Earthquake	**ma-EQ-SVL-02**	Lifeline Infrastructure Seismic Assessment	Assess seismic vulnerabilities of roads, utilities, and communication lines to prioritize mitigation investments.	PRV	Short 1-3 Years	City Public Works	Medium	Medium	General Fund / Staff Time	HMGP	High	ps-EQ-SVW-01, ps-EQ-SVL-03, ps-EQ-SVL-05
Flood	**ma-FL-SVL-01**	Drainage Improvements	Replace undersized culverts and enhance stormwater system capacity at key, low-lying intersections, along Bean Creek, and along Carbonera Creek, its tributaries, and adjacent low-lying roadways, including sediment and debris accumulation prevention measures.	PRV, SP	Medium 3-5 Years	City Public Works	High	High	General Fund / Staff Time	HMA/ PROP 1/CWSRF	Medium	ps-FL-SCC-01, ps-FL-SCC-04, ps-FL-SVL-02, ps-FL-CBC-05, ps-FL-SVL-01, ps-FL-SVL-03, ps-FL-SVL-04, ps-HR-SVL-01, ps-HR-SVL-02, ps-SW-SVL-02
Severe Weather (Heavy Rain)	**ma-HR-SVL-02**	Stormwater Master Plan Update	Update the stormwater plan to reflect new climate models, future flood risk, and capital needs.	PRV	Short 1-3 Years	City Planning and Public Works	Low	Medium	General Fund / Staff Time	SWGP (State Water Grant Program)/CWSRF	Medium	ps-HR-SVL-01, ps-FL-SVL-03, ps-FL-SVL-02, ps-FL-SVL-04, ps-FL-SVL-05, ps-HR-SVL-02, ps-SW-SVL-02
Severe Weather (High Wind)	**ma-HW-SVL-01**	Utility & Tree Hardening Initiative	Upgrade aging utility poles, underground utilities, and increase proactive tree trimming in public rights-of-way.	SP	Short 1-3 Years	City Public Works + PG&E	Medium	High	General Fund / Staff Time	Cal Energy Commission- CERRI/ HMGP/CAL FIRE	Low	ps-HW-SVL-02, ps-HW-SVL-03, ps-SW-SVL-02
Slope Failure	**ma-SF-SVL-01**	Slope Stability Inventory & Monitoring	Create an up-to-date slope hazard inventory to inform capital improvements, and install early warning sensors on high-risk slopes.	PRV	Short 1-3 Years	City Public Works and Planning	Medium	High	General Fund / Staff Time	HMGP/ USGS/ Cal OES HMA/ FMPRA	High	ps-SF-SVL-04, ps-SF-SCC-02, ps-CC-SVL-03, ps-SF-SVL-01, ps-SF-SVL-02, ps-SF-SVL-03, ps-SF-SVL-04
Slope Failure	**ma-SF-SVL-02**	Hillside Stabilization Support Program	Establish a technical and financial assistance program to support property owners in engineering and constructing slope stabilization and vegetation-based erosion control measures at key hillside sites.	PPRO, NRP, SP	Short 1-3 Years	City Public Works and Planning + County	High	High	General Fund / Staff Time	HMGP/ Cal OES/ USGS/ DWR	High	ps-SF-SVW-02, ps-SF-SVL-01, ps-SF-SVL-03, ps-SF-SVL-04

Hazard	Action ID	Action Title	Description	FEMA Mitigation Alternative	Timeline	Responsibility	Cost	Benefit	Internal Funding Source	External Funding Source	Priority (Based on Criteria)	Problems Addressed
Wildfire	**ma-WF-SVL-01**	Private Road Fuel Management Program	Partner with private road residents and HOAs to implement a cost-sharing defensible space and vegetation management program focused in areas of higher population (e.g., Lockhart Gulch, Bean Creek, and Blue Bonnet).	NRP	Short 1-3 Years	City Public Works + Fire District, Fire Safe Council	Medium	High	General Fund / Staff Time	Measure Q/ CAL FIRE/ HMGP/ CFSC (CA Fire Safe Council)/ CWDG (Comm Wildfire Defense Grant)/ PGE	High	ps-WF-SVL-05, ps-CC-SVL-02, ps-WF-SVL-01, ps-WF-SVL-02, ps-WF-SVL-03
Wildfire	**ma-WF-SVL-02**	Critical Facility Hardening	Establish and maintain defensible space around and implement structure hardening measures for critical facilities (e.g., pump stations, WWTP) and other public lands and assets in moderate to high fire zones to improve resistance to wildfire. This may include fuel management on public open space such as Glenwood Preserve and Sky Park.	NRP, SP, PPRO	Short 1-3 Years	City Public Works and Utilities	High	High	General Fund / Staff Time	HMA/ CAL FIRE/ USDA EWP/ CWDG/	High	ps-WF-SVL-04, ps-WF-SVL-05, ps-WF-SVW-01, ps-WF-WTS-02
Wildfire	**ma-WF-SVL-03**	Post-Fire Landscape Recovery & Resilience Program	Establish a post-fire recovery and landscape resilience program that can be implemented immediately following an event for hillside and burn-scarred areas and includes annual community outreach and education.	NRP, PE&A	Medium 3-5 Years	City Planning + RCD, Fire District	Medium	High	General Fund / Staff Time	Measure Q/ CAL FIRE/ HMGP/ CFSC (CA Fire Safe Council)/ CWDG (Comm Wildfire Defense Grant)/ PGE	High	ps-WF-SVL-02, ps-CC-SVL-02, ps-CC-SVL-03, ps-SF-SVL-02, ps-SF-SVL-04, ps-WF-SVL-03, ps-WF-SVL-05

Section 3. City of Watsonville

Municipal Annex

SANTA CRUZ COUNTY
MULTI-JURISDICTIONAL
HAZARD MITIGATION PLAN

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Santa Cruz County

2025 Multi-Jurisdictional Hazard Mitigation Plan

Volume 2, Section 3: City of Watsonville (WTS)

Municipal Annex

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Adoption Record

To comply with the Federal Disaster Mitigation Act of 2000 (DMA 2000), the City of Watsonville has officially adopted this 2025 Santa Cruz County Multi-Jurisdictional Hazard Mitigation Plan, including Volume 1 in its entirety as well as this Volume 2 Municiple annex. The adoption of the MJHMP recognizes the city's commitment to reducing the impacts of natural hazards within its jurisdiction and across Santa Cruz County.

A copy of the city's adoption record is provided on the following pages. Adoption records for all jurisdictions are summarized in Volume 1, Table ES-1.

ADOPTION RECORD TO BE INSERTED UPON COMPLETION.

Section 3. City of Watsonville

3.1 Scope & Purpose

This annex details the elements specific to the City of Watsonville in the 2025 Santa Cruz County Multi-Jurisdictional Hazard Mitigation Plan (MJHMP). This annex is not intended to be a standalone document but appends to and supplements the information contained in the umbrella plan document (Volume 1). As such, all sections of the umbrella plan, including the planning process and other procedural requirements apply to and were met by the City of Watsonville. This annex provides additional information specific to the City of Watsonville, with a focus on providing additional details on the planning process, risk assessment, and mitigation strategy for this jurisdiction.

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3.2 Jurisdictional Setting

The City of Watsonville is located in southern Santa Cruz County in Central California in the Pajaro Valley. Watsonville is 80 miles southeast of San Francisco. Located on the north bank of the Pajaro River, Watsonville is the center of Santa Cruz County's agricultural industry.

The City of Watsonville encompasses approximately 6.7 square miles, with an average elevation of 29 feet above sea level. While Watsonville continues to advance in urban planning, housing, transportation, and flood resilience, population growth is trending downward. City of Watsonville's location within Santa Cruz County and the State of California are shown in Figure 3-1.

- Date of Incorporation: March 30, 1868
- Current Population: 50,669 (United States Census Bureau, 2016-2021)
- Population Growth: The city has experienced a population decrease of -2.3% between 2013 and 2023 (United States Census Bureau, 2016-2021)

3.2.1 Geography & Climate

The City of Watsonville is situated in a low-lying river valley approximately three miles inland from the Pacific Ocean. Figure 3-1 illustrates its regional context within southern Santa Cruz County. The city's landscape is largely defined by alluvial deposits originating from surrounding hills and mountains, resulting in fertile soils that have historically supported its robust agricultural economy, particularly the cultivation of berries.

Soil composition varies across the city, with loam dominating the inland areas and sandy loam prevalent closer to the coast. Watsonville's topography is generally flat, with an average elevation of approximately 29 feet above sea level.

The city experiences a Mediterranean climate, characterized by warm to hot, dry summers and mild, wet winters. Average summer high temperatures can reach into the mid-90s°F, while winter lows occasionally drop into the upper 20s°F. Precipitation is concentrated between November and March, with minimal rainfall in the summer months. Snowfall is extremely rare due to the city's low elevation. Figure 3-2 presents the average annual precipitation data.

Prevailing winds are generally mild, but during summer evenings, onshore flow from the Pacific Ocean brings cooler marine air inland. These climatic and geographic conditions contribute to Watsonville's highly productive agricultural landscape but also present natural hazard risks, including flooding from the Pajaro River, periodic drought, and wildfire threats in surrounding upland areas.

3.2.2 Historical Overview

Watsonville was incorporated on March 30, 1868, and has since grown into the largest city in the Pajaro Valley, shaped by its agricultural economy and steady waves of residential development. The city's historic downtown reflects its 19th-century origins, with early civic and commercial buildings that continue to anchor the urban core.

Much of Watsonville's housing stock was constructed during the post–World War II era, when population growth and economic expansion spurred suburban-style development across the city. According to the City's Housing Element, about 45 percent of Watsonville's housing units are now more than 30 years old, reflecting their construction during the 1950s through the 1970s. These older homes, while integral to the city's neighborhoods and heritage, present ongoing challenges related to seismic safety, energy efficiency, and long-term maintenance (City of Watsonville Housing Element, 2015-2023).

Newer subdivisions, many built during the 1980s and 1990s, expanded the city's footprint, while more recent growth has emphasized infill housing, redevelopment of underutilized properties, and farmland preservation. This blend of historic downtown structures, mid-century neighborhoods, and newer developments defines Watsonville's built environment today, reflecting both the city's agricultural roots and its evolving role as a regional hub. (City of Watsonville General Plan, 2005)*;* (City of Watsonville Housing Element, 2015-2023).

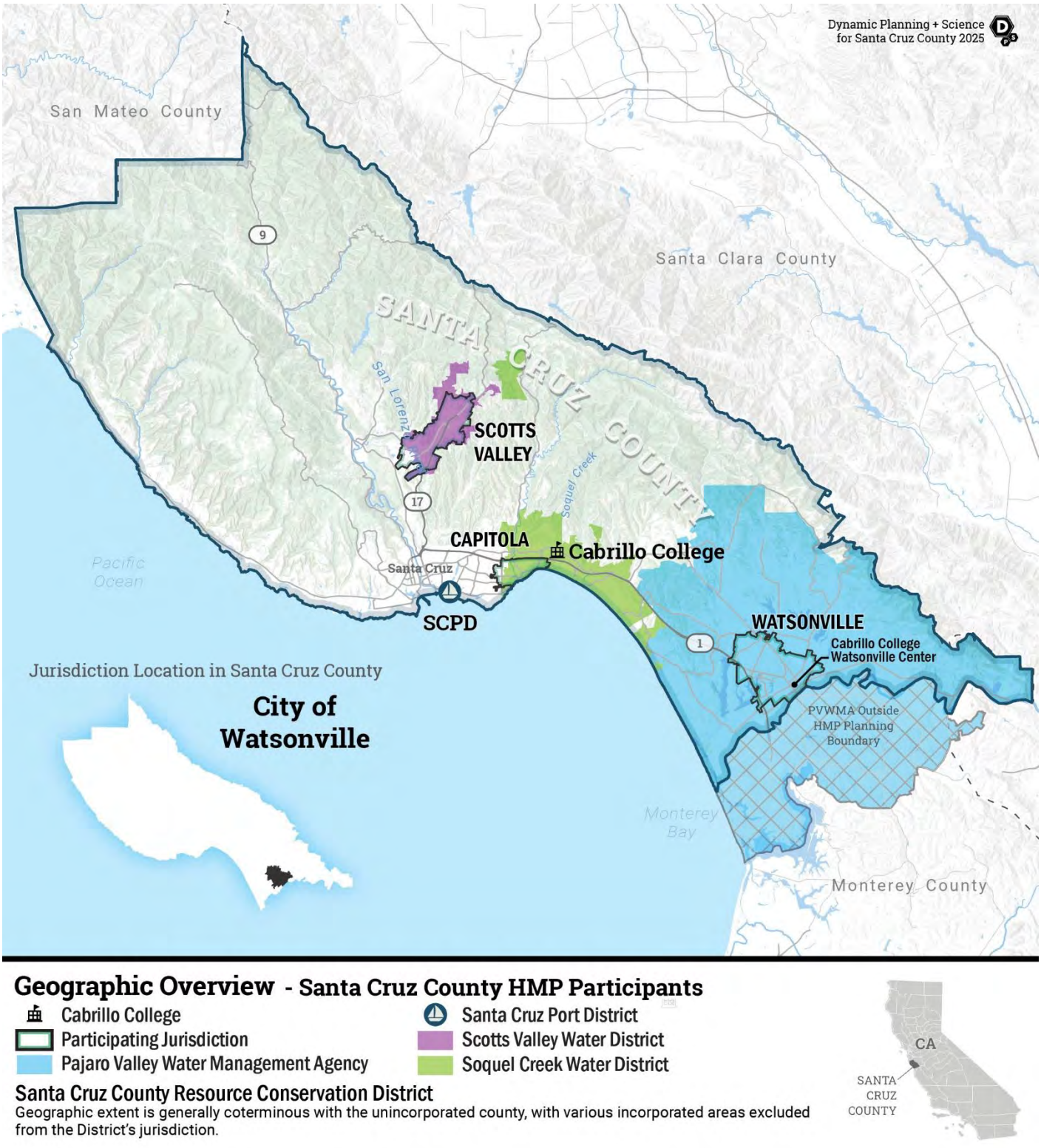


Figure 3-1: City of Watsonville Sphere of Influence

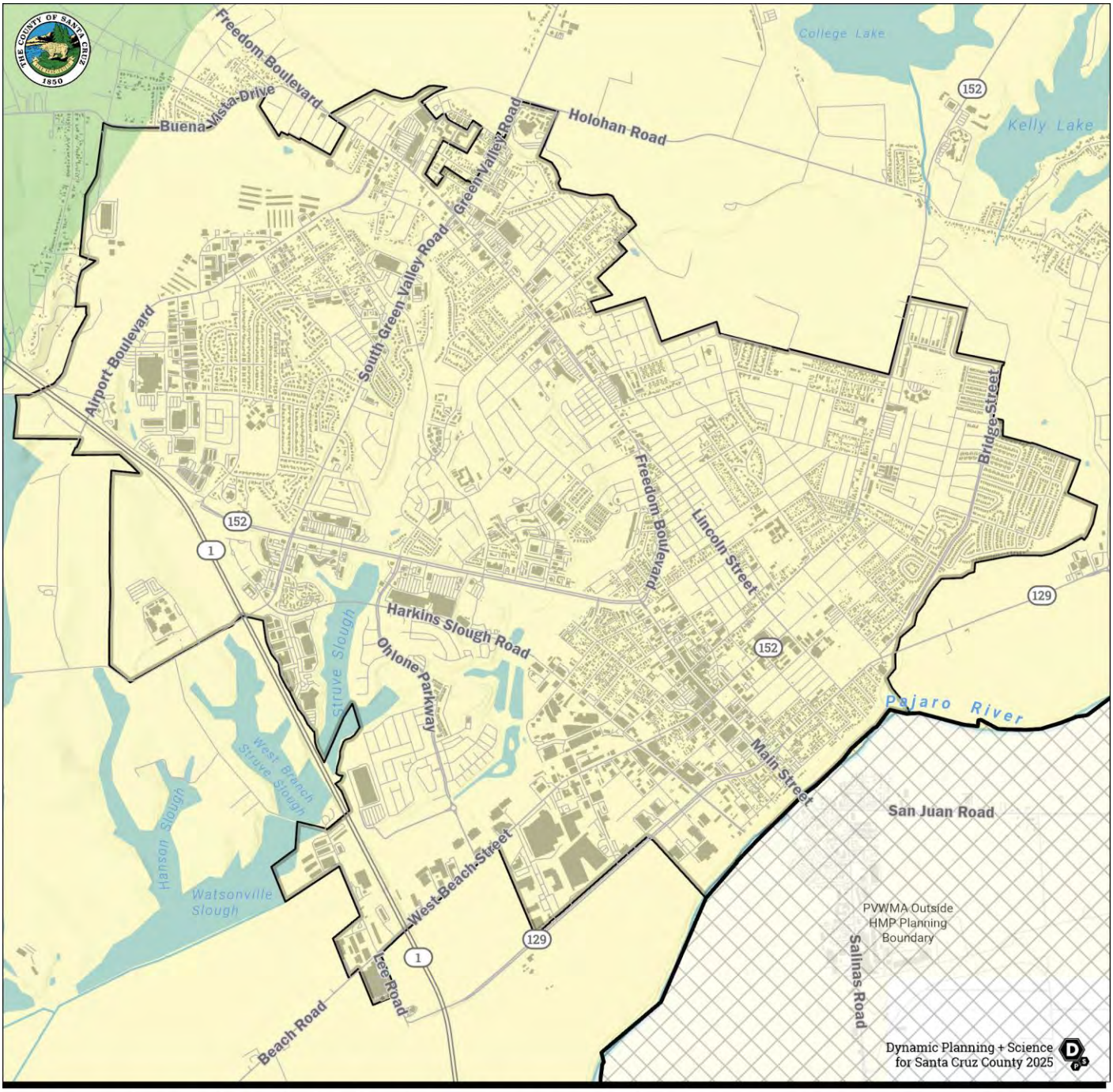


Figure 3-2 City of Watsonville Average Annual Precipitation Map

3.2.3 Demographics & Vulnerable Populations

This section describes the demographic characteristics of the City of Watsonville to guide hazard mitigation planning efforts. Natural disasters affect communities both physically and socially, with demographic composition playing a central role in determining how impacts are distributed, particularly among vulnerable groups facing greater challenges in preparedness, response, and recovery. Understanding the area's social and economic landscape also helps assess potential social costs from infrastructure damage, including housing, industry, public facilities, essential services, and transportation.

Exploring local demographic data may help to identify groups and geographic areas with specific vulnerability to hazard events. In the context of all-hazards preparedness and response planning, at-risk individuals (often used interchangeably with "vulnerable populations") are defined federally as "children, pregnant women, senior citizens, and other individuals who have access or functional needs in the event of a public health emergency." (42 U.S.C. § 2802(b)(4)(B) (2019)) These populations may include, but are not limited to, individuals who are economically disadvantaged, living with disabilities, dependent on caregivers, from historically marginalized communities, have limited English proficiency or are non-English speaking, lack access to transportation, are experiencing homelessness, or have chronic medical conditions.

Certain populations face greater risk following a natural hazard event due to age, economic mobility, physical disability, geographic location, or a combination of factors. Vulnerability in the face of a hazard event is not a fixed characteristic; the same individual may be at risk for some hazards but not at risk for others. Planning for vulnerable populations in the context of hazard mitigation can help communities to prioritize limited resources where they will be the most effective. Refer to Volume 1, Section 1.4.3, for a more in-depth discussion of planning for vulnerable populations, at-risk individuals with access and functional needs, and environmental justice.

The total population, total number of households, and average household size of the City of Watsonville are presented in Table 3-1, compared to the other municipalities and Santa Cruz County. The city is the second largest of all the incorporated municipalities and has the highest average household size.

Table 3-1: Population and Housing Summary

Jurisdiction	Total Population	Total Households	Average Household Size
City of Watsonville	**51,968**	**15,792**	**3.24**
Santa Cruz County	266,021	106,635	2.36

Source: ACS 5-Year, 2018-2023

3.2.3.1 Income & Housing

Economic mobility is one of the most important predictors of natural hazard vulnerability. Low-income residents are more likely to occupy housing which is inadequately maintained or otherwise poorly built to withstand extreme events. For example, mobile or modular homes are more susceptible to damage in earthquakes and floods than other types of residences and are less likely to contain A/C units to cope with high heat events. In urban areas, low-income residents are more likely to occupy older homes and apartment complexes with unreinforced masonry, which is particularly susceptible to seismic damage.

Low-income households and communities face disproportionate financial burden from costs associated with disaster preparedness, response, and recovery. Disasters create unexpected expenses which may serve as "tipping points" for families and individuals living on the edge of poverty or homelessness. Recovery costs may be higher for those without resources to conduct hazard mitigation activities ahead of time. Families and individuals who lack access to transportation may be unable to evacuate ahead of an emergency. (Krause & Reeves, 2017)

Low-income residents and renters are also less likely to purchase insurance, meaning that those with the most to lose during an event are also the least prepared to deal with potential losses. Major hurricane events in recent history such as Harvey, Irma, and Katrina all demonstrate that low-income and/or historically marginalized communities face increased vulnerability to hazard events and struggle the most to recover.

Median household income in the City of Watsonville was $74,785, with an overall poverty rate of 15.1%. By comparison, median income and poverty rates for Santa Cruz County were $109,266 and 11.2%, respectively. (see Table 3-2) Median income and poverty rates are also shown on the block group level in Figure 3-3 and Figure 3-4.

Table 3-2: Household Income and Poverty Levels

Jurisdiction	Median Income	Poverty Rate
City of Watsonville	**$74,785**	**15.1%**
Santa Cruz County (Total)	$109,266	11.2%

Source: ACS 5-Year, 2018-2023

Renters are also more vulnerable to natural hazards, as they are less likely to take out property insurance and the decision to make major structural improvements typically lies with the property owner. Federal disaster recovery services can exacerbate inequality between renters and homeowners; payout amounts are significantly higher for homeowners applying through FEMA's Individual Assistance (IA) program; from 1999 to 2013 U.S. homeowners saw their wealth increase with local hazard damages, whereas renters' wealth decreased. (Howell, Junia; Elliot, James, 2019)

Approximately 56% of occupied housing units in City of Watsonville are renters, compared to 40% for Santa Cruz County as a whole; refer to Table 3-3. Hence, Watsonville has a much higher percentage of renter occupied dwelling units than Santa Cruz County has a whole. Figure 3-5 depicts housing occupancy in Watsonville.

Table 3-3: Owner- and Renter Occupied Households

Jurisdiction	# Occupied Housing Units	# Renter Occupied	% Renter Occupied	# Owner Occupied	% Owner Occupied
City of Watsonville	**15,267**	**8,610**	**56.4%**	**6,657**	**43.6%**
Santa Cruz County	96,873	38,771	40.0%	58,102	60.0%

Source: ACS 5-Year, 2018-2023

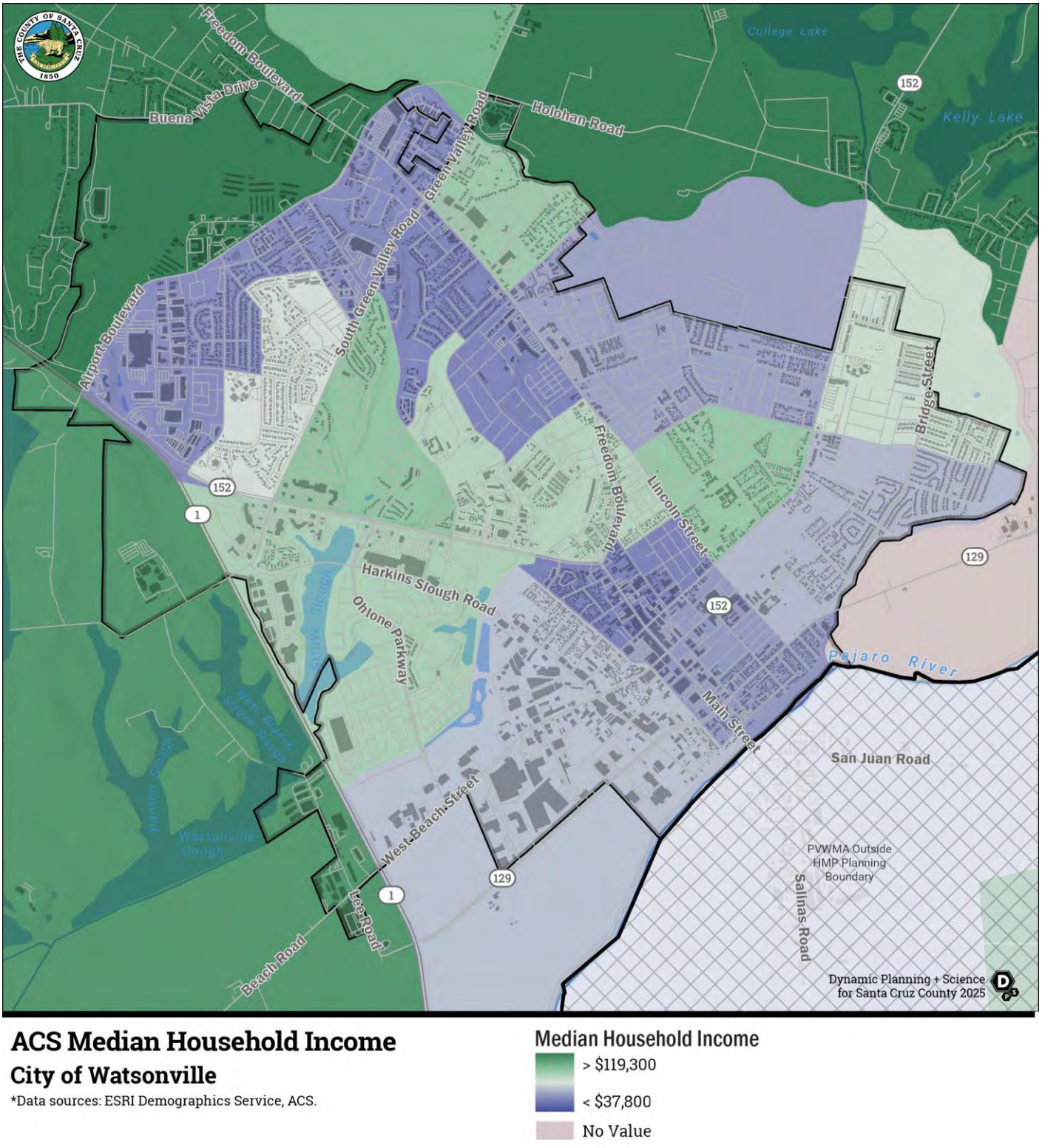
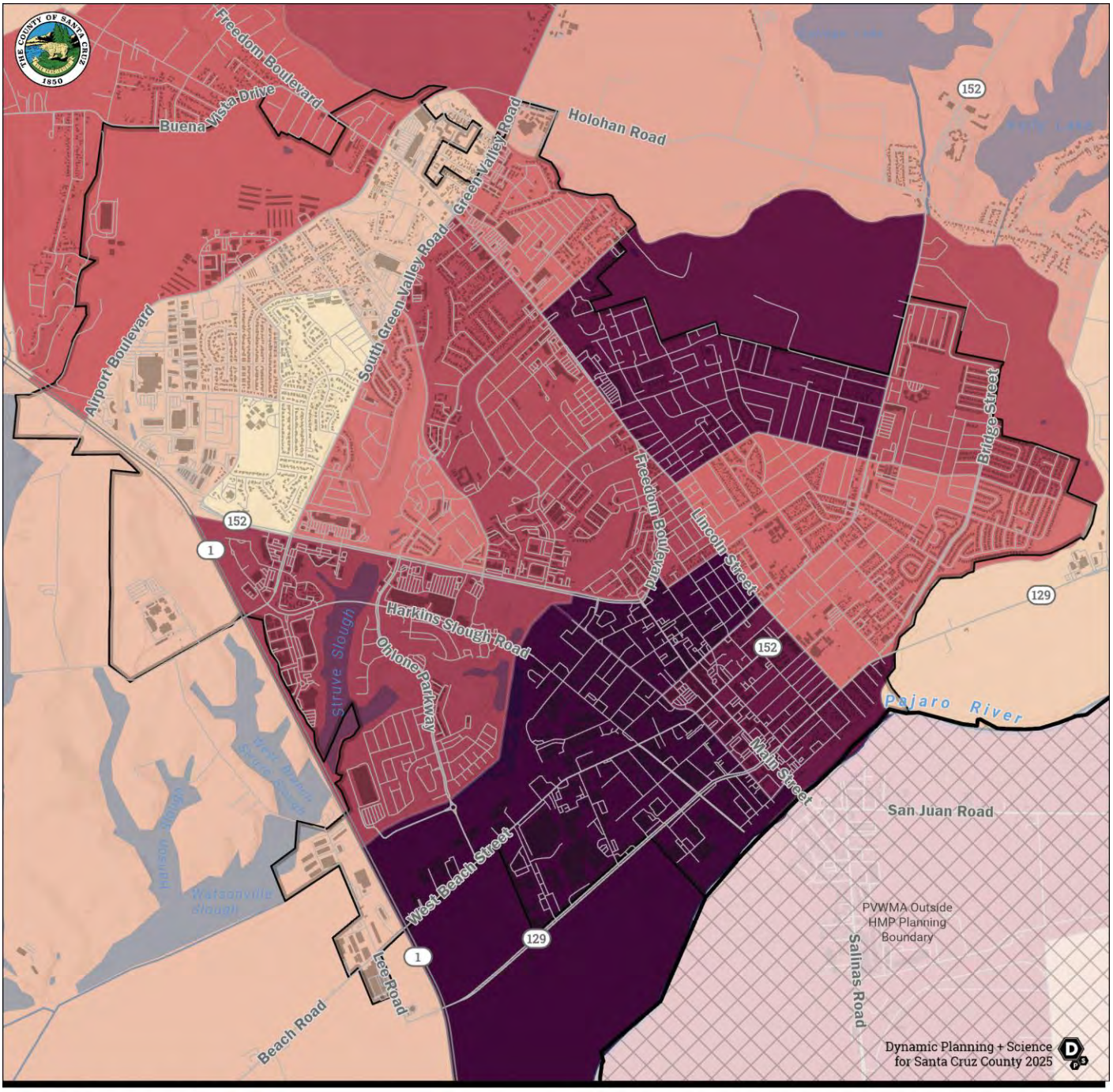


Figure 3-3: City of Watsonville - Median Household Income Map



ACS Poverty Status

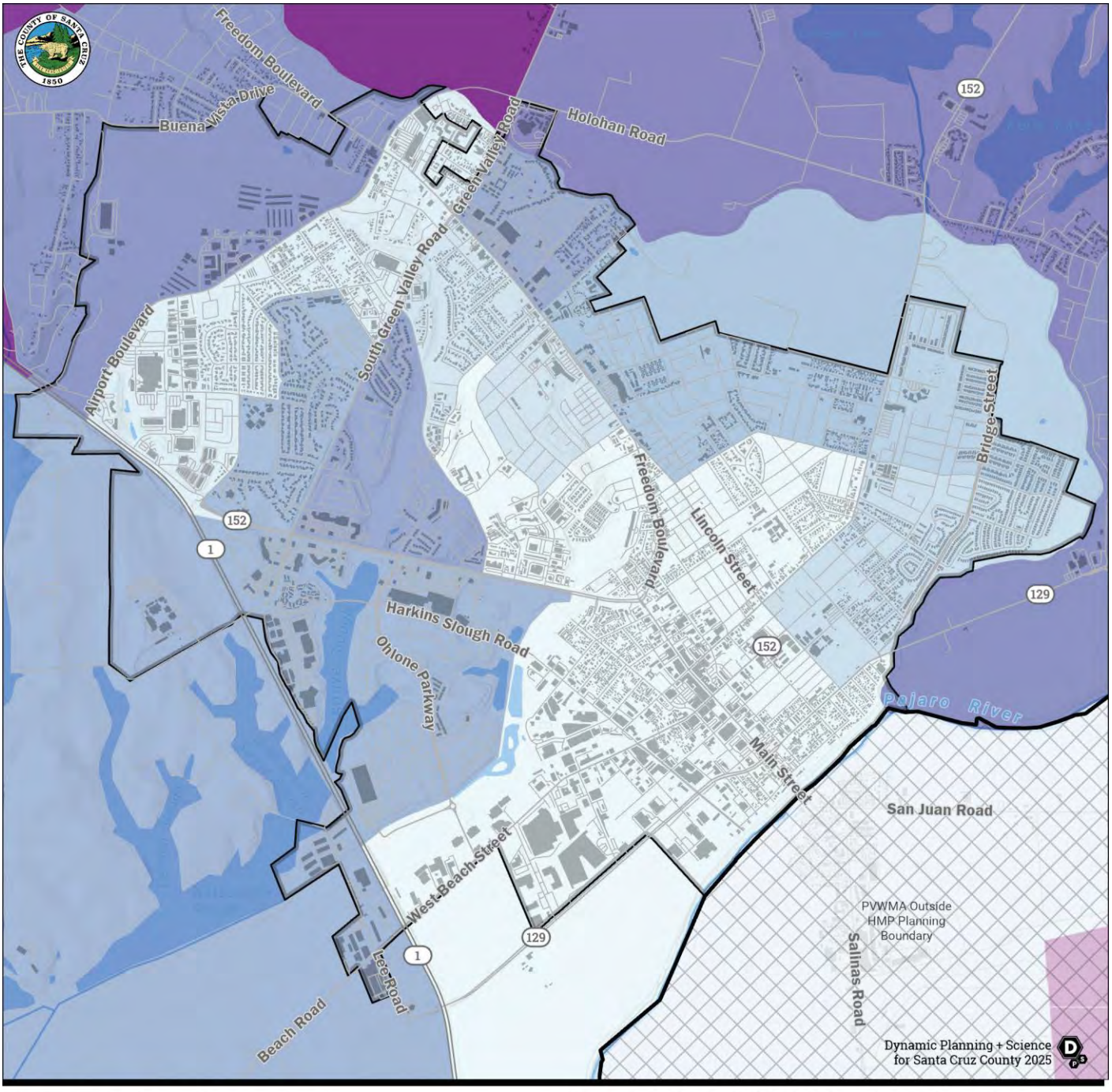
City of Watsonville

*Data sources: ESRI Demographics Service, ACS.

Percent of Population Whose Annual Income is Below Poverty

- > 24%
- < 1%
- No Value

Figure 3-4: City of Watsonville - Poverty Status Map



ACS Housing Occupancy
City of Watsonville
*Data sources: ESRI Demographics Service, ACS.

Percent of Housing Units that are Owner-Occupied
> 88%
< 41%
No Value

Figure 3-5: City of Watsonville - Occupied Housing Units Map

3.2.3.2 Dependent & Elderly Disabled Populations

Age is a significant factor in assessing vulnerability to natural hazards. Both older adults and children are considered dependent populations due to their reliance on caregivers for safety, mobility, and support during emergency events. These populations face heightened risks during disasters such as floods, wildfires, and earthquakes, particularly when compounding factors such as poverty, disability, or social isolation are present.

In the City of Watsonville, approximately 30.6% of households include at least one individual over the age of 65, and 4.2% of all households are comprised of seniors living alone. Among senior households, 5.3% live below the poverty line (Table 3-4). Seniors who live alone often face greater challenges in emergency situations, including difficulties with evacuation, limited access to real-time alerts due to digital literacy or lack of internet access, and chronic health conditions that require special care. These factors make seniors, especially those who are low-income or socially isolated, among the most vulnerable in a disaster context. Critical facilities such as assisted living centers require advanced coordination for evacuation and continuity of care and are therefore prioritized in emergency response plans.

Children are another key dependent population. In Watsonville, 42.1% of households include individuals under 18, with 12.9% of these households headed by a single caregiver (Table 3-4). Children rely entirely on caregivers for transportation, shelter, and decision-making during emergencies. The disruption of school systems, childcare, and social services during disasters can have significant emotional, developmental, and educational impacts on youth. Additionally, families with limited economic means or single caregivers may struggle to maintain access to necessary resources and recovery support.

Figure 3-6 highlights areas of the city with elevated concentrations of economically depend age groups.

Table 3-4: Economically Dependent Age Groups

Jurisdiction	% Households 65+	% Households 65+ Living Alone	% Households 65+ in Poverty	% Households <18	% Households <18 w Single Caregiver
City of Watsonville	**30.6%**	**4.2%**	**5.3%**	**42.1%**	**12.9%**
Santa Cruz County	33.4%	7.9%	2.7%	24.8%	6.0%

Source: ACS 5-Year, 2018-2023

Elderly populations face increased risks during disaster events due to age-related health conditions, mobility limitations, and potential social isolation. In Watsonville, approximately 11.8% of the non-institutionalized population lives with a disability, a slightly higher rate than the countywide average of 11.1% (Table 3-5).

Table 3-5: Watsonville Non-Institutionalized Disabled Population

Jurisdiction	# Persons w Disability	% Persons w Disability
City of Watsonville	**6,109**	**11.8%**
Santa Cruz County	29,557	11.1%

Source: ACS 5-Year, 2018-2023

Among those with access and functional needs, elderly individuals with disabilities represent a highly vulnerable subpopulation when it comes to disaster preparedness, response, and recovery. This group includes seniors living with physical or cognitive impairments such as hearing or vision loss, reduced mobility, reliance on assistive medical devices, neurodivergence, or chronic health conditions that may be exacerbated by hazard events (e.g., exposure to wildfire smoke or extreme heat).

Figure 3-7 illustrates the distribution of elderly individuals (age 65+) with disabilities across the City of Watsonville. The data show notable concentrations—exceeding 47% of the elderly population—in several distinct neighborhoods, primarily located in the northern, eastern, and southeastern portions of the city. These include areas around East Lake Avenue, Green Valley Road, Airport Boulevard, and Freedom Boulevard, as well as pockets near the Pajaro River.

The combination of advanced age and disability can present significant challenges not only during emergency response but also in implementing hazard mitigation measures. Elderly individuals with disabilities may face physical, financial, or logistical barriers to undertaking activities such as seismic retrofitting, anchoring fuel tanks, installing foundation bracing, or implementing residential flood-proofing techniques. Many live in older housing stock that is more vulnerable to earthquake damage or repetitive flooding and may lack the resources or support networks needed to complete mitigation upgrades.

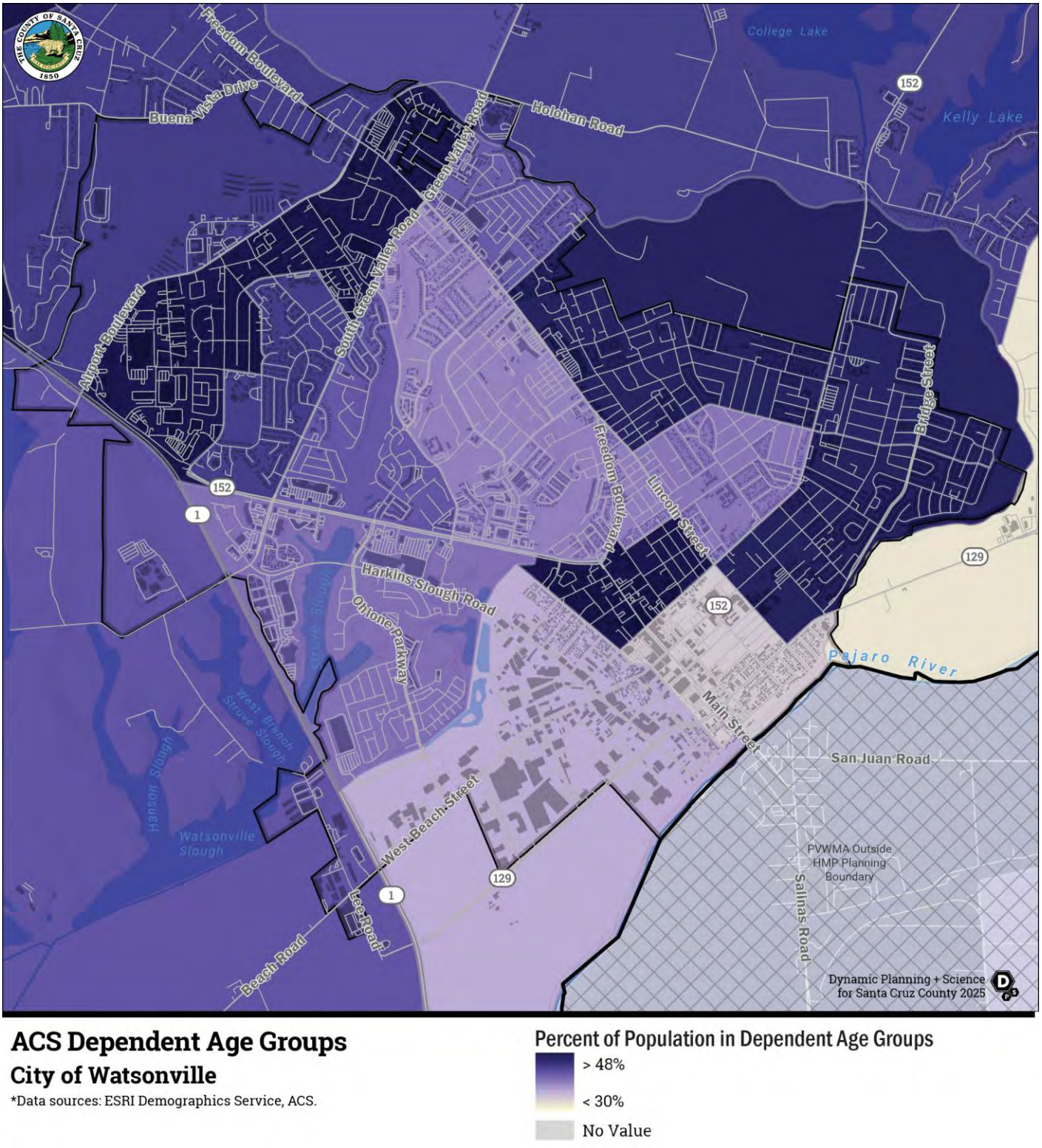


Figure 3-6: City of Watsonville - Economically Dependent Age Groups Map

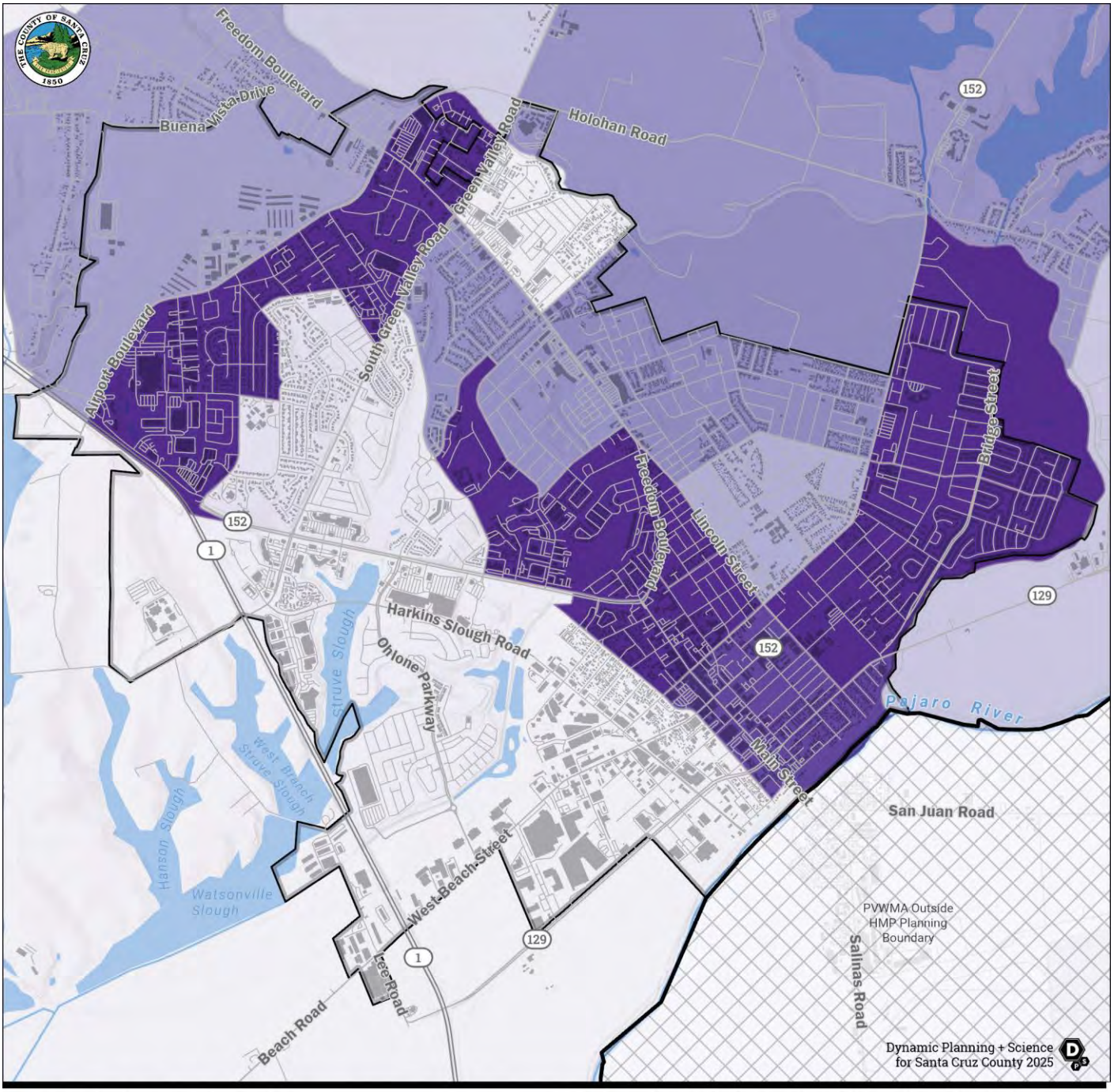


Figure 3-7: City of Watsonville - Disabled Elderly Population Map

3.2.3.3 Race, Ethnicity & Language

Natural disasters compound racial disparities; non-white individuals and communities receive less recovery aid from FEMA than their white counterparts, even where the amount of damage is the same. (Howell, Junia; Elliott, James R., 2019) (National Advisory Council, 2020) These disparities are evidence of the complicated relationship between disaster recovery and overlapping social vulnerabilities including race, income, language, and health. Black and Latinx residents are more likely to be low income and renters, conditions which create barriers to navigating FEMA's Individual Assistance programs. Communities with more non-white residents may have lower tax revenue and property values, which means less investment in mitigation and rebuilding efforts before and after an emergency.

Figure 3-8 depicts the racial and ethnic composition of the City of Watsonville. According to ACS data, nearly all census tracts within the city boundaries identify Hispanic or Latino as the predominant racial or ethnic group. This demographic pattern reflects Watsonville's long-standing role as a cultural and economic hub for Latino communities in the Pajaro Valley, many of whom are employed in agriculture, food processing, and other essential industries.

The strong concentration of Hispanic and Latino populations has important implications for hazard mitigation planning. Language access, cultural relevance of outreach materials, and partnerships with trusted community-based organizations are essential to ensure effective communication of preparedness information, emergency alerts, and recovery resources. Tailoring hazard mitigation and resilience strategies to reflect Watsonville's demographic reality will help reduce disparities in disaster outcomes and ensure equitable access to mitigation programs.

Residents with limited English proficiency (LEP) face heightened barriers to understanding emergency alerts, accessing preparedness resources, and navigating post-disaster recovery programs. In Watsonville, nearly 49% of households speak Spanish and 15% report limited English proficiency, rates significantly higher than the county average (Table 3-6). Figure 3-9 shows where Spanish-speaking populations are concentrated in Watsonville.

Many LEP residents are renters or frontline workers living in high-risk areas, making it critical to provide translated preparedness materials, culturally competent outreach, and tailored emergency alerts. Partnering with trusted community organizations can enhance outreach effectiveness and help ensure equitable access to mitigation resources and life-safety information.

Table 3-6: County-Wide Household Languages

Jurisdiction	# Spanish Speaking Households	% Spanish Speaking Households	# Limited English Households	% Limited English Households	# Other Language Households
City of Watsonville	**7,719**	**48.9%**	**2,363**	**15.0%**	**0**
Santa Cruz County (Total)	18,325	17.2%	3,354	3.1%	90

Source: ACS 5-Year, 2018-2023

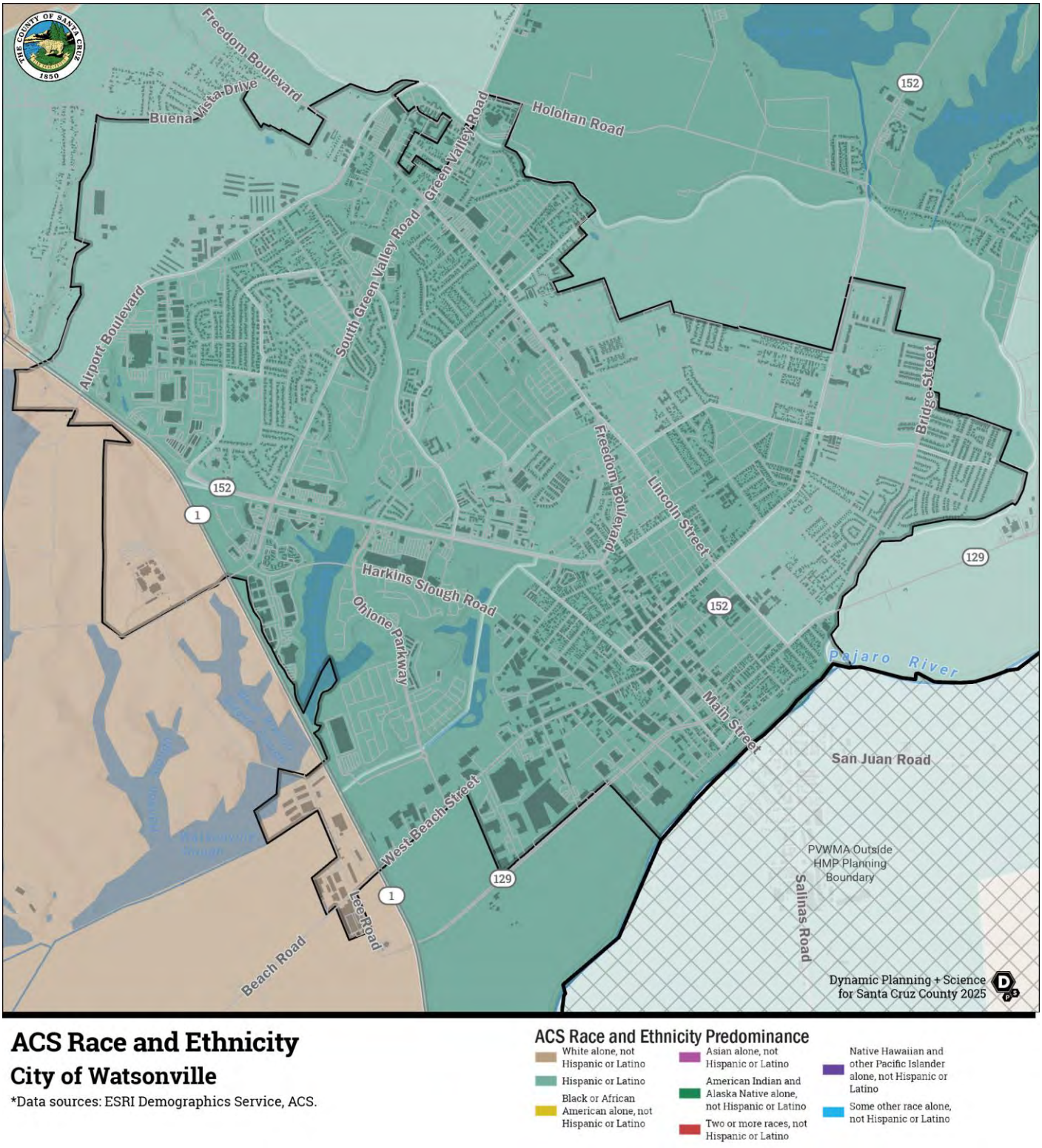


Figure 3-8: City of Watsonville - Race and Ethnicity Predominance Map

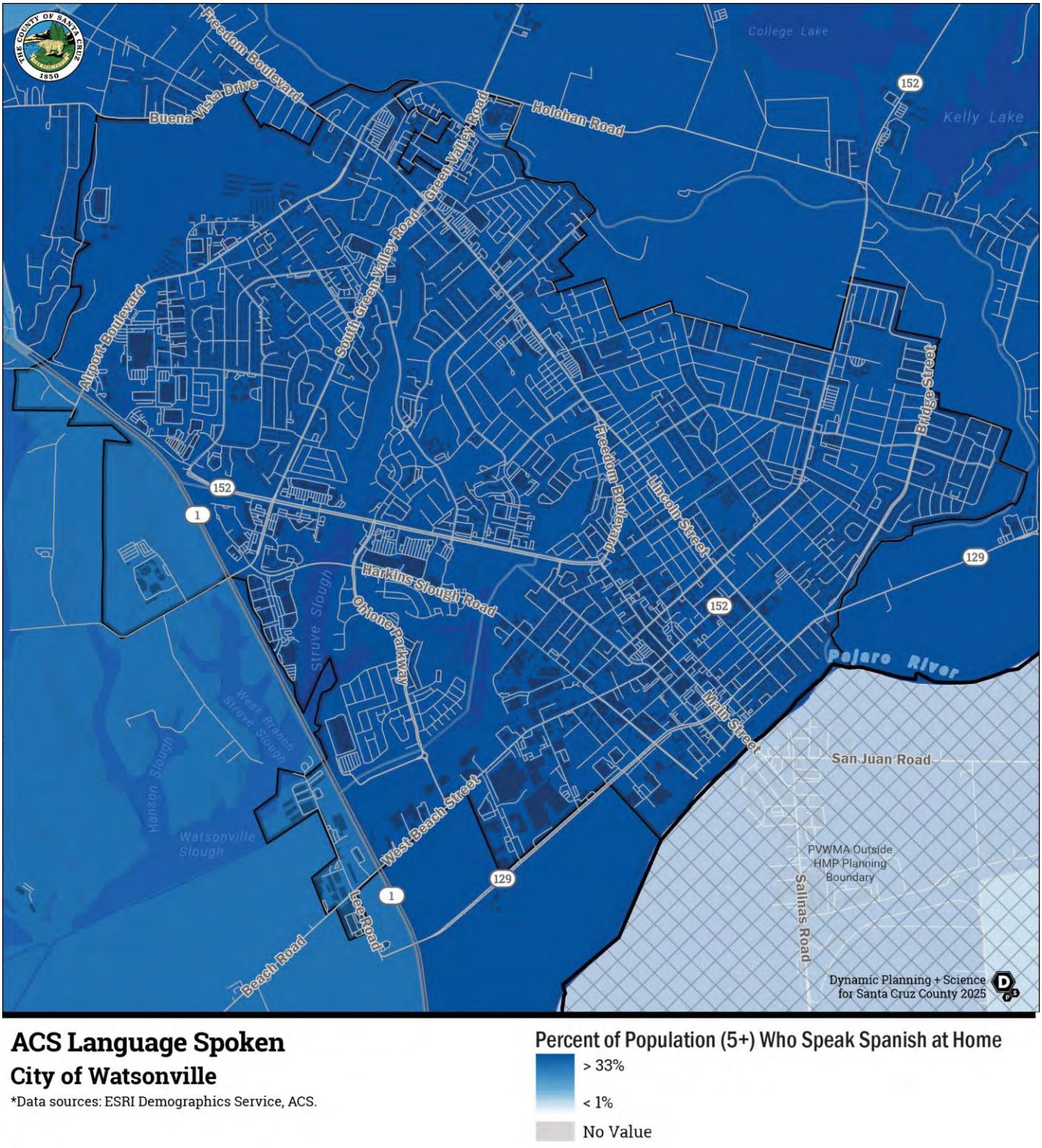


Figure 3-9: City of Watsonville - Percentage of Spanish-Speaking Population Map

3.2.3.4 Social Vulnerability Index (SVI)

The CDC Social Vulnerability Index (SVI) provides important insight into the geographic and demographic factors that shape Watsonville's resilience to disasters. As described in Volume 1, Section 1.4.3.6, the SVI is a composite measure developed by the CDC that identifies communities more likely to require additional support before, during, and after an emergency. The index incorporates four key dimensions: socioeconomic status, household composition and disability, minority status and language, and housing and transportation access, producing scores that range from 0 (lowest vulnerability) to 1 (highest vulnerability).

Figure 3-10 shows that Watsonville ranks among the areas of highest vulnerability in Santa Cruz County, with many census tracts scoring between 0.50 and 1.00. This reflects the city's demographic and socioeconomic profile, which includes large populations of agricultural workers, renters, Spanish-speaking households, and lower-income families. In addition, a significant share of residents are seniors, children, or individuals with disabilities, further elevating vulnerability scores.

These conditions highlight how disaster preparedness, hazard mitigation, and recovery can be more challenging in Watsonville than in other parts of the county. Language barriers, limited access to transportation, and economic constraints can delay evacuation, reduce access to hazard insurance, and create barriers to implementing home retrofits or floodproofing measures.

The presence of elevated social vulnerability in Watsonville underscores the importance of equity-focused hazard mitigation strategies. Tailored outreach in multiple languages, partnerships with trusted community organizations, and targeted funding support for housing retrofits, flood protection, and seismic strengthening are critical steps to ensure that Watsonville residents, particularly those in high vulnerability neighborhoods, have the resources and support needed to reduce disaster risk.

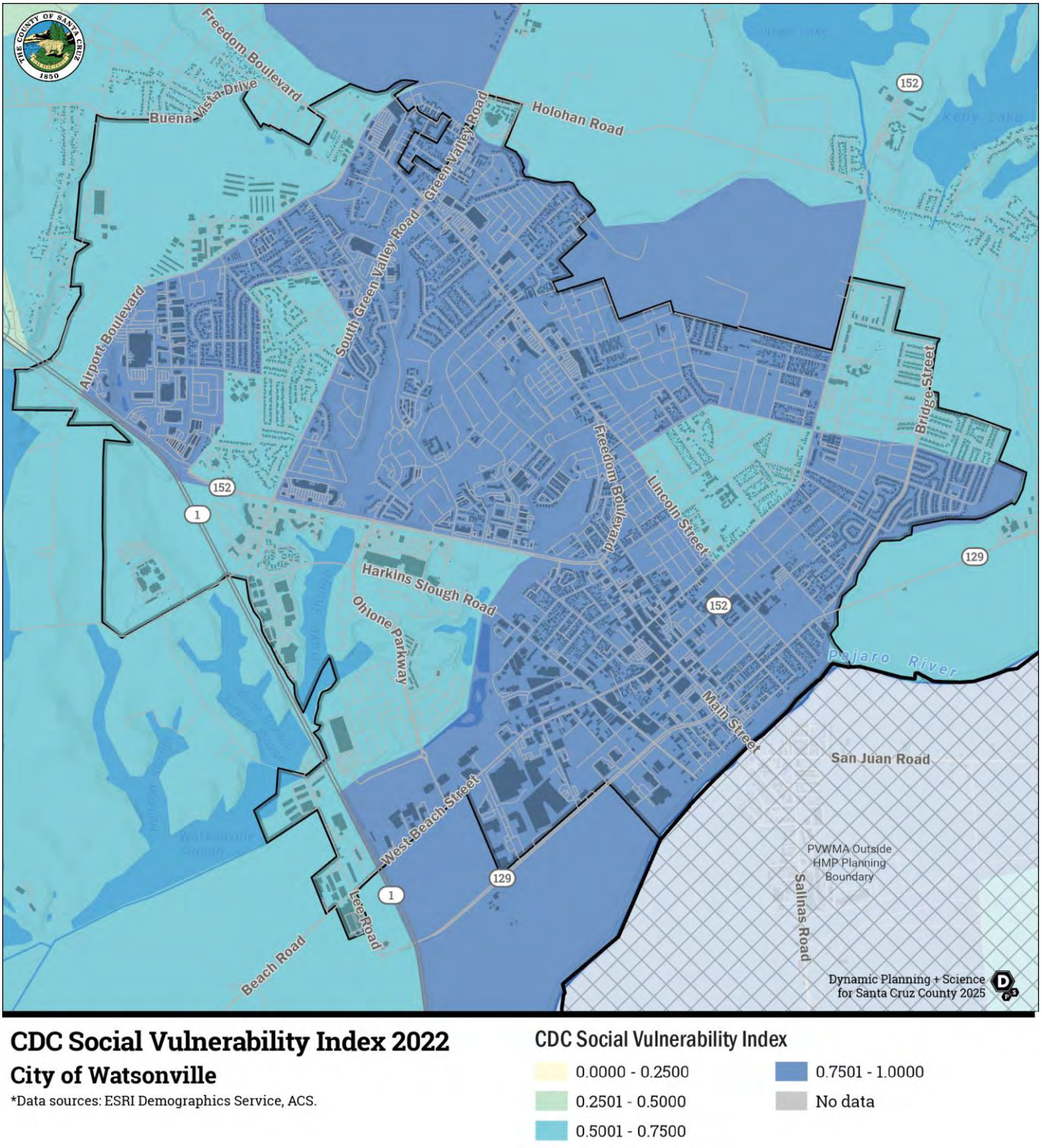


Figure 3-10: City of Watsonville Social Vulnerability Index Map

3.2.4 Economy

Watsonville serves as the economic heart of the Pajaro Valley, with a local economy that is both agriculture-based and globally connected. The region is renowned for its fertile soils and temperate climate, which have made agriculture the city's economic backbone for more than a century. Today, Watsonville remains a national leader in berry and vegetable production, with strawberries, apples, fresh flowers, broccoli, cauliflower, and artichokes among the most significant crops grown in the valley.

In addition to farming, Watsonville has built a strong food-processing and distribution sector. The city's processors freeze and ship more fruits and vegetables than any other single area in the United States, and more than $280 million is invested annually in shipping fresh and processed products worldwide. This makes Watsonville a critical link in the national and international food supply chain.

Beyond agriculture, Watsonville hosts major employers in manufacturing, construction, and distribution. Companies headquartered in the city include Driscoll's Strawberries, Martinelli's, California Giant, Monterey Mushrooms, Graniterock, Granite Construction, West Marine, Vendwize, and Fox Racing Shox, all of which reflect the city's economic diversity. Together, these industries contribute to Watsonville's role as both a regional employment center and a hub of agricultural innovation.

Watsonville's economic profile has direct implications for hazard resilience. Agriculture and food processing are highly sensitive to disruptions caused by flooding, earthquakes, and climate-related hazards. Damage to fields, cold storage facilities, or transportation networks could have cascading impacts beyond the local economy, affecting regional food security and supply chains. Similarly, many of the city's essential industries rely on a large workforce of agricultural and service-sector employees, many of whom face economic vulnerabilities that can compound disaster impacts.

For this reason, hazard mitigation planning in Watsonville must prioritize the protection of critical economic infrastructure, workforce housing, and transportation corridors, ensuring that both local livelihoods and regional supply chains remain resilient in the face of future hazards.

3.2.5 Growth Trends & Future Development

The City of Watsonville had an estimated population of 51,968 in 2023, which is approximately 20% of the total population of Santa Cruz County. Between 2013 and 2019, Watsonville's population grew from 51,544 to 53,800, an increase of 4%. It then declined by nearly 2,000 people in the span of four years to 51,968 in 2023, almost wiping out all the growth between 2013 and 2019. Watsonville has ample room to grow both within the existing city limits and through annexation, and it would be expected the population would resume an upward trend.

Although recent demographic shifts indicate a downturn in population growth and development, they also highlight the need to recalibrate hazard mitigation strategies to reflect changing conditions. Reduced growth may alleviate immediate pressure on infrastructure and resource demand, yet it can also lead to challenges such as diminished funding for hazard mitigation initiatives or delayed upgrades to aging

infrastructure. Aligning development plans with hazard mitigation objectives becomes even more critical in this context. Proactive planning is essential to ensure that the city remains resilient, addressing potential vulnerabilities and maintaining readiness to respond to natural hazards despite slowing growth.

Population density and household composition can provide critical insights into the assumed location of risk within a community. In 2023, Watsonville had 15,792 total households, with an average household size of 3.24 individuals per household. This figure is the highest in Santa Cruz County and well above the Countywide average of 2.36. Such metrics suggest that the city may have a higher prevalence of multi-generational or family units as compared to senior or single-occupant households. Areas with higher population densities or distinctive household structures are often more susceptible to hazards like flooding, fire, or evacuation challenges, given the concentration of people and infrastructure. Consequently, mitigation strategies tailored for these demographics, including enhanced sheltering solutions and evacuation procedures, are essential. Although the City of Watsonville has taken significant mitigation steps since the prior MJHMP, ongoing efforts in this annex focus on addressing these vulnerabilities and refining strategies to counter persistent risks stemming from past development and residual hazard exposures.

Table 3-7: Population and Household Size

Jurisdiction	Population	Households	Avg. Household Size
Santa Cruz County	266,021	106,635	2.36
City of Watsonville	51,968	15,792	3.24

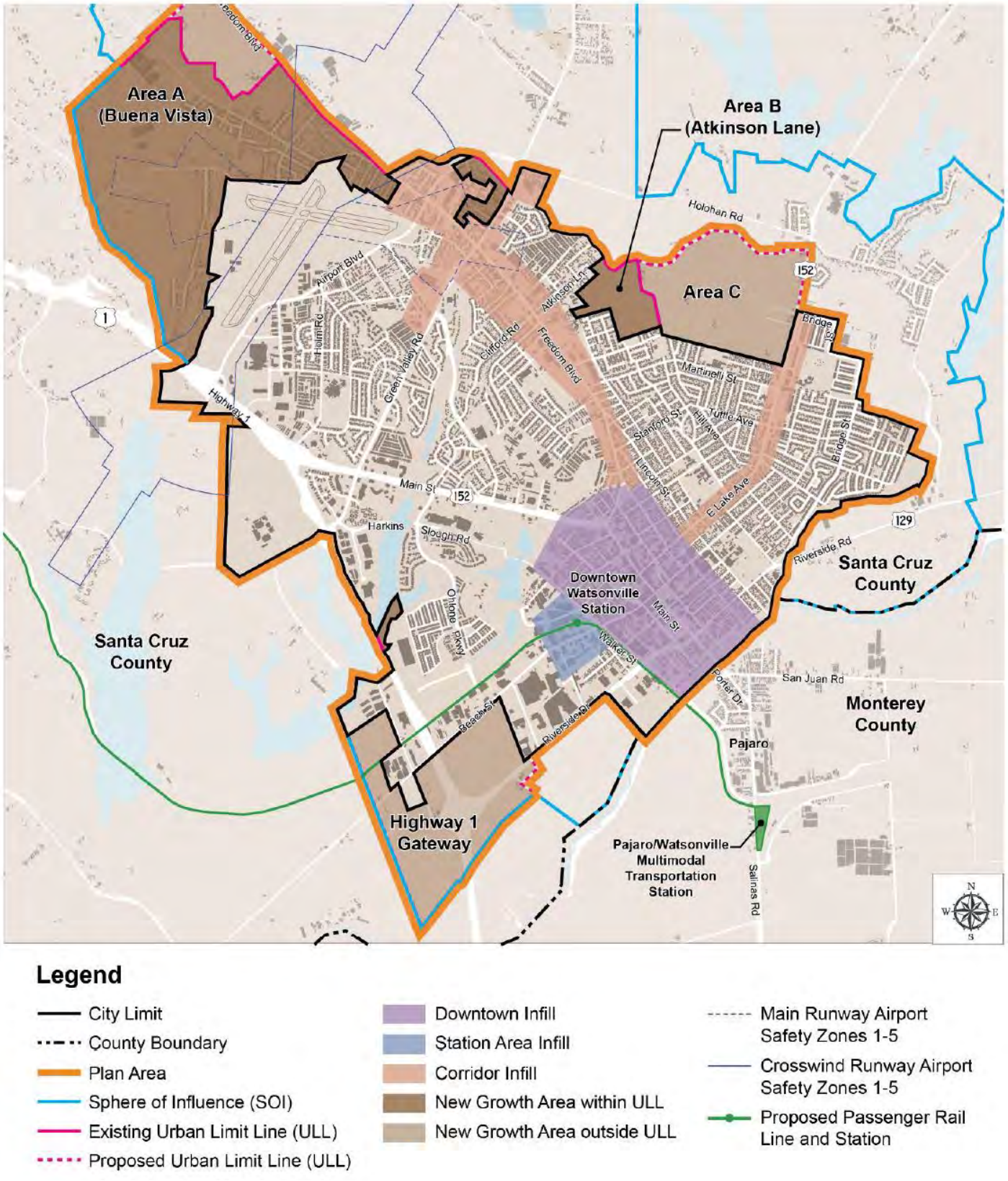
Source: 2016-2021 ACS 5-Year Estimates

Long Range Growth

The City of Watsonville is preparing for significant residential and commercial growth through its 2050 General Plan. The accompanying Environmental Impact Report projects the addition of up to 5,980 new housing units and approximately 1.7 million square feet of non-residential development. Much of this growth will occur as infill along East Lake Avenue, Freedom Boulevard, and Downtown Watsonville, where the recently adopted Downtown Watsonville Specific Plan encourages mixed-use development and increased density.

Growth is also anticipated beyond current city limits in areas such as Buena Vista, Atkinson Lane, Area C, and the Highway 1 Gateway (Figure 3-11), which together represent major opportunities for new homeownership and commercial development. However, these sites require annexation or approval through citywide referendums before large-scale development can proceed.

This projected growth carries important implications for hazard mitigation planning. First, expanded residential and commercial development will place additional demands on infrastructure while also increasing exposure to flood, seismic, and wildfire hazards, particularly in newly developed or annexed areas. Second, as development extends into outlying neighborhoods, equitable access to evacuation routes, emergency services, and mitigation funding will be essential to protect vulnerable populations. Finally, Watsonville has a unique opportunity to ensure that infill and new construction are designed with resilience in mind. This includes adopting elevated construction in flood-prone areas, incorporating green infrastructure to reduce stormwater impacts, and requiring seismic retrofitting or advanced building practices to better withstand future earthquakes.



Legend

- City Limit
- County Boundary
- Plan Area
- Sphere of Influence (SOI)
- Existing Urban Limit Line (ULL)
- Proposed Urban Limit Line (ULL)
- Downtown Infill
- Station Area Infill
- Corridor Infill
- New Growth Area within ULL
- New Growth Area outside ULL
- Main Runway Airport Safety Zones 1-5
- Crosswind Runway Airport Safety Zones 1-5
- Proposed Passenger Rail Line and Station

Figure 3-11: Areas of Growth Identified in the 2050 General Plan

3.3 Planning Process

The City of Watsonville followed the planning process detailed in Volume 1, Section 2, including participating in the county-wide Hazard Mitigation Planning Team (HMPT) and formulating their own internal planning team to support the broader planning process.

The city's representatives in the Steering Group led stakeholder and public engagement efforts alongside the Consultant Team, with assistance from the county-wide HMPT and their internal planning team. This engagement process is described in Volume 1. Specifically, for the City of Watsonville, this included postings to the city website and social media, outreach events, and public presentations, as documented in Appendix B. Examples of Key Stakeholders engaged by Santa Cruz County on behalf of the city with relevance to the development of Watsonville's mitigation strategy include the USDA and other federal agencies; DWR and other state agencies; the City of Santa Cruz and other neighboring jurisdictions; community-based organizations such as Community Bridges and Watsonville Wetlands Watch; utility providers like AT&T and Pajaro Valley Water Management Agency; UC Santa Cruz and other academia; and local businesses.

All Key Stakeholders that were invited to participate in the planning process are listed in Volume 1, Section 2, and the input received from stakeholders was integrated into the city's annex, as described in Volume 1 Table 2-9. The city's internal planning participants, their positions, and how they participated in the planning process are shown in Table 3-8.

Table 3-8: City of Watsonville Planning Committee and Steering Group Members

Stakeholder	Title	Department	CRS Expertise	Description of Involvement
Courtney Lindberg	Public Works Director	Public Works		Lead Point-of-Contact
Leslie Rios	Environmental Project Manager	Public Works		Alternate Point-of-Contact
Toto Vu-Duc	Former Environmental Project Manager	Public Works		Former Alternate Point-of-Contact
Charles Hanley	GIS Coordinator	Innovation and Technology		HMPT #2
Christopher Gregorio	Assistant Engineer / CRS Coordination	Public Works		HMPT #1, BO#2
Cristy Cassel	Conservation Outreach Program Manager	Public Works		HMPT #2
Danielle Green	Assistant Director of Public Works	Public Works		HMPT #1,#2; BO#1
David Rodriguez	Assistant Police Chief	Police		HMPT #2, BO#2
Joseph DeSante	Chief Building Official	Community Development		HMPT #1, BO#2.5
Justin Meek	Assistant Community Development Director	Community Development		HMPT #2,#3. All Breakouts

Stakeholder	Title	Department	CRS Expertise	Description of Involvement
Matt Orbach	Assistant Community Development Director	Community Development		HMPT #1,#2; BO#1
Michelle Pulido	Public Information Officer	Police		HMPT #1,#2; BO#1
Nancy Porto	Community Outreach Coordinator	Public Works		Outreach Assistant
Nick Culabaquib	Deputy City Manager	City Manager's Office		HMPT #1; BO#1
Raunel Zavala	Senior Administrative Analyst			Kick-Off Meeting
Tamara Vides	City Manager	City Manager's Office		BO#1
Tom Avila	Division Chief – Operations	Fire		HMPT #1,#2;#3,#4; BO#1, BO#2,

The City of Watsonville participated in a comprehensive hazard mitigation planning process as part of the 2025 Santa Cruz County MJHMP update. This included a series of breakout meetings that engaged the city's planning team, which included key city personnel and stakeholders in evaluating hazards, identifying local vulnerabilities, and prioritizing mitigation strategies.

The kickoff meeting held on January 27, 2025, launched the planning process by introducing the project scope and clarifying the roles of the Steering Group and participating jurisdictional teams. In the months that followed, a series of structured meetings addressed foundational elements of the plan, including a review of key changes since the previous plan, an overview of hazard mitigation principles, and exercises to prioritize local hazards.

On Thursday, April 24, 2025, the City of Watsonville convened its first breakout session to advance local hazard mitigation planning efforts. The meeting reinforced Watsonville's role within the broader multi-jurisdictional framework and emphasized the importance of sustained participation from city departments and regional partners. Participants discussed recent and potential natural disasters, with particular focus on their impacts to critical infrastructure and community resilience. The session highlighted the increasing frequency and severity of hazard events and the vital role of proactive planning in reducing risk. Newly released hazard data were reviewed, and concerns were raised regarding inaccuracies in the updated CAL FIRE wildfire hazard maps, underscoring the need for reliable data and stronger coordination with state agencies to improve local risk modeling.

Building on this initial meeting, Watsonville city staff worked closely with the county-wide HMPT to review historical hazard impacts, assess ongoing development trends, and evaluate the city's capabilities and gaps in risk reduction. The breakout session included the development of a localized risk matrix to prioritize the hazards affecting the city, tailored to Watsonville's unique geography and built environment, and laid the foundation for identifying hazard-specific problem statements and mitigation actions.

July 14, 2025, Breakout Meeting shifted toward reviewing local capabilities and defining specific areas of concern, which informed the drafting of problem statements. Teams worked collaboratively to refine mitigation alternatives, align actions with FEMA guidelines, and develop a shortlist of priority mitigation actions and inter-jurisdictional collaboration opportunities.

These efforts built upon the county-wide meetings held between January 2025 and August 2025, which introduced the MJHMP update process, defined the roles of the Steering Group and county planning committee, and outlined the timeline and deliverables for each participating jurisdiction.

Throughout this planning process, the City of Watsonville has remained focused on aligning its goals with FEMA standards, maintaining eligibility for federal mitigation funding, and incorporating updated risk data into planning and policy documents. These localized efforts are documented in this annex as well as in Volume 1, Appendix B of the 2025 MJHMP. Table 3-9 shows meeting records for the City of Watsonville Planning Team. Steering Group and county-wide HMPT meetings are documented in Volume 1, Section 2.

Table 3-9: City of Watsonville Planning Team Meetings

Meeting & Date	Agenda / Topics	Goals / Key Inputs
County-Wide Steering Group and HMPT Meetings #1 & #2 January 27, 2025 – March 27, 2025		
WTS Planning Team Breakout Meeting #1 April 24, 2025	▪ Community engagement progress and results ▪ Risk assessment and community vulnerability ▪ Demographics and vulnerable populations ▪ Overview of jurisdiction-specific hazard risks and exposure ▪ Introduction to Risk Assessment Mapping Platform (RAMP) ▪ Jurisdiction-specific hazard risk ranking exercise	▪ Consensus on jurisdiction-specific priority hazards ▪ Identify capabilities and potential mitigation actions ▪ Community engagement volunteers
County-Wide HMPT Meeting #3 June 2, 2025		
WTS Planning Team Breakout Meeting #2 July 14, 2025	▪ Review capabilities assessment ▪ Review areas of concern and define problem statements ▪ Principles of effective mitigation strategies and actions, and mitigation alternatives ▪ Refine and align jurisdiction-specific mitigation actions exercise	▪ Consensus on jurisdiction-specific capabilities ▪ Consensus on jurisdiction-specific areas of concern ▪ Consensus on priority mitigation actions and collaboration opportunities ▪ Community engagement volunteers
County-Wide HMPT Meeting #4 August 4, 2025		

3.3.1 Public Input & Draft Review

As detailed in Volume 1, Section 2, the draft plan was available for public review and comment from September 29 to October 20, 2025. Public comments received during that time were similar to those gathered throughout the public engagement process, including the need for more equity in the distribution of mitigation activities and funding and the need for enhanced cooperation among jurisdictions, utility providers, and state agencies. These comments were incorporated into the city's mitigation strategy, as appropriate; although, most were already addressed by the Mitigation Action Plan which was based on previous public input.

Public and stakeholder input was gathered and incorporated throughout the plan development process, before the public review period, such as from the online public survey (see Volume 1, Section 2.1.2 and Appendix B, for details). During the review period, jurisdictional staff and stakeholders that participated in the plan development also reviewed the public draft and provided comments on minor corrections and revisions, which were addressed in the final plan.

3.4 What's New

This section provides an overview of hazard mitigation planning efforts for the planning area and highlights the updates made in the 2025 MJHMP. The City of Watsonville previously maintained its own standalone Local Hazard Mitigation Plan, which guided resilience planning and hazard mitigation actions at the city level. For the first time, Watsonville is now participating in the countywide MJHMP process. This integration reflects the City's ongoing commitment to regional resilience and acknowledges that many hazards such as flooding, severe storms, drought, and earthquakes cross jurisdictional boundaries.

Through participation in the MJHMP, Watsonville has identified its highest priority hazards, developed hazard specific problem statements, and proposed actionable strategies to reduce risks. By aligning with countywide partners and leveraging regional resources, Watsonville has strengthened its capacity to prepare for, withstand, and recover from disasters while continuing to protect its unique coastal community character.

3.4.1 Mitigation Activities

The city has successfully implemented several initiatives aimed at addressing identified vulnerabilities. These accomplishments are highlighted in this section and have directly contributed to reducing risks from hazards such as flooding, all hazards, and severe weather. These completed projects showcase Watsonville's ability to effectively plan, fund, and execute measures that protect its residents and infrastructure.

In addition, Watsonville has systematically reviewed and adjusted its mitigation actions, exemplifying adherence to FEMA's Planning Policy Guide principles and emphasizing the importance of dynamic and

adaptive mitigation planning. By fostering partnerships, leveraging funding opportunities, and prioritizing equity in implementation, the city aligns with best practices to build resilience against natural disasters. This ongoing effort is a testament to the city's commitment to the principles of risk-informed decision-making, equitable resource allocation, and integration with broader regional and state hazard mitigation objectives.

Adjustments to Previous Mitigation Actions

A significant portion of the city's mitigation efforts remain ongoing or in the pipeline. These actions, ranging from infrastructure upgrades to community outreach initiatives, represent the city's proactive approach to addressing hazards as resources become available.

Recognizing constraints such as limited funding and shifting priorities, the city has reevaluated certain initiatives, leading to their reprioritization or canceling of mitigation actions. Factors such as feasibility, cost-effectiveness, and emerging risks informed these decisions, ensuring alignment with the city's updated hazard mitigation goals. Adjustments to previous mitigation actions are documented as part of the City of Watsonville's Mitigation Action Plan in Table 3-16, and more specific status updates are provided in Table 3-17.

3.4.2 Mitigation Successes

Watsonville General Plan 2050

The City of Watsonville General Plan was last comprehensively updated in 1994. The city initiated a comprehensive update in 2023 and the updated plan, Watsonville General Plan 2050, is expected to be adopted by Fall 2026. The update includes an update to the Safety Element to reference the Santa Cruz Multi-Jurisdiction Hazard Mitigation Plan. Watsonville General Plan 2050 anticipates new growth occurring in undeveloped portions of Atkinson Lane and Manabe/Burgstrom. Watsonville General Plan 2050 also will address changes to State Law that apply to General Plans.

Downtown Watsonville Specific Plan

The Downtown Watsonville Specific Plan (DWSP) was adopted by the City of Watsonville in October 2023 to guide the revitalization of the downtown core as a vibrant, walkable, mixed-use environment. The DWSP focuses on facilitating housing production and preservation; encouraging higher-density mixed-use residential and commercial development; supporting retail, entertainment, visitor-serving, civic, and cultural uses; and recommending key transportation and circulation improvements. The DWSP expressly promotes compact infill development near existing transit services to reduce automobile dependency, alleviate local and regional traffic congestion, and lower greenhouse gas emissions. Public realm and mobility improvements emphasized in the DWSP include enhancing pedestrian safety and comfort,

improving bicycle infrastructure and connectivity, implementing complete streets concepts, and upgrading streetscapes to create a more accessible and inviting downtown environment.

Collectively, these strategies are intended to strengthen downtown Watsonville's economic vitality, support a diverse range of residents and employees, and improve overall community resilience, including to natural hazards. The DWSP is regulatory, as it was adopted by ordinance and therefore substitutes for zoning within the DWSP area. An Environmental Impact Report was prepared for the DWSP in accordance with the requirements of the California Environmental Quality Act, which enables streamlining for subsequent projects found consistent with the DWSP, in accordance with CEQA Guidelines Section 15182.

Watsonville 2030 Climate Action & Adaption Plan

The Watsonville City Council adopted the Watsonville 2030 Climate Action & Adaption Plan in July 2021. The plan sets in motion a suite of programs that are designed to reduce the community's greenhouse gas emissions to 80% lower than levels in 1990 by 2030, meeting a State-mandated legal target. The plan provides a roadmap to reduce the community's greenhouse gas emissions, combat the impacts of climate change, and explore carbon sequestration and habitat restoration.

Infrastructure Projects

The City of Watsonville is undertaking a number of infrastructure projects. These projects include the Water Main Replacement Project, Roache Well & Pump Station, Freedom/Green Valley Water & Sewer Improvements, Hames Reservoir Interior Coating & Connection Modifications, and Sydney & Jehl Avenue Sewer, Storm, & Water Improvements. These projects can assist the City of Watsonville at improving resiliency to extreme temperatures, drought, and climate change.

3.5 Risk Assessment

This section focuses on profiling hazards specific to the City of Watsonville and assessing their vulnerability independent of the broader county-wide planning area, which has been evaluated in Section 3 of Volume 1. The hazard profiles in Volume 1 discuss overall impacts to the planning area and describe relevant plans, policies, and regulations; past events; location; frequency and probability of future occurrences; severity and extent; warning time; secondary hazards; and climate change impacts. For more information on risk assessment methodologies, see Volume 1, Appendix A.

This section includes a tailored vulnerability assessment, analyzing assets at risk such as population, property, and critical facilities and infrastructure unique to the city, and information on city-specific differences in hazard vulnerability across the planning area. It also identifies total city assets at risk, including people, property, and critical facilities and infrastructure within the city. In addition, this section presents growth and development trends for the community, offering insights into vulnerabilities and risks that represent the broader context of assets at risk.

3.5.1 Hazard Screening & Prioritization

Members of the planning team from each participating jurisdiction came together to collaboratively decide which county-wide hazards would be included in the MJHMP and which would be excluded. Hazard screening and prioritization took place early in the process and integrated historic data, local knowledge, and consensus opinions to create a risk assessment matrix for the county as well as for each participating jurisdiction. These matrices indicate the priority of hazards prior to further refinement. Details about this process, the results of the discussion, and in-depth profiles for county-wide hazards can be found in Volume 1, Sections 2 and 3.

The final results of the hazard screening and prioritization exercises are summarized in Table 3-11, including which specific subhazards were selected by Watsonville's Planning Team.

The City of Watsonville's internal planning group used the same hazard identification and prioritization process as the county-wide Planning Team. They reviewed previously prepared hazard mitigation plans and other relevant documents to determine the realm of natural hazards that have the potential to affect the city. Table 3-10 provides a crosswalk of hazards identified in select planning documents, including the 2020 City of Watsonville Local HMP, the 2021 Santa Cruz County Local HMP, and the 2023 State of California HMP. The crosswalk was used to develop a preliminary hazards list, providing a framework for the group to evaluate which hazards were truly relevant to the City of Watsonville and which ones were not.

The internal planning group then ranked hazards based on their probability of affecting City of Watsonville and potential impacts on the community. Figure 3-12 displays the results of the hazard risk ranking exercise that was performed before further refinement. All hazards have been profiled in Volume 1 of this document. The purpose of this annex is to specifically address the city's vulnerability to specifically identified hazards.

Table 3-10: City of Watsonville Document Review Crosswalk

Hazard	2020 City of Watsonville LHMP	2021 Santa Cruz County LHMP	2023 California State HMP
Agricultural Pests			■
Avalanche			■
Climate Change	■	■	■
Coastal		■	
Dam Failure		■	■
Drought	■	■	■
Earthquake / Liquefaction	■	■	■
Extreme Cold		■	
Extreme Heat	■	■	■
Extreme Weather / Storms	■	■	■
Flood	■	■	■
Geologic / Mass Movement	■	■	■
Human-Caused			■
Insects			■
Levee Failure	■		■
Pandemic Disease			■
Sea Level Rise	■		■
Soil			
Subsidence			
Tornado			
Tsunami / Seiche Wave			■
Volcano			■
Wildfire	■	■	■

Risk Assessment Matrix Definitions

PROBABILITY RATING

The likelihood of a hazard event occurring within a time period?

PROBABILITY

Highly Likely	**Highly likely** - 100% annual probability. Or Likely to occur every year in your lifetime.
Likely	**Likely** - between 10 & 100% annual probability. Or will occur several times in your lifetime.
Possible	**Possible** - between 1 & 10% annual probability. Or Likely to occur some time in your lifetime.
Unlikely	**Unlikely** - less than 1% annual probability. Or unlikely but possible to occur in your lifetime.

IMPACT RATING

In terms of injuries, damage, or death, would you anticipate impacts to be minor, limited, critical, or catastrophic when a significant hazard event occurs? The impact could be in terms of one hazard event (flooding from a culvert failure) or a large-scale event (multiple rivers flooding) in the same jurisdictional boundary.

IMPACT

Minor	Limited	Critical	Catastrophic

Minor - very few injuries, if any. Only minor property damage & minimal disruption on quality of life. Temporary shutdown of critical facilities.

Limited - minor injuries only. Approx. 10% or less of property in disaster footprint damaged or destroyed. Complete shutdown of critical facilities for more than one day.

Critical - multiple deaths/injuries possible. Between 25% and 50% of property in disaster footprint is damaged or destroyed. Complete shutdown of critical facilities for more than one week.

Catastrophic - high number of deaths/injuries possible. More than 50% of property in affected area damaged or destroyed. Complete shutdown of critical facilities for 30 days or more.

To concentrate resources, the jurisdictional planning team will focus on "High" and "Extreme" risk hazards. These hazards have the higher probability and greater impact as it relates to the jurisdictions planning area.

Hazard definitions are included in **Vol. 1** of this plan. Some hazards are discussed as subset hazards– e.g., "Dam Failure" within the "Flood" hazard profile. If a hazard is not present on the risk matrix or are grey in color, the jurisdictional planning team felt the hazard had a minimal footprint within their planning area and was not ranked.

Hazard Information / Legend:

CLIMATE CHANGE

Climate Change impacts will be addressed at the end of each hazard section and as a stand alone section for each jurisdiction.
For County and Municipal governments you will be required to address climate change impacts in the Safety Element of your General Plan. Climate change may change the frequency, duration and intensity of hazards listed above.

City of Watsonville Risk Matrix

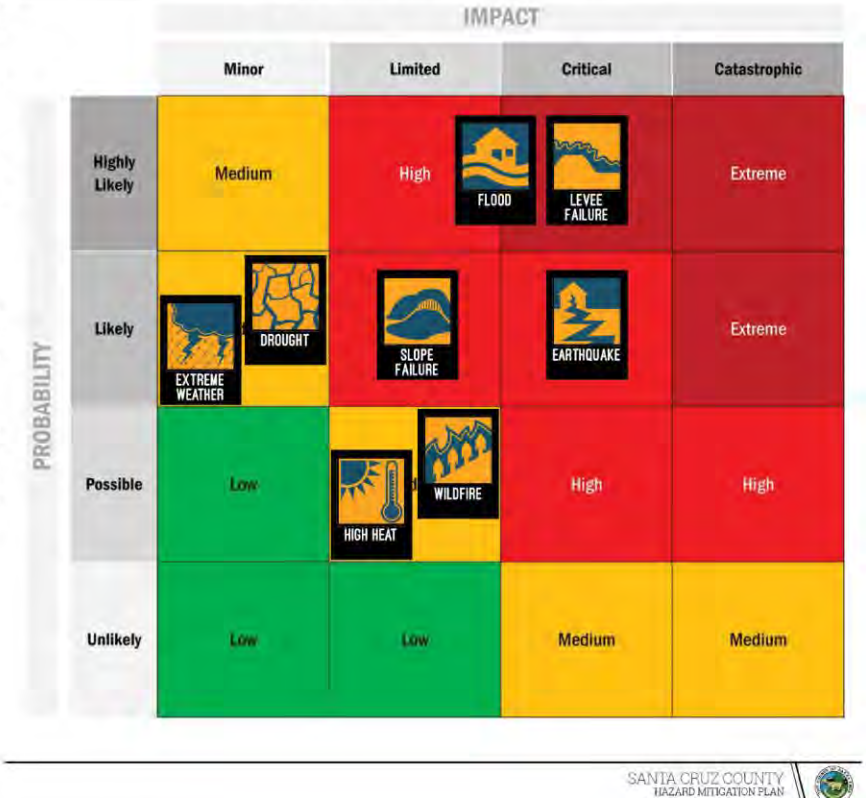


Figure 3-12: City of Watsonville - Risk Assessment Matrix

Table 3-11: City of Watsonville Hazards Prioritization Summary

Hazard	Priority	Explanation
Wildfire	**Medium**	Profiled in Volume 1, Section 3.2.1, and Section 3.5.2.1 in this annex
Flood	**Extreme**	Profiled in Volume 1, Section 3.2.2, and Section 3.5.2.2 in this annex, including Levee Failure
Earthquake	**High**	Profiled in Volume 1, Section 3.2.3, and Section 3.5.2.3 in this annex, including Liquefaction
Severe Weather	**Medium**	Profiled in Volume 1, Section 3.2.4, and Section 3.5.2.4 in this annex, including High Wind and Heavy Rain (not including Winter Weather due to low probability and impact)
Coastal Hazards	-	Not a priority due to no exposure
Slope Failure	**High**	Profiled in Volume 1, Section 3.2.6, and Section 3.5.2.5 in this annex
Dam Failure	-	Not a priority due to no exposure
Drought	**Medium**	Profiled in Volume 1, Section 3.2.8, and Section 3.5.2.6 in this annex
Extreme Heat	**Medium**	Profiled in Volume 1, Section 3.2.9, and Section 3.5.2.7 in this annex
Climate Change	**High**	Profiled in Volume 1, Section 3.2.10, and Section 3.5.2.8 in this annex (not including Sea-Level Rise due to no exposure)

3.5.2 Vulnerability to Specific Hazards

Assessing vulnerabilities exposes the unique characteristics of individual hazards and begins the process of narrowing down which areas within the city are vulnerable to specific hazard events. The vulnerability assessment considered unique local knowledge of hazards and impacts and a GIS overlaying method for examining such vulnerabilities in more depth. Using these methods, the city's planning group estimated vulnerable populations, properties, and assets, and potential losses, primarily to flood hazards. In addition, the exposure of city assets to drought, geological, earthquake, wildfire and slope failure were also considered.

Many of the hazard profiles include a snapshot map and damage estimation tables that illustrate the city's vulnerabilities to those specific hazards. These maps assisted the planning group in understanding the hazard exposure of populations, parcels, and critical facilities and infrastructure. Each snapshot map contains an exposure summary that displays the percentage of the population, the improvement and content value of parcels, and the amount of critical infrastructure that is exposed. For hazards without geospatial extents, such as drought and extreme weather, narratives are provided instead of exposure maps and tables.

Based on the hazard prioritization exercise, this vulnerability assessment focuses on eight hazards for the City of Watsonville, some of which encompass subhazards such as Levee Failure, Liquefaction, and Heavy Rain.

Wildfire
SECTION 3.5.2.1



Flood
SECTION 3.5.2.2



Earthquake
SECTION 3.5.2.3



Severe Weather
SECTION 3.5.2.4



Slope Failure
SECTION 3.5.2.5



Drought
SECTION 3.5.2.6



Extreme Heat
SECTION 3.5.2.7



Climate Change
SECTION 3.5.2.8



3.5.2.1 Wildfire Hazard

Watsonville is located in a river valley, with its urban edges extending into areas of grasslands, foothills, and wildland vegetation that create localized wildfire risk. While most of the city is urbanized and at low wildfire risk, Figure 3-13 shows that the northwest portion of Watsonville lies within CAL FIRE–designated moderate to high wildfire hazard zones. These areas coincide with the wildland-urban interface (WUI), where residential neighborhoods are located adjacent to flammable vegetation.

Exposure within city limits is relatively limited: only 18 residents and 2 parcels fall within mapped wildfire hazard zones. However, approximately 21 transportation and lifeline assets (2% of the citywide total) are also located in these zones, highlighting risks to local road access and emergency response. While structural exposure is modest, wildfire can still have disproportionate impacts on vulnerable populations and critical systems.

Watsonville residents living near the WUI, especially seniors, limited-English speakers, and other dependent populations, face evacuation challenges due to limited road access, lack of route redundancy, and barriers to emergency communication. Multiple critical facilities, including emergency shelters, water infrastructure, and hazardous materials storage sites, are also located in wildfire-prone areas, where fire-related damage or service interruption could result in cascading impacts.

Although wildfire has historically been a lower priority hazard compared to flooding and earthquakes, climate change is expected to increase wildfire risk across the region. Hotter and drier conditions, combined with fuel accumulation and the expansion of development into flammable landscapes, are heightening the city's exposure. Even localized fire events near the city's perimeter could disrupt transportation corridors, threaten utilities, or require rapid evacuations of at-risk populations.

For Watsonville, wildfire risk management should focus on protecting vulnerable populations at the WUI, hardening critical facilities, maintaining defensible space, and strengthening evacuation planning and communication systems. Continued collaboration with CAL FIRE, Santa Cruz County Fire, and neighboring jurisdictions will be essential to reducing wildfire risk along Watsonville's edges while ensuring equitable protection for the city's most at-risk residents.

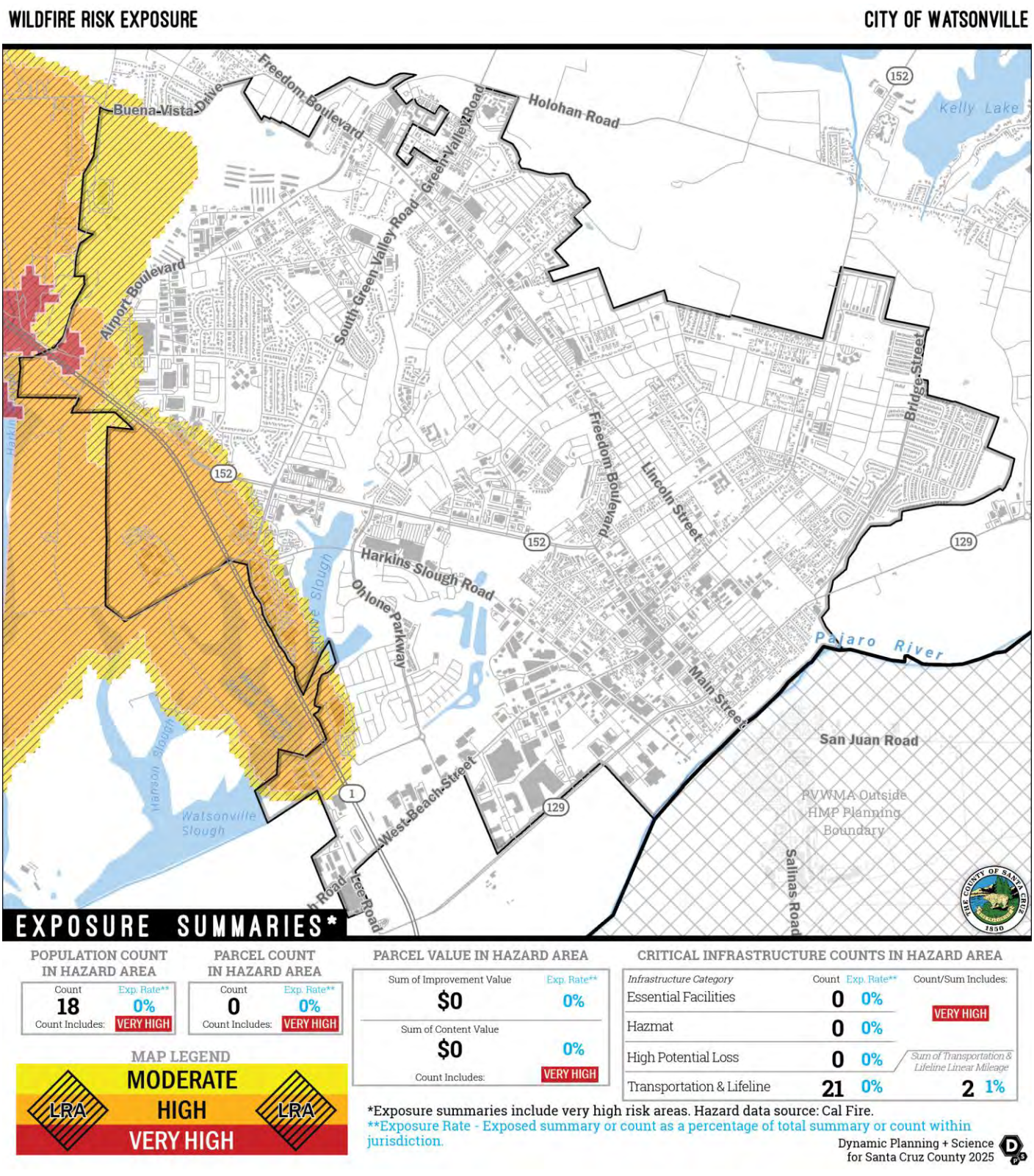


Figure 3-13 City of Watsonville - Wildfire Risk Exposure Map

3.5.2.2 Flood Hazard

Flooding is one of the most significant hazards facing the City of Watsonville, posing risks to residents, businesses, critical infrastructure, and the local economy. The city's location along the Pajaro River and its tributaries, combined with flat low-lying topography and extensive development within the floodplain, has resulted in a long history of damaging flood events. In addition to riverine flooding, Watsonville is also vulnerable to localized stormwater flooding and levee failures, threats that are expected to worsen with climate change and sea level rise.

Location & Extent

The city's location at the confluence of the Pajaro River Basin and the Watsonville Slough watershed places much of the community at high risk of inundation. The eastern and downtown neighborhoods drain into the Pajaro River and its tributaries, Salsipuedes Creek and Corralitos Creek, while the central and western areas drain into the Watsonville Slough system, including Harkins, Struve, and West Struve Sloughs. These waterways, combined with Watsonville's flat topography and aging levee infrastructure, create multiple pathways for flooding.

Flooding in Watsonville can occur in several ways. In some neighborhoods, inadequate interior drainage results in shallow urban flooding, typically less than three feet in depth. More severe events occur when the Pajaro River or Salsipuedes Creek levees are overtopped or fail, a scenario that the U.S. Army Corps of Engineers has indicated is likely during a 100-year storm event. Overflow of Corralitos Creek upstream of the levees presents another chronic concern, particularly in the eastern half of the city, where floodwaters cannot re-enter the channel once overtopped. FEMA Flood Insurance Rate Maps (FIRMs) designate much of Watsonville as Special Flood Hazard Areas (SFHAs), classified as Zones A, AO, AH, and AE, with additional risk represented by shaded Zone X (0.2% annual chance flood).

Historical Flooding

Watsonville has a long history of damaging flood events. The 1955 and 1958 Pajaro River floods remain the largest on record, producing discharges of 24,000 and 23,500 cubic feet per second at the Chittenden gauge. Both events caused widespread inundation, with recurrence intervals of roughly 25 years. More recent floods in 1995 and 1998 also resulted in extensive property and infrastructure damage due to levee overtopping and failures. These events underscore the chronic nature of Watsonville's flood risk and the vulnerabilities that persist today.

Flood Risk Exposure

FEMA Flood Risk Exposure mapping (Figure 3-14) highlights the scale of Watsonville's exposure. Approximately 11,470 residents, about 22% of the city's population, and 2,084 parcels (20% of total) lie within the FEMA 100-year and 500-year flood hazard zones. The total improvement value at risk is estimated at $1.92 billion, with an additional $1.72 billion in contents value. Critical facilities are also threatened, including three essential facilities (43% of citywide total), 50 hazardous material sites (30%), and more than 1,500 transportation and lifeline assets (81%), reflecting the potential for community-wide disruption during a major flood.

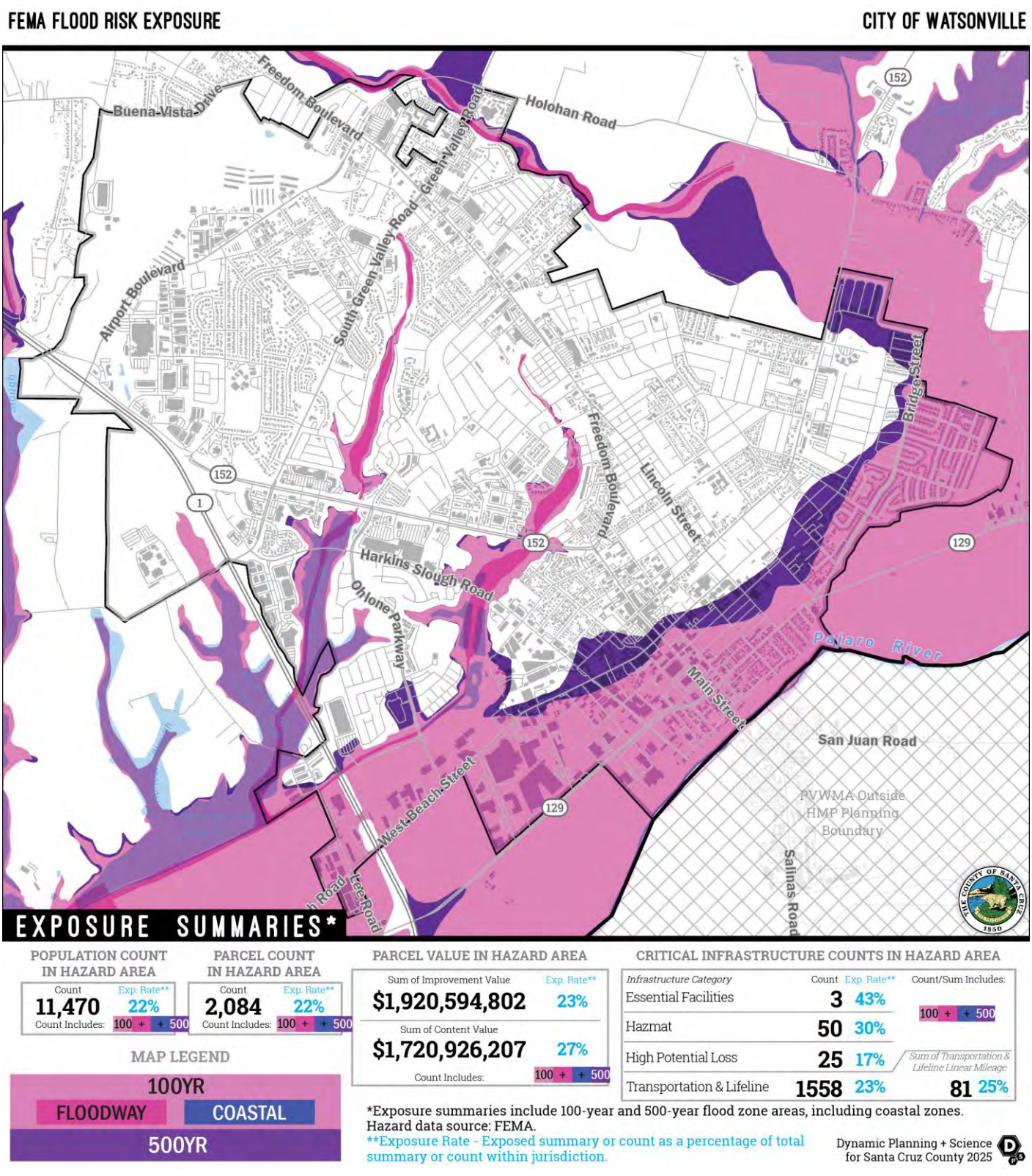


Figure 3-14: City of Watsonville - FEMA Flood Risk Exposure

Social Vulnerability & At-Risk Populations

Flood impacts are disproportionately borne by Watsonville's most vulnerable residents. Elderly individuals living near the Pajaro River face mobility challenges during evacuation, while low-income and Spanish-speaking households in downtown and industrial flood zones may lack access to warnings, insurance, and recovery programs. These barriers increase the likelihood of prolonged displacement and financial hardship after a disaster.

Critical Facilities & Infrastructure Risks

Key city facilities, including the wastewater treatment plant and police station, are within the 1% annual chance floodplain. Flooding also disrupts stormwater systems and roadways in downtown and east Watsonville, causing business closures and limiting emergency access. The Watsonville Slough system faces contamination risk during flood events, threatening a critical backup water supply for drought periods.

Chronic Threats & Climate Change

Watsonville faces chronic flood risk from the Pajaro River and nearby creeks, made worse by aging levees and more intense storms linked to climate change. Ongoing urbanization has increased impervious surfaces, contributing to greater stormwater runoff and more frequent localized flooding. In addition, FEMA's flood maps are outdated and do not adequately account for sea level rise, sedimentation, or storm surge interaction with local sloughs, leading to an underestimation of future exposure

Levee Failure

Levee failure is a significant subhazard of riverine flooding in Watsonville, with the Pajaro River levee system representing one of the city's most critical sources of flood risk. Levees are designed to protect low-lying areas by containing river flows within a defined channel during high-water events. While they reduce the frequency of flooding, they do not eliminate risk. Levee failure can occur through overtopping during extreme storms, erosion of embankments, seepage beneath or through the levee structure, or collapse caused by prolonged saturation or foundation instability.

The Pajaro River levee system, constructed in the late 1940s, provides flood protection to Watsonville, the unincorporated community of Pajaro in Monterey County, and surrounding agricultural lands. However, the levees are widely recognized as under-designed for current hydrologic conditions and have a documented history of failures, including during the March 2023 atmospheric river event, when a major breach inundated large portions of Pajaro and prompted mass evacuations in both Monterey and Santa Cruz Counties. By contrast, the San Lorenzo River levee system in Santa Cruz has been upgraded in recent decades, but the Pajaro River levees remain vulnerable despite ongoing efforts such as the Pajaro River Flood Risk Management Project.

A levee breach poses a particularly severe hazard because the sudden release of impounded water can produce deeper, faster-moving floods than natural overbank events, leaving little time for evacuation. In

Watsonville, levee failure would threaten residential neighborhoods, critical infrastructure, major roadways, and agricultural areas, with consequences including property loss, prolonged service disruptions, contamination of water supplies, and risks to human safety. Factors that increase the likelihood of levee failure in Watsonville include:

- Extreme storm events exceeding the design capacity of the Pajaro River levees.
- Deferred maintenance, including erosion, vegetation, or burrowing animals that weaken structural integrity.
- Prolonged high flows, leading to seepage or internal erosion (piping).
- Seismic activity, which could compromise levee stability.
- Climate change, with more intense rainfall events increasing hydraulic stress on the levee system.

Given the central role of the Pajaro River levees in protecting Watsonville, levee failure remains one of the city's most acute and consequential flood hazards.



Figure 3-15: Pajaro River Levee System Source: Santa Cruz County

Implications for Hazard Mitigation

Flooding remains Watsonville's highest-impact hazard, threatening residents, infrastructure, and critical services. The Pajaro River Flood Risk Management Project is an essential regional investment to address levee deficiencies and reduce long-term flood exposure. At the local level, Watsonville must also prioritize:

- Upgrading stormwater infrastructure to reduce urban flooding.
- Floodproofing and elevating critical facilities to maintain essential services.
- Updating hazard maps to incorporate climate change and sea level rise.
- Equitable outreach and engagement, ensuring elderly, low-income, and Spanish-speaking populations receive accessible preparedness resources.

By combining structural investments with equity-focused strategies, Watsonville can reduce both the physical and social impacts of future floods, enhancing long-term resilience for the entire community.

Growth & Flood Hazard Overlap in Watsonville

Future growth in Watsonville is expected to occur through a mix of downtown infill, station area development, and expansion into designated growth areas at the city's edges. While these areas align with the city's long-term goals for compact, transit-oriented development, a closer look at flood hazard exposure reveals that many of these sites overlap with FEMA-designated floodplains and areas historically vulnerable to levee overtopping and stormwater flooding.

The Downtown Infill and Station Area are central to Watsonville's growth strategy, but they are also among the areas of highest flood exposure. FEMA flood maps show that much of the downtown core lies within the 100-year and 500-year floodplains of Struve Slough and Corralitos Creek, exposing future housing and commercial development to recurrent flooding. Without targeted floodproofing and stormwater infrastructure improvements, these projects could increase the concentration of vulnerable populations in high-risk areas.

Similarly, the Highway 1 Gateway growth area lies adjacent to the Harkins and Struve Sloughs, both identified on FEMA maps as subject to flooding. This means that new residential or commercial development here will likely face shallow flooding hazards and water quality concerns, especially during major storm events when slough systems overtop.

In the northeast, Area C (Atkinson Lane) overlaps with flood zones associated with Corralitos and Salsipuedes Creeks. Historical accounts and hydrologic studies note that floodwaters from Corralitos Creek, once overtopped, cannot easily re-enter the channel downstream due to levee confinement. Growth in this area would therefore bring new residents and assets into areas already challenged by recurring flood problems.

By contrast, the northwest growth area at Buena Vista (Area A) is largely outside mapped flood hazard zones. This location represents one of the few areas where Watsonville can accommodate new growth without directly placing additional population and assets into high flood risk zones.

Taken together, this analysis shows that Watsonville's most significant areas of planned growth—downtown, station areas, Atkinson Lane, and the Highway 1 Gateway—are also areas of concentrated flood risk. While this supports smart-growth principles, it underscores the importance of integrating hazard mitigation into future land use planning. Investments in levee improvements, stormwater system upgrades, resilient design standards, and climate-informed flood mapping will be essential to ensure that Watsonville's growth does not also amplify its vulnerability to flooding.

National Flood Insurance Program

The National Flood Insurance Program (NFIP) makes federally backed flood insurance available to homeowners, renters, and business owners in participating communities. FEMA has prepared a detailed Flood Insurance Study (FIS) for Santa Cruz County and municipalities. The study presents water surface elevations for floods of various magnitudes, including the 1% annual chance flood (100-YR flood) and the 0.2% annual chance flood (500-YR flood). Base flood elevations and the boundaries of the 100- and 500-YR floodplains are shown on Flood Insurance Rate Maps (FIRMs), which are the principal tools for identifying the extent and location of the flood hazard. FIRMs are the most detailed and consistent data source available, and for many communities they represent the minimum area of oversight under their floodplain management program. See Section 3 of Volume 1 for general information on the NFIP.

The City of Watsonville has participated in the NFIP since 1984 and has adopted the most recent FIRMs and FIS issued by FEMA (effective August 3, 2016) as well as local floodplain development regulations in compliance with the minimum NFIP standards (Watsonville Municipal Code Title 9, Chapter 2). These minimum standards include procedures and provisions for substantial improvements and substantial damages to existing structures, the latter of which are employed by the floodplain administrator and city building inspectors following any hazard event affecting structures located in the flood hazard area in accordance with NFIP requirements. Regulations for substantial improvements are enforced via permitting procedures. By code, implementation and enforcement of the city's floodplain regulations are assigned to the City Manager.

The City of Watsonville is currently in good standing with the provisions of the NFIP. Compliance is monitored by FEMA regional staff and by the California Department of Water Resources under a contract with FEMA. Maintaining compliance under the NFIP is an important component of flood risk reduction. See Table 3-12 for more information on the City's policies and historic flood insurance claims.

Table 3-12: City of Watsonville National Flood Insurance Program Information

City of Watsonville NFIP Status and Flood Insurance Statistics	
NFIP Status	Participating Since 1984
Community Identification (CID)	060357
CRS Class (Entry Date)	Class 8 (October 1992)
Policies in Force (Total Coverage)	360 Policies ($100,866,000 in Coverage)
Policies Inside SFHA / Outside SFHA	234 Inside / 36 Outside
Total Claims (Total Paid)	144 Claims ($1,623,932 Paid)
Repetitive Loss (RL) / Severe Repetitive Loss (SRL) Properties	3 RL / 0 SRL
Repetitive Loss Payments	$107,891 for Buildings / $2,677 for Contents

Note: The number of policies is by property and does not count policies for individual buildings. The Privacy Act of 1974 (5 USC 522a) restricts the release of certain types of data to the public. Flood insurance policy and claims data is included in the list of restricted information. FEMA can only release such data to state and local governments, and only if the data is used for floodplain management, mitigation, or research purposes. Therefore, this plan does not identify the repetitive loss properties or include claims data for any individual property.

Community Rating System

The City of Watsonville has participated in FEMA's Community Rating System (CRS) since October 1, 1992. The CRS is a voluntary program under the National Flood Insurance Program (NFIP) that rewards communities for implementing floodplain management practices beyond NFIP minimum standards. Participation provides flood insurance policyholders with reduced premiums while encouraging local investment in flood risk reduction.

Watsonville currently holds a Class 8 rating, which provides all policyholders within FEMA-designated Special Flood Hazard Areas (SFHAs) with a 10% discount on annual flood insurance premiums (FEMA CRS Eligible Communities, 2022).

Over the years, Watsonville has supported projects, programs and other flood mitigation measures that have reduced repetitive loss risk and helped property owners lower their flood insurance costs. Funding sources for these projects have included FEMA Hazard Mitigation Assistance grants, Community Development Block Grant (CDBG) programs, and Army Corps/State Reclamation Board initiatives. Some projects have been completed, while additional properties remain in need of elevation or retrofit to meet current flood protection standards.

Through CRS, the city also documents and addresses repetitive loss properties, earning credits for activities that reduce the likelihood of future claims. Each class improvement in CRS corresponds to an additional 5% premium discount for policyholders in SFHAs. By expanding CRS activities—such as higher building standards, enhanced public outreach, and integration of Pajaro River levee improvements—Watsonville has the opportunity to pursue a Class 7 rating, which would increase flood insurance discounts to 15% while further strengthening resilience to flooding.

3.5.2.3 Earthquake Hazard

Watsonville is located in a seismically active region of California and is highly susceptible to the impacts of earthquakes due to its proximity to the San Andreas Fault and several local active faults, including the Zayante and Butano, which can produce earthquakes in the magnitude 6.4–7.4 range. While no active faults run directly through the city, the entire community is exposed to strong ground shaking and secondary hazards such as liquefaction. A scenario magnitude 7.1 earthquake on the San Andreas Fault in the Santa Cruz Mountains demonstrates the scale of this hazard. Based upon this modeled event, Figure 3-16 shows that all of Watsonville would experience strong to very strong shaking.

Older residential structures, many of which predate modern seismic codes, are particularly vulnerable to collapse or severe damage. Disadvantaged residents, including renters and mobile home occupants, face elevated risks because they may lack earthquake insurance, adequate emergency supplies, or the ability to afford post-disaster repairs, leaving them vulnerable to long-term displacement. The city also contains a small number of unreinforced masonry buildings in the downtown core and industrial areas, which are at high risk of failure in strong seismic events.

Seismic events also threaten Watsonville's lifeline systems. A major earthquake could disrupt pipelines, water storage tanks, wastewater infrastructure, and electrical facilities, leading to cascading service failures and long-term outages. Shaking may also damage roadways, bridges, and culverts, delaying emergency response and evacuation efforts. Beyond shaking damage, liquefaction poses a severe secondary hazard across much of the city due to its soft soils and high groundwater table. Figure 3-17 shows that more than 23,000 people, 4,500 parcels, and three essential facilities are in liquefaction hazard zones.

Finally, Watsonville lacks a formal program to inventory and retrofit its highest-risk buildings, such as unreinforced masonry or soft-story structures. This leaves well-documented vulnerabilities unaddressed. Together, these factors illustrate that earthquakes remain one of the most consequential hazards for Watsonville, threatening not only lives and property but also critical infrastructure, lifeline systems, and the city's most vulnerable populations.

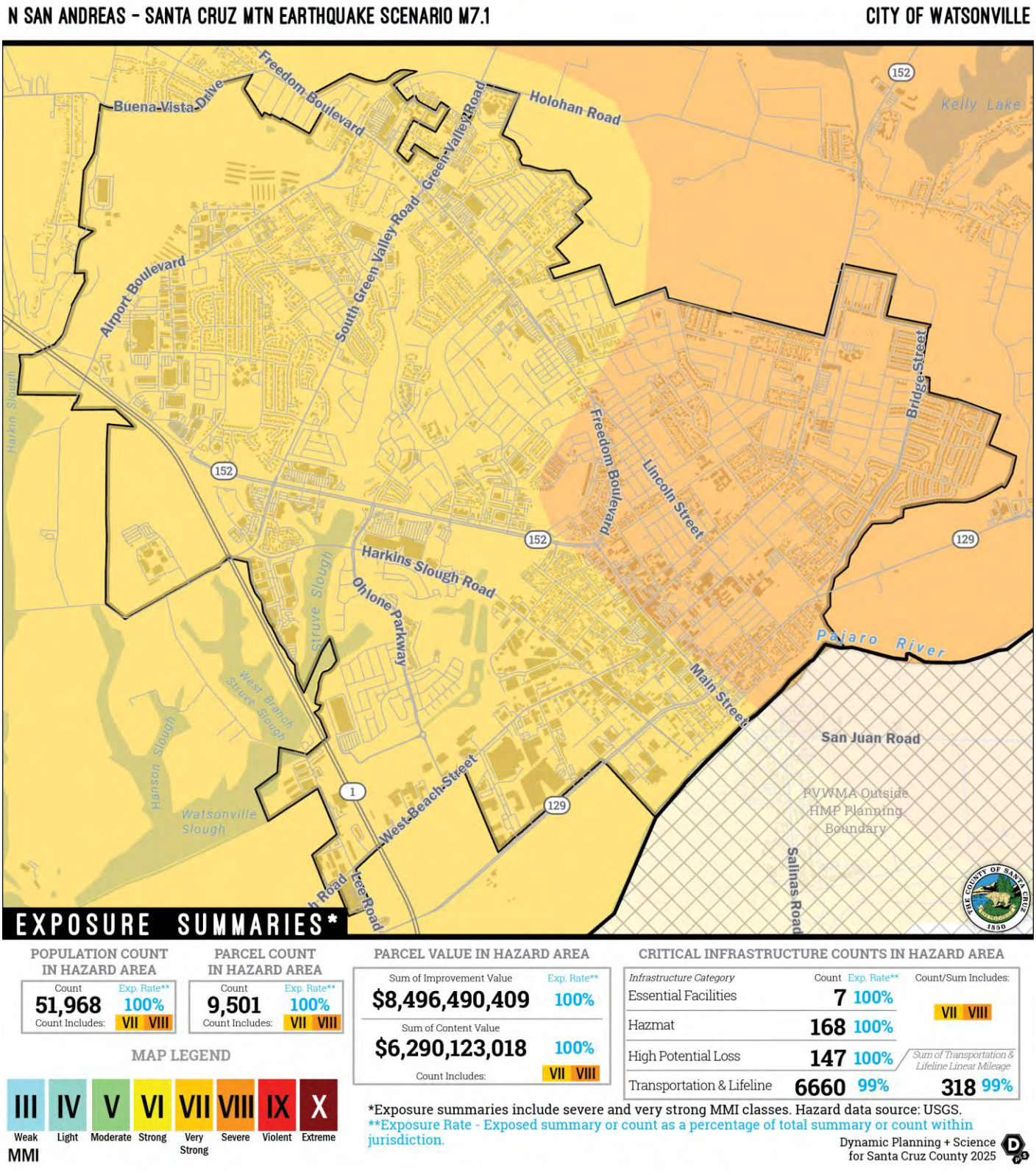


Figure 3-16: Exposure Summary – City of Watsonville Earthquake Risk (M7.1 San Andreas Shaking)

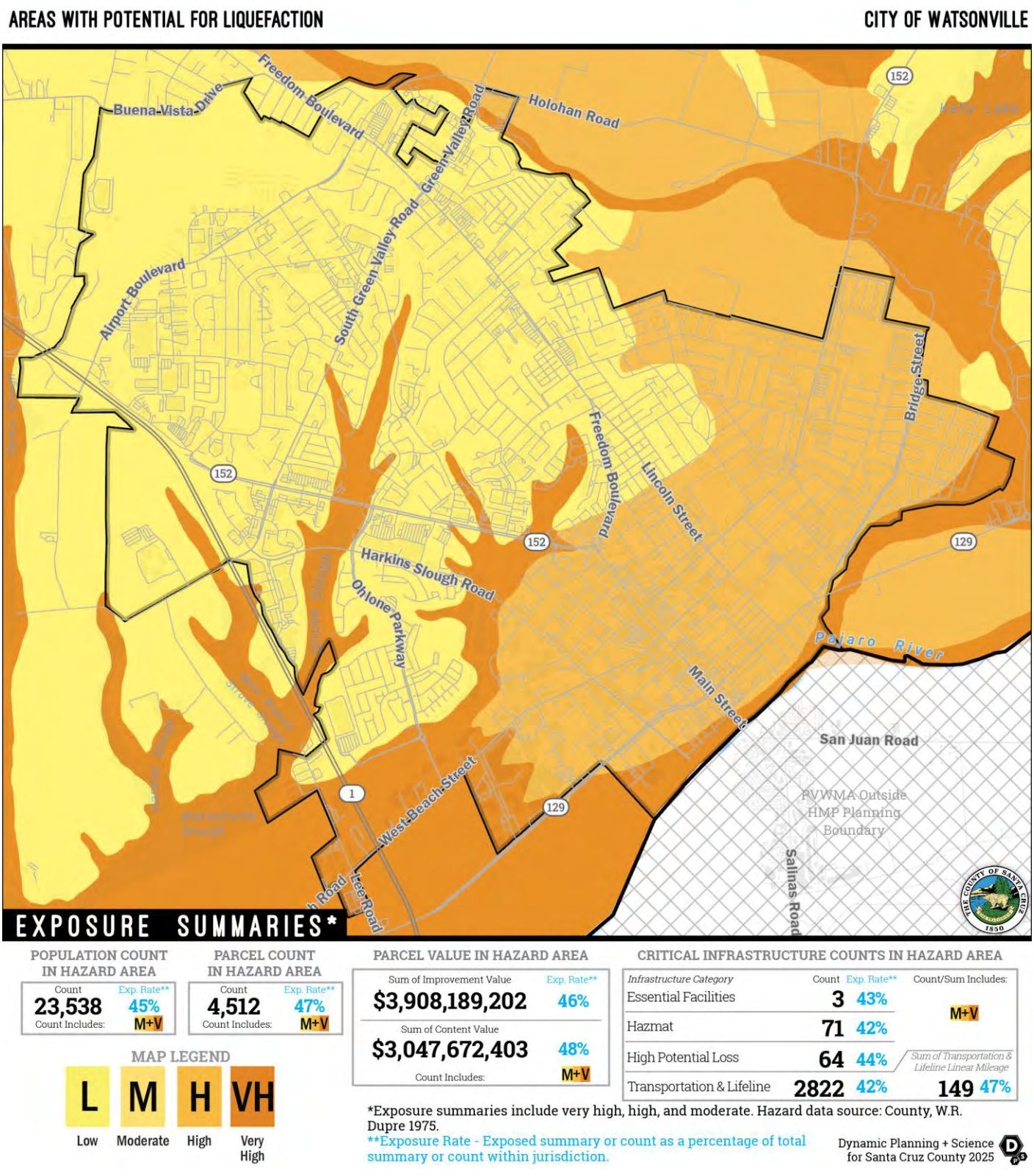


Figure 3-17: Exposure Summary – City of Watsonville Liquefaction Risk

3.5.2.4 Severe Weather Hazard

Severe storms are a recurring hazard in Watsonville, typically driven by high winds, heavy rainfall, and atmospheric river events during the winter months. While tornadoes, hail, and snow are rare in the region, severe storm impacts can be significant due to the city's vulnerable infrastructure, older housing stock, and concentrations of at-risk populations.

High winds frequently cause downed trees and power lines in and around Watsonville, leading to widespread power outages, communication disruptions, and blocked roadways. Such conditions strain emergency response capabilities, delay evacuations, and exacerbate challenges for dependent populations.

Heavy rainfall during atmospheric river events can overwhelm Watsonville's aging stormwater infrastructure, especially in older downtown areas and low-lying neighborhoods near culverts and sloughs. These localized flash floods result in hazardous road conditions, temporary isolation of neighborhoods, and damage to property and infrastructure.

Residents in mobile homes and older housing, many of whom are low-income or elderly, are particularly vulnerable during storm events. These households face heightened risks from power outages, mobility limitations, and health impacts during prolonged high wind or heavy rain events. As demonstrated in Figure 3-6 and Figure 3-7, there are concentrations of economically dependent populations, including children and seniors with disabilities, located in low-lying areas adjacent to the Pajaro River on the east site of the city, where heavy rain impacts are most pronounced. These areas adjacent to the river in downtown Watsonville also have higher concentrations of low-income households and populations living below the poverty line (Figure 3-3 and Figure 3-4).

Severe storm frequency and intensity are projected to increase because of climate change. Watsonville already faces frequent winter storms and recurring atmospheric rivers, which are contributing to repeated road closures, localized flooding, and long-term infrastructure strain. Climate-driven changes to storm severity highlight the city's continued vulnerability to cascading hazards, including flooding and slope instability along the slough system.

While severe storms in Watsonville may not produce catastrophic destruction, their compounding effects on vulnerable populations, lifeline infrastructure, and mobility make them a critical hazard for ongoing mitigation planning. Strategies to reduce risk should prioritize hardening power and drainage systems, enhance stormwater infrastructure, and develop targeted preparedness and response measures that reach the city's most at-risk residents.

3.5.2.5 Slope Failure Hazard

Slope failure, which includes landslides and localized slope instability, is a secondary but important hazard for the City of Watsonville. These events are typically triggered by earthquakes, prolonged rainfall, loss of vegetation, or grading activities. Although most of Watsonville lies on relatively flat terrain, slope failure risk is concentrated along the banks of the Watsonville Slough system and in limited hillside neighborhoods on the western and northern edges of the city.

Figure 3-18 illustrates the areas of Watsonville mapped as highly susceptible to slope failure. Nearly 2,200 residents and more than 250 parcels are located in these zones. The total value of improvements at risk is estimated at $172 million, with an additional $95 million in contents value. Critical facilities are not widely exposed; however, several transportation and lifeline assets (4% of citywide total) are located within mapped hazard areas, reflecting the potential for slope failures to interrupt connectivity and access.

Slope failure has the potential to damage roadways, culverts, and underground utilities, restricting emergency access and service delivery in affected neighborhoods. The city's underlying geology, including Santa Margarita Sandstone and Santa Cruz Mudstone formations, is particularly prone to landslides when exposed to heavy rainfall or seismic shaking, conditions that can exacerbate slope instability.

While slope failure is less widespread than flooding or earthquakes in Watsonville, its impacts can be severe at the neighborhood scale, isolating residents and disrupting critical services. Mitigation efforts should focus on monitoring unstable slopes along slough banks, restricting future development in high-susceptibility zones, and stabilizing vulnerable areas where feasible, while also integrating slope failure risk into emergency access planning.

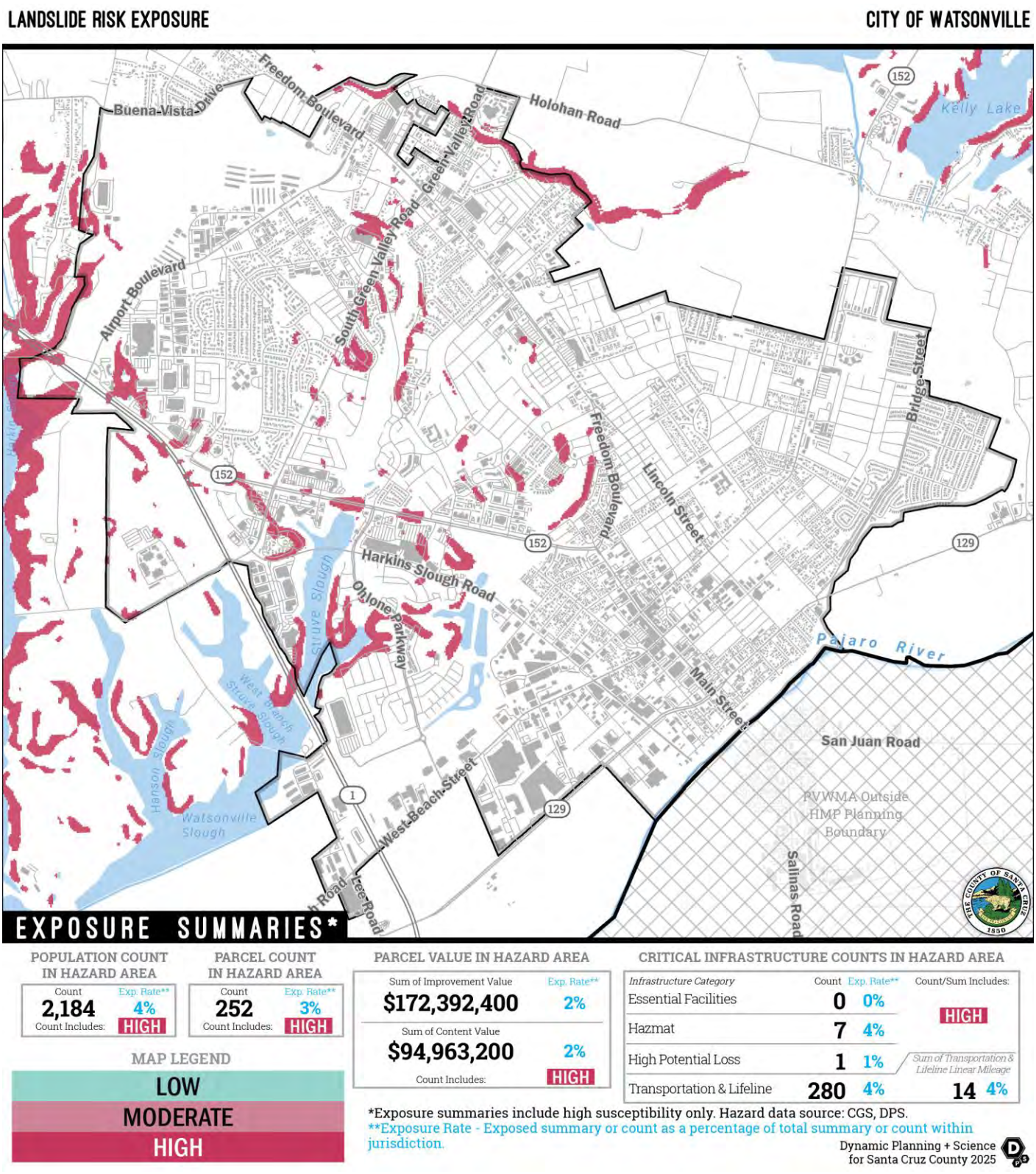


Figure 3-18 City of Watsonville - Landslide Risk Exposure Map

3.5.2.6 Drought Hazard

Drought is a chronic hazard for Watsonville and the Pajaro Valley, with conditions recurring regularly over the past two decades. As shown in Figure 3-19, Santa Cruz County has experienced multiple prolonged drought cycles since 2000, including exceptional drought (D4) conditions between 2014–2016 and again during 2021–2022. These cycles have had profound impacts on local water supply, agriculture, and vulnerable populations.

Watsonville depends heavily on the Pajaro Valley Groundwater Basin, which is already overdrafted and subject to chronic depletion. Extended drought reduces recharge of aquifers and surface water flows, placing stress on municipal wells and water supplies for fire suppression. Declining groundwater levels also heighten the risk of saltwater intrusion from Monterey Bay into the Pajaro Valley Basin, further threatening long-term water quality and reliability.

Drought impacts disproportionately affect low-income residents, farm workers, and disadvantaged households, who may face rising utility costs, stricter water use restrictions, and employment disruptions in the agriculture and food processing sectors. In rural and fringe neighborhoods where residents rely on shallow or aging wells, prolonged drought increases the risk of well failure or degraded water quality, further exacerbating inequities in water access.

Climate change is expected to intensify the frequency and duration of multi-year droughts, increasing Watsonville's dependence on the already overdrawn Pajaro Valley Basin. The city's limited storage capacity compounds this vulnerability, leaving residents and agricultural operations more exposed to recurring water shortages. Drought conditions also interact with other hazards, such as increasing wildfire risk by drying vegetation and reducing water available for suppression.

Building resilience to drought in Watsonville will require expanding groundwater recharge projects, investing in water conservation and efficiency programs, and advancing equitable drought planning that prioritizes at-risk communities. Collaboration with the Pajaro Valley Water Management Agency, local farmers, and regional partners remains critical to ensuring long-term water security for residents, agriculture, and the local economy.

Table 3-13: Drought Classifications and Impacts

Category	Description	Possible Impacts
D0	Abnormally Dry	▪ Soil is dry; irrigation delivery begins early ▪ Dryland crop germination is stunted ▪ Active fire season begins
D1	Moderate Drought	▪ Dryland pasture growth is stunted; producers give supplemental feed to cattle ▪ Landscaping and gardens need irrigation earlier; wildlife patterns begin to change ▪ Stock ponds and creeks are lower than usual
D2	Severe Drought	▪ Producers increase water efficiency methods and drought-resistant crops ▪ Grazing land inadequate ▪ Fire season is longer, with high burn intensity, dry fuels, and large fire spatial extent; more fire crews on staff ▪ Lake- and river-based tourism declines; boat ramps close ▪ Trees are stressed; plants increase reproductive mechanisms; wildlife diseases increase ▪ Water temperatures increase; programs to divert water to protect fish begin ▪ River flows decrease; reservoir levels are low and banks are exposed
D3	Extreme Drought	▪ Federal water not adequate to meet irrigation contracts; extracting supplemental groundwater is expensive ▪ Fire season lasts year-round; fires occur in typically wet parts of the state; burn bans are implemented ▪ Ski and rafting business is low; mountain communities suffer ▪ Low water levels impede fish migration and cause lower survival rates ▪ Wildlife encroach on developed areas; little native food and water is available for bears, which hibernate less ▪ Water sanitation is a concern; reservoir levels drop significantly; surface water is nearly dry, flows are very low; water theft occurs ▪ Livestock need supplemental feed, cattle and horses are sold; little pasture remains ▪ Well and aquifer levels decrease; homeowners drill new wells
D4	Exceptional Drought	▪ Fire season is very costly; number of fires and areas burned are extensive ▪ Many recreational activities are affected ▪ Fields are left fallow; orchards are removed; vegetable yields are low; honey harvest is small; agricultural unemployment is high, food aid is needed ▪ Fish rescue and relocation begins; pine beetle infestation occurs; forest mortality is high; wetlands dry up; wildlife death is widespread; algae blooms appear ▪ Poor air quality affects health; greenhouse gas emissions increase as hydropower production decreases; West Nile outbreaks rise ▪ Water shortages are widespread; surface water is depleted; federal irrigation water deliveries are curtailed; water prices are extremely high; wells are dry, more and deeper wells are drilled; water quality is poor

Source: Adapted from U.S. Drought Monitor Drought Classifications and Impacts

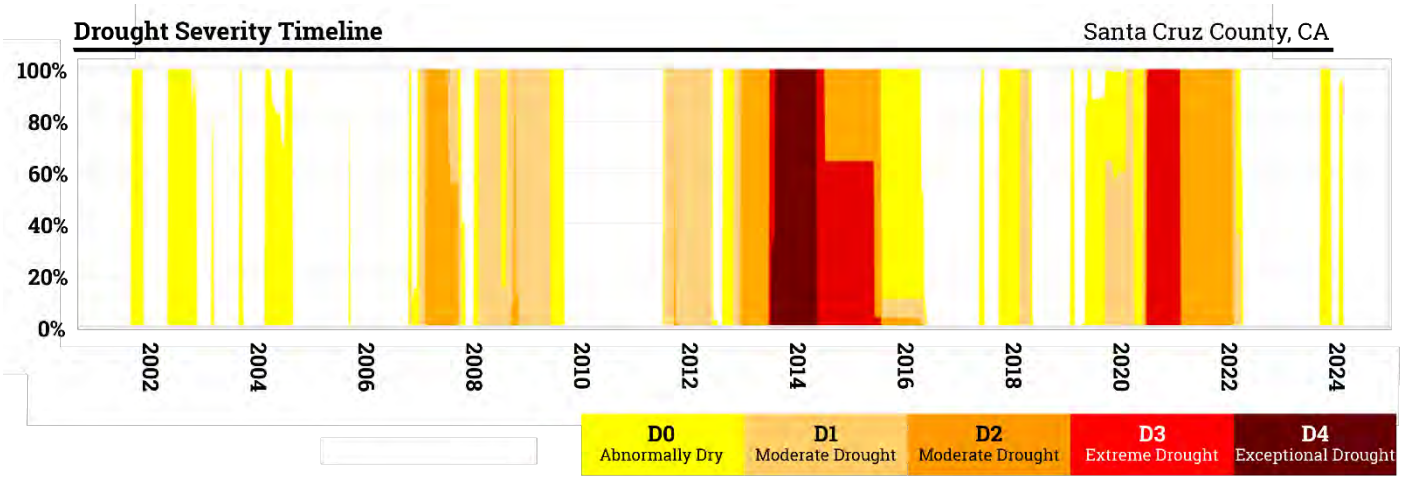


Figure 3-19: Drought Severity Timeline 2000-2024

3.5.2.7 Extreme Heat Hazard

The city's inland valley location and reliance on outdoor agricultural labor make it particularly sensitive to rising temperatures and more frequent extreme heat days. While the coastal influence of Monterey Bay provides some natural moderation, climate change is projected to increase both the frequency and intensity of heat waves in the region, posing growing risks to public health, agriculture, and infrastructure.

Heat waves are becoming more common across California, with projections showing a significant rise in the number of extreme heat days by mid-century. In Watsonville, outdoor agricultural workers face elevated risks during extreme heat events, particularly those without access to shaded rest areas, cooling stations, or protective equipment. Seniors, low-income residents, and individuals in older housing stock without air conditioning are also especially vulnerable to heat-related illness and may lack transportation to reach cooling centers.

The city's population exposure is compounded by socioeconomic factors. Many households in Watsonville are cost-burdened and lack adaptive measures such as air conditioning or urban tree canopy coverage, increasing health risks during prolonged heat events. This mirrors statewide findings that low-income and minority populations are disproportionately affected by extreme heat.

The frequency of extreme heat days is projected to rise significantly across inland Santa Cruz County by mid-century. For Watsonville, this means disproportionate impacts on agricultural workers in the Pajaro Valley as well as low-income neighborhoods with limited adaptive capacity. By the end of the century, the number of warm nights—when temperatures remain elevated and prevent recovery from daytime heat—is also projected to increase dramatically.

Extreme heat often coincides with elevated wildfire risk, reduced air quality from ozone and particulates, and public safety power shutoffs designed to prevent utility-caused ignitions. These secondary hazards can compound vulnerabilities by cutting access to cooling or disrupting medical care reliant on electricity.

3.5.2.8 Climate Change Hazard

Climate change is a cross-cutting hazard that intensifies the risks posed by flooding, drought, wildfire, severe storms, and extreme heat. For Watsonville, located in the Pajaro Valley at the intersection of coastal, riverine, and agricultural systems, climate change is already evident in more frequent atmospheric rivers, longer drought cycles, and hotter summers. Projections show these stressors will continue to worsen through mid- and late-centuries, compounding risks across natural and built environments.

Vulnerable Populations

Watsonville's most vulnerable residents—including seniors, renters, farmworkers, low-income households, and limited-English communities—are disproportionately at risk from climate-driven hazards. These groups often face barriers such as limited financial resources, lack of insurance, or reduced mobility during emergencies. Farm workers are directly exposed to rising temperatures and wildfire smoke during agricultural labor, while renters in older housing may lack cooling, insulation, or flood protection measures.

Stress on Critical Systems

Climate change amplifies stress on critical infrastructure systems. Heavier rainfall and atmospheric rivers test aging stormwater networks, while drought reduces groundwater recharge in the overdrafted Pajaro Valley Basin. Energy systems are increasingly strained during heat waves and Public Safety Power Shutoffs (PSPS), while transportation networks are vulnerable to both flood damage and wildfire-related closures. These cascading disruptions highlight the interdependence of lifeline systems and the growing need for redundancy and resilience planning.

Projected Hazards & Future Risks

Climate projections indicate an increase in both frequency and intensity of hazards, including extreme heat, severe winter storms, drought, wildfire, and sea-level rise. Sea-level rise is expected to elevate flood risk along the Pajaro River and adjacent sloughs, threatening Watsonville's neighborhoods and agricultural economy. Extreme heat days are projected to rise sharply by mid-century, disproportionately affecting outdoor workers and inland communities. These overlapping threats compound and cascade, magnifying risks across sectors and lengthening recovery times.

3.5.3 Planning for Hazards & Growth

As a charter city, Watsonville manages growth within the framework of its municipal charter while also adhering to California's planning, zoning, subdivision, and environmental regulations. Watsonville is bordered by prime agricultural lands, the Pajaro River, and an extensive network of sloughs, meaning future growth will occur primarily through infill development and redevelopment of underutilized properties within the existing urban footprint. This growth pattern places new development in areas already exposed to hazards, including flooding along the Pajaro River and local creeks, liquefaction-prone soils, and localized stormwater flooding in low-lying neighborhoods.

By coordinating with the General Plan Safety Element, hazard vulnerability is integrated into land use decisions, infrastructure investments, and redevelopment approvals. This approach satisfies state and federal requirements for hazard mitigation planning and positions Watsonville to pursue disaster recovery and resilience funding.

Climate change is expected to intensify hazards such as flooding, severe storms, drought, wildfire at the wildland urban interface, and extreme heat. For Watsonville, where much of the city lies within flood-prone areas of the Pajaro Valley, this means that new projects must be designed with resilience in mind. Growth management therefore emphasizes sustainable building practices, water conservation, agricultural preservation, and integration of climate adaptation strategies to ensure that redevelopment and infill do not increase existing risks.

Long-Range Planning & Growth Management

Planning for future growth in the City of Watsonville requires a proactive approach that balances development needs with hazard awareness and risk reduction. As Watsonville continues to evolve, careful planning and compliance with state and local standards are essential to safeguard public safety, protect infrastructure, and reduce vulnerabilities. By embedding hazard mitigation into long-range planning and growth management, the city strengthens its overall resilience to natural hazards.

The General Plan serves as Watsonville's overarching blueprint for growth and community priorities, addressing land use, circulation, housing, utilities, open space, conservation, noise, and public safety. Within it, the Safety Element establishes policies to address hazards such as flooding, seismic risk, wildfire at the wildland urban interface, and extreme weather, and it is to be used in close coordination with the County-Wide MJHMP. The General Plan Land Use Element provides guidance on where future development will occur, with an emphasis on infill development, redevelopment of underutilized properties, and farmland preservation. At the time of this MJHMP update, Watsonville is preparing a new General Plan that will more fully integrate hazard mitigation and climate adaptation into its planning framework.

Watsonville does not have a large Sphere of Influence compared to other cities, but its growth policies, shaped by the Santa Cruz County Local Agency Formation Commission (LAFCO), require balancing housing and employment needs with the preservation of surrounding agricultural lands. In addition to the General

Plan, the city relies on specific plans, master plans, and infrastructure plans to manage growth in key areas, such as downtown revitalization, industrial redevelopment, and neighborhood-scale infill projects. These plans often incorporate hazard data to ensure that new development is consistent with both the General Plan and state regulatory standards.

As part of its planning framework, Watsonville has incorporated—and will continue to incorporate—hazard data and other hazard information from its hazard mitigation plan directly into the General Plan as well as other long-range planning mechanisms, including the Climate Action Plan and Capital Improvements Plan. The 2025 MJHMP update expands on this integration by introducing new mapping and analytical tools, including the Risk Assessment and Mitigation Planning (RAMP) platform (see Volume 1, Section 2.2.1), which supports data-driven decisions about where and how development should occur. By applying these updated tools and policies, Watsonville ensures that future growth is resilient, sustainable, and responsive to the evolving challenges of climate change and natural hazards.

Building Codes & Development Standards

Watsonville's development strategies combine comprehensive planning frameworks with strong regulatory measures to guide growth while reducing risks from natural hazards. Building codes play a central role in this approach. Nationally, continual improvements to building codes since 1990 have added only about one percent to construction costs while significantly improving disaster resilience (National Institute of Building Sciences, 2019). In California, building codes are among the most stringent in the world, establishing minimum standards to safeguard against hazards such as earthquakes, flooding, wildfire, landslides, and severe weather. Watsonville enforces these standards locally, providing a strong foundation for resilient construction and hazard reduction.

The City is required to regularly update its development regulations to align with the California Building Code (CBC), which is revised every three years and was most recently updated in 2025. The CBC establishes some of the world's highest construction standards, ensuring occupant safety in the face of natural hazards. Climate change is also addressed through adoption and enforcement of the California Green Building Standards (CALGreen) and Energy Codes, which incorporate energy efficiency, sustainable design, and climate adaptation measures.

The City of Watsonville's Municipal Code sets forth stringent regulations to mitigate hazards for both new and existing structures. These include:

- **Title 8 Adoption of most recent California building codes**, including the California Fire Code and seismic standards, which ensure structures are resilient to wildfire, earthquake, and other hazards.
- **Title 9, Chapter 2 Floodplain management regulations** to ensure new development avoids or mitigates risks in flood-prone areas.
- **Title 14 Zoning restrictions** that prevent development in hazardous zones, including floodplains and WUI areas.

Watsonville also participates in the National Flood Insurance Program (NFIP) and the Community Rating System (CRS), requiring that all new developments in designated flood hazard areas meet or exceed FEMA's minimum flood protection standards. This participation provides direct benefits to residents through reduced flood insurance premiums and demonstrates the City's commitment to proactive floodplain management.

Through these building and development regulations, Watsonville ensures that new development in hazard-prone areas is either restricted or subject to strict hazard-mitigation requirements. Where development is permitted, codes emphasize reducing exposure and vulnerability through appropriate siting, resilient construction techniques, stormwater management, and emergency access provisions. For example, new structures in liquefaction-prone areas must comply with geotechnical design standards, and development along the Pajaro River is subject to strict floodproofing requirements.

Beyond code enforcement, Watsonville integrates these mandates into its broader planning framework, including the General Plan, Housing Element, and Hazard Mitigation Plan (HMP). This alignment ensures that growth management, environmental review, and hazard mitigation strategies work together to address emerging risks from flooding, drought, extreme heat, wildfire, and severe storms, all of which are projected to intensify with climate change.

California Environmental Quality Act (CEQA)

The California Environmental Quality Act (CEQA) requires General Plans, Specific Plans, and major development projects to evaluate hazards such as flooding, wildfire, seismic risk, and slope instability. Environmental documents must identify these risks and propose mitigation measures to reduce impacts, which may include infrastructure upgrades, evacuation planning, geotechnical design standards, or limits on development in high-risk areas.

In Watsonville, CEQA is especially important for projects near the Pajaro River floodplain, local sloughs, and liquefaction-prone soils. For example, if new residential uses are proposed near the wildland urban interface (WUI) or flood zones, CEQA would require an assessment of hazard exposure and could recommend setbacks, fire-resistant construction, and improved emergency access.

By embedding hazard considerations into land use review, CEQA ensures that future growth in Watsonville is planned with both environmental protection and public safety in mind.

3.5.3.1 Development & Hazard Considerations

The City of Watsonville covers approximately 6.6 square miles and functions as a regional hub for housing, agriculture, and industry in the Pajaro Valley. Unlike smaller neighboring jurisdictions, Watsonville maintains both infill opportunities and designated areas for new growth within its Sphere of Influence (SOI). Future development is expected to occur through a combination of downtown and corridor infill, redevelopment near the proposed passenger rail station, and expansion into planned growth areas such as Buena Vista (Area A), Atkinson Lane (Area B), and the Highway 1 Gateway (Area C) (See Figure 3-11).

Watsonville's regulatory framework requires that new development conform to California's strict planning and building codes, reducing—but not eliminating—exposure to natural hazards. As the city continues to grow, hazard considerations are increasingly important because many of the areas designated for future development overlap with zones at risk from flooding, liquefaction, and other geologic hazards.

Flood Hazards: Flood risk is concentrated along the Pajaro River, Corralitos Creek, and Salsipuedes Creek, as well as throughout the Watsonville Slough system. FEMA Flood Insurance Rate Maps (FIRMs) identify large portions of the downtown, industrial districts, and eastern neighborhoods within the 100-year floodplain. Future growth in low-lying areas near the Highway 1 Gateway and Atkinson Lane will require strict compliance with FEMA and state flood protection standards, along with investments in stormwater and levee infrastructure to reduce chronic flood risk.

Liquefaction Hazards: Much of Watsonville is underlain by unconsolidated alluvial soils with shallow groundwater, placing nearly half of the city's population—more than 23,000 residents—at risk of liquefaction during a major earthquake. Growth in areas such as Buena Vista and the rail station district will require geotechnical investigations, soil stabilization measures, and resilient infrastructure design to mitigate earthquake-induced ground failure risks.

Slope Failure Hazards: While landslide hazards are less widespread, areas along the western hillsides and near slough embankments show susceptibility to slope instability. These hazards are most relevant where road access and utility infrastructure cross hazard-prone areas. Growth in hillside or slough-adjacent areas should incorporate slope stabilization, erosion control, and redundant access routes to maintain emergency connectivity.

Wildfire Hazards: Watsonville's wildfire exposure is limited compared to inland communities; however, the northwestern city edge near Buena Vista lies within a moderate to high wildfire hazard zone. Development in this area must comply with California Fire Code standards, including defensible space and fire-resistant construction. While the overall risk remains low, planning for emergency evacuation and fire-safe design will be essential in this growth area.

Drought and Water Supply: Future growth will place additional demand on Watsonville's water system, which relies heavily on groundwater from the Pajaro Valley Basin. This basin is already overdrafted and threatened by saltwater intrusion, making drought and climate change significant stressors. Planned

development must therefore integrate water efficiency, conservation, and reliance on recycled or supplemental water supplies to avoid exacerbating long-term scarcity.

In summary, Watsonville is not fully built out and retains significant growth capacity. However, much of its expansion potential lies in areas already exposed to flooding, liquefaction, and water supply stress. By embedding hazard data into General Plan implementation, Specific Plans, and CEQA review, the city can ensure that growth occurs in a way that is resilient, sustainable, and protective of both people and infrastructure.

3.5.4 Hazard Problem Statements

As part of the mitigation action identification process, the internal planning group for each jurisdiction identified areas of concern (aka problem statements) for their respective facilities based on the risk assessment and vulnerability analysis. Problem statements focused on the impact, victim, and the threat that the hazard could create in the jurisdiction, as described in Table 3-14 Identifying common issues and weaknesses through these problem statements assisted the planning group in understanding the realm of resources needed for mitigation.

The goal is to have at least one mitigation action for every problem statement. Projects or actions have been developed to mitigate each problem identified. See Table 3-16 for a full list of mitigation actions and corresponding problem statements that they address. Each problem statement is coded with a problem number for cross-referencing between Table 3-14 and Table 3-16.

Table 3-14: City of Watsonville Problem Statements

Hazard	Sub-Hazard	Area of Concern	Problem IS	Description	Related Mitigation Actions
Climate Change		Victim	ps-CC-WTS-01	Watsonville?s vulnerable populations, including seniors, renters, farmworkers, low-income families, and limited-English communities, face increased cumulative risk from intersecting climate change-driven hazards such as heatwaves, floods, wildfire, and drought.	ma-CC-WTS-01
Climate Change		Impact	ps-CC-WTS-02	Critical systems like stormwater, water supply, energy, and transportation, are increasingly stressed during compounding, climate change-driven events.	ma-CC-RCD-01
Climate Change		Threat	ps-CC-WTS-03	Climate projections show increasing frequency and intensity of hazards, including extreme heat, severe storms, drought, wildfire, and sea?level rise, that compound and cascade risk across sectors.	ma-CC-RCD-01

Hazard	Sub-Hazard	Area of Concern	Problem IS	Description	Related Mitigation Actions
Drought		Victim	ps-DR-WTS-01	Low-income residents and farmworkers may be disproportionately impacted by drought-related water restrictions, rising utility costs, and potential employment disruptions in agriculture and food processing sectors.	ma-DR-SVW-02
Drought		Victim	ps-DR-WTS-02	Rural and fringe-area residents relying on shallow or aging wells face heightened risk of well failure or poor water quality during prolonged drought cycles.	ma-DR-CBC-03
Drought		Impact	ps-DR-WTS-03	Declining recharge during extended droughts reduces groundwater levels, stressing municipal wells and water supply reliability for fire suppression.	ma-DR-WTS-01
Drought		Impact	ps-DR-WTS-04	Drought-induced groundwater depletion exacerbates the chronic threat of saltwater intrusion into the Pajaro Valley Basin.	ma-DR-PVW-02
Drought		Threat	ps-DR-WTS-05	Climate change is projected to intensify the frequency and duration of multi-year drought cycles and dependence on the overdrafted Pajaro Valley groundwater basin creates chronic vulnerability, especially since the city?s existing storage capacity is insufficient for drought resilience.	ma-DR-PVW-02
Extreme Heat		Victim	ps-EH-WTS-01	Outdoor agricultural workers in the Watsonville area face heightened health risks from increasing extreme heat days, particularly those lacking access to shaded rest areas, cooling stations, or protective equipment.	ma-EH-SCC-01
Extreme Heat		Victim	ps-EH-WTS-02	Seniors, low-income residents, and individuals in older housing without air conditioning are especially vulnerable to heat-related illness during high heat days and may lack transportation to reach cooling centers.	ma-ET-CPT-01
Extreme Heat		Threat	ps-EH-WTS-03	The frequency of extreme heat days is projected to rise significantly by mid-century, with disproportionate impacts on inland agricultural zones and low-income neighborhoods.	ma-EH-WTS-01
Extreme Heat		Threat	ps-EH-WTS-04	Watsonville lacks formal procedures for opening and staffing cooling centers, outreach to vulnerable populations, and pre-positioning resources on extreme heat days.	ma-AH-CPT-01, ma-AH-WTS-01

Hazard	Sub-Hazard	Area of Concern	Problem IS	Description	Related Mitigation Actions
Earthquake		Victim	ps-EQ-WTS-01	Watsonville contains a concentration of older residential buildings often occupied by disadvantaged households, many of which may not meet current seismic codes and are more likely to suffer collapse or life-threatening damage during an earthquake.	ma-EQ-CBC-02
Earthquake		Victim	ps-EQ-WTS-02	Disadvantaged residents, including renters and mobile home occupants, may lack earthquake insurance, emergency supplies, or the ability to afford post-disaster repairs, increasing vulnerability to long-term displacement.	ma-EQ-SCC-02
Earthquake		Impact	ps-EQ-WTS-03	The city contains numerous unreinforced masonry buildings, particularly in the downtown core and industrial areas, which are at high risk of structural failure during strong seismic events.	ma-EQ-SVL-03, ma-EQ-WTS-01
Earthquake		Impact	ps-EQ-WTS-04	A major earthquake could disrupt essential infrastructure systems, including pipelines, water storage tanks, sewage networks, and electrical facilities, leading to cascading failures and long-term service outages.	ma-EQ-WTS-02, ma-EQ-PVW-01
Earthquake		Impact	ps-EQ-WTS-05	Seismic activity could damage roadways, bridges, and culverts, restricting emergency vehicle access and delaying evacuations or aid delivery in affected areas.	ma-EQ-CPT-03
Earthquake		Threat	ps-EQ-WTS-06	Watsonville is exposed to high seismic hazard due to proximity to the San Andreas Fault and local active faults (Zayante, Butano), which are capable of producing magnitude 6.4?7.4 earthquakes.	ma-EQ-WTS-01
Earthquake		Threat	ps-EQ-WTS-07	The city lacks a formal or consistently enforced program to inventory, evaluate, and retrofit high-risk structures such as unreinforced masonry or soft-story buildings, leaving known vulnerabilities unaddressed.	ma-EQ-CPT-02, ma-EQ-SVL-03, ma-EQ-WTS-01
Flood		Victim	ps-FL-WTS-01	Elderly residents in neighborhoods and unhoused encampments adjacent to the Pajaro River face mobility challenges and are less able to evacuate or access emergency services during flood events.	ma-AH-CPT-01

Hazard	Sub-Hazard	Area of Concern	Problem IS	Description	Related Mitigation Actions
Flood		Victim	ps-FL-WTS-02	Low-income and Spanish-speaking communities living in downtown and industrial areas are disproportionately located in flood-prone zones and may lack access to warnings, insurance, and recovery support.	ma-FL-SCC-05
Flood		Impact	ps-FL-WTS-03	The City?s wastewater treatment plant, police station, and other critical infrastructure lie within the 1% annual chance floodplain, placing essential services at risk of prolonged disruption during major flood events.	ma-FL-CPT-02, ma-FL-WTS-02
Flood		Impact	ps-FL-WTS-04	Flood events damage stormwater systems and roadways in downtown and east Watsonville, leading to road closures, business disruption, and restricted emergency access.	ma-FL-WTS-01
Flood		Impact	ps-FL-WTS-05	Flooding poses a contamination risk to drinking water sources, including the Watsonville Slough, which may serve as a water source during drought or emergency periods.	ma-FL-WTS-01
Flood		Threat	ps-FL-WTS-06	Watsonville experiences chronic flood risk from the Pajaro River and Corralitos and Salsipuedes Creeks. Aging levees and increased storm intensity due to climate change exacerbate this threat despite ongoing planning efforts.	ma-FL-WTS-01
Flood		Threat	ps-FL-WTS-07	Urbanization and impervious surfaces are increasing stormwater runoff volume and frequency, worsening flood severity in areas with inadequate drainage or no levee protection.	ma-FL-WTS-01
Flood		Threat	ps-FL-WTS-08	Flood maps are outdated and do not fully reflect sea level rise, sedimentation, or storm surge interactions with sloughs and the Pajaro River, underestimating future hazard exposure.	ma-FL-CPT-03
Flood		Victim	ps-FL-WTS-09	Flood impacts to farmworkers are increased due to potential employment disruptions in agriculture and food processing sectors.	ma-FL-CPT-02
Severe Weather	Heavy Rain	Impact	ps-HR-WTS-01	Heavy rain during atmospheric river events overwhelms stormwater infrastructure, causing localized flash flooding in low-lying roadways and near culverts, particularly in older downtown areas.	ma-HR-SCC-01, ma-HR-WTS-01, ma-HR-CPT-02

Hazard	Sub-Hazard	Area of Concern	Problem IS	Description	Related Mitigation Actions
Severe Weather	Heavy Rain	Threat	ps-HR-WTS-02	Watsonville faces frequent winter storms and atmospheric river events, which are increasing in severity due to climate change and contribute to recurring road closures and local flooding.	ma-HR-CPT-02
Liquefaction		Threat	ps-LQ-WTS-01	Large portions of Watsonville are susceptible to liquefaction, particularly in areas with high water tables and soft alluvial soils, exacerbating ground shaking impacts and structural instability.	ma-AH-CPT-01
Slope Failure		Victim	ps-SF-WTS-01	Residents in hillside neighborhoods along the city?s western and northern edges may face evacuation challenges resulting from landslides blocking access, especially dependent populations.	ma-SF-WTS-02
Slope Failure		Impact	ps-SF-WTS-02	Landslides and debris flows can damage roadways, pipelines, bridges, and culverts, restricting emergency access and utility service in areas of steeper slopes and less stable soils.	ma-SF-RCD-01
Slope Failure		Threat	ps-SF-WTS-03	Local geology, including Santa Margarita Sandstone and Santa Cruz Mudstone, is highly prone to landslides exacerbated by heavy rain, vegetation loss, or grading activities.	ma-SF-WTS-01
Severe Weather		Victim	ps-SW-WTS-01	Residents in mobile homes and older housing, many of whom are low-income or elderly, are particularly vulnerable to power outages, loss of access, and associated health risks during high wind and heavy rain events.	ma-SW-CBC-02
Severe Weather		Impact	ps-SW-WTS-02	High wind events, especially following heavy rain, regularly down trees and power lines, disrupting power, communications, and road access throughout Watsonville and straining emergency response capabilities.	ma-SW-CBC-02
Severe Weather		Victim	ps-SW-WTS-03	Severe storms disproportionately impact farmworker communities due to increased insecurity from potential employment disruptions in agriculture and food processing sectors.	ma-SW-CBC-01

Hazard	Sub-Hazard	Area of Concern	Problem IS	Description	Related Mitigation Actions
Wildfire		Victim	ps-WF-WTS-01	Watsonville residents living near the wildland-urban interface (WUI), especially vulnerable populations such as senior and limited-English speakers, face evacuation challenges due to limited road access, insufficient route redundancy, and emergency communications barriers.	ma-WF-SVW-03
Wildfire		Impact	ps-WF-WTS-02	Multiple critical facilities, including emergency shelters, water infrastructure, and hazardous materials storage facilities, are located in high or moderate wildfire hazard zones, posing risk of fire-related service interruption or secondary hazards.	ma-WF-SVL-02
Wildfire		Threat	ps-WF-WTS-03	Wildfire risk is increasing due to hotter, drier conditions, fuel accumulation, and proximity of development to flammable vegetation along the city?s edges.	ma-WF-SCW-01

3.5.4.1 Climate Change Impacts & Vulnerable Populations

The City of Watsonville is home to diverse and vibrant communities, yet many residents face disproportionate risks from climate change–driven hazards. Seniors, renters, farmworkers, low-income families, and limited-English speakers are particularly vulnerable due to a combination of socioeconomic, linguistic, and housing-related factors. Vulnerability is not uniform; some groups may face elevated risks from certain hazards such as extreme heat or flooding while being less impacted by others. Climate change is expected to intensify these disparities by increasing the frequency and severity of compounding hazard events.

Drought and Water Supply: Watsonville depends heavily on the Pajaro Valley Groundwater Basin, which is chronically overdrafted and subject to saltwater intrusion. Prolonged droughts reduce recharge, lower groundwater levels, and stress water availability for municipal and agricultural uses. Low-income households and farmworker communities are disproportionately impacted by water restrictions, higher utility costs, and employment disruptions in agriculture and food processing sectors. Rural residents dependent on shallow or aging wells also face elevated risks of water shortage or contamination.

Flooding and Severe Storms: Watsonville faces chronic flood risk from the Pajaro River, Corralitos Creek, and Salsipuedes Creek, with nearly 1,000 residents and multiple critical facilities—including the wastewater treatment plant and police station—located in the one percent annual chance floodplain. Aging levees and outdated flood maps compound the threat, while increasing storm intensity from atmospheric rivers elevates future flood exposure. Elderly residents, unhoused populations along the river, and low-income or Spanish-speaking households face heightened vulnerability due to evacuation challenges, limited

insurance coverage, and barriers to recovery resources. Farmworkers also experience secondary impacts through job loss when agriculture and food processing facilities are disrupted by flooding.

Earthquake and Liquefaction: Watsonville is located near the San Andreas Fault and other active local faults, making it highly susceptible to seismic activity. Although not impacted by climate change, the city has a concentration of older residential buildings and unreinforced masonry structures, particularly in the downtown core, which are especially vulnerable to collapse. Liquefaction risk is elevated in areas with soft soils and high groundwater. Renters, mobile home residents, and low-income households often lack earthquake insurance, retrofits, or the resources to recover from damage, leading to higher displacement risk.

Extreme Heat: Outdoor agricultural workers face significant health risks from increasing numbers of extreme heat days, particularly when shaded rest areas or cooling stations are unavailable. Seniors, low-income households, and residents in older housing without air conditioning are also highly vulnerable. Rising energy costs may force some households to avoid using cooling systems, increasing health risks during prolonged heatwaves. The city currently lacks formal heat response procedures such as pre-positioned cooling centers and outreach strategies for at-risk populations.

Slope Failure: Hillside neighborhoods on the city's western and northern edges are prone to landslides and debris flows during heavy rain, which can block access routes and restrict emergency services. Local geology, including Santa Margarita Sandstone and Santa Cruz Mudstone, further elevates susceptibility to slope instability. Populations with limited mobility or financial resources may be unable to address slope hazards on private land or evacuate quickly when needed.

Wildfire: While Watsonville's urban core faces lower wildfire risk, residents near the wildland-urban interface (WUI) are increasingly exposed to fire hazards. Vulnerable populations, including seniors and limited-English speakers, face challenges with evacuation and emergency communications. Wildfire also poses risks to critical facilities such as emergency shelters, water infrastructure, and hazardous materials storage sites. Hotter, drier conditions and accumulated fuels increase the likelihood of fire spread, while post-wildfire recovery is complicated by limited funding and socioeconomic disparities.

The compounding effects of climate change on Watsonville's vulnerable populations require proactive and equitable strategies. Enhancing emergency communication in multiple languages, investing in resilient infrastructure, expanding resources for renters and farmworker households, and integrating climate adaptation into daily city operations will strengthen Watsonville's resilience and reduce disparities across its most at-risk populations.

3.6 Mitigation Strategy

This section provides the framework for how the City of Watsonville will reduce hazard risk within its jurisdiction while supporting the broader goals of the Santa Cruz County MJHMP. It includes an overview of existing capabilities, opportunities to strengthen resilience, and the City's prioritized mitigation actions. Together, these elements demonstrate how Watsonville integrates hazard awareness into its planning and development processes while contributing to a coordinated countywide approach.

Within the Santa Cruz County MJHMP, the mitigation strategy serves as the roadmap for future hazard mitigation efforts. For Watsonville, the strategy outlined in this annex reflects the outcomes of the countywide planning process while also addressing the City's unique risks, priorities, and community needs. The strategy is designed to reduce vulnerabilities identified in the risk assessment, including the problem statements developed for flooding, earthquakes and liquefaction, slope failure, wildfire, drought, severe storms, extreme heat, and climate change.

Mitigation actions identified in this annex include both policy-based and project-based initiatives, with an emphasis on integrating resilience into land use planning, infrastructure investments, and community programs. Actions are structured to align with FEMA's requirements and to coordinate with existing city, county, and regional planning mechanisms. Each action identifies responsible parties, potential funding sources, and the resources needed for implementation.

For Watsonville, this strategy provides a framework for strengthening resilience by combining city-led initiatives—such as infrastructure improvements, building code enforcement, and community preparedness—with regional coordination through the MJHMP. By advancing these efforts in alignment with the General Plan and other local planning documents, Watsonville enhances its ability to reduce hazard risk while supporting long-term community safety, sustainability, and economic stability.

The subsections that follow describe these elements in detail:

- **Section 4.6.1 Aligning Action Planning** with Capabilities provides a summary of the City's capacity to address natural hazards.
- **Section 4.6.3 Mitigation Action Plan** presents Watsonville's prioritized actions to guide implementation in coordination with countywide strategies.

3.6.1 Aligning the Action Plan

This section connects the City of Watsonville's mitigation actions with its existing capabilities and areas for growth. Capability assessments are a required element of hazard mitigation planning under the Disaster Mitigation Act of 2000 and FEMA's 2023 guidance, ensuring that actions are realistic, achievable, and aligned with available resources.

The section begins with a summary of Watsonville's capabilities across four areas: planning and regulatory, administrative and technical, fiscal, education and outreach. This overview highlights the tools and

strengths that the city's already uses to reduce hazard risk. The section then provides a detailed analysis of each capability area, identifying both current practices and opportunities to expand resilience.

3.6.1.1 Capabilities & Opportunities Assessment

To develop a realistic and actionable mitigation strategy, it must account for existing jurisdictional capabilities and what future opportunities there are to enhance those capabilities for purposes of hazard mitigation. This section provides an assessment of the City of Watsonville's existing capabilities and future opportunities, including planning and regulatory, administrative and technical, fiscal, and public outreach and education capabilities. This assessment also identifies opportunities to integrate this MJHMP into future planning, policies, or programs to weave mitigation efforts into daily operations and address hazard problems wholistically. Capabilities are categorized into four groups and include various mechanisms.

- **Planning and Regulatory Capabilities:** Existing long-range plans, emergency response plans, hazard-specific plans, land use policies, and building and development standards.
- **Administrative and Technical Capabilities:** Available expertise in emergency services, engineering, grant management, and community planning.
- **Fiscal Capabilities:** Budgetary capacity, taxing authority, grants, and other funding mechanisms that can support mitigation projects.
- **Outreach and Education Capabilities:** Existing programs for providing technical assistance, community education, public warnings, and stakeholder engagement.

A full description of the process used to develop the capabilities assessment is provided in Volume 1, Section 2.3.3.

This capabilities and opportunities assessment for Watsonville lists the various types of capabilities along with how they have been, currently are, or will in the future be integrated into hazard mitigation planning efforts. The three "HMP Integration" columns that identify the capability's status and usage are color-coded with green, yellow, or orange shading to communicate the following:

- **Status:** If the capability is present at all and what level of use it has generally.
- **Current Mitigation Use:** If the capability is currently being used in mitigation efforts, specifically, and at what level.
- **Future Opportunity:** If there is a future opportunity to integrate the capability into mitigation efforts and at what level.

Planning & Regulatory Capabilities

The City of Watsonville maintains strong planning and regulatory tools that directly reduce hazard risks and guide future development. The city adopts and enforces the California Building Code through its Municipal Code (Title 8), ensuring that all new construction meets some of the most rigorous seismic, fire, and structural standards in the nation. In addition, Titles 9 and 14 of the Municipal Code apply specialized hazard-related development standards, including flood protection requirements, seismic safety overlays,

hillside protections, and coastal zone regulations. These measures are reinforced by Watsonville's Zoning Ordinance (Title 14) and a Growth Management Ordinance, which establishes an Urban Limit Line and ties annual development caps to the General Plan's Land Use and Housing Elements.

Watsonville's Capital Improvement Program (2023–2027) prioritizes drainage, levee, and pump infrastructure upgrades in flood-prone areas, directly supporting flood risk reduction. The city also implements an Erosion and Sediment Control Program under Municipal Code Chapter 7-6, which regulates grading and filling activities, and requires compliance with post-construction stormwater standards.

Public outreach on hazards is supported through the Fire Department and County OR3, with seasonal campaigns related to flood and fire awareness. The City also coordinates hazard reduction through its Urban Water Management Plan (2020), which addresses long-term drought resilience, water conservation, and supply reliability.

As a regulated MS4 stormwater operator, Watsonville conducts annual inspections to ensure compliance with the City's Stormwater Management Program, reducing flood and water quality risks. Seismic safety is addressed in the Municipal Code through the Seismic Safety District (Section 14-16.2300), which requires site-specific geologic investigations for development in known hazard areas.

Although Watsonville does not maintain a dedicated retrofit program for unreinforced masonry (URM) or soft-story structures, the General Plan's Safety Element acknowledges seismic risks and provides policy direction for addressing them. This remains an opportunity for future program development to further reduce earthquake vulnerability.

Future integration of the MJHMP will occur through various processes and mechanisms outlined across multiple mitigation actions (Table 3-16). A key opportunity for future hazard mitigation integration with the city's existing planning mechanisms are to use the extreme heat hazard vulnerability assessment in this plan to support implementation of the city's Urban Forest Master Plan, Urban Greening Plan, and Climate Action Plan to achieve their goals (ma-EH-WTS-01).

Administrative & Technical Capacity

The City of Watsonville has a well-established administrative and technical framework for hazard mitigation, anchored by its Community Development, Public Works and Utilities, and Fire Departments. These departments collectively provide planning, engineering, and emergency management services that support implementation of the City's hazard reduction programs.

Watsonville maintains professional planning and engineering staff across multiple departments, including community planners, land development engineers, and construction engineers, ensuring that hazard considerations are integrated into site review, permitting, and capital projects. The Building Official, housed in the Community Development Department, serves as both the City's Building Code Official and Floodplain Administrator, enforcing California Building Code provisions and FEMA floodplain management standards.

The Fire Department provides a dedicated Fire Marshal who leads plan review, building inspections, and fire hazard mitigation activities. Emergency coordination is managed by a designated Emergency Manager within the Fire Department, who also participates in the County's Emergency Operations Center (EOC).

While the City has strong in-house expertise, certain specialized capacities remain limited. Watsonville does not maintain a dedicated resiliency planner or public outreach personnel, though adaptation planning is integrated into the City's 2022 Climate Action and Adaptation Plan (CAAP). Similarly, the city relies on cross-trained planners and engineers for climate and flood planning but does not yet employ dedicated hazard scientists. GIS services are available through the Community Development and Information Services Departments, but staffing is limited, and the city frequently partners with consultants for advanced mapping and analysis.

Grant-writing and management are handled by staff in Public Works and Finance, though the city lacks a dedicated full-time grant manager or mitigation specialist. This has not prevented Watsonville from successfully securing outside funds for hazard-related projects, but additional capacity could strengthen future applications for state and federal resilience grants.

Overall, Watsonville's administrative and technical strengths lie in its multidisciplinary staff capacity and integration across departments, combined with strong interagency partnerships. Expanding specialized functions such as resiliency planning, dedicated outreach, and GIS analysis would further enhance the City's ability to proactively address hazard vulnerabilities.

Warning Systems & Services

The City of Watsonville relies heavily on the regional emergency alert and warning infrastructure coordinated by County OR3. The CruzAware system serves as the City's primary platform for hazard alerts, providing residents with real-time notifications by text, phone, or email. CruzAware issues warnings for a broad range of hazards including floods, wildfires, geological hazards, and severe weather events, ensuring consistency across the countywide emergency management framework.

Although the City does not operate its own independent warning system, it actively supports dissemination of alerts through City-managed communication channels. This includes integration with the City's website, social media platforms (Facebook, Instagram, and Twitter/X), and coordination with the Fire and Police Departments, which amplify urgent messages during emergencies. The city also maintains a strong relationship with the National Weather Service Monterey Office, which provides storm forecasts, flood warnings, and coastal hazard alerts specific to the region.

Watsonville's emergency warning capacity is strengthened through participation in countywide systems, but there remain opportunities for expansion. For example, the city does not currently participate in FEMA's StormReady program, though Santa Cruz County has achieved StormReady and TsunamiReady status. Additionally, hazard-specific public education campaigns—such as neighborhood flood alerts or fire season preparedness messaging—are conducted only on a limited basis, often seasonally.

In practice, Watsonville's role is to amplify and localize county and state warnings while ensuring that alerts reach its diverse population. Given the City's large Spanish-speaking community and agricultural workforce, expanding multilingual emergency communications and ensuring alerts are accessible to residents with limited connectivity are critical next steps.

Fiscal Capabilities

The City of Watsonville maintains a broad set of fiscal tools that support hazard mitigation and resilience investments. Unlike smaller jurisdictions, Watsonville can both levy voter-approved taxes and administer a range of development-related fees, providing a diversified base for funding capital projects and disaster preparedness.

The City has the authority to levy special taxes for specific purposes, as demonstrated by past measures such as Measure G, which funded police and fire services. In addition, Watsonville generates stable revenue through stormwater, solid waste, and water utility fees, which directly support drainage system maintenance, water reliability projects, and compliance with state and federal stormwater requirements.

Watsonville also relies on system development fees charged to new development, which fund public improvements, including stormwater and transportation infrastructure. Capital Improvement Program (CIP) funding is another cornerstone of the City's fiscal capacity. The 2023–2027 CIP dedicates significant investment toward levee improvements, pump station upgrades, and other drainage projects in flood-prone areas, reflecting a strong linkage between fiscal policy and hazard risk reduction.

Additional resources come from federal and state programs, including annual allocations of Community Development Block Grants (CDBG), which have historically supported ADA accessibility, emergency response, and infrastructure improvements in vulnerable neighborhoods. These external funds help extend the City's reach, particularly in low-income and hazard-prone areas.

While Watsonville has the authority to issue general obligation bonds and special tax bonds, these tools are not currently utilized for hazard mitigation projects. Expanding their use could provide long-term funding for major infrastructure upgrades, particularly flood protection. Similarly, the City does not currently use benefit assessments or formal policies for withholding development in hazard-prone areas, though hazard-related zoning standards and urban limit lines already reduce exposure in high-risk zones.

In practice, Watsonville's fiscal strategy blends local fees and taxes with external grant funding, creating a flexible, layered approach to resilience. Opportunities remain to leverage untapped financing mechanisms—such as bonds or benefit assessments—to address large-scale capital needs, particularly as climate change intensifies flooding, drought, and extreme weather impacts.

Education & Outreach Capabilities

The City of Watsonville maintains strong education and outreach programs that connect hazard awareness with community preparedness. These efforts are led primarily by the Fire Department, Police Department,

Public Works and Utilities, with additional support from regional partners such as the Santa Cruz County Fire Safe Council and the Pajaro Valley Water Management Agency.

The city uses its website and social media platforms (Facebook, Instagram, and X) to provide real-time emergency alerts, preparedness tips, and seasonal safety reminders. These channels are widely used during winter storm events, wildfire smoke episodes, and flood advisories, offering residents timely, accessible information. However, opportunities remain to centralize hazard-related resources into a single web portal for easier community access.

Watsonville also participates in annual public safety events, including National Night Out, Preparedness Month activities, fire safety school visits, and station tours. These events provide direct opportunities for residents to learn about evacuation planning, flood safety, and emergency communications. Outreach efforts are supported by seasonal mailers and flyers, though a recurring hazard mitigation newsletter could further strengthen ongoing public awareness.

At the neighborhood level, Watsonville supports community preparedness through its Community Emergency Response Team (CERT) program, part of the Santa Cruz County CERT network. Local CERT volunteers receive training in basic disaster response, first aid, and search-and-rescue, expanding the City's response capacity during major hazard events.

Partnerships also play a critical role. The Fire Safe Council of Santa Cruz County works with Watsonville to expand defensible space programs, vegetation management, and community education, while the City's collaboration with regional conservation and water agencies promotes drought awareness, flood preparedness, and groundwater conservation. Watsonville is also home to a designated Firewise community, with potential to expand this program into other high-risk neighborhoods along hillside edges.

Overall, Watsonville's education and outreach capabilities reflect a community-based approach: combining digital tools, in-person events, and regional partnerships to ensure hazard information reaches a diverse population, including vulnerable residents such as seniors, farmworkers, and limited-English speakers.

CAPABILITY ASSESSMENT LEGEND

HMP Integration

Status	Current Mitigation Use	Future Opportunity
Currently in use or present.	Used widely for mitigation.	Opportunity to expand and integrate.
(Sort of) Seldomly used or limited presence.	Limited use in mitigation planning.	Limited opportunity to expand and integrate.
(No) Not present or available.	Not used in mitigation planning.	No opportunity to expand or integrate.

Table 3-15: City of Watsonville Capabilities Assessment

Resource	HMP Integration: Status	HMP Integration: Current Mitigation Use	HMP Integration: Future Opportunity	Notes / Additional Detail
Planning and Regulatory Capabilities				
Construction and Future Development Regulations				
Building Codes				City Municipal Code Title 8, Building Regulations, adopting the 2022 California Building Code (Part 2 of Title 24 of the California Code of Regulations)
Hazard-Related Development Standards				City Municipal Code Titles 9 and 14, Planning / Zoning, apply Coastal, Flood Protection, Seismic Safety, and Hillside zones and development standards; Title 8, Building Regulations, applies fire hazard standards
Zoning Ordinance				City Municipal Code Title 14, Zoning
Hazard-Specific Ordinance				City Municipal Code Titles 9 and 14, Planning / Zoning, apply Coastal, Flood Protection, Seismic Safety, and Hillside zones and development standards
Growth Management Ordinance				Urban Limit Line and annual development caps tied to the General Plan Land Use and Housing Elements
Hazard Reduction Programs (Annually Conducted)				
Capital Improvements Program (CIP) or Plan				2023-2027 CIP includes drainage, levee, and pump infrastructure upgrades in flood-prone areas
Erosion/Sediment Control Program				City Municipal Code Chapter 7-6, Excavations, Grading, Filling, and Erosion Control, and Public Improvement Standards Stormwater Post Construction Standards
Hazard-Related Public Outreach Program				Emergency preparedness outreach through Fire Department and County OES; some seasonal flood/fire awareness efforts
Urban Water Management Plan				2020 UWMP supports drought planning, conservation, and water reliability
Stormwater Management Program (Annual Inspections)				Classified as an MS4 operating under a NPDES permit; annual inspections conducted
Seismic Safety Program (Non-structural)				City Municipal Code Section 14-16.2300, Seismic Safety District, requires site-specific geologic reports within areas of known hazards
Earthquake Modernization Plan (Building Safety)				No specific soft-story or URM retrofit program; General Plan Safety Element addresses seismic hazards but no structured mitigation program currently
Hazard Plans				
General Plan Safety Element				Current General Plan Public Safety Element addresses hazards such as seismic, flood, and coastal
Site Plan Review Requirements				Site plan reviews enforced through City Municipal Code Title 14, Zoning, and CEQA review processes

Resource	HMP Integration: Status	HMP Integration: Current Mitigation Use	HMP Integration: Future Opportunity	Notes / Additional Detail
General Plan Environmental Justice Element				No standalone element in current General Plan; to be integrated upon next update and through CAAP implementation
Community Wildfire Protection Plan (CWPP)				Covered under 2022 Santa Cruz County CWPP (WUI risk minimal within City limits)
Economic Development Plan				No formal plan, but priorities embedded in General Plan, Downtown Watsonville Specific Plan, and CAAP
Floodplain Management Plan				No formal plan, but City Municipal Code Titles 9 and 14, Planning / Zoning, apply Flood Protection development standards
Stormwater Management Plan				Watsonville Stormwater Management Plan under NPDES Phase II MS4 Permit; updated BMPs and outreach conducted annually
Emergency Operations Plan				2019 Emergency Operations Plan; participates in the Santa Cruz County Operational Area Plan
Climate Action Plan				2022 Climate Action & Adaptation Plan (CAAP) includes mitigation strategies for sea level rise, extreme heat, and wildfire smoke
Climate Vulnerability Assessment				Completed as part of 2022 CAAP; includes social vulnerability mapping, hazard exposure, and future climate projections
Urban Greening Plan				Community Forestry Project; tree canopy and nature-based stormwater infrastructure projects via CAAP
Ground Water Management Planning / Plans				2020 UWMP; City coordinates on groundwater recharge and water conservation; covered through Pajaro Valley Water Management Agency (PV Water)
National Flood Protection Program (NFIP)				
Floodplain Management Regulations				City Municipal Code Titles 9 and 14, Planning / Zoning, apply Flood Protection development standards
Flood Insurance Education and Technical Assist.				Public outreach through floodplain permitting process and website; no formal technical assistance program
Flood Insurance Study				Effective FEMA FIS adopted by reference in City Municipal Code Chapter 9-2, Floodplain Management
Elevation Certificates				Maintained by Engineering Division
Flood Hazard Mapping / Re-Mapping				Effective FEMA FIRMs adopted by reference in City Municipal Code Chapter 9-2, Floodplain Management
Community Rating System (CRS)				Joined October 1992; currently Class 8
Administrative and Technical				
Community Planning and Development Services				
Community Planner				Staff in Community Development Department

Resource	HMP Integration: Status	HMP Integration: Current Mitigation Use	HMP Integration: Future Opportunity	Notes / Additional Detail
Planner/Engineer (Land Development)				Staff in Community Development and Public Works and Utilities Departments
Engineer/Professional (Construction)				Staff in Public Works and Utilities Department
Planner/Engineer/Scientist (Natural Hazards)				No dedicated staff; however, cross-trained planners and engineers support climate and flood planning
Transportation Planner				No dedicated staff; limited future opportunity
Resiliency Planner				No dedicated staff, but CAAP includes adaptation planning tasks
Building Official (Full time or Augmented)				Building Official housed in Community Development Department
Floodplain Administrator				Role fulfilled by Engineering staff
Fire Marshal				Fire Marshall housed in Watsonville FD administration; Planning Department manages plan review with consultant ensuring fire code compliance; inspections conducted by both Building and Fire Department staff
Dedicated Public Outreach Personnel				No dedicated staff; future opportunity
GIS Specialist and Capability				GIS Coordinator in Information and Technology Services Department, but limited capacity
Emergency Manager				Emergency services coordination housed in City Manager's Office; participates in County EOC functions
Dedicated Grant Manager, Writer, or Specialist				No dedicated staff: however, staff in Public Works and Finance manage grant applications when needed
Other	N/A	N/A	N/A	
Warning Systems and Services				
General				Participates in Santa Cruz County's regional emergency alert system CruzAware
Flood				CruzAware alerts
Tornado				CruzAware alerts
Wildfire				CruzAware alerts
Geological Hazards				CruzAware alerts
Fiscal Capabilities				
Financial Resources (for Hazard Mitigation)				
Levy Taxes for Specific Purposes				Watsonville can levy special taxes via voter approval (e.g., Measure G for police/fire)
Utilities Fees				Stormwater, solid waste, and water utility fees
Benefit Assessments				Not currently, future opportunity
Community Development Block Grants (CDBG)				Annual CDBG allocations for emergency response and ADA infrastructure

Resource	HMP Integration: Status	HMP Integration: Current Mitigation Use	HMP Integration: Future Opportunity	Notes / Additional Detail
System Development Fee				Collected on new developments to fund public improvements including stormwater and transportation
General Obligation Bonds to Incur Debt				Bond issuance is authorized but not currently used for hazard mitigation; may be considered for levee or drainage upgrades
Special Tax Bonds to Incur Debt				No special tax bonds for hazard mitigation; may be explored to fund specific flood mitigation
Withheld Spending in Hazard-Prone Areas				No formal policies, but development is constrained in high-risk zones via zoning and development standards (e.g., floodplain)
Stormwater Service Fees				Fees support drainage system maintenance and improvements per MS4 permit compliance
Capital Improvement Project Funding				2023-2027 CIP includes drainage, levee, and pump infrastructure upgrades in flood-prone areas
Education / Outreach Capabilities				
Education/Outreach Resources				
Website Dedicated to Hazard Topics				Emergency preparedness and hazard-specific webpages under City Manager, Public Works and Utilities, and Fire Department; opportunity to centralize content
Dedicated Social Media				City posts emergency alerts and preparedness tips via Facebook, Instagram, and Twitter (X)
Local Citizen Groups That Communicate Hazard Risks				Fire Safe Council of Santa Cruz County; partner organizations (e.g., PV Water, environmental NGOs) conduct limited outreach
Hazard Info. Avail. at Library/ Planning Desk				Not currently, future opportunity
Annual Public Safety Events				Watsonville Fire and Police host National Night Out, Preparedness Month, fire safety school visits, station tours, and other public safety activities
Ability to Field Public Tech. Assistance Requests				Requests related to hazard information, code enforcement, and stormwater handled via general service request system
Public Safety Newsletters or Printed Outreach				Limited seasonal outreach via flyers or mailers (e.g., storm prep), but no recurring hazard mitigation newsletter
Community Emergency Response Team (CERT)				Has a city team through Santa Cruz County CERT program with local training options
Fire Safe Councils				City is covered by Fire Safe Council of Santa Cruz County, but activity is limited in urban Watsonville
Firewise				Only one Firewise community in Watsonville as of 2025; could pursue additional in hillside-adjacent zones
StormReady				City does not participate, but Santa Cruz County is both StormReady and TsunamiReady

Resource	HMP Integration			Notes / Additional Detail
	Status	Current Mitigation Use	Future Opportunity	
Resource Conservation Districts				Resource Conservation District of Santa Cruz County supports groundwater recharge, fire fuel management, and climate education
Other	N/A	N/A	N/A	

3.6.2 City of Watsonville Mitigation Action Plan

Watsonville's mitigation actions were developed through a collaborative process informed by the updated risk assessment, local priorities, and extensive stakeholder engagement. As part of this 2025 MJHMP update, the City reviewed mitigation actions from its prior Local Hazard Mitigation Plan to determine which actions to carry forward, which to consolidate, and where entirely new strategies were required. This careful evaluation ensured that the updated action plan builds upon past commitments while also responding to current risks and future challenges.

The plan addresses Watsonville's most significant hazards, including flooding, earthquakes, severe storms, drought, wildfire, extreme heat, and climate change. Each mitigation action is designed to align with FEMA's hazard mitigation guidance and the requirements of the Disaster Mitigation Act of 2000. Where appropriate, overlapping or redundant actions were consolidated into broader, more comprehensive strategies that improve clarity, increase feasibility, and strengthen regional coordination.

The mitigation action prioritization method used by all participating jurisdictions is described in Volume 1, Section 4. Each action specific to Watsonville is documented in Table 3-16, which identifies the responsible department, implementation timeframe, potential funding sources, and resources required to complete the action. Each action is also assigned a unique alphanumeric identifier (see Figure 3-20) that links the strategy to its associated hazard and supports consistent monitoring and reporting.

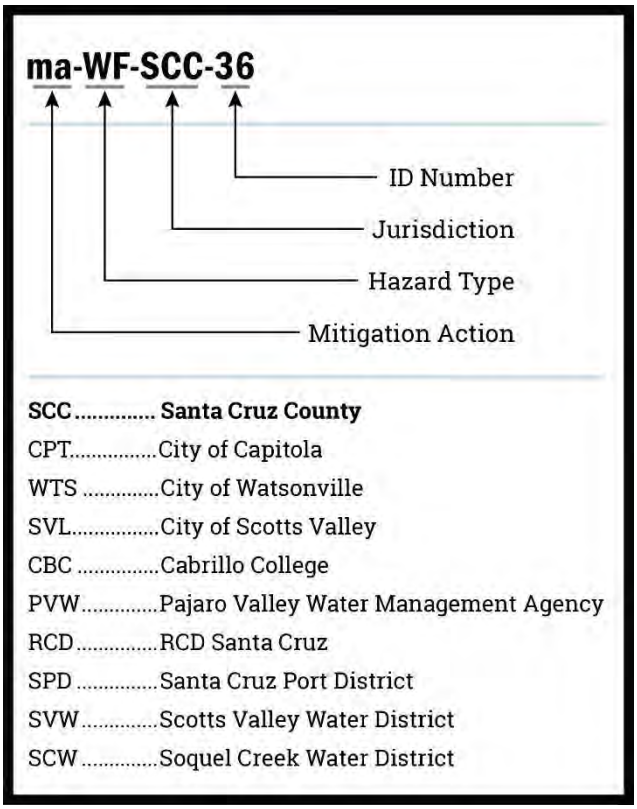


Figure 3-20: Mitigation Action Number Key

Watsonville's approach recognizes that some hazards are most effectively addressed through regional efforts. Flood protection, drought resilience, and wildfire risk reduction often extend beyond the city's boundaries and require collaboration with county, regional, and state partners. By aligning local actions with regional strategies, Watsonville helps to consolidate resources, maximize funding opportunities, and ensure that mitigation projects achieve the greatest benefit for the Pajaro Valley and the wider Santa Cruz County community.

Collectively, these mitigation actions provide a roadmap for reducing hazard risk, protecting vulnerable populations, and strengthening the long-term resilience of Watsonville.

Table 3-16: City of Watsonville Mitigation Action Plan

Hazard	Action ID	Action Title	Description	FEMA Mitigation Alternative	Timeline	Responsibility	Cost	Benefit	Internal Funding Source	External Funding Source	Priority (Based on Criteria)	Problems Addressed
All Hazard	**ma-AH-WTS-01**	Emergency Center Activation Plan	Expand formal procedures and funding for activating, staffing, and advertising emergency centers for warming, cooling, or other sheltering needs during extreme weather and other hazard events.	PRV, PE&A	Short 1-3 Years	City Parks + County, City of Santa Cruz, and other regional partners	Low	High	General fund, staff Time	other state grants	High	ps-AH-SCC-08, ps-EH-SCC-02, ps-EH-SVL-05, ps-EH-WTS-04, ps-CC-SCC-05, ps-DF-SCC-03, ps-SW-SCC-03, ps-WW-SCC-01, ps-WW-SCC-02, ps-CC-WTS-01, ps-CC-WTS-03, ps-EH-WTS-02, ps-EH-WTS-03, ps-FL-WTS-01, ps-FL-WTS-02, ps-WF-WTS-02
Climate Change	**ma-CC-WTS-01**	Neighborhood Climate Resilience Program	Develop an enhanced multilingual and multigenerational outreach and assistance program to increase resilience through activities such as urban gardening, tree planting, and xeriscaping.	PE&A, PRV	Medium 3-5 Years	City Sustainability + County OR3, CBOs, HOAs, Community Advisory Committee, Promotoras	Low	High	Water Conservation Program, general fund, staff time	Measure Q	High	ps-CC-WTS-01, ps-CC-WTS-02, ps-CC-WTS-03, ps-DR-WTS-01, ps-DR-WTS-02, ps-DR-WTS-05, ps-EH-WTS-01, ps-EH-WTS-02, ps-EH-WTS-03, ps-FL-WTS-01, ps-SW-WTS-03
Drought	**ma-DR-WTS-01**	Drought-Resilient Storage & Reuse	Build new water tank and expand non-potable reuse systems to offset supply stress during droughts.	SP	Short 1-3 Years	City Water + DWR	High	High	Water fund, staff time	DWR Urban & Multi Benefit Drought Relief Grant	Low	ps-DR-WTS-03, ps-DR-SPD-03, ps-CC-WTS-02, ps-CC-WTS-03, ps-DR-WTS-01, ps-DR-WTS-02, ps-DR-WTS-04, ps-DR-WTS-05
Earthquake	**ma-EQ-WTS-01**	Retrofit High-Risk Buildings	Develop and implement an incentive-based retrofit program for unreinforced masonry and soft-story buildings, prioritized by occupancy and proximity to critical facilities.	PRV	Medium 3-5 Years	City Building + contractors	High	High	General fund, staff time (Limited)	CDBG	Medium	ps-EQ-SVL-04, ps-EQ-WTS-03, ps-EQ-WTS-07, ps-EQ-WTS-06, ps-EQ-WTS-01, ps-EQ-WTS-02, ps-EQ-WTS-06, ps-LQ-WTS-01
Earthquake	**ma-EQ-WTS-02**	Critical Infrastructure Seismic Hardening	Strengthen and stabilize critical facilities and infrastructure, including upgrading pipelines, drainage channels, storage tanks, reservoirs, roads, and bridges, based on vulnerability analysis. May include establishing backup power or enhancing communication systems.	SP, PPRO	Medium 3-5 Years	City Public Works and Utilities + utility and road partners	High	High	General fund, water fund, sewer fund, staff time	HMGP	Medium	ps-EQ-WTS-04, ps-EQ-WTS-05, ps-EQ-WTS-06, ps-LQ-WTS-01
Extreme Heat	**ma-EH-WTS-01**	Meet Urban Forest Master Plan Goals	Implement the Urban Forest Master Plan, Urban Greening Plan, and Climate Action Plan to achieve their goals, including reducing extreme heat impacts.	PRV, PE&A	Long 5-10 Years	City Parks + CBOs	Medium	High	General fund, staff time, Measure R	Measure Q, Prop 4, EPA	Medium	ps-EH-CPT-02, ps-EH-SVL-05, ps-EH-WTS-03, ps-CC-WTS-01, ps-CC-WTS-02, ps-CC-WTS-03, ps-EH-WTS-01, ps-EH-WTS-03
Flood	**ma-FL-WTS-01**	Green Stormwater Infrastructure	Expand stormwater BMPs and green infrastructure (e.g., raingardens, bioswales) in urban flood-prone areas, to retain stormwater and reduce the risk of flooding in adjacent or downstream areas. Integrate with climate change projections.	NRP, SP, PRV	Long 5-10 Years	City Public Works and Planning	High	High	Staff time, general fund, utility fund (when applicable)	Measure Q, Prop 4, EPA	Very High	ps-FL-SCC-07, ps-FL-SVL-04, ps-FL-WTS-04, ps-FL-WTS-05, ps-FL-WTS-06, ps-FL-WTS-07, ps-CC-WTS-02, ps-CC-WTS-03, ps-FL-WTS-01, ps-FL-WTS-02, ps-FL-WTS-08, ps-FL-WTS-09, ps-HR-WTS-01, ps-HR-WTS-02, ps-SW-WTS-01
Flood	**ma-FL-WTS-02**	Critical Facility Floodproofing	Elevate, floodproof, or relocate the wastewater treatment plant, police station, and emergency shelters located within the 1% annual chance floodplain.	PPRO, SP	Medium 3-5 Years	City Public Works and Utilities + County	High	High	Sewer fund, staff time	HMGP	High	ps-FL-CPT-04, ps-FL-WTS-03, ps-CC-WTS-03, ps-FL-WTS-04, ps-FL-WTS-06
Severe Weather (Heavy Rain)	**ma-HR-WTS-01**	Culvert & Drainage Retrofit Program	Upgrade culverts in flood prone areas and implement green infrastructure drainage solutions, using both nature-based and structural solutions where appropriate, to reduce localized flooding.	SP, PPRO	Medium 3-5 Years	City Public Works + Caltrans, County	High	High	Staff time, general fund, utility fund (when applicable)	Measure Q, Prop 4, EPA	Very High	ps-HR-WTS-01, ps-HR-SCC-01, ps-HR-SVL-02, ps-CC-WTS-02, ps-CC-WTS-03, ps-FL-WTS-04, ps-FL-WTS-06, ps-FL-WTS-07, ps-FL-WTS-08, ps-FL-WTS-09, ps-HR-WTS-02, ps-SW-WTS-01, ps-SW-WTS-02

Hazard	Action ID	Action Title	Description	FEMA Mitigation Alternative	Timeline	Responsibility	Cost	Benefit	Internal Funding Source	External Funding Source	Priority (Based on Criteria)	Problems Addressed
Severe Weather (High Wind)	**ma-HW-WTS-01**	Utility High Wind Corridor Assessment & Microgrid Pilot	Identify high-risk corridors and coordinate with utility providers to bury or harden power and communication lines and poles in high-risk corridors prone to wind damage. Invest in energy redundancy through piloting microgrid development.	SP, PPRO	Long 5-10 Years	City Public Works and Utilities + PG&E and other utility providers	High	High	Enterprise funds when applicable, staff time, general fund	PG&E Vegetation Management Partnership; FEMA HMGP; Cal Fire	Low	ps-HW-CBC-01, ps-HW-SVL-01, ps-HW-SVL-03, ps-CC-WTS-02, ps-CC-WTS-03, ps-SW-WTS-01, ps-SW-WTS-02
Slope Failure	**ma-SF-WTS-01**	Landslide Hazard Inventory & Mapping	Update slope stability and landslide risk maps to reflect local geology and rainfall trends.	PRV	Medium 3-5 Years	City Public Works and Planning + consultants	Medium	High	Staff time, general fund	FEMA	Medium	ps-SF-WTS-03, ps-SF-WTS-01, ps-SF-WTS-02, ps-SF-WTS-03
Slope Failure	**ma-SF-WTS-02**	Hillside Stabilization & Drainage Improvements	Conduct outreach to owners of high-risk properties to install slope stabilizing drainage and vegetation controls in western/northern neighborhoods.	PPRO, SP	Short 1-3 Years	City Planning + County OR3, RCD, CDFA, NRCS	Medium	High	Staff time, general fund	HMGP Cal Trans	Medium	ps-SF-WTS-01, ps-SF-CPT-02, ps-SF-WTS-02, ps-SF-WTS-03
Wildfire	**ma-WF-WTS-02**	Evacuation Education & Awareness	Create targeted multilingual and multigenerational outreach for mitigation resources, evacuation routes, and wildfire response in vulnerable WUI neighborhoods.	PE&A	Long 5-10 Years	City Police + County OR3, CERT, CBO partners	Medium	Medium	Staff time,	HMGP CAL FIRE CalOES	Medium	ps-WF-SVL-01, ps-CC-WTS-02, ps-CC-WTS-03, ps-WF-WTS-01, ps-WF-WTS-03
Wildfire	**ma-WF-WTS-01**	Establish Defensible Space Program	Establish defensible space inspection program and ensure compliance with clearing around critical facilities and infrastructure sites.	PRV, NRP, PPRO	Short 1-3 Years	City Fire and Public Works + CAL FIRE, County OES	Medium	High	Staff time	HMGP, CAL FIRE, CalOES, Prop 4, Measure Q	Low	ps-WF-CBC-02, ps-CC-WTS-02, ps-CC-WTS-03, ps-WF-WTS-01, ps-WF-WTS-02, ps-WF-WTS-03

3.6.3 Status of Previous Mitigation Actions

In 2020, the City of Watsonville adopted its previous FEMA-approved HMP. This 2025 MJHMP represents a comprehensive update from that previous plan, as discussed in Volume 1, Section 1.5. Table 3-17 provides status updates for all the previous mitigation actions in the 2020 HMP, from which many of the mitigation actions in Table 3-16 were sourced and revised.

Table 3-17: Status of 2020 City of Watsonville Mitigation Actions

Action ID	Description	Status
1	Develop and implement seismic retrofit program options for home and business owners, including through public-private partnerships	Combined and revised into ma-EQ-WTS-01
2	Strengthen and stabilize public facilities and infrastructure, including but limited to nonreinforced masonry buildings, nonductile concrete buildings and facilities, storm lines, sloughs, storm culverts, channels, streets, and bridges	Combined and revised into ma-EQ-WTS-02, ma-HR-WTS-01
3	Structural improvements to earthen reservoirs	Combined and revised into ma-EQ-WTS-02
4	Protect roads, including in downtown and green valley corridors	Combined and revised into ma-EQ-WTS-02
5	Develop an eave construction program for homes	Combined and revised into ma-WF-WTS-01
6	Develop or improve defensible space for critical facilities, including wells, pump stations, reservoirs, booster tanks, and filter plant	Combined and revised into ma-WF-WTS-01
7	Assess and develop a plan to implement a 100-foot buffer for sloughs within City limits	Combined and revised into ma-FL-WTS-01
8	Develop or improve stormwater system BMPs, including but not limited to flood attenuation ponds, bio-retention, detention basins, gutters, storm drain inlets, culverts, culvert outfalls, bio swales, catch basins, and storm outfall dissipaters	Combined and revised into ma-FL-WTS-01, ma-HR-WTS-01
9	Develop and implement watershed improvements and habitat enhancements for sloughs, storm culverts, and channels	Combined and revised into ma-FL-WTS-01, ma-HR-WTS-01
10	Protect (elevate, armor, or relocate) critical infrastructure, facilities, and systems from sea level rise, including but not limited to pump stations, wells, and the wastewater treatment facility	Combined and revised into ma-FL-WTS-02
11	Promote and sponsor programs to buy out, relocate, elevate, and flood-proof existing flood-prone structures	Cancelled, ongoing baseline mitigation activity
12	Assess and increase the development and use of community gardens to support local food production, including through partnerships	Combined and revised into ma-CC-WTS-01

Action ID	Description	Status
13	Develop and implement upgrades to City properties and facilities with features that would improve stormwater runoff, provide water saving opportunities, and incorporate low-impact development strategies—all moving toward a more green infrastructure	Combined and revised into ma-FL-WTS-01
14	Develop and implement natural resource protection and management policies and programs, including tree planting programs, monitoring of invasive species, and support for native plants	Combined and revised into ma-CC-WTS-01, ma-FL-WTS-01
15	Develop redundancy in communications systems for water, storm pump stations, sewer lift stations, and critical airport facilities	Combined and revised into ma-EQ-WTS-02
16	Conduct a flood outreach program, including increased signage in flood-prone areas and improvements to the Flood Alert System	Cancelled, ongoing baseline mitigation activity
17	Develop community empowerment programs that promote hazard mitigation leadership and action	Combined and revised into ma-WF-WTS-02
18	Develop and implement energy efficiency policies and programs, including through public-private partnerships	Combined and revised into ma-CC-WTS-01
19	Develop and implement policies and programs that increase investments in local energy production, distribution, and storage, including through microgrid development	Combined and revised into ma-HW-WTS-01
20	Assess and provide backup power for critical infrastructure and facilities, including but not limited to wells, pump stations, reservoirs, booster tanks, and traffic control facilities	Combined and revised into ma-EQ-WTS-02, ma-HW-WTS-01
21	Assess the vulnerability of public facilities, infrastructure, and structures to seismic risk	Combined and revised into ma-EQ-WTS-01, ma-EQ-WTS-02
22	Develop an inventory of private structures and identify the types that are at greatest seismic risk	Combined and revised into ma-EQ-WTS-01, ma-EQ-WTS-02
23	Evaluate current policies that relate to stormwater and flood control to accommodate and mitigate expected future impacts to property, infrastructure, and community well-being	Combined and revised into ma-FL-WTS-02
24	Develop and implement a drought plan that includes monitoring groundwater levels and supply and increasing aquifer storage and recovery	Combined and revised into ma-DR-WTS-01
25	Assess current capacity of food banks and develop strategies to increase their functionality during disasters	Combined and revised into ma-FL-WTS-02
26	Trains and prepares City employees with the skills needed to properly manage any natural disaster or major critical incident	Cancelled, ongoing baseline mitigation activity

Section 4. Soquel Creek Water District

Special District Annex

SANTA CRUZ COUNTY
MULTI-JURISDICTIONAL
HAZARD MITIGATION PLAN

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Santa Cruz County

2025 Multi-Jurisdiction Hazard Mitigation Plan Update

Volume 2, Section 4: Soquel Creek Water District (SCW)

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Adoption Resolution

To comply with the Federal Disaster Mitigation Act of 2000 (DMA 2000), the Soquel Creek Water District has officially adopted this 2025 Santa Cruz County Multi-Jurisdictional Hazard Mitigation Plan, including Volume 1 in its entirety as well as this Volume 2 Special District annex. The adoption of the MJHMP recognizes the district's commitment to reducing the impacts of natural hazards within its jurisdiction and across Santa Cruz County.

A copy of the district's adoption record is provided on the following pages. Adoption records for all jurisdictions are summarized in Volume 1, Table ES-1.

ADOPTION RECORD TO BE INSERTED UPON COMPLETION.

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Section 4. Soquel Creek Water District

4.1 Scope & Purpose

This annex details the elements specific to the Soquel Creek Water District (SqCWD) in the 2025 Santa Cruz County Multi-Jurisdictional Hazard Mitigation Plan (MJHMP). This annex is not intended to be a standalone document but appends to and supplements the information contained in the umbrella plan document (Volume 1). As such, all sections of the umbrella plan, including the planning process and other procedural requirements, apply to and were met by SqCWD. This annex provides additional information specific to SqCWD, with a focus on providing additional details on the planning process, risk assessment, and mitigation strategy for this jurisdiction.

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4.2 Jurisdictional Setting

SqCWD is a public water agency established in 1961 under California law. It provides potable water service across a 17-square-mile area along the central coast of Santa Cruz County, California. The district's service area includes the City of Capitola and several unincorporated communities including Aptos, La Selva Beach, Rio Del Mar, Seascape, Soquel, and Opal Cliff. The district covers approximately seven miles of coastline and extends inland into the foothills of the Santa Cruz Mountains. SqCWD serves a population of approximately 30,000 through over 16,000 service connections and maintains a complex water system that includes more than 160 miles of distribution pipeline, 18 storage tanks, 15 active production wells, and over 80 groundwater monitoring wells.

The district relies entirely on groundwater extracted from the Santa Cruz Mid-County Groundwater Basin and CA Basin 3-001 and produces an annual 3,348 acre-feet of water, which the California Department of Water Resources has designated as a critically overdrafted groundwater basin. Water use includes about 80% residential (single-family and multi-family), and nearly 20% non-residential (commercial, industrial, schools, governmental, landscape irrigation). There are currently no agricultural accounts.

SqCWD has developed a wide array of plans and strategies to address natural hazards and risks. These include its 2020 Urban Water Management Plan, Water Shortage Contingency Plan, 2021 Emergency Response Plan, 2021 Risk and Resilience Assessment, and an annually updated Capital Improvement Program (CIP). These plans incorporate hazard-specific mitigation strategies for drought, earthquake, coastal hazards, and fire-related disruptions. The district's flagship Pure Water Soquel project is a groundwater replenishment and advanced

treatment initiative that aims to protect the basin from seawater intrusion by injecting highly purified water into the aquifer. In addition, the district collaborates with the City of Santa Cruz on surface water transfers and is engaged in ongoing groundwater management planning through its participation in the Mid-County Groundwater Sustainability Agency (GSA).

The district has adopted a FEMA-compliant Emergency Response Plan and participates in the National Incident Management System (NIMS) and Standardized Emergency Management System (SEMS). SqCWD's public outreach and conservation programs are well-established, and its financial structure, which is supported by Proposition 218-compliant rate studies, ensures the sustainability of its water supply and hazard mitigation investments.

- **Year of Incorporation:** 1961
- **2023 Population Served:** 30,061 (CAS 5-Year, 2018-2023)
- **Coverage Area:** approximately seven miles long along the coast and extends inland one to three miles, covering approximately 17 square miles

4.2.1 Geography & Climate

SqCWD is located along California's central coast in Santa Cruz County. The district's service area spans approximately 17 square miles, extending about seven miles along the Pacific Ocean coastline and between one and three miles inland into the foothills of the Santa Cruz Mountains. Figure 4-1 identifies the district boundary within Santa Cruz County. This area includes diverse topography, ranging from low-lying coastal neighborhoods such as Aptos, Rio Del Mar, and La Selva Beach to elevated inland communities such as Soquel and portions of Seascape and Aptos Hills. Much of the service area is characterized by blufftop terrain, coastal terraces, wooded hillsides, and steep slopes, some of which are subject to landslides and erosion. Several key infrastructure assets, such as wells, pipelines, and tanks, are located in or near areas mapped for liquefaction, slope instability, or tsunami inundation.

The climate of the district's service area is classified as Mediterranean coastal, with cool, wet winters and dry, warm summers. Precipitation is highly seasonal, with the majority falling between November and April. Average annual rainfall varies between 25 to 35 inches (Figure 4-2), depending on elevation and proximity to the coast. Coastal fog and marine layer effects are common in summer, moderating temperatures along the shoreline. Average high temperatures in the summer range from the mid-60s to low 70s °F, while winter highs are generally in the mid-50s °F. Inland areas experience slightly warmer summer temperatures and cooler winter nights compared to the coast. (2020 Urban Water Management Plan , 2020)

Climate variability has increased in recent years, with extreme weather events such as atmospheric river storms, heatwaves, and prolonged drought that pose growing risks to water supply reliability, infrastructure, and public safety. The Santa Cruz Mid-County Groundwater Basin, the sole source of supply for the district, is especially sensitive to precipitation deficits and overdraft, with ongoing seawater intrusion near the coast due to historic overpumping.

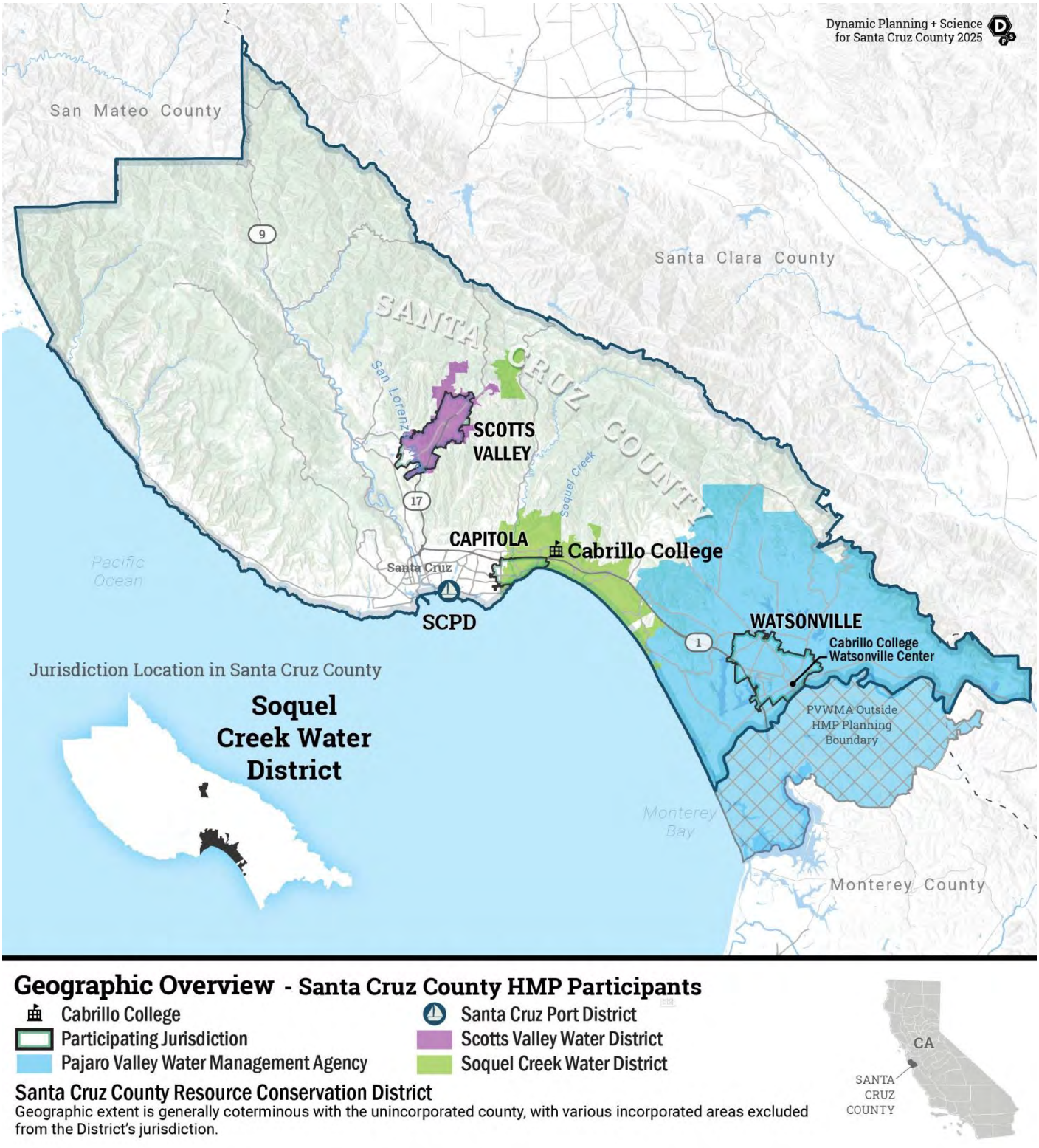


Figure 4-1: SqCWD Sphere of Influence

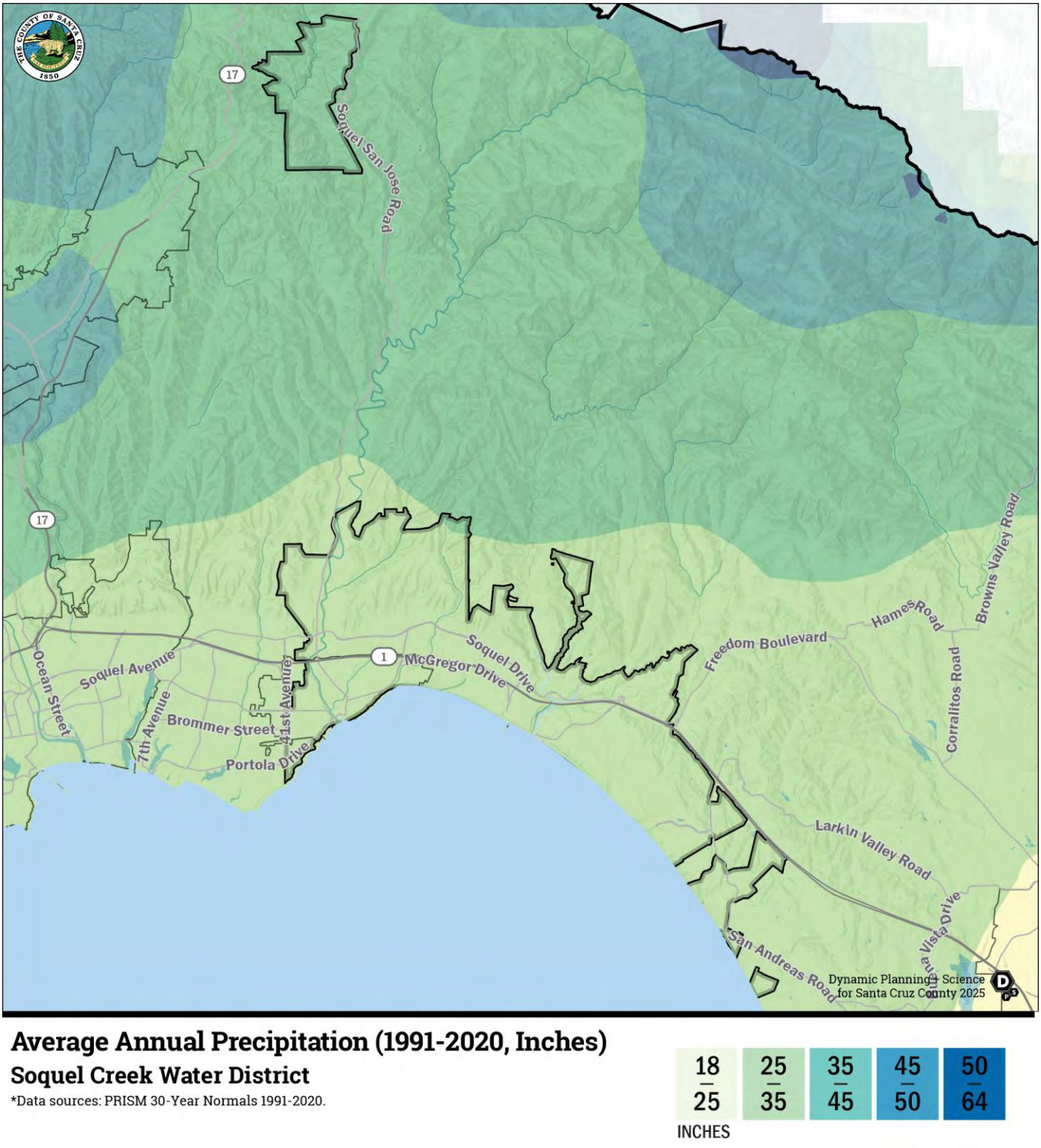


Figure 4-2 SqCWD Average Annual Precipitation Map

4.2.2 Historic Overview

SqCWD traces back to the early 1960s, a time of rapid growth and environmental challenges along the central coast of Santa Cruz County. Amid recurring flood damage and increasing water demand, residents of Soquel and nearby communities recognized the need for a public agency to manage both flood control and water supply. In 1961, a local ballot measure led to the formation of the Soquel Creek County Water District under California's County Water District Law (Division XII, California Water Code, Section 30000 et seq.), establishing a five-member elected Board of Directors to guide the new agency's mission.

The district was initially tasked with addressing chronic flooding in areas like downtown Soquel, where overflowing creeks routinely damaged roads, homes, and farmland. Winter storms often transformed local waterways into dangerous torrents filled with debris, and although various flood control efforts had been attempted, they lacked coordination and long-term vision. At the same time, communities including Soquel, Aptos, Capitola, Rio Del Mar, and La Selva Beach were experiencing rapid population growth, which placed new demands on the region's water supply. Prior to the District's formation, residents largely relied on unregulated private wells that tapped the overused coastal aquifer.

The district's first major milestone came in 1964 with the acquisition of the Monterey Bay Water Company, a private utility that provided service to many customers in the region. This transition significantly expanded the district's operational footprint and marked a pivotal shift from a flood-control agency to a full-fledged municipal water provider. Flood control responsibilities were formally discontinued, and the district shifted focus entirely to water supply and resource management.

Throughout the 1960s and 1970s, SqCWD invested in infrastructure development and groundwater protection. The district constructed new wells, expanded water main capacity, and implemented early groundwater monitoring efforts. The devastating drought of 1976–77 and a 1977 U.S. Geological Survey report warning of seawater intrusion into the coastal aquifer highlighted the region's vulnerability. These events prompted the district to declare a Water Emergency in 1979 and accelerate conservation efforts. During this period, the district also initiated a coastal monitoring network to measure groundwater levels, salinity, and water quality, establishing a foundation for its future sustainability programs.

The district continued to modernize throughout the 1980s and 1990s, eventually serving more than 30,000 residents across four primary service zones with a centralized team of engineers, operators, and policy staff. The district remains a not-for-profit special district, governed by its Board of Directors, and continues to engage the public through transparent governance, conservation initiatives, and long-term water resource planning.

Today, SqCWD provides drinking water exclusively from the Santa Cruz Mid-County Groundwater Basin, which has been identified as critically overdrafted by the California Department of Water Resources. With no imported or surface water sources, the district is wholly dependent on local groundwater, making the management of this resource a cornerstone of its operations.

4.2.3 Demographics & Vulnerable Populations

This section describes the demographic characteristics of SqCWD to guide hazard mitigation planning efforts. Natural disasters affect communities both physically and socially, with demographic composition playing a central role in determining how impacts are distributed, particularly among vulnerable groups facing greater challenges in preparedness, response, and recovery. Understanding the area's social and economic landscape also helps assess potential social costs from infrastructure damage, including housing, industry, public facilities, essential services, and transportation.

Exploring local demographic data may help to identify groups and geographic areas with specific vulnerability to hazard events. In the context of all-hazards preparedness and response planning, at-risk individuals (often used interchangeably with "vulnerable populations") are defined federally as "children, pregnant women, senior citizens, and other individuals who have access or functional needs in the event of a public health emergency." (42 U.S.C. § 2802(b)(4)(B) (2019)) These populations may include, but are not limited to, individuals who are economically disadvantaged, living with disabilities, dependent on caregivers, from historically marginalized communities, have limited English proficiency or are non-English speaking, lack access to transportation, are experiencing homelessness, or have chronic medical conditions.

Certain populations face greater risk following a natural hazard event due to age, economic mobility, physical disability, geographic location, or a combination of factors. Vulnerability in the face of a hazard event is not a fixed characteristic; the same individual may be at risk for some hazards but not at risk for others. Planning for vulnerable populations in the context of hazard mitigation can help communities to prioritize limited resources where they will be the most effective. Refer to Volume 1, Section 1.4.3, for a more in-depth discussion of planning for vulnerable populations, at-risk individuals with access and functional needs, and environmental justice.

4.2.3.1 Income & Housing

Low-income households and communities face disproportionate financial burden from costs associated with disaster preparedness, response, and recovery. Disasters create unexpected expenses which may serve as "tipping points" for families and individuals living on the edge of poverty or homelessness. Low-income residents and renters are also less likely to purchase insurance, meaning that those with the most to lose during an event are also the least prepared to deal with potential losses. Renters are also more vulnerable to natural hazards because the decision to make major structural or property improvements typically lies with the property owner. Major hazard events in recent history, such as the CZU Lightning Complex Fire and the 2022 tsunami, emphasize the need for inclusive planning that addresses systemic vulnerabilities, improves access to recovery resources, and fosters community resilience to reduce future disparities during hazard events.

According to ACS data, much of the SqCWD service area has a median household income above $119,300, especially in neighborhoods like Seascape, La Selva Beach, and portions of Soquel and Aptos. These areas

are shaded dark green, indicating relatively affluent residential zones. However, certain census tracts closer to Capitola and the urban corridor along Highway 1 show lighter green, reflecting median household incomes below $100,000 in some cases. Figure 4-3 shows the degree of economic disparity within the district's boundaries

Figure 4-4 shows concentrations of poverty greater than 24% (deep red) in the western part of Capitola and areas bordering Live Oak, which fall within or adjacent to SqCWD's boundaries. Other parts of the district, such as inland Aptos and La Selva Beach, show significantly lower poverty rates (pale beige), with fewer than 1% of residents below the poverty line. These disparities suggest that while the district serves many affluent communities, it also includes neighborhoods with vulnerable populations who may be disproportionately affected by water costs, hazard exposure, and service disruptions.

Figure 4-5 displays the percentage of owner-occupied housing units across the SqCWD service area. Darker purple shades indicate census blocks with high rates of homeownership (greater than 88%), while lighter areas reflect lower homeownership, and consequently, a higher prevalence of renters.

Within the SqCWD boundaries, particularly in coastal and urbanized areas such as Capitola, Aptos, and parts of Soquel, many census tracts exhibit significantly lower homeownership rates, often below 41%. This suggests a high concentration of renters in these more densely populated neighborhoods. These areas are also more likely to be impacted by housing affordability issues and displacement pressures, given their proximity to coastal amenities and tourism.

In contrast, more inland portions of the service area, such as those east of Highway 1 and closer to the Soquel Hills, show a much higher proportion of owner-occupied housing units. These communities may face different vulnerabilities, such as wildfire exposure or limited access to public transit, but are generally characterized by higher household income levels and more stable housing tenure.

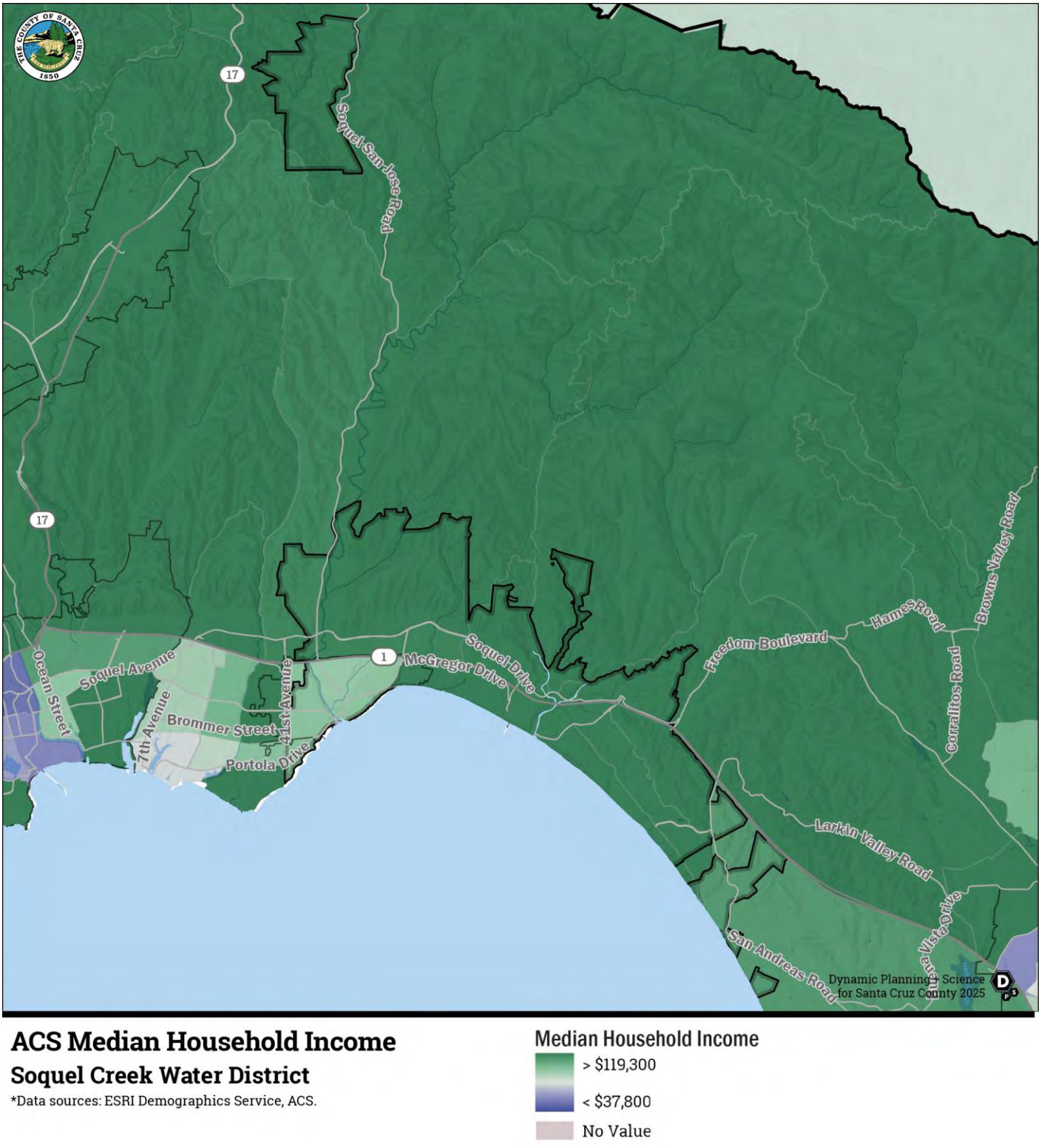


Figure 4-3: SqCWD Median Household Income Map

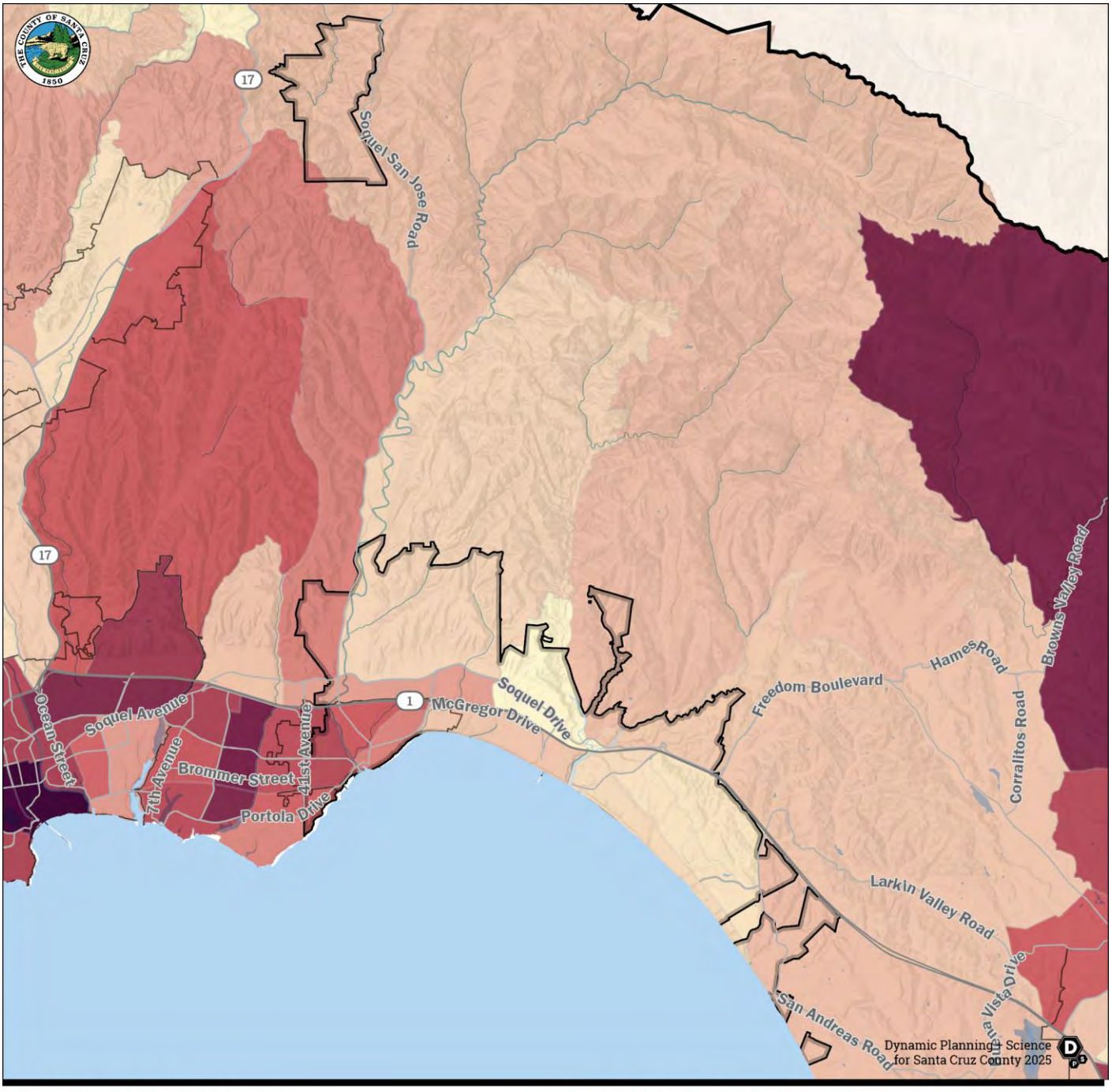


Figure 4-4: SqCWD Poverty Status Map

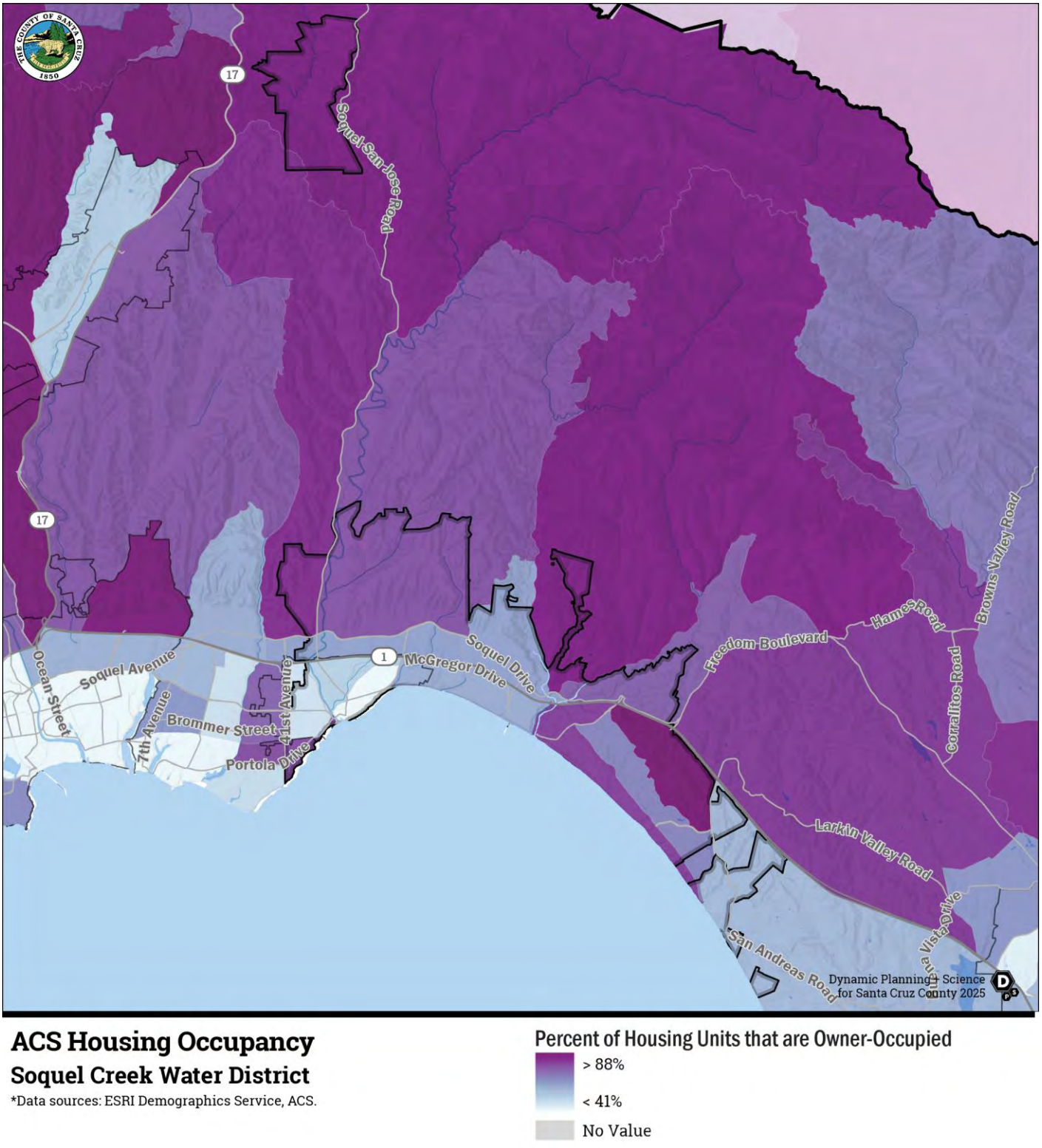


Figure 4-5: SqCWD Owner-Occupied Housing Units Map

4.2.3.2 Dependent & Disabled Populations

Age and disability status play significant roles in vulnerability to natural hazards, as seniors, children, and many who experience disabilities are dependent populations who rely on caregiver networks for support and protection. Seniors and disabled persons may have mobility challenges and increased health concerns, necessitating additional assistance during evacuations and recovery. Similarly, children have limited ability to protect themselves and depend on caregivers to ensure their safety and well-being during emergencies. When combined with factors such as poverty, these vulnerabilities can be further compounded, highlighting the importance of targeted interventions to address the unique needs of dependent and disabled populations.

Figure 4-6 shows a large portion of the SqCWD service area, especially the inland and northeastern census tracts, has over 48% of the population in dependent age categories. These age groups include children under 18 and seniors over 65, both of whom typically require greater assistance during emergencies. The prevalence of these populations underscores the need for targeted planning strategies such as accessible evacuation protocols, emergency shelters with pediatric and elder care capacity, and educational outreach tailored to guardians and caregivers. This demographic distribution suggests that in parts of Aptos, Soquel, and surrounding areas, nearly 1 in 2 residents may need additional support during a disaster, amplifying the demand on emergency response and community resilience programs.

Figure 4-7 further highlights vulnerabilities among residents over 65 years old living with disabilities. Within central Soquel and parts of Live Oak and Capitola, the percentage of elderly individuals with disabilities exceeds 47%, placing them among the most at-risk populations for harm during hazards. These disabilities may limit mobility, sensory perception, or cognitive functioning, which can delay evacuation and impede access to emergency services, particularly in events like wildfires requiring rapid evacuation, earthquakes that damage roads and utilities, and extended power outages that impact medical equipment use. Given this context, the SqCWD and regional emergency planners should prioritize investment in accessible hazard communication, transportation resources for mobility-limited residents, and coordination with home health and caregiver networks to support continuity of care during hazard events.

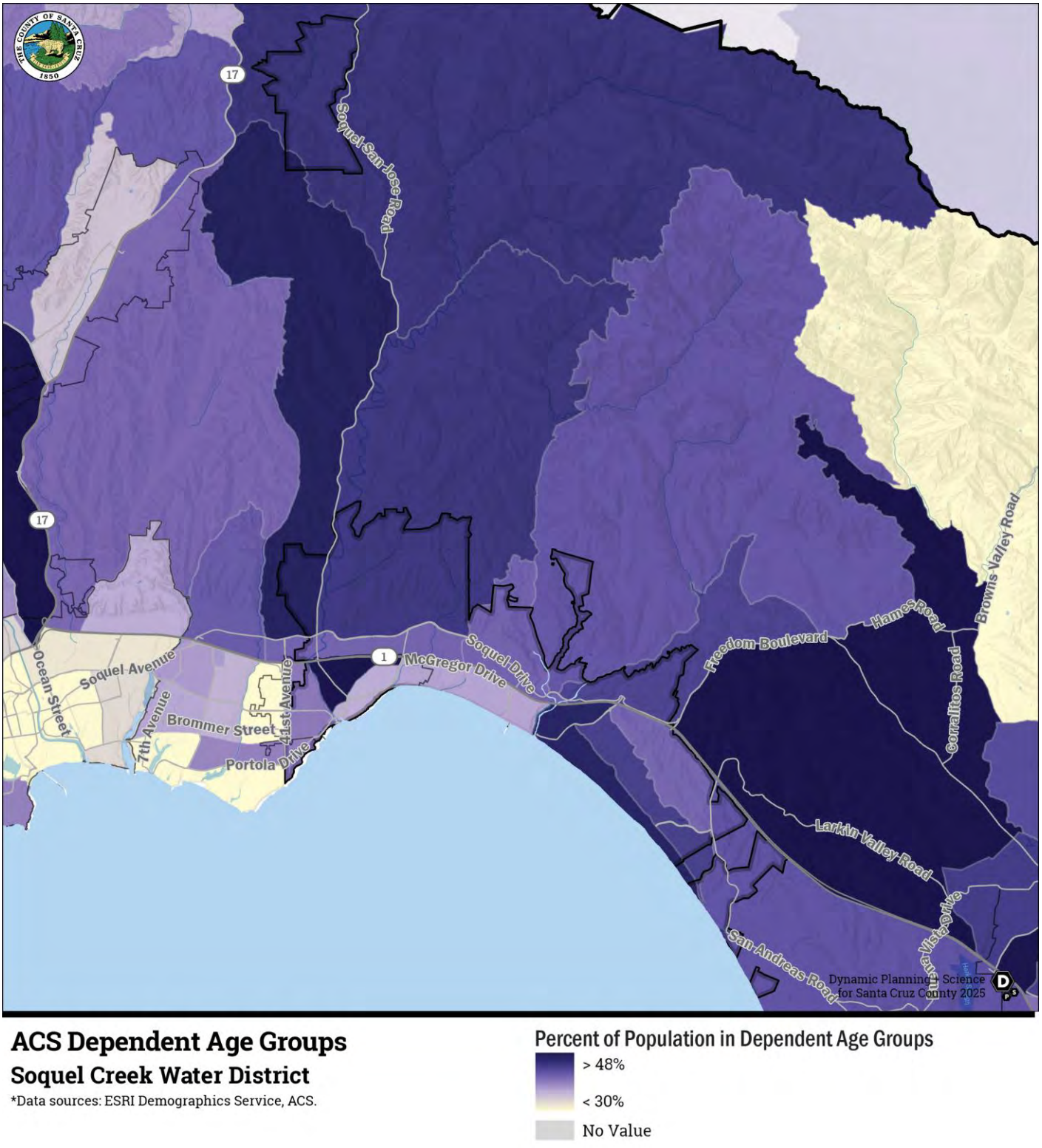


Figure 4-6: SqCWD Economically Dependent Age Groups Map

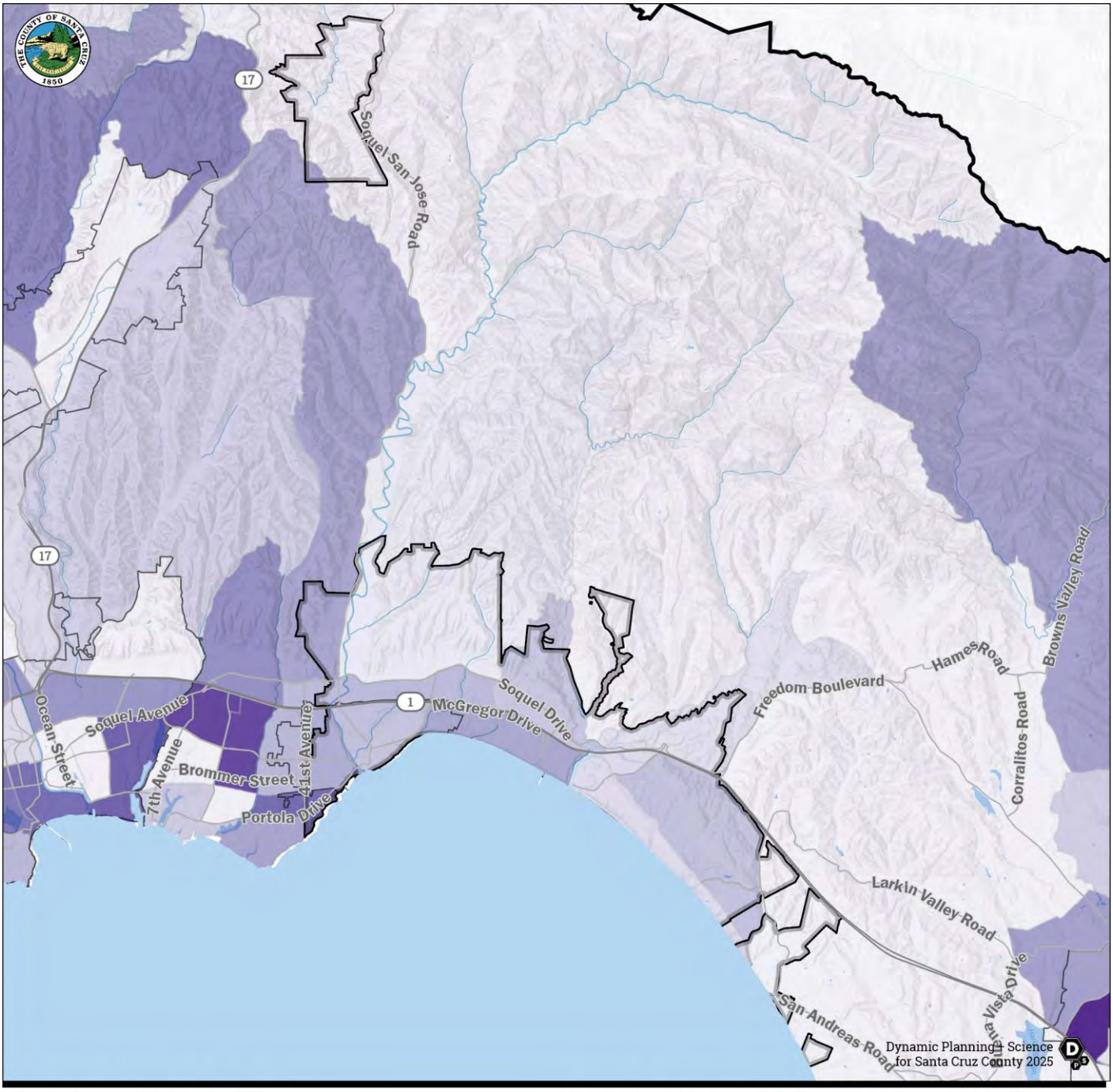


Figure 4-7: SqCWD Disabled Elderly Map

4.2.3.3 Race, Ethnicity & Language

Natural disasters compound racial disparities; non-white individuals and communities receive less recovery aid from FEMA than their white counterparts, even where the amount of damage is the same. (Howell & Elliott, 2019) (National Advisory Council, 2020) The recent COVID-19 pandemic was a testament to racial disparities in disaster outcomes, with non-white persons facing morbidity rates from COVID-19 infections anywhere from 70% to 350% higher than white, non-Hispanic persons. (CDC, 2020)

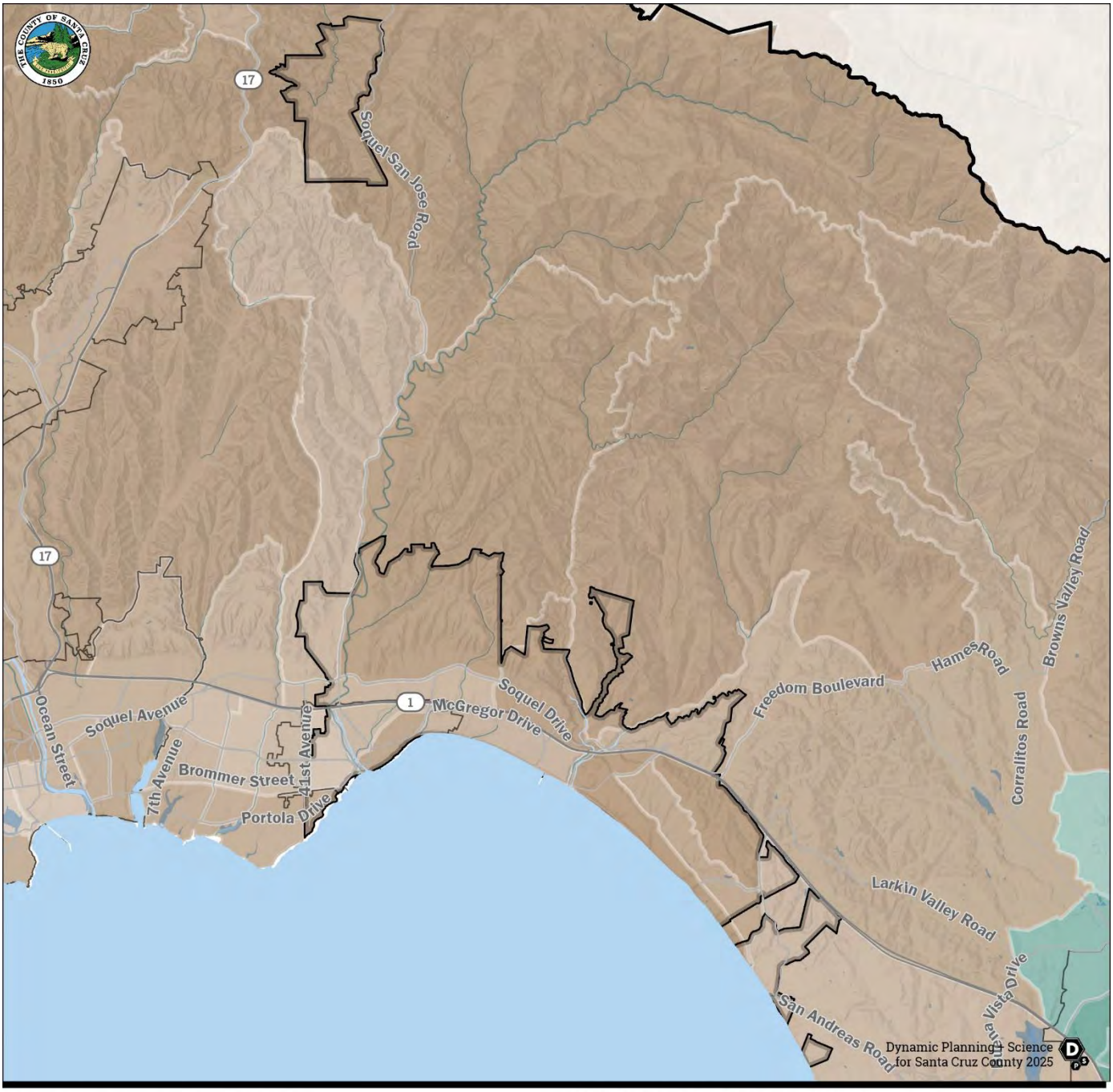
These disparities are evidence of the complicated relationship between disaster recovery and overlapping social vulnerabilities including race, income, language, and health. Black and Latinx residents are more likely to be low income and renters, conditions which create barriers to navigating FEMA's Individual Assistance programs. Communities with more non-white residents may have lower tax revenue and property values, which means less investment in mitigation and rebuilding efforts before and after an emergency.

It should be noted that rural ACS estimates are often less accurate than those for urban areas because the geographic representation, broken down by smaller Census Block Groups or Tracts, becomes insignificant and the margin of error increases within these smaller sample pools. This is particularly true when referencing minority demographic groups. As such, race and ethnicity are discussed as part of a more comprehensive approach using the Center for Disease Control's (CDC) Social Vulnerability Index (SVI) in the following section. In addition, some minority households may avoid participating in Census surveys due to mistrust of government agencies or concerns about immigration status. This can lead to underreporting, further obscuring the true extent of racial, ethnic, language-related vulnerabilities.

The racial and ethnic composition of the SqCWD service area is predominantly non-Hispanic White, as shown by the brown shading throughout the district on Figure 4-8. According to ACS data almost all census tracts within the SqCWD boundary reflect White alone, not Hispanic or Latino, as the predominant racial group. Despite this majority, pockets of ethnic diversity are likely present within smaller neighborhoods or in renter-heavy and coastal areas. These subtler trends might be masked by the predominance metric used in the map.

Figure 4-9 reveals significant linguistic diversity in the SqCWD service area. Some areas near Capitola, Aptos, and southeastern coastal tracts, show that more than 33% of the population aged 5+ speak Spanish at home. These are areas with darker blue shading on the map. Other parts of the district, especially inland, show lower Spanish-speaking populations (<1%), shown in light blue.

This linguistic pattern indicates a need for multilingual hazard communication, particularly in Spanish. It also reinforces the importance of tailoring emergency alerts, preparedness materials, and community engagement to reach Limited English Proficiency (LEP) populations, many of whom may be renters or frontline service workers in high-risk areas.



ACS Race and Ethnicity
Soquel Creek Water District
*Data sources: ESRI Demographics Service, ACS.

ACS Race and Ethnicity Predominance

- White alone, not Hispanic or Latino
- Hispanic or Latino
- Black or African American alone, not Hispanic or Latino
- Asian alone, not Hispanic or Latino
- American Indian and Alaska Native alone, not Hispanic or Latino
- Two or more races, not Hispanic or Latino
- Native Hawaiian and other Pacific Islander alone, not Hispanic or Latino
- Some other race alone, not Hispanic or Latino

Figure 4-8: SqCWD Race and Ethnicity Predominance Map

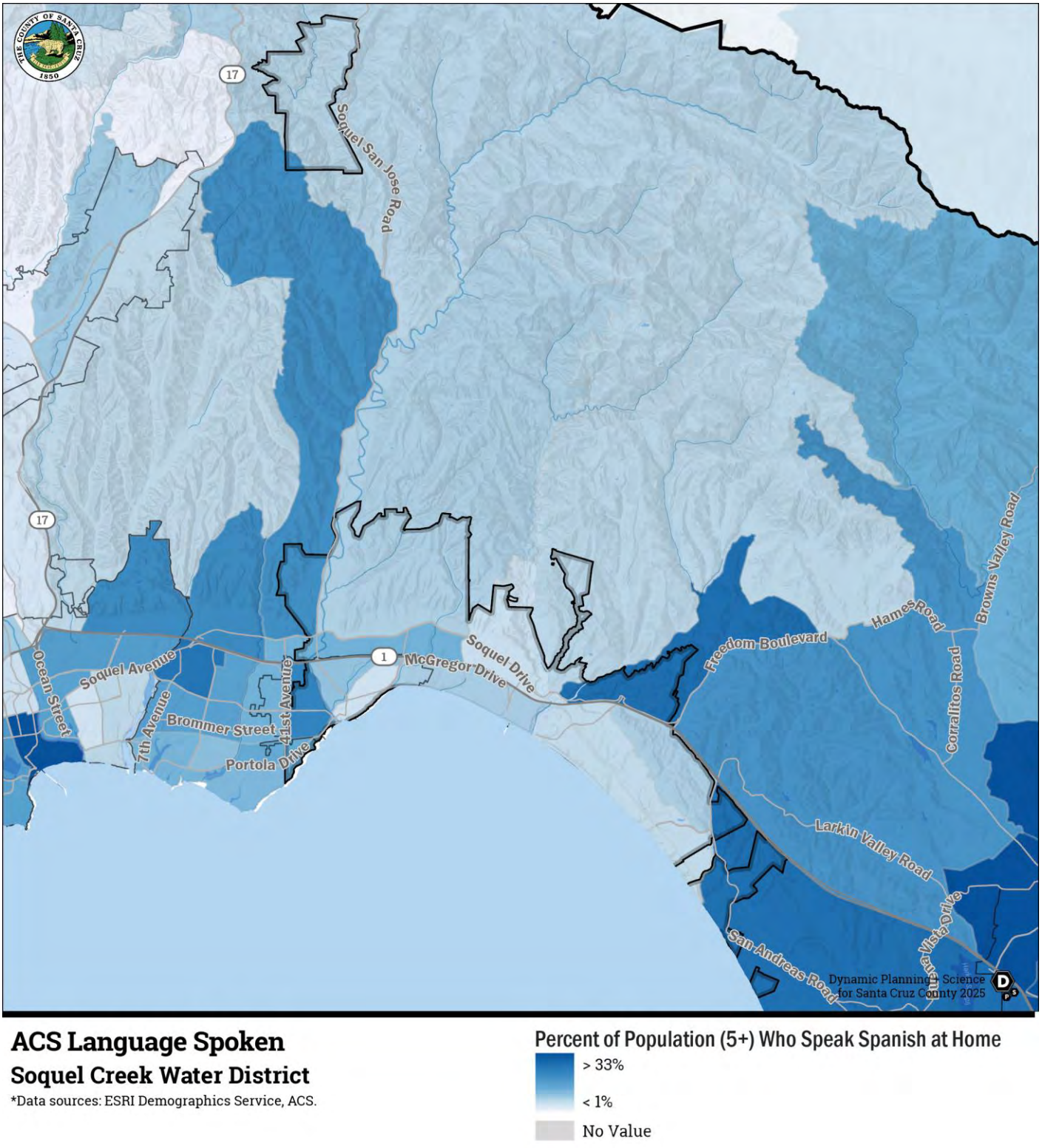


Figure 4-9: SqCWD Spanish-Speaking Population Map

4.2.3.4 Social Vulnerability Index (SVI)

The Centers for Disease Control and Prevention (CDC) Social Vulnerability Index (SVI) for SqCWD reveals important spatial and demographic patterns that have direct implications for equitable hazard mitigation planning. As discussed in detail in Volume 1, Section 1.4.3.6, the SVI is a composite measure developed by the CDC to identify communities that are more likely to require support before, during, and after a disaster. It incorporates a range of factors across four key dimensions: socioeconomic status, household composition and disability, minority status and language, and housing type and transportation access. The resulting index score ranges from 0 (lowest vulnerability) to 1 (highest vulnerability).

Figure 4-10 shows that within the SqCWD service area, vulnerability is unevenly distributed. The highest levels of social vulnerability are concentrated in the southern and eastern portions of the district. These areas, which include neighborhoods in and around Watsonville and parts of eastern Aptos, reflect overlapping challenges such as limited English proficiency, lower educational attainment, reduced household income, and higher population densities. Communities in these areas are more likely to face barriers in emergency preparedness and response, such as difficulty accessing timely hazard warnings, limited transportation options during evacuations, and slower recovery times following a disaster. This is consistent with other indicators of vulnerability, such as high percentages of Spanish-speaking households, residents with less than a high school education, and households without internet access.

In contrast, the inland and northern portions of the district, particularly in the more forested or mountainous areas, show considerably lower SVI scores. These communities may benefit from higher household incomes, higher education levels, and greater access to resources such as reliable internet, transportation, and healthcare. However, these lower vulnerability scores do not negate the importance of hazard mitigation in those areas, especially given their potential exposure to wildfire, slope failure, and drought-related impacts.

Mid-range SVI scores are common along the central coastal corridor of the district, particularly around Soquel and Capitola. These areas demonstrate a mix of vulnerability factors and may benefit from targeted interventions that address specific gaps in emergency communication, outreach, or service accessibility.

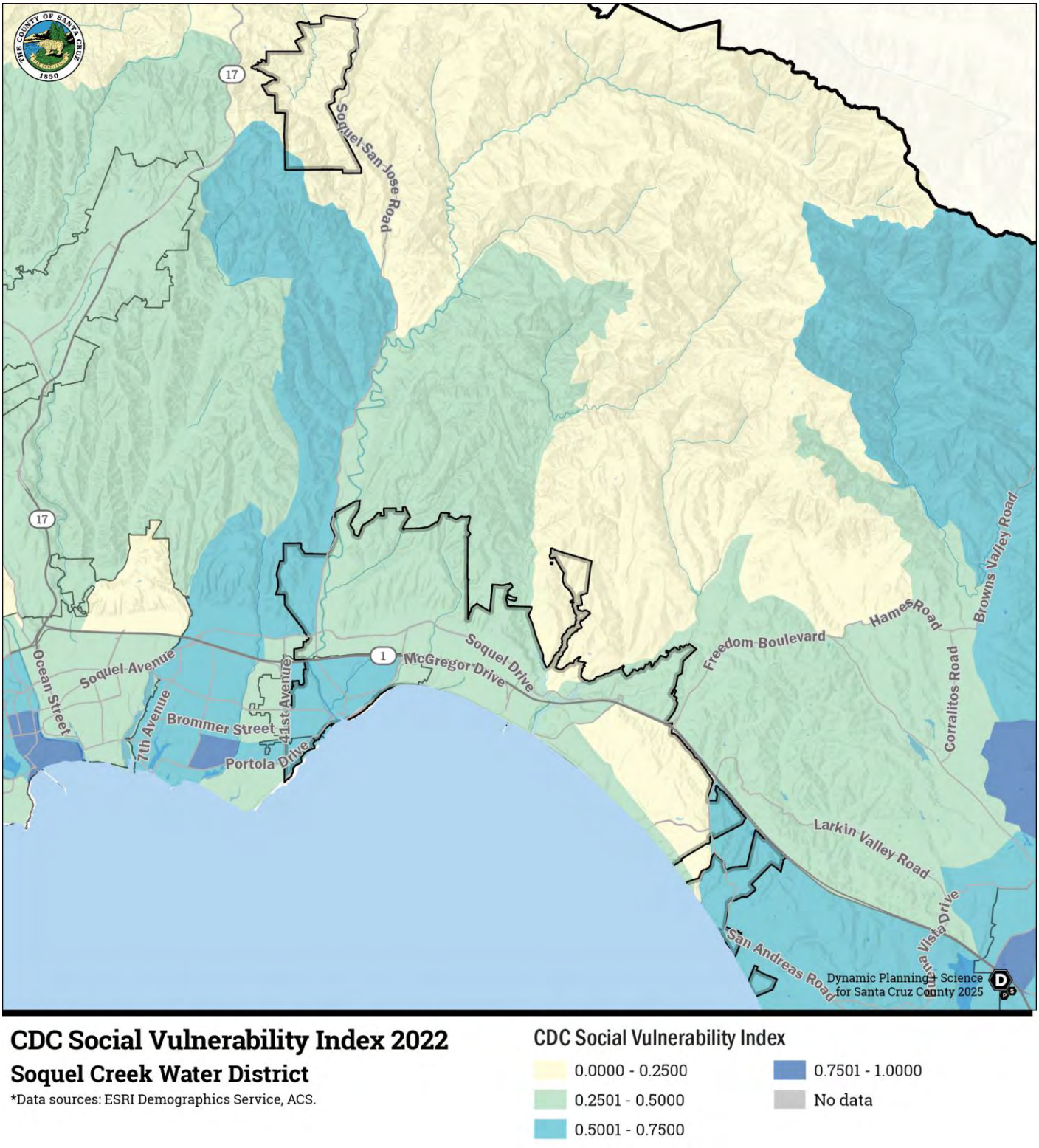


Figure 4-10: SqCWD Social Vulnerability Index Map

4.2.4 Economy

The economy of the SqCWD is closely tied to the broader economic profile of central Santa Cruz County, particularly the coastal communities of Capitola, Soquel, Aptos, and parts of unincorporated areas that fall within the district's service boundaries. While SqCWD is not an economic entity in itself, its service area plays a vital role in supporting a range of economic activities that include residential, commercial, institutional, and recreational, that depend on reliable water infrastructure.

4.2.5 Growth Trends & Future Development

SqCWD serves a largely built-out area along Monterey Bay in Santa Cruz County, where substantial urban expansion is limited by geographic constraints and urban growth boundaries. Although large-scale development is not expected, incremental residential infill and accessory dwelling unit (ADU) construction remain ongoing. According to the 2020 Urban Water Management Plan, SqCWD anticipates modest population growth of approximately 2% to 4% over a 20-year planning horizon. This growth will primarily result from small-scale residential intensification rather than expansion into undeveloped land.

Development patterns within the district's boundaries are heavily influenced by water supply availability and sustainability mandates. Because the district relies solely on groundwater from the Santa Cruz Mid-County Basin, water supply availability is a limiting factor on new development. The 2023 Well Master Plan and the Pure Water Soquel advanced water purification project are designed to support existing and future demands while protecting against further degradation of the groundwater supply.

While major annexation or growth is unlikely, climate change resilience and hazard mitigation planning are increasingly central to SqCWD's infrastructure and land use coordination. New infrastructure, including pipelines, production wells, and recharge basins associated with Pure Water Soquel, have been planned with seismic resilience and coastal hazards in mind, ensuring long-term viability of service to a growing and increasingly vulnerable population.

4.3 Planning Process

SqCWD followed the planning process detailed in Volume 1, Section 2, including participating in the county-wide Hazard Mitigation Planning Team (HMPT) and formulating their own internal planning group to support the broader planning process.

The district's representatives in the Steering Group led stakeholder and public engagement efforts alongside the Consultant Team, with assistance from the HMPT and their internal planning team. This engagement process is described in Volume 1. Specifically, for Soquel Creek Water District, this included postings to the district website and social media as well as outreach events, as documented in Appendix B. Examples of Key Stakeholders engaged by Santa Cruz County on behalf of the district with relevance to the development of SqCWD's mitigation strategy include the USDA and other federal agencies; CalOES and other state agencies; the City of Santa Cruz and other neighboring jurisdictions; local Fire Safe Councils; community-

based organizations like Watsonville Wetlands Watch; utility providers like AT&T; UC Santa Cruz and other academia; and local businesses.

All Key Stakeholders that were invited to participate in the planning process are listed in Volume 1, Section 2, and the input received from stakeholders was integrated into the district's annex, as described in Volume 1 Table 2-9. The district's internal planning participants, their positions, and how they participated in the planning process are shown in Table 4-1.

Table 4-1: SqCWD Participants

Planning Group Members	Title	Description of Involvement
Skyler Murphy	Water Resources Planner	Lead Point of Contact; attended Kickoff Meeting, HMPT Meetings #1, #2, and #3 and Breakouts #1 and #2
Taj Dufour	Engineering Manager	Alternate Point of Contact; attended Breakouts #1 and #2
Connor Pollard	Associate Engineer	Participating Stakeholder and Breakouts #1 and #2
Melanie Mow Shumacher	General Manager	Participating Stakeholder; attended Breakouts #1 and #2
Nicholas Emmert	Operations & Maintenance Manager	Participating Stakeholder and Breakouts #1 and #2
Shelley Flock	Water Resources Manager	Participating Stakeholder; attended Kickoff Meeting, HMPT Meetings #1, and Breakouts #1 and #2

SqCWD participated in a comprehensive hazard mitigation planning process as part of the 2025 Santa Cruz County MJHMP update. This included a series of breakout meetings, listed in Table 4-2 that engaged the district's planning team, which included key district personnel and stakeholders in evaluating hazards, identifying local vulnerabilities, and prioritizing mitigation strategies

The kickoff meeting held on January 27, 2025, launched the planning process by introducing the project scope and clarifying the roles of the Steering Group and participating jurisdictional teams. In the months that followed, a series of structured meetings addressed foundational elements of the plan, including a review of key changes since previous planning efforts, an overview of hazard mitigation principles, and exercises to prioritize local hazards. On July 30, 2025, participants engaged in a hexagon mapping activity designed to visually identify mitigation actions that could benefit from or require inter-jurisdictional coordination. These collaborative efforts helped shape a refined set of mitigation alternatives, establish shared planning goals, and align local strategies with FEMA's Hazard Mitigation Assistance (HMA) funding framework.

Throughout the series of breakout meetings, SqCWD engaged in a structured and collaborative planning process focused on assessing hazard risks, identifying vulnerabilities, and developing targeted mitigation strategies. The meetings began with recaps of the county-wide HMPT meetings to ensure alignment of goals and progress.

During the April 10, 2025, breakout out meeting, discussions concentrated on community engagement outcomes, initial risk assessments, and the integration of demographic data to better understand vulnerable populations. Jurisdictional teams reviewed their specific hazard exposures using the Risk Assessment Mapping Platform (RAMP) and participated in prioritization exercises to identify their top hazards.

The July 22, 2025, breakout meeting shifted toward reviewing local capabilities and defining specific areas of concern, which informed the drafting of problem statements. Teams worked collaboratively to refine mitigation alternatives, align actions with FEMA guidelines, and develop a shortlist of priority mitigation actions and inter-jurisdictional collaboration opportunities.

The meetings also included consensus-building activities around hazard rankings, capabilities, and planned actions, while providing regular updates on the overall project schedule.

Table 4-2: Jurisdictional Breakout Meeting Records

Meeting & Date	Agenda / Topics	Goals / Key Inputs
County-Wide Steering Group and HMPT Meetings #1 & #2 January – March 2025		
SqCWD Planning Team Breakout Meeting #1 April 10, 2025	▪ County-wide HMPT meetings #1 and #2 recaps ▪ Community engagement progress and results ▪ Risk assessment and community vulnerability ▪ Demographics and vulnerable populations ▪ Overview of jurisdiction-specific hazard risks and exposure ▪ Introduction to Risk Assessment Mapping Platform (RAMP) ▪ Jurisdiction-specific hazard risk ranking exercise ▪ Project schedule updates and next steps	▪ Consensus on jurisdiction-specific priority hazards ▪ Identify capabilities and potential mitigation actions ▪ Community engagement volunteers
County-Wide HMPT Meeting #3 June 2025		
SqCWD Planning Team Breakout Meeting #2 July 22, 2025	▪ Breakout Meeting #1 and HMPT #3 recaps ▪ Review capabilities assessment ▪ Review areas of concern and define problem statements ▪ Principles of effective mitigation strategies and actions, and mitigation alternatives ▪ Refine and align jurisdiction-specific mitigation actions exercise ▪ Project schedule updates and next steps	▪ Consensus on jurisdiction-specific capabilities ▪ Consensus on jurisdiction-specific areas of concern ▪ Consensus on priority mitigation actions and collaboration opportunities ▪ Community engagement volunteers

Meeting & Date	Agenda / Topics	Goals / Key Inputs
County-Wide HMPT Meeting #4 August 2025		

4.3.1 Public Input & Draft Review

As detailed in Volume 1, Section 2, the draft plan was available for public review and comment from September 29 to October 20, 2025. Public comments received during that time were similar to those gathered throughout the public engagement process, including the need for more equity in the distribution of mitigation activities and funding and the need for enhanced cooperation among jurisdictions, utility providers, and state agencies. These comments were incorporated into the city's mitigation strategy, as appropriate; although, most were already addressed by the Mitigation Action Plan which was based on previous public input.

Public and stakeholder input was gathered and incorporated throughout the plan development process, before the public review period, such as from the online public survey (see Volume 1, Section 2.1.2 and Appendix B, for details). During the review period, jurisdictional staff and stakeholders that participated in the plan development also reviewed the public draft and provided comments on minor corrections and revisions, which were addressed in the final plan.

4.4 What's New

This section offers an overview of the hazard mitigation planning efforts for the planning area and highlights the updates made in this 2025 MJHMP. This is the first time SqCWD has participated in the MJHMP process. While not included in the 2021 plan, the district has since strengthened its focus on resilience through key efforts. Through this MJHMP process, SqCWD has identified its highest-priority hazards, developed hazard-specific problem statements, and proposed actionable mitigation strategies.

4.4.1 Mitigation Activities

Although SqCWD has not previously participated in a formal hazard mitigation plan, it has proactively implemented a range of projects that align with FEMA's mitigation goals and reduce vulnerability to natural hazards. One of the most significant efforts is the Pure Water Soquel project. This project is an advanced water purification and groundwater recharge initiative designed to combat seawater intrusion and ensure long-term drought resilience. The district also developed a comprehensive Emergency Response Plan (2021) to enhance preparedness and guide coordination with local emergency services during disasters.

To strengthen operational continuity, SqCWD installed backup generators at critical wells and pump stations, reducing the risk of service interruptions during wildfire-related power shutoffs or storms. The district also completed a Well Master Plan (2023) to evaluate and upgrade aging well sites, with a focus on seismic safety and system redundancy. As part of its long-term drought strategy, the district adopted a

Water Shortage Contingency Plan that outlines phased demand reduction measures and public outreach protocols. These efforts are complemented by ongoing conservation programs, multilingual public education campaigns, and community engagement initiatives aimed at improving water security and emergency readiness.

As a first-time participant in a hazard mitigation plan, SqCWD had no formally adopted mitigation actions from a previous plan. However, the district continues to advance a range of ongoing and planned efforts that support hazard mitigation, climate resilience, and long-term water security. These are highlighted in this section, reflecting the district's continued dedication to long-term risk reduction.

4.4.2 Mitigation Successes

Although SqCWD is participating in a formal hazard mitigation plan for the first time, multiple important mitigation actions and other efforts to increase the district's resilience to hazards have been completed. Some of these endeavors in which the district collaborated with Santa Cruz County are described in Volume 1, Section 2. This section describes additional district-specific success stories, which highlight SqCWD's commitment to reducing risks and building a more resilient community in the face of natural hazards.

Pure Water Soquel Program

Pure Water Soquel (PWS) is SqCWD's flagship project to replenish the Mid-County Groundwater Basin and prevent seawater intrusion. The project, Figure 4-11, captures highly treated wastewater that would otherwise be discharged into the Monterey Bay National Marine Sanctuary and further purifies it through a proven three-step advanced treatment process: microfiltration, reverse osmosis, and ultraviolet disinfection with hydrogen peroxide. The resulting purified water is then injected into the groundwater basin, Soquel Creek's sole source of drinking water, to protect against saltwater contamination and provide a sustainable, drought-resilient water supply.



Figure 4-11: Pure Water Purification Center Construction

2021 Emergency Response Plan (ERP)

The ERP outlines roles, responsibilities, and response protocols for a wide range of hazard events, including wildfire, earthquakes, PSPS events, and drought. This FEMA-aligned ERP is integrated with the district's broader risk reduction strategy and is updated regularly based on operational changes and new threat assessment.

Well Master Plan

In 2023, the district finalized its Well Master Plan, a strategic assessment of aging groundwater infrastructure that identifies upgrades needed to improve reliability, seismic safety, and water quality

performance. This planning effort ensures that well field operations remain resilient under drought and earthquake conditions and that capital investments are guided by long-term risk profiles.

Water Shortage Contingency Plan (WSCP)

The WSCP defines clear response stages for varying drought conditions, including conservation targets, public outreach, and emergency supplies. This plan ensures consistent and equitable water use reductions during shortage events, while protecting vulnerable populations and critical customers

Grants & Funding

SqCWD has secured substantial federal and state funding to advance its resilience and water sustainability initiatives. These projects include a $21 million WaterSMART grant, a $50 million Groundwater Implementation Grant under California's Proposition 1, a $9 million prior grant from the Bureau of Reclamation, $2 million in state planning funds, and low-interest loans via the State's Seawater Intrusion Control Loan Program and the EPA Water Infrastructure Finance and Innovation Act (WIFIA) Program. (Soquel Creek Water District, 2025)

Public Outreach & Education Programs

These programs include multilingual conservation campaigns, school partnerships, and emergency alerts, which have increased community awareness of water-related hazards and built support for long-term mitigation efforts.



Figure 4-12: Santa Cruz Earth Day Festval-2024

4.5 Risk Assessment

This section focuses on profiling coastal and other hazards specific to SqCWD and assessing their vulnerability independent of the broader county-wide planning area, which has been evaluated in Section 3 of Volume 1. The hazard profiles in Volume 1 discuss overall impacts to the planning area and describe relevant plans, policies, and regulations; past events; location; frequency and probability of future occurrences; severity and extent; warning time; secondary hazards; and climate change impacts. For more information on risk assessment methodologies, see Volume 1, Appendix A.

This section includes a tailored vulnerability assessment, analyzing assets at risk such as population, property, and critical facilities and infrastructure unique to the district, and information on district-specific differences in hazard vulnerability across the planning area. It also identifies total district assets at risk, including people, property, and critical facilities and infrastructure within the district. In addition, this section presents growth and development trends for the communities served, offering insights into vulnerabilities and risks that represent the broader context of assets at risk.

4.5.1 Hazard Screening & Prioritization

Members of the planning team from each participating jurisdiction came together to collaboratively decide which county-wide hazards would be included in the MJHMP and which would be excluded. The hazard screening and prioritization took place early in the process and integrated historic data, local knowledge, and consensus opinions to create a risk assessment matrix for the county as well as for each participating jurisdiction. These matrices indicate the priority of hazards prior to further refinement. Details about this process, the results of the discussion, and in-depth profiles for county-wide hazards can be found in Volume 1, Sections 2 and 3.

The final results of the hazard screening and prioritization exercises are summarized in Table 4-4, including which specific subhazards were selected by SqCWD's planning team.

The SqCWD's internal planning group used the same hazard identification and prioritization process as the county-wide Planning Team. They reviewed previously prepared relevant documents and past events to determine the realm of natural hazards that have the potential to affect the district. Table 4-3 provides a crosswalk of hazards identified in select planning documents, including the district's 2021 Risk and Resilience Assessment, the 2021 Santa Cruz County LHMP, and the 2023 State of California HMP. The crosswalk was used to develop a preliminary hazards list, providing a framework for the group to evaluate which hazards were truly relevant to the district and which ones were not.

The internal planning group then ranked hazards based on their probability of affecting SqCWD and potential impacts on the communities it serves. Figure 4-13 displays the results of the hazard risk ranking exercise that was performed before further refinement. All hazards have been profiled in Volume 1 of this document. The purpose of this annex is to specifically address SqCWD's vulnerability to specifically identified hazards.

Table 4-3: SqCWD Document Review Crosswalk

Hazard	SqCWD Risk and Resilience Assessment 2021	Santa Cruz County LHMP 2021	2023 California SHMP
Agricultural Pests			■
Avalanche			■
Climate Change		■	■
Coastal		■	■
Dam Failure		■	■
Drought		■	■
Earthquake / Liquefaction	■	■	■
Extreme Cold		■	■
Extreme Heat		■	■
Extreme Weather / Storms	■	■	■
Flood	■	■	■
Geologic / Mass Movement	■	■	■
Human-Caused			■
Insects			■
Levee Failure			■
Pandemic Disease			■
Sea Level Rise			■
Soil			■
Subsidence			■
Tornado			■
Tsunami / Seiche Wave	■		■
Volcano			■
Wildfire	■	■	■

Risk Assessment Matrix Definitions

PROBABILITY RATING

The likelihood of a hazard event occurring within a time period?

PROBABILITY

Highly Likely	**Highly likely** - 100% annual probability. Or Likely to occur every year in your lifetime.
Likely	**Likely** - between 10 & 100% annual probability. Or will occur several times in your lifetime.
Possible	**Possible** - between 1 & 10% annual probability. Or Likely to occur some time in your lifetime.
Unlikely	**Unlikely** - less than 1% annual probability. Or unlikely but possible to occur in your lifetime.

IMPACT RATING

In terms of injuries, damage, or death, would you anticipate impacts to be minor, limited, critical, or catastrophic when a significant hazard event occurs? The impact could be in terms of one hazard event (flooding from a culvert failure) or a large-scale event (multiple rivers flooding) in the same jurisdictional boundary.

IMPACT

Minor	Limited	Critical	Catastrophic

Minor - very few injuries, if any. Only minor property damage & minimal disruption on quality of life. Temporary shutdown of critical facilities.

Limited - minor injuries only. Approx. 10% or less of property in disaster footprint damaged or destroyed. Complete shutdown of critical facilities for more than one day.

Critical - multiple deaths/injuries possible. Between 25% and 50% of property in disaster footprint is damaged or destroyed. Complete shutdown of critical facilities for more than one week.

Catastrophic - high number of deaths/injuries possible. More than 50% of property in affected area damaged or destroyed. Complete shutdown of critical facilities for 30 days or more.

To concentrate resources, the jurisdictional planning team will focus on "High" and "Extreme" risk hazards. These hazards have the higher probability and greater impact as it relates to the jurisdictions planning area.

Hazard definitions are included in **Vol. 1** of this plan. Some hazards are discussed as subset hazards– e.g., "Dam Failure" within the "Flood" hazard profile. If a hazard is not present on the risk matrix or are grey in color, the jurisdictional planning team felt the hazard had a minimal footprint within their planning area and was not ranked.

Hazard Information / Legend:

CLIMATE CHANGE

Climate Change impacts will be addressed at the end of each hazard section and as a stand alone section for each jurisdiction.
For County and Municipal governments you will be required to address climate change impacts in the Safety Element of your General Plan. Climate change may change the frequency, duration and intensity of hazards listed above.

Soquel Creek Water District Risk Matrix

IMPACT

PROBABILITY

	Minor	Limited	Critical	Catastrophic
Highly Likely	Medium	SEA LEVEL RISE, COASTAL EROSION	Extreme	Extreme
Likely	TSUNAMI	DROUGHT, FLOOD	WILDFIRE, EARTHQUAKE	Extreme
Possible	Low	Medium	SLOPE FAILURE	High
Unlikely	Low	Low	Medium	Medium

Figure 4-13: SqCWD Risk Assessment Matrix

Table 4-4: SqCWD Hazards Prioritization Summary

Hazard	Priority	Explanation
Wildfire	**High**	Profiled in Volume 1, Section 3.2.1, and Section 4.5.2.1 in this annex
Flood	**High**	Profiled in Volume 1, Section 3.2.2, and Section 4.5.2.2 in this annex (not including Levee Failure due to being outside jurisdictional mission and authority)
Earthquake	**Extreme**	Profiled in Volume 1, Section 3.2.3, and Section 4.5.2.3 in this annex, including Liquefaction
Severe Weather	-	Not a priority due to being outside jurisdictional mission and authority
Coastal Hazards	**High**	Profiled in Volume 1, Section 3.2.5, and Section 4.5.2.4 in this annex, including Coastal Erosion and Tsunami (Coastal Storm and Wave Run-Up and Surge recognized as compounding hazards but are not SqCWD's focus)
Slope Failure	**High**	Profiled in Volume 1, Section 3.2.6, and Section 4.5.2.5 in this annex
Dam Failure	-	Not a priority due to no exposure
Drought	**High**	Profiled in Volume 1, Section 3.2.8, and Section 4.5.2.6 in this annex
Extreme Heat	-	Not a priority due to being outside jurisdictional mission and authority
Climate Change	**High**	Profiled in Volume 1, Section 3.2.10, and Section 4.5.2.7 in this annex, including Sea-Level Rise

4.5.2 Vulnerability to Specific Hazards

Assessing vulnerabilities exposes the unique characteristics of individual hazards and begins the process of narrowing down which areas within SqCWD are vulnerable to specific hazard events. The vulnerability assessment considered unique local knowledge of hazards and impacts and a GIS overlaying method for examining such vulnerabilities in more depth. Using these methods, the district's planning group estimated vulnerable populations, properties, and assets, and potential losses, primarily to coastal hazards. In addition, the exposure of district assets to drought, geological, earthquake, wildfire and flood hazards was also considered.

Many of the hazard profiles include a snapshot map and damage estimation tables that illustrate the district's vulnerabilities to those specific hazards. These maps assisted the planning group in understanding the hazard exposure of populations, parcels, and critical facilities and infrastructure. Each snapshot map contains an exposure summary that displays the percentage of the population, the improvement and content value of parcels, and the amount of critical infrastructure that is exposed. For hazards without geospatial extents, such as drought, narratives are provided instead of exposure maps and tables.

Based on the hazard prioritization exercise, this vulnerability assessment focuses on seven hazards for SqCWD, some of which encompass subhazards such as Liquefaction and Coastal Erosion.

Wildfire
SECTION 4.5.2.1



Flood
SECTION 4.5.2.2



Earthquake
SECTION 4.5.2.3



Coastal Hazards
SECTION 4.5.2.4



Slope Failure
SECTION 4.5.2.5



Drought
SECTION 4.5.2.6



Climate Change
SECTION 4.5.2.7



4.5.2.1 Wildfire Hazard

SqCWD faces a mixture of wildfire hazard conditions based on its geographic position and proximity to wildland-urban interfaces (WUIs). According to the CAL FIRE-based maps, Figure 4-14 shows much of the inland and northeastern portions of the District are exposed to Moderate to High Fire Hazard Severity Zones (FHSZs) within the Local Responsibility Area (LRA), particularly along forested and hilly terrain where development borders vegetated lands.

Specifically, the wildfire risk exposure map shows that moderate wildfire hazard dominates the northern and eastern areas of the district, while high wildfire hazard affects a band of wildland-urban interface along the northern boundary and eastern edge of the service area. There are a few smaller areas at the edges near forested canyons that fall within very High hazard zones, typically adjacent to steep slopes and wildland vegetation.

Southern and coastal parts of the district, including urban and suburban zones along Highway 1 and near the coast, fall outside of the mapped hazard zones, suggesting a much lower risk of direct wildfire exposure.

Despite the mapped hazard designations, the exposure summaries in Figure 4-14 indicate that zero population, parcels, or parcel value lie within the "Very High" hazard areas. Critical infrastructure including essential facilities, high-potential loss sites, and lifeline systems are also shown as having 0% exposure in these highest risk areas.

This suggests that while the SqCWD service area includes regions mapped with higher wildfire hazard levels, developed assets and critical facilities are not currently located within the highest risk zones.

The Mean Fire Return Interval (MFRI) map, Figure 4-15 for SqCWD shows how often wildfires have historically occurred across the area. Coastal and urban parts of the district, such as Capitola and Soquel, generally have long fire return intervals over 100 years indicating lower natural wildfire risk. In contrast, inland and forested areas, particularly near Nisene Marks State Park and the district's northern edge, show much shorter intervals (as low as 6–15 years), reflecting higher wildfire potential.

However, SqCWD includes areas designated as "High" wildfire hazard within both Local Responsibility Areas (LRA) and State Responsibility Areas (SRA). Approximately 3,900 residents live within these high-risk zones, primarily concentrated along the district's northern boundary. Within this same hazard area, roughly 2,200 parcels are exposed, representing an estimated $2.5 billion in combined structure and content value. In addition, critical infrastructure is at risk, including approximately 235 key assets such as storage tanks, production wells, pump stations, and emergency interties, as well as approximately 31 miles of essential infrastructure lines located within the "High" wildfire hazard zones.

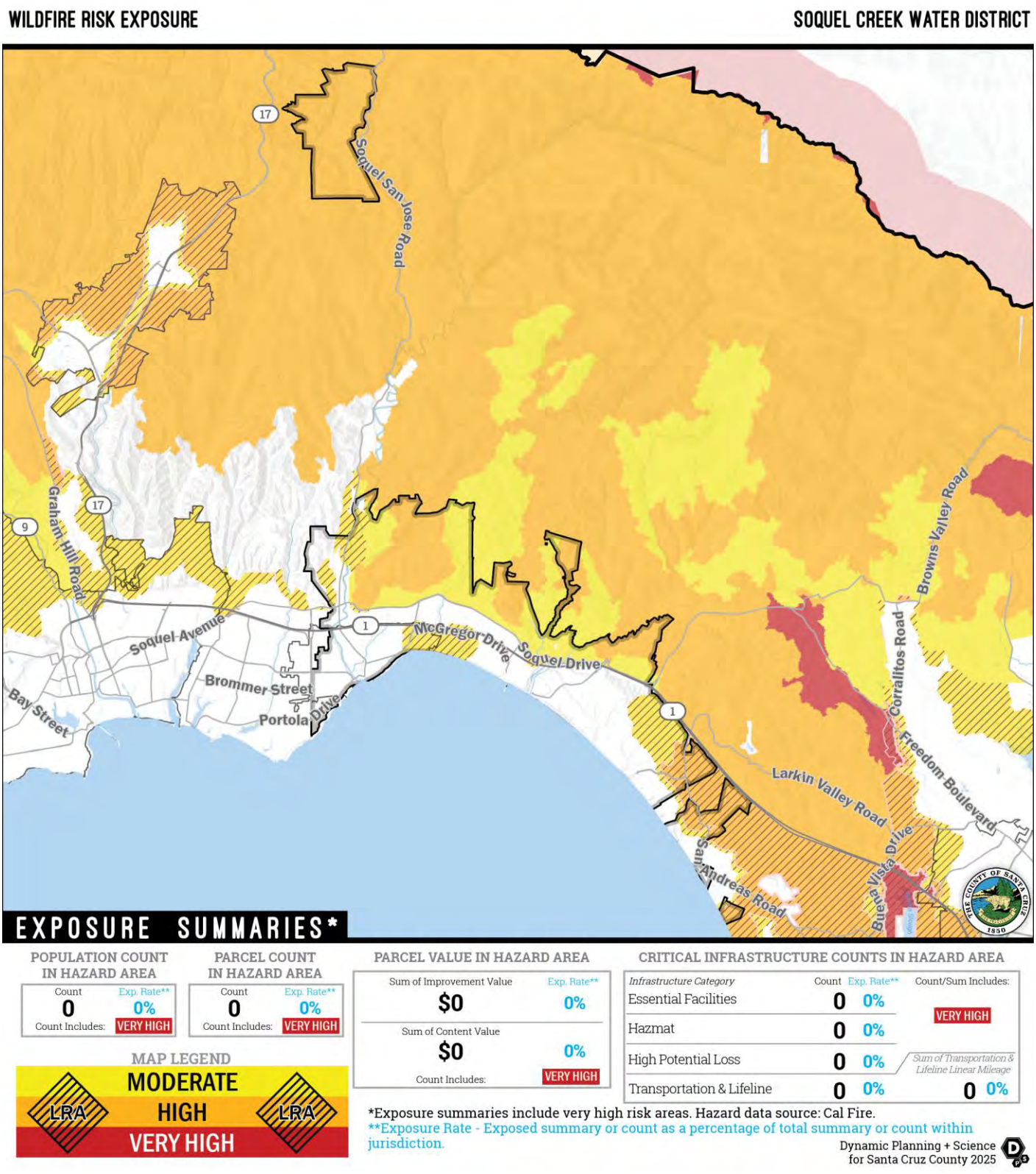


Figure 4-14: Exposure Summary - SqCWD Wildfire Risk

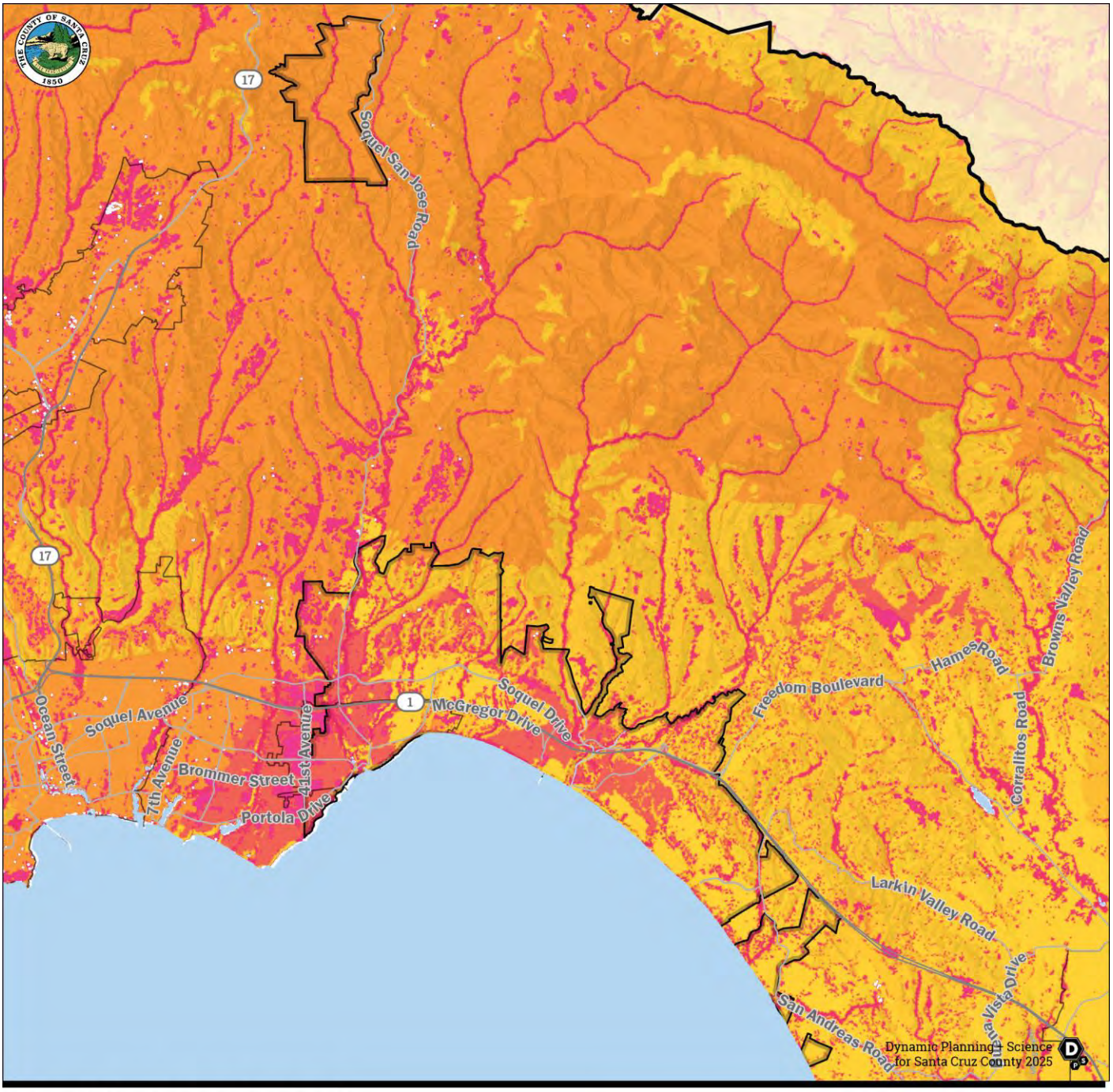


Figure 4-15: SqCWD Mean Fire Return Interval Map

4.5.2.2 Flood Hazard

Flood hazards present a significant concern for the SqCWD, particularly given the region's topography, watershed characteristics, and proximity to the coast. According to FEMA floodplain data, Figure 4-16 shows portions of the district lie within the 100-year and 500-year flood zones, including coastal areas and riverine floodways. The FEMA flood risk maps in Figure 4-16 indicate that approximately 1,700 people reside within these designated flood hazard areas, and roughly 800 parcels are located within the 100-year and 500-year flood zones, amounting to an estimated $624 million in structural improvement value and roughly $380 million in content value at risk. These exposures account for 5% and 6% of the district's total respective values.

SqCWD's critical infrastructure exposure is also notable. There are approximately 11 miles of water mains, more than 60 hydrants, and one production well located within mapped flood hazard areas, as well as many miles of non-district transportation infrastructure used to access, maintain, and repair these assets. These areas are primarily along Soquel Creek within and to the north of the City of Capitola and in the Aptos Creek watershed through the unincorporated communities of Aptos Village and Rio Del Mar. Many district assets are also exposed to coastal flooding along the beach between Capitola and the unincorporated community of Seascape, with water mains and hydrants on Las Olas Drive, Beach Drive, and Potbelly Beach Road vulnerable to flooding compounded by coastal erosion and sea level rise, as discussed in other profiles. The exposure of these lifelines and associated access routes underscores the potential for flood events to disrupt the delivery of the district's essential services and delay repairs and maintenance.

Beyond FEMA-designated flood zones, additional areas of concern are identified through DWR's Flood Awareness Zones (Figure 4-17). These areas capture flood-prone zones that may not be mapped under FEMA but still represent meaningful flood risks due to local hydrology and terrain. While the exposure levels in these awareness zones are lower, Figure 4-17 showing only around three parcels in the district's service area being affected, these areas are still important for planning purposes, particularly in regions where future floodplain expansion is anticipated due to climate change or updated hydrologic modeling.

Collectively, this data highlights that SqCWD's flood vulnerability is concentrated along coastal areas and near stream corridors, with significant infrastructure exposure in low-lying areas.

As a special district and not a municipality, SqCWD does not participate in the National Flood Insurance Program (NFIP); however, the SqCWD complies with all minimum floodplain development standards and environmental review requirements established by the county and municipalities where its projects are located.

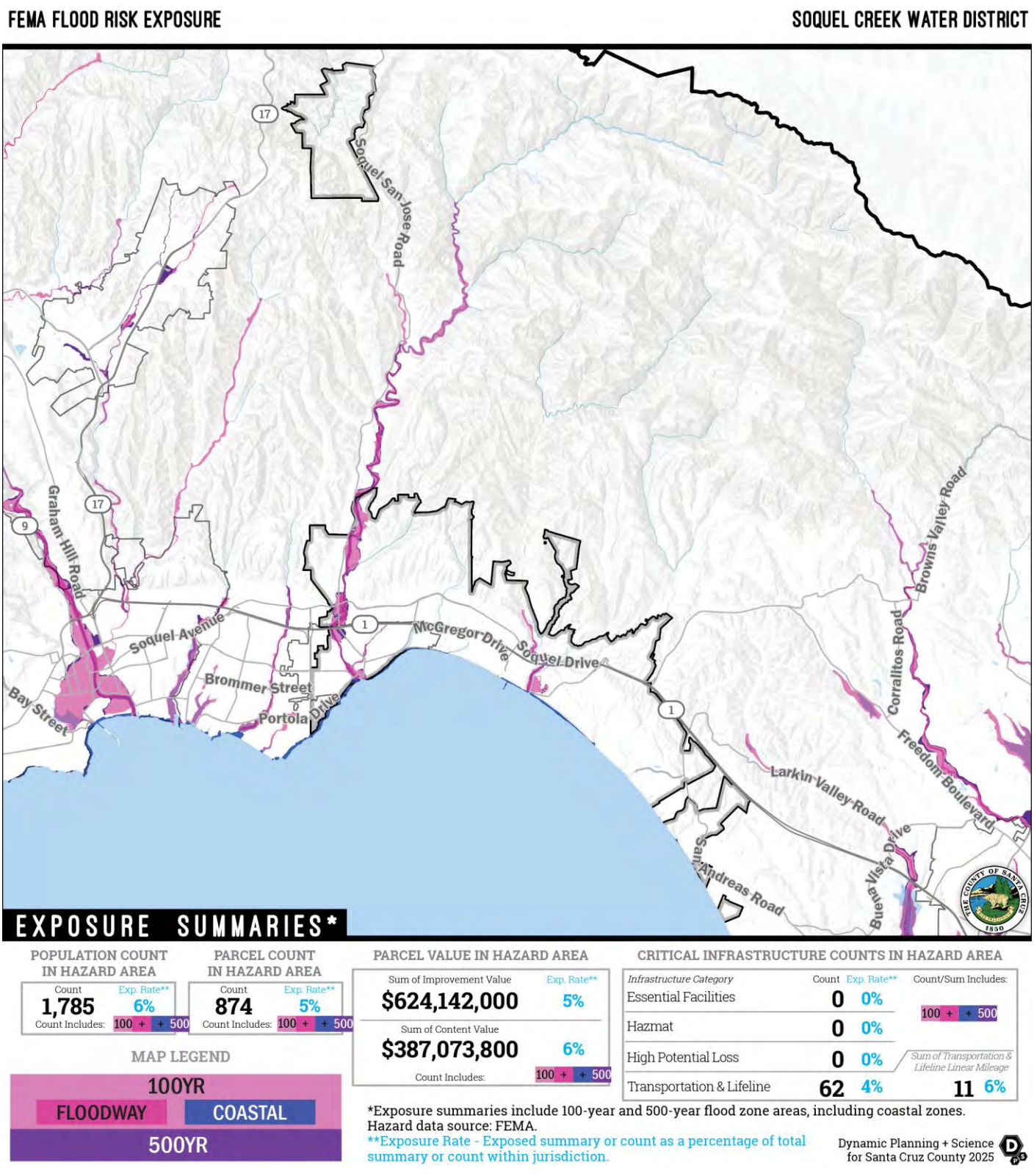


Figure 4-16: Exposure Summary - SqCWD Flood Risk (FEMA Zones)

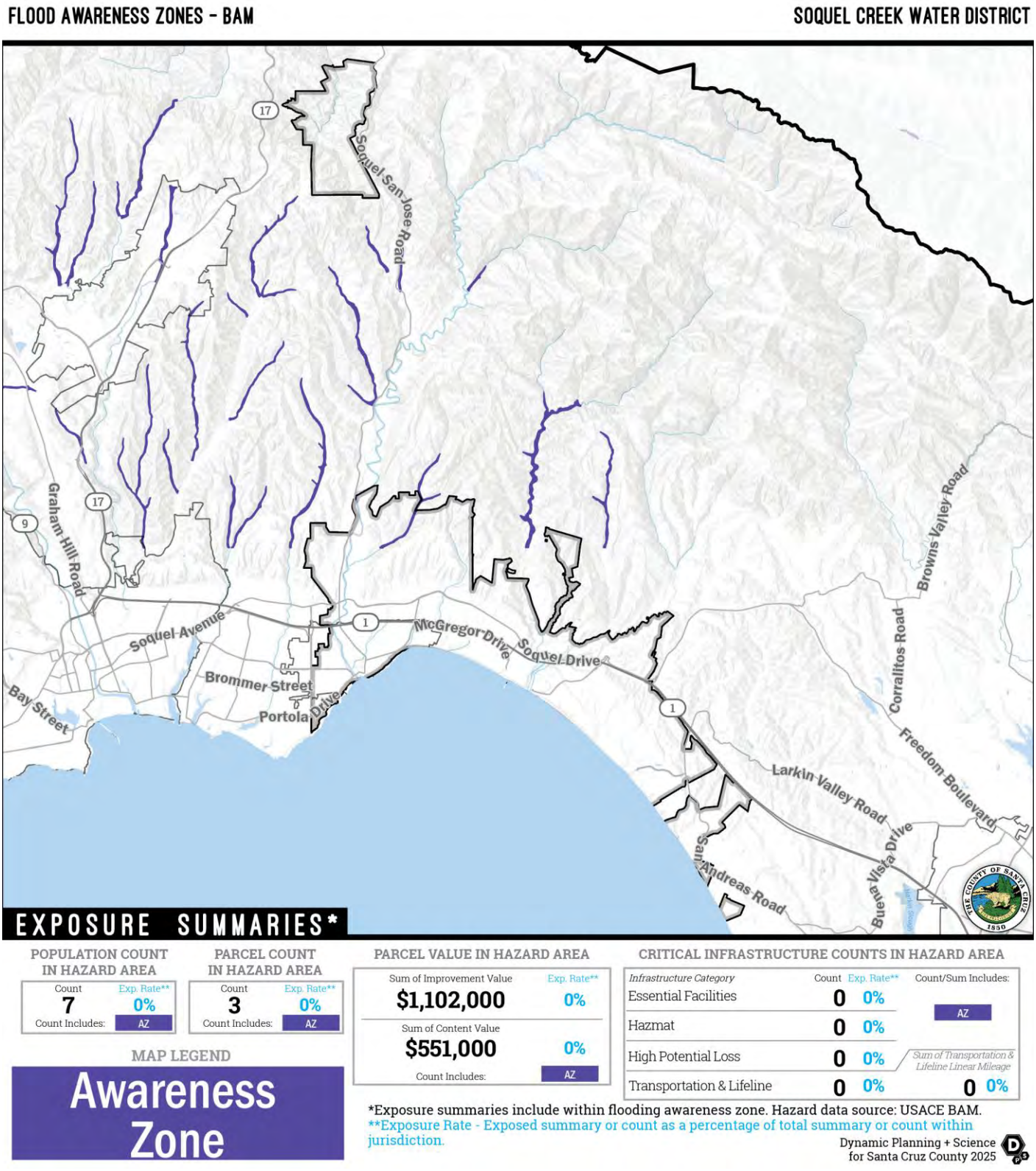


Figure 4-17: Exposure Summary - SqCWD Flood Risk (DWR Awareness Zones)

4.5.2.3 Earthquake Hazard

SqCWD faces widespread and significant risk from earthquake hazards due to its location near the active San Andreas Fault system. Figure 4-18 shows that the entire district lies within zones of strong to very strong ground shaking under the magnitude (M) 7.1 North San Andreas Santa Cruz Mountains earthquake scenario chosen for this vulnerability assessment. According to scenario mapping, approximately 27,000 people (90% of the population within the district) and 15,000 parcels (also around 90%) are exposed to these seismic intensities (Figure 4-18). The combined structure and content value of exposed parcels exceeds $16 billion, with most falling within Modified Mercalli Intensity (MMI) zones VII and VIII, indicating the potential for structural damage, utility disruption, and injury.

A significant earthquake event has the potential to damage all of the district's critical facilities and infrastructure, including all production wells, treatment facilities, tanks, pump stations, pressure valves, and emergency interties with other water systems. Approximately 180 miles of water mains and 1,300 hydrants are also exposed, increasing the risk posed by post-earthquake fires.

In addition to strong ground motion, SqCWD faces significant risks from liquefaction across most of its service area, in low-lying areas near creeks, floodplains, and the coastal plain. Liquefaction-prone zones in the district are shown in Figure 4-19 and include the Aptos and Soquel Creek corridors. Over 4,200 people, nearly 2,750 parcels, and over $3 billion in total parcel value are exposed to the possibilities of liquefaction. Approximately 250 critical facilities—hydrants, production wells, treatment facilities, tanks, and pump stations—and almost 34 miles of water main lie within the most vulnerable areas, with high to very high liquefaction potential. In addition, one emergency intertie is exposed to very high liquefaction risk next to Valencia Creek. Even a moderate seismic event could severely affect the district's capacity to maintain water service due to damage to these critical assets.

Although direct surface rupture risk is relatively low and no mapped faults run directly beneath SqCWD facilities or infrastructure, the proximity to the Zayante–Vergeles and San Andreas fault systems presents a credible threat of severe shaking and associated cascading hazards such as landslides, liquefaction, and service outages as shown in Figure 4-20. Moreover, the watershed from which the district draws its water and its customers fall within the Earthquake Fault Zones of Required Investigation, which may trigger secondary impacts such as reduced water quality from earthquake-triggered landslides or challenges in post-disaster reconstruction. Areas identified are shown in Figure 4-20, and include approximately 130 residents and 20 parcels affected totaling nearly $24 million.

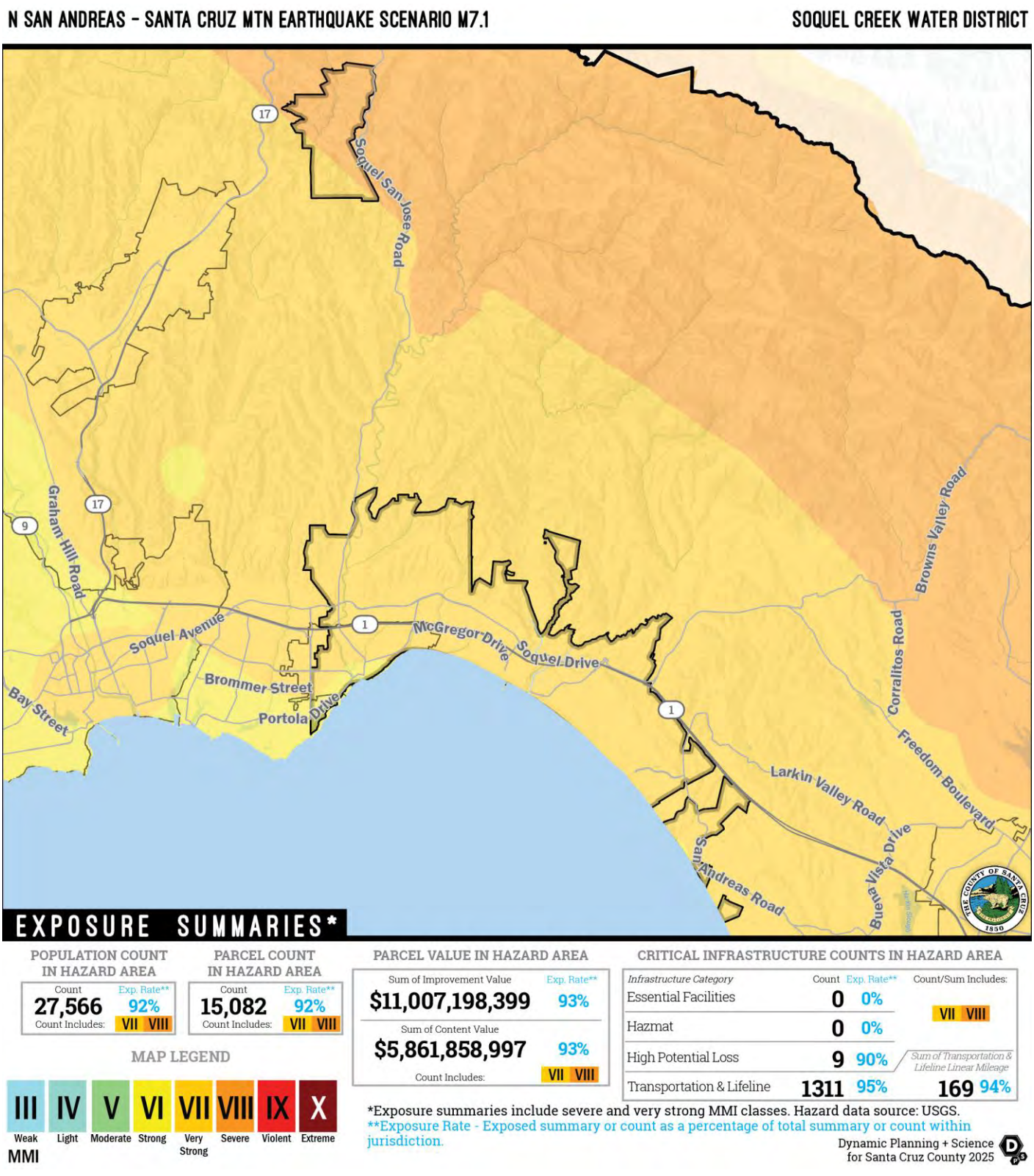


Figure 4-18: Exposure Summary - SqCWD Earthquake Risk (M7.1 San Andreas Shaking)

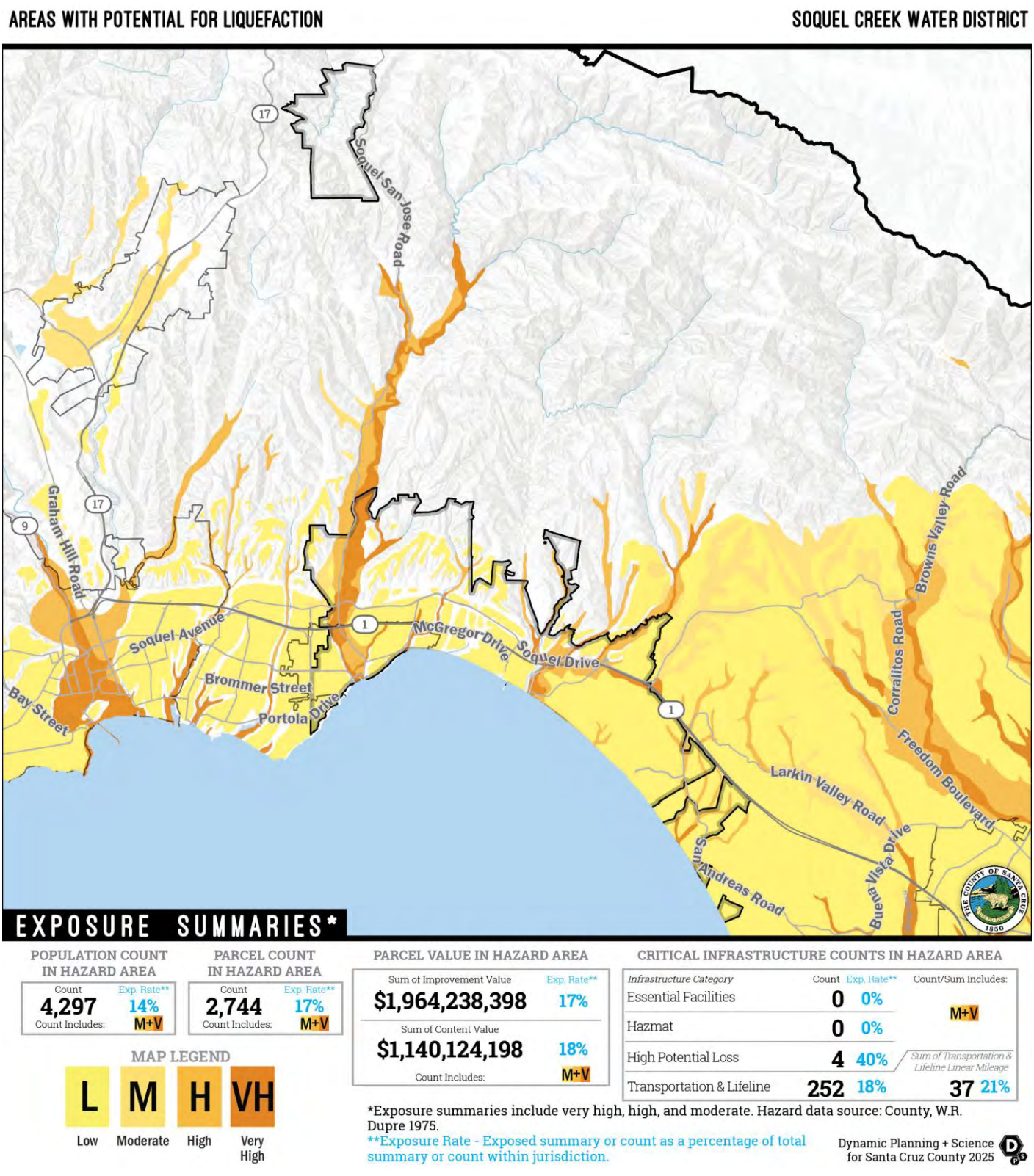


Figure 4-19: Exposure Summary - SqCWD Liquefaction Risk

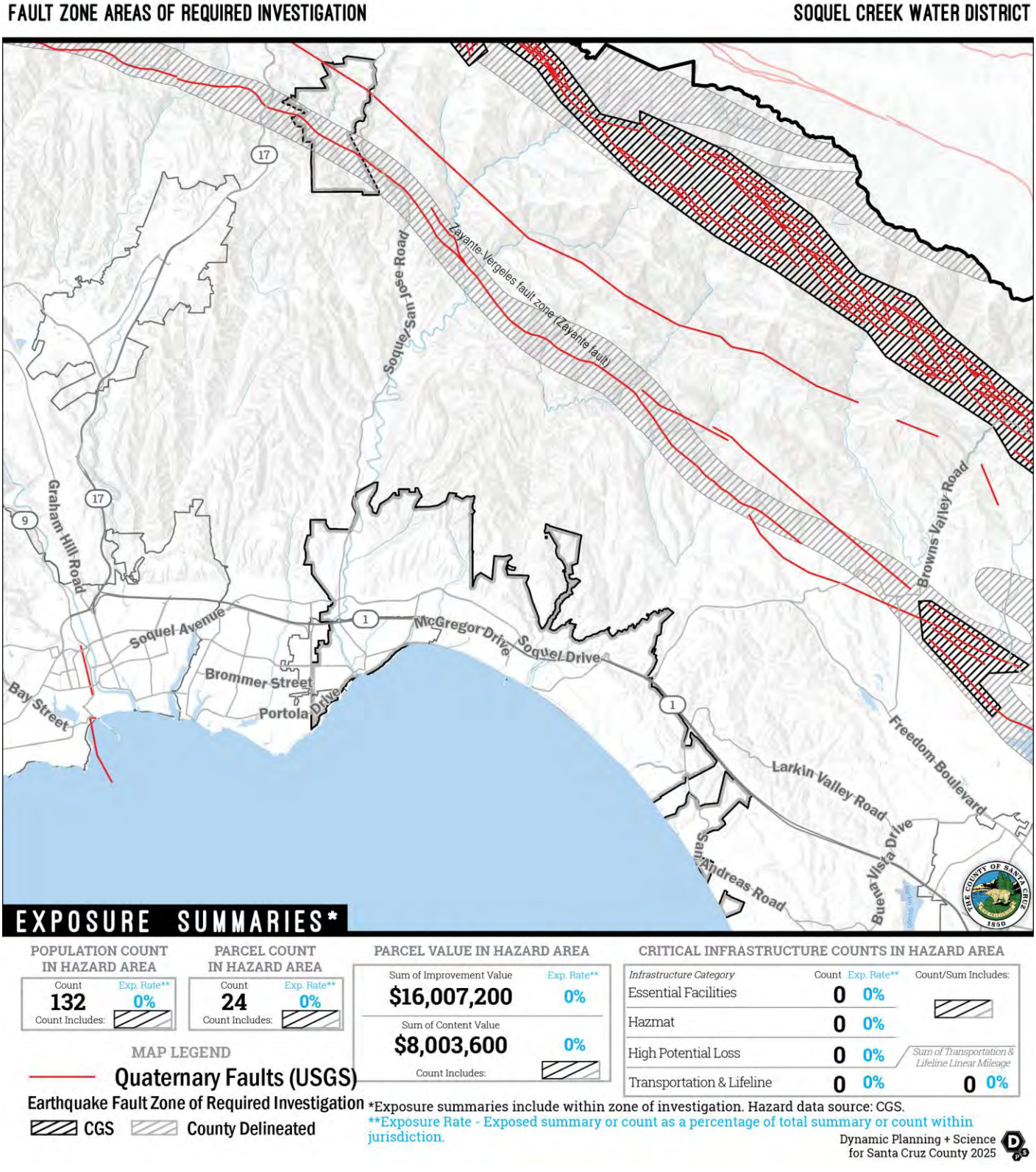


Figure 4-20: Exposure Summary - SqCWD Earthquake Risk (Fault Zones)

4.5.2.4 Coastal Hazards

SqCWD faces growing risks from coastal hazards, including coastal erosion and tsunami events. These threats are intensified by climate change and sea level rise, as discussed in Section 4.5.2.7, as well as the district's proximity to the Pacific Ocean and vulnerable low-lying areas such as the Soquel Estuary, lower Soquel Creek, and the Capitola shoreline.

Coastal Erosion

SqCWD continually faces risks from coastal erosion, and increasingly so with the compounding effects of climate change, severe weather and sea level rise. As a natural and ongoing process, coastal erosion involves the gradual loss of beaches, bluffs, and land due to wave action, storm surges, tidal forces, and rising sea levels. However, in recent decades, the rate and severity of erosion have accelerated due to climate change, stronger storm events, and rising seas. The coastline within and adjacent to SqCWD around Capitola Beach, the Soquel Estuary, New Brighton State Beach, and Seacliff State Beach, features unconsolidated soils and low-lying development, making it particularly vulnerable to erosion-related impacts.

The erosion threat in Santa Cruz County is driven by multiple factors. Strong wave activity, particularly during El Niño years, regularly undermines coastal bluffs. Sediment starvation caused by upstream damming and human development further reduces natural beach replenishment. In response, some areas have installed protective structures such as seawalls and revetments; however, these can worsen erosion in adjacent unprotected areas. Portions of Santa Cruz County have experienced erosion rates of 1 to 2 feet per year on average, with localized hotspots seeing over 5 feet of retreat annually during severe winter storms (California Coastal Commission, 2024).

For SqCWD, the implications of ongoing coastal erosion are significant. Erosion threatens a significant portion of the district's critical infrastructure and facilities, much of which is located along the coastline and stream outlets into the Monterey Bay where coastal erosion is most pronounced.. Erosion can also damage roadways and recreation trails that provide the district access to these assets for maintenance and repairs. For SqCWD, coastal erosion threatens to compromise the structural stability of many miles of water mains, as well as numerous hydrants, pump stations, and valves located along the coast. As climate change and sea level rise progress, coastal infrastructure will require relocation or hardening to maintain service reliability.

Tsunami

Tsunamis pose a rare but potentially catastrophic hazard to SqCWD and its surrounding communities along the central coast of Santa Cruz County. While the likelihood of a tsunami is low compared to other coastal hazards, the consequences of a major tsunami event can be devastating due to the district's coastal proximity, low-lying terrain, and the concentration of development in vulnerable shoreline areas.

As shown in Figure 4-21, a significant portion of the district's coastal area lies within mapped tsunami run-up zones. Specifically, approximately 2,500 residents or about 9% of the district's total population, live within the tsunami hazard area. The same exposure zone contains nearly 1,500 parcels, also totaling roughly 9% of the district's parcel count. The total value of improvements in the tsunami zone is estimated at nearly $1 billion while content value exposure is approximately $560 million. These figures underscore the high potential for economic loss in the event of a tsunami.

The district's critical facilities and infrastructure are also at risk. The district has about 12 miles of water main, 90 hydrants, a pressure valve, and a production well located within the tsunami run-up area, all of which could be severely damaged and rendered inoperable from a significant tsunami event. Further, a sizable tsunami is likely to wash out, bury, or otherwise damage transportation infrastructure in the area, reducing SqCWD's ability to repair assets following an event. This exposure highlights the extent of impairment that could occur for essential water delivery, emergency response, and post-disaster recovery capabilities if damaged..

Tsunamis in this region would likely be generated by distant subduction zone earthquakes, such as those occurring along the Aleutian or Cascadia Subduction Zones. These events could provide limited warning time for evacuation, with inundation depths and flow velocities capable of sweeping away structures, vehicles, and above-ground utility assets. Communities such as Capitola and the surrounding urbanized coastal corridors are especially at risk due to their concentration of residential and commercial development near beaches, estuaries, and the mouths of creeks and rivers.

The California Geological Survey (CGS) and National Tsunami Hazard Mitigation Program (NTHMP) provide updated inundation modeling and maps, which inform local emergency planning, evacuation signage, and community outreach.

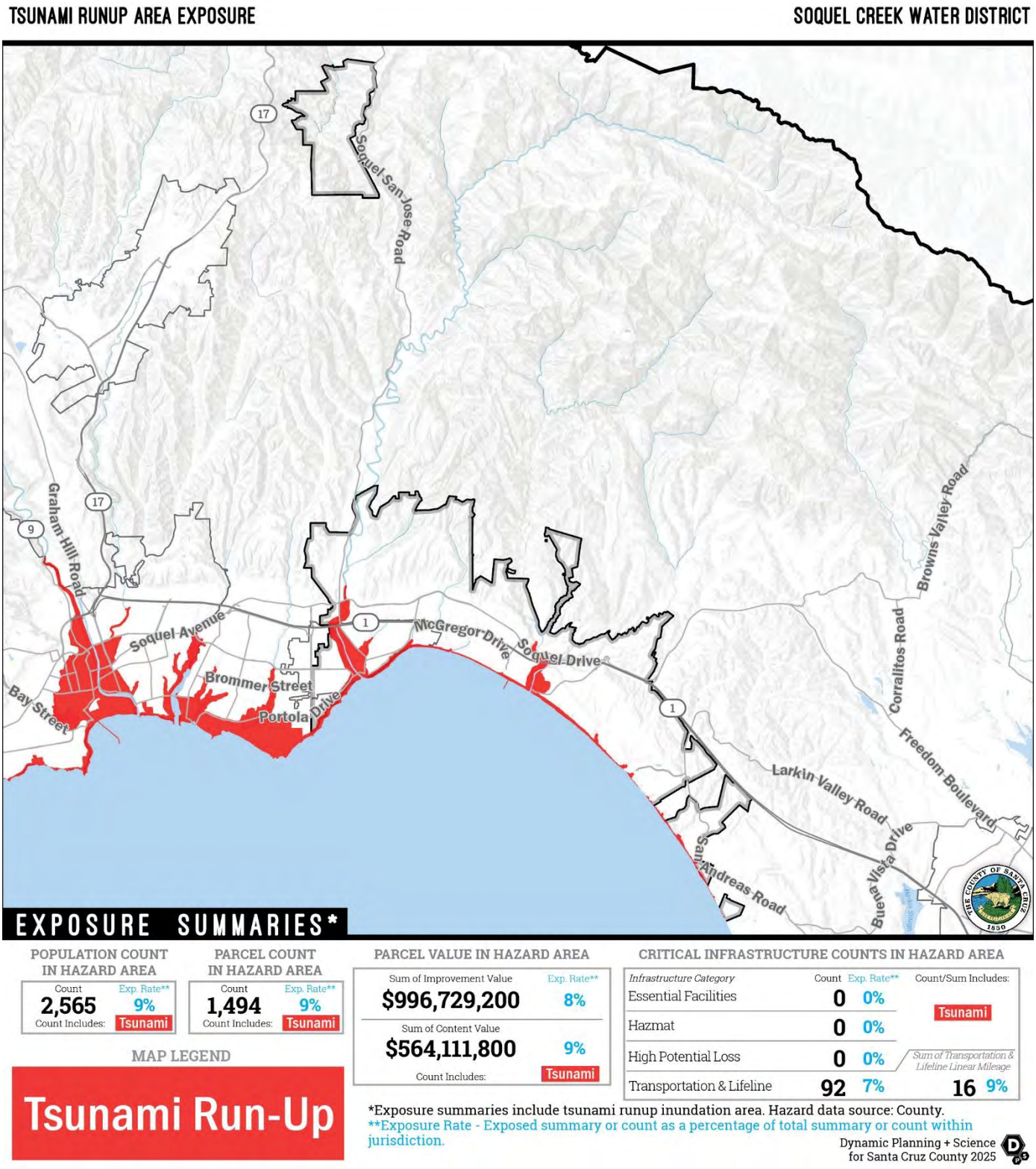


Figure 4-21: Exposure Summary - SqCWD Tsunami Risk

4.5.2.5 Slope Failure Hazard

SqCWD faces slope failure hazards within its jurisdiction which could severely impact critical infrastructure and service reliability. While bluff failure associated with coastal erosion is also a significant concern for the district, this section concentrates on inland slope failure risks; coastal erosion is discussed in Section 4.5.2.4.

Slope failure-prone areas are extensive across the district, especially in the foothills of the Santa Cruz Mountains as they merge with the shallow coastal plain (Figure 4-22). These areas are mapped as having high susceptibility to landslides, debris flows, and other types of slope failure, with the highest risk concentrated in areas of steep topography along waterways and other drainages.

Figure 4-22 shows approximately 7,500 people, around 25% of the district's population, reside in areas susceptible to landslides, and approximately 3,000 parcels, around 20% of the total, with a combined structural and content value exceeding $3 billion are also located in these areas. Critical infrastructure exposure is also significant. More than 230 critical facilities—accounting for approximately 17% of the district's total infrastructure—fall within mapped landslide susceptibility zones. This includes about 30 miles of water mains, almost 200 hydrants, two production wells, three emergency interties, and many pump stations, tanks, and valves. Slope failures can lead to water main breaks and service disruptions, and incur significant repair costs in the long-term, particularly after periods of heavy rainfall or seismic activity. In addition, slope failures often block or damage access roads upon which SqCWD depends to access, maintain, and repair its assets to ensure delivery of water to its customers.

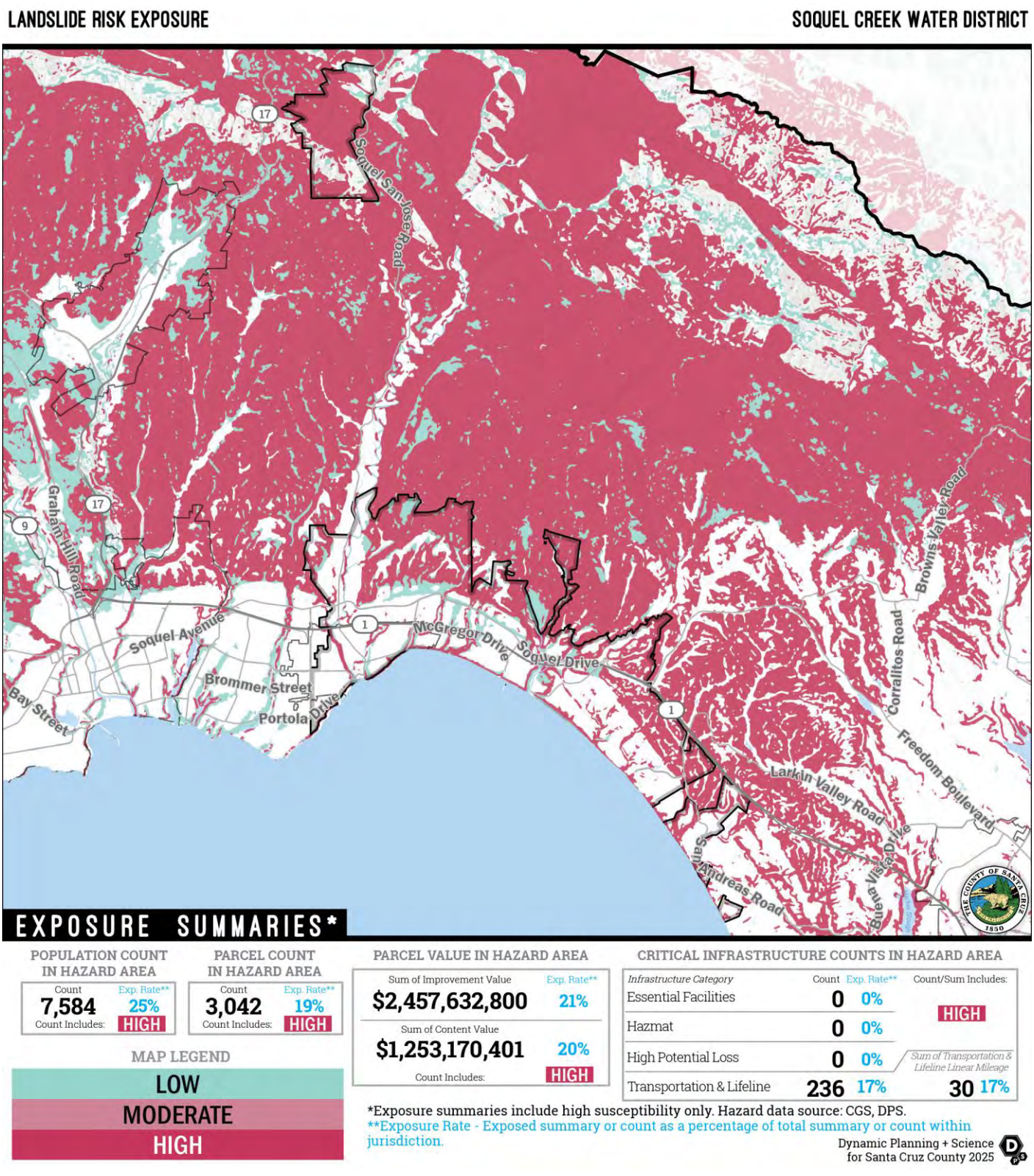


Figure 4-22: Exposure Summary - SqCWD Slope Failure Risk

4.5.2.6 Drought Hazard

The National Drought Monitor provides drought data and maps nationally and on a localized, watershed scale. The National Drought Monitor is the product of 11 agencies, including the NDMC, NOAA and USDA, and is available at http://droughtmonitor.unl.edu/. The National Drought Monitor categorizes the level of drought from D0 through D4, with D4 being the highest "exceptional drought." Table 4-5 depicts drought classifications and impacts from the level of drought occurrence in California, while Figure 4-23 shows a time series of the level of drought in Santa Cruz County from 2000 to 2024 according to the National Drought Monitor.

SqCWD is particularly vulnerable to drought due to its heavy reliance on local groundwater basins and a limited surface water supply. The district serves communities that are highly dependent on sustainable water management strategies, especially as the frequency and severity of drought conditions increase.

SqCWD relies almost entirely on groundwater pumped from the Santa Cruz Mid-County Groundwater Basin, a critically overdrafted basin identified under California's Sustainable Groundwater Management Act (SGMA). The district does not have access to imported water, and its service area lacks large surface reservoirs, meaning that prolonged droughts pose direct and immediate risks to water supply availability.

During drought conditions, groundwater levels may decline more rapidly, increasing the risk of saltwater intrusion, especially in coastal zones. The basin has already experienced seawater intrusion due to long-term overdraft, and further droughts would intensify this hazard, compromising the long-term viability of groundwater as a safe drinking water source.

Drought conditions reduce recharge rates and can increase the concentration of contaminants such as nitrates, naturally occurring minerals, and volatile organic compounds (VOCs). This may place additional stress on water treatment systems and create higher costs for water quality compliance. Moreover, as aquifers are drawn down further, infrastructure such as wells and pumps are subjected to greater operational demands, increasing the risk of mechanical failures or emergency outages during high-demand periods.

Persistent droughts also place significant pressure on water agencies to meet state-mandated conservation requirements. SqCWD has implemented tiered water pricing, drought surcharges, and aggressive conservation messaging in past droughts. Future droughts may require stricter demand-side restrictions, including water rationing, which can generate public resistance and logistical challenges.

Table 4-5: Drought Classifications and Impacts

Category	Description	Possible Impacts
D0	**Abnormally Dry**	▪ Soil is dry; irrigation delivery begins early ▪ Dryland crop germination is stunted ▪ Active fire season begins

Category	Description	Possible Impacts
D1	Moderate Drought	▪ Dryland pasture growth is stunted; producers give supplemental feed to cattle ▪ Landscaping and gardens need irrigation earlier; wildlife patterns begin to change ▪ Stock ponds and creeks are lower than usual
D2	Severe Drought	▪ Producers increase water efficiency methods and drought-resistant crops ▪ Grazing land inadequate ▪ Fire season is longer, with high burn intensity, dry fuels, and large fire spatial extent; more fire crews on staff ▪ Lake- and river-based tourism declines; boat ramps close ▪ Trees are stressed; plants increase reproductive mechanisms; wildlife diseases increase ▪ Water temperatures increase; programs to divert water to protect fish begin ▪ River flows decrease; reservoir levels are low and banks are exposed
D3	Extreme Drought	▪ Federal water not adequate to meet irrigation contracts; extracting supplemental groundwater is expensive ▪ Fire season lasts year-round; fires occur in typically wet parts of the state; burn bans are implemented ▪ Ski and rafting business is low; mountain communities suffer ▪ Low water levels impede fish migration and cause lower survival rates ▪ Wildlife encroach on developed areas; little native food and water is available for bears, which hibernate less ▪ Water sanitation is a concern; reservoir levels drop significantly; surface water is nearly dry, flows are very low; water theft occurs ▪ Livestock need supplemental feed, cattle and horses are sold; little pasture remains ▪ Well and aquifer levels decrease; homeowners drill new wells
D4	Exceptional Drought	▪ Fire season is very costly; number of fires and areas burned are extensive ▪ Many recreational activities are affected ▪ Fields are left fallow; orchards are removed; vegetable yields are low; honey harvest is small; agricultural unemployment is high, food aid is needed ▪ Fish rescue and relocation begins; pine beetle infestation occurs; forest mortality is high; wetlands dry up; wildlife death is widespread; algae blooms appear ▪ Poor air quality affects health; greenhouse gas emissions increase as hydropower production decreases; West Nile outbreaks rise ▪ Water shortages are widespread; surface water is depleted; federal irrigation water deliveries are curtailed; water prices are extremely high; wells are dry, more and deeper wells are drilled; water quality is poor

Source: Adapted from U.S. Drought Monitor Drought Classifications and Impacts

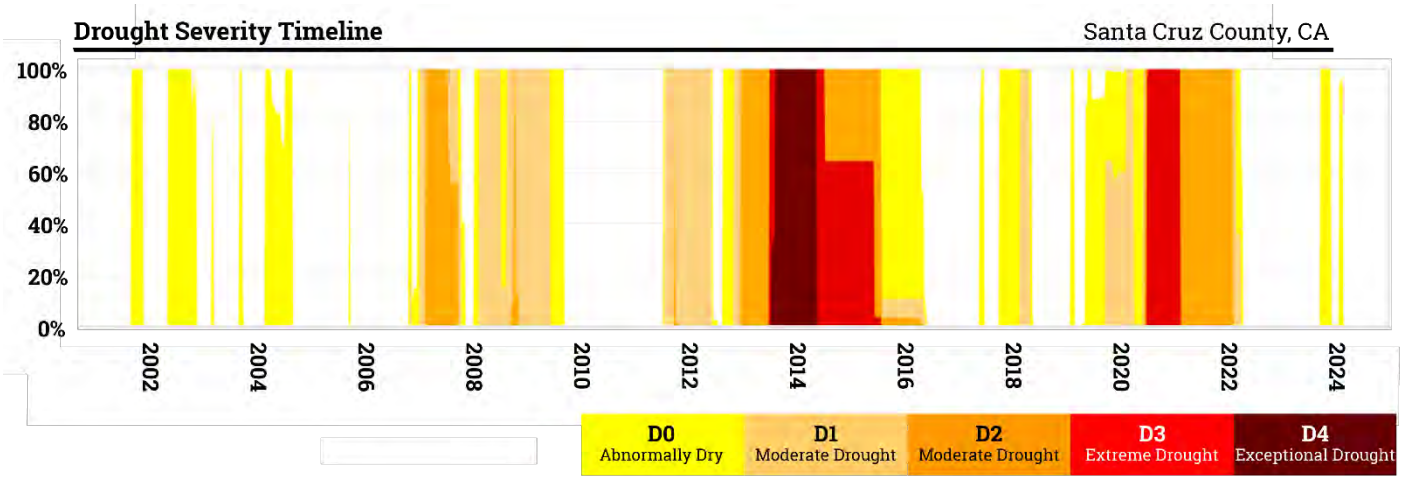


Figure 4-23: Drought Severity Timeline 2000-2024

4.5.2.7 Climate Change Hazard

Average annual temperatures across most of California have already increased by more than 1°F, with some areas experiencing rises of over 2°F when comparing the 1901–1960 average to that of 1986–2016. Daily maximum temperatures—a key indicator of extreme heat—are projected to increase by 4.4°F to 5.8°F by 2050 and by 5.6°F to 8.8°F by 2100. Heat waves that impact public health, known as heat-health events, are also expected to intensify across the state. By 2050, these events are projected to last up to two weeks longer in the Central Valley and occur four to ten times more often in the Northern Sierra region (California Natural Resources Agency, 2022).

California is already experiencing significant impacts from climate change, including prolonged drought, a lengthened wildfire season, increased coastal flooding and erosion, and widespread tree mortality. The state has observed rising average temperatures, more extreme heat days, fewer cold nights, a longer growing season, and shifts in the water cycle, with less winter precipitation falling as snow. In addition, summertime fog has declined by approximately 33%, and both snowmelt and rainwater runoff are occurring earlier in the year (Cal OES, 2018).

Long-term trends indicate a 12% to 20% decline in fog across California from 1900 through projections to 2070. Climate experts suggest that warming temperatures reduce the ability of air masses to cool enough to produce fog, which plays a critical role in supporting California's ecosystems (Grantham, Teodore; University of California, Berkeley, 2018).

SqCWD faces a range of hazards intensified by climate change. These include sea level rise (SLR), drought, coastal erosion, and wildfire, all of which directly threaten the district's water infrastructure and groundwater-dependent service area. Although SqCWD has not previously framed these hazards explicitly under a "climate change" lens in past mitigation plans, the nature, frequency, and severity of these threats are projected to increase due to a warming climate.

Drought conditions are becoming more frequent and severe under climate change. SqCWD's sole reliance on groundwater heightens its vulnerability, especially during prolonged dry periods. As precipitation patterns shift and snowpack in the Sierra Nevada declines, statewide water availability becomes more uncertain. This increases demand on local groundwater systems and challenges long-term supply reliability.

Although SqCWD's service area is mostly urban and coastal, the northern boundary of the district extends into areas designated as "High" wildfire hazard by Cal Fire. Climate change is increasing wildfire risk through hotter temperatures, drier vegetation, and longer fire seasons. These fires can threaten water quality, destroy critical facilities, and cause prolonged service interruptions.

Sea Level Rise

Sea levels along the Central Coast could rise by approximately 1 ft by 2050 and up to nearly 12 ft by 2150 under medium to high emissions scenarios. Sea level rise (SLR) increases the risk of coastal inundation, saltwater intrusion into freshwater aquifers, and damage to coastal infrastructure. (California Ocean Protection Council, 2025) Within SqCWD's service area, the COSMOS v3.1 model (Figure 4-24) shows that SLR impacts are concentrated along the immediate coastline and tidal zones, including areas adjacent to key infrastructure corridors such as Highway 1 and coastal neighborhoods. Exposure summary data on Figure 4-24 indicate that approximately 400 residents and 60 parcels lie within the districts service area and the SLR hazard zone, with a total structure and content value exposure of nearly $57 million. While the exposure rate is low (<1%), these zones represent vital coastal corridors and resources for the district. SLR further compounds coastal erosion risks, threatening bluff stability, beach retreat, and inundation of facilities and infrastructure during king tide and flood events. Chronic erosion along the coast is projected to intensify with accelerating SLR and more frequent storm surge events. As such, the district will likely face increasing maintenance needs for any lifelines that traverse or are adjacent to these erosion-prone coastal zones and are not relocated or hardened in the long term.

Very little of SqCWD's assets are directly exposed to SLR, but FEMA floodplain maps help demonstrate how the compounding hazards of SLR, flooding, and coastal erosion may significantly impact portions of the district's service area (Figure 4-16).

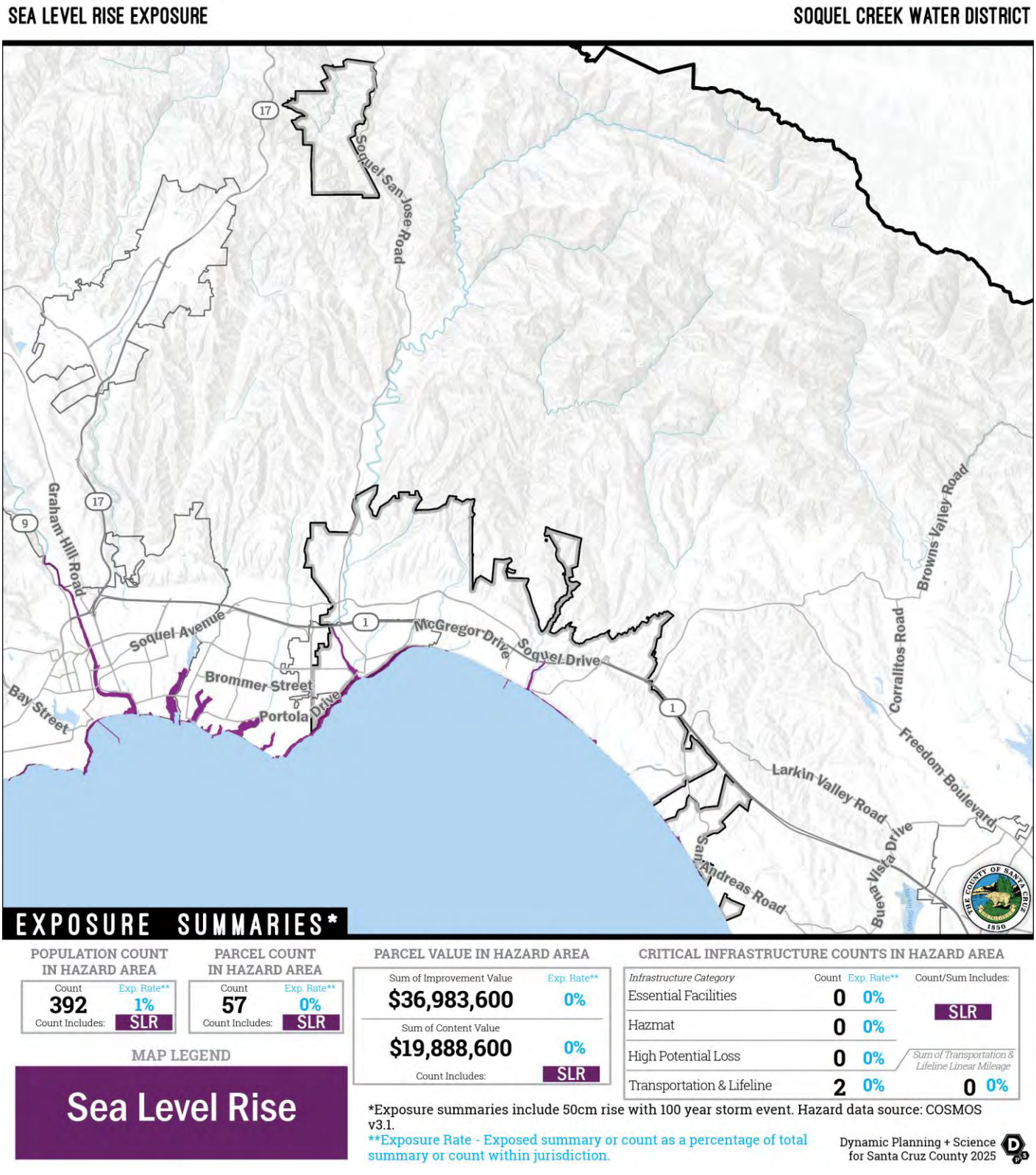


Figure 4-24: Exposure Summary - SqCWD Sea Level Rise Risk

4.5.3 Planning for Hazards & Growth

SqCWD integrates hazard mitigation and resilience planning directly into its long-term infrastructure and development strategies to ensure a sustainable and secure water supply system for current and future customers.

One of the foundational documents supporting this integration is the 2020 UWMP which projects population growth and water demand through 2040. The UWMP outlines how water efficiency, groundwater protection, and recycled water use will meet demand even during multiple dry years, ensuring that future development does not outpace the district's water resource capacity. The district's water demand projections are synchronized with land use patterns and expected housing growth in its four primary service areas of Soquel, Aptos, Capitola, and La Selva Beach, allowing hazard-aware planning to guide decisions about system expansion and infrastructure siting.

Central to SqCWD's future-proofing efforts is Pure Water Soquel, a landmark groundwater replenishment and seawater intrusion prevention project. This advanced water purification initiative will supply purified water to recharge the Santa Cruz Mid-County Groundwater Basin, the District's sole drinking water source. By increasing the long-term reliability of the water supply, the project supports future residential and commercial development in a way that is resilient to climate change, drought, and regulatory restrictions under the Sustainable Groundwater Management Act (SGMA). The project also enables the district to comply with basin sustainability goals without relying on additional groundwater pumping or external water imports, both of which would be vulnerable to climate impacts or infrastructure failure.

SqCWD also actively incorporates hazard data into infrastructure decision-making through documents such as its 2021 Risk and Resilience Assessment and 2023 Well Master Plan. These assessments evaluate the vulnerability of critical infrastructure such as wells, pump stations, treatment facilities, and storage tanks, to a wide range of threats including earthquakes, power outages, wildfires, and sea level rise.

To enhance system readiness and ensure continuity of operations during emergencies, the district adopted a comprehensive ERP in 2021. This plan outlines hazard-specific procedures for wildfire, drought, seismic events, and public safety power shutoff (PSPS) scenarios. As new development areas are incorporated into the district's service boundary or experience infrastructure upgrades, the ERP serves as a framework for evaluating how emergency response capabilities can scale alongside population and asset growth.

In parallel, the district's WSCP uses a tiered drought response structure to protect supplies and maintain equitable service delivery. This plan ensures that as development proceeds, water allocation and conservation messaging can be swiftly scaled up during extreme droughts.

Equity also plays a growing role in SqCWD's future development strategy. Several communities within or adjacent to the district's service area have been identified as Disadvantaged Communities (DACs) under state guidelines. Although formal planning processes specific to these populations are limited in scope, the district's major resilience investments, including Pure Water Soquel and its demand management programs, are explicitly designed to minimize the financial and environmental burdens on low-income

residents. These efforts ensure that vulnerable populations are not disproportionately affected by rate increases or service disruptions during emergencies or climate-related events.

Lastly, SqCWD's Capital Improvement Program (CIP) and 2023 Rate Study incorporate hazard mitigation into the financial and logistical planning for future development. The CIP prioritizes projects such as seismic tank retrofits and new interties to support system redundancy, that both support long-term growth and reduce risk exposure while the rate study ensures that future development costs are distributed fairly and sustainably across user groups.

4.5.3.1 Development & Hazard Considerations

SqCWD faces significant hazard risks that are directly influenced by past and ongoing patterns of urban development. While the district itself is not a land use authority, residential, commercial, and infrastructure growth within its service area has increased exposure to multiple hazards, including drought, wildfire, flooding, and coastal threats like sea level rise and saltwater intrusion.

Historically, urban development in the unincorporated areas of Santa Cruz County, the City of Capitola, and the Live Oak community have placed critical infrastructure and housing in areas prone to wildfire, flooding, and seismic activity. For example, new construction in the wildland-urban interface (WUI), especially in the district's northern service area, has increased the number of people and properties exposed to high fire hazard severity zones.

Additionally, residential development in low-lying coastal areas and near the Soquel Creek floodplain has expanded the number of structures vulnerable to flooding. Growth in the district's coastal areas, including portions of Capitola Village, now overlaps with tsunami evacuation zones, and will face escalating risk from sea level rise and coastal erosion as projected by the California Ocean Protection Council and the U.S. Geological Survey. New homes and businesses near bluffs or on unstable soils also increase the likelihood of damage from slope failures and expansive soils, particularly during heavy rainfall years.

As development pushes further into hazard-prone areas, the district must plan for a more complex and distributed infrastructure network that remains resilient to disaster. Longer distribution lines, more dispersed customer bases, and increased reliance on pump stations and tanks in remote areas create vulnerabilities, especially during power outages, earthquakes, or wildfires. Expansion into hilly or geologically unstable terrain further complicates emergency access and response.

4.5.4 Hazard Problem Statements

As part of the mitigation action identification process, the internal planning group for each jurisdiction identified areas of concern (aka problem statements) for their respective facilities based on the risk assessment and vulnerability analysis. Problem statements focused on the impact, victim, and the threat that the hazard could create in the jurisdiction, as described in Table 4-6. Identifying common issues and

weaknesses through these problem statements assisted the planning group in understanding the realm of resources needed for mitigation.

The goal is to have at least one mitigation action for every problem statement. Projects or actions have been developed to mitigate each problem identified. See Table 4-8 for a full list of mitigation actions and corresponding problem statements that they address. Each problem statement is coded with a problem number for cross-referencing between Table 4-6 and Table 4-8.

Table 4-6: SqCWD Problem Statements

Hazard	Sub-Hazard	Area of Concern	Problem IS	Description	Related Mitigation Actions
Coastal Hazards	Coastal Erosion	Threat	ps-CE-SCW-01	Bluff erosion along the coastline threatens the long-term stability of buried pipelines and surface infrastructure in erosion-prone areas of Capitola and near Soquel Creek.	ma-CE-CPT-01, ma-CE-SCW-01, ma-CE-SCW-02, ma-CE-SCW-03
Coastal Hazards	Coastal Erosion	Impact	ps-CE-SCW-02	Coastal erosion can undermine the structural integrity of water infrastructure and access roads, increasing the risk of equipment damage or service outages.	ma-CE-SCW-01
Coastal Hazards	Coastal Erosion	Victim	ps-CE-SCW-03	Communities and facilities located along coastal bluff areas may face reduced water service reliability due to damage or relocation of infrastructure caused by erosion.	ma-CE-SCW-01
Drought		Impact	ps-DR-SCW-01	Prolonged drought periods may reduce groundwater recharge rates, stressing Soquel Creek Water District?s well-based supply system.	ma-DR-SCW-01, ma-DR-SCW-02, ma-DR-SCW-03, ma-DR-SVW-01, ma-DR-CBC-03
Drought		Victim	ps-DR-SCW-02	Customers relying on groundwater and recycled water from the Pure Water Soquel project may experience decreased service reliability during severe drought conditions.	ma-DR-SCW-01
Drought		Threat	ps-DR-SCW-03	Climate change is increasing the frequency and severity of droughts, putting long-term strain on the District?s water supply resilience and planning.	ma-DR-CBC-03
Drought		Impact	ps-DR-SCW-04	Drought stress may trigger over-extraction from local aquifers, risking saltwater intrusion and long-term damage to groundwater quality.	ma-DR-SCW-01, ma-DR-SPD-01
Drought		Threat	ps-DR-SCW-05	Existing water conservation messaging and drought response protocols may be insufficient for future extreme drought scenarios.	ma-DR-SCW-02, ma-DR-CBC-01

Hazard	Sub-Hazard	Area of Concern	Problem IS	Description	Related Mitigation Actions
Earthquake		Impact	ps-EQ-SCW-01	Some water tanks within the District have not yet been seismically retrofitted and may experience sloshing, structural damage, or failure during earthquakes.	ma-EQ-SCW-01
Earthquake		Victim	ps-EQ-SCW-02	Earthquake-induced service disruptions may isolate communities reliant on Soquel Creek Water District, especially if key pipelines, tanks, wells or pump stations? fail.	ma-AH-SCW-01, ma-EQ-SCW-01, ma-EQ-SCW-02
Earthquake		Threat	ps-EQ-SCW-03	The District lacks fully developed earthquake scenario planning for infrastructure interties and emergency water supply coordination with partner agencies.	ma-EQ-SCW-03
Flood		Impact	ps-FL-SCW-01	Flooding in the Bates Creek and North Main Street area has previously damaged critical water infrastructure, highlighting ongoing vulnerabilities where water lines intersect with creeks, culverts, or bridges.	ma-FL-SCW-01
Flood		Threat	ps-FL-SCW-02	Water lines that intersect or run adjacent to undersized or deteriorating county culverts are increasingly vulnerable to failure during flooding triggered by heavy storm events.	ma-FL-SCW-01
Flood		Victim	ps-FL-SCW-03	Flood-prone areas near production wells and pump stations are at risk of service disruption and damage, especially in floodplains and low-lying coastal zones.	ma-FL-SCW-02
Flood		Threat	ps-FL-SCW-04	Limited coordination between culvert condition assessments and water infrastructure siting reduces the District?s ability to proactively address flood hazards.	ma-FL-SCW-03
Liquefaction		Threat	ps-LQ-SCW-01	Several critical infrastructure assets, including pump stations and production wells, are located in areas with high liquefaction risk, threatening operational continuity during a seismic event.	ma-AH-SCW-01
Slope Failure		Threat	ps-SF-SCW-01	Water infrastructure throughout SqCWD service area are at risk from landslides and bluff failures, which can cause service disruptions or require costly relocations.	ma-SF-SCW-01
Slope Failure		Impact	ps-SF-SCW-02	Slope instability may damage tanks, pipelines, and access roads, increasing maintenance costs and posing safety hazards for crews.	ma-SF-SCW-02, ma-SF-SCW-03

Hazard	Sub-Hazard	Area of Concern	Problem IS	Description	Related Mitigation Actions
Slope Failure		Victim	ps-SF-SCW-03	Residents and facilities in slope-prone areas may experience delayed restoration of water service following landslide-related damage to District infrastructure.	ma-SF-SCW-02, ma-SF-SCW-01
Sea Level Rise		Impact	ps-SLR-SCW-01	Rising sea levels pose a threat to coastal hydrants, pipelines and other water infrastructure located near beaches, increasing exposure to corrosion, wave action, and inundation.	ma-SLR-SCW-01
Sea Level Rise		Victim	ps-SLR-SCW-02	Residents and facilities in low-lying coastal zones are vulnerable to service disruptions as sea level rise threatens pipelines, wells, and valves in the vicinity.	ma-SLR-SCW-01, ma-SLR-SCW-02
Sea Level Rise		Threat	ps-SLR-SCW-03	Sea level rise and storm surge increase the risk of sand deposition and debris accumulation around key valve access points, limiting emergency operations and maintenance.	ma-SLR-SCW-01, ma-SLR-SCW-02, ma-SLR-SCW-03
Sea Level Rise		Impact	ps-SLR-SCW-04	Sea level rise increases groundwater levels, which can corrode and infiltrate buried pipes and appurtenances, while also driving seawater intrusion that threatens the long-term reliability of groundwater supply.	ma-SLR-SCW-02, ma-SLR-PVW-02
Coastal Hazards	Tsunami	Threat	ps-TS-SCW-01	Coastal infrastructure such as hydrants, valves, and pipelines are vulnerable to inundation and debris impacts during a tsunami event.	ma-TS-SCW-01, ma-TS-SCW-02, ma-TS-SCW-03
Coastal Hazards	Tsunami	Impact	ps-TS-SCW-02	A tsunami could cause significant physical damage to coastal water infrastructure and obstruct access routes needed for emergency response and repair.	ma-TS-SCW-02
Coastal Hazards	Tsunami	Victim	ps-TS-SCW-03	Customers in low-lying areas near beaches may face prolonged service outages following a tsunami due to loss of access and compromised infrastructure.	ma-TS-SCW-02
Wildfire		Threat	ps-WF-SCW-01	Critical water infrastructure, such as tanks, production wells and pump stations in high fire severity zones are surrounded by flammable vegetation such as eucalyptus trees and lack sufficient defensible space.	ma-WF-SCW-01

Hazard	Sub-Hazard	Area of Concern	Problem IS	Description	Related Mitigation Actions
Wildfire		Victim	ps-WF-SCW-02	Water infrastructure in the Santa Cruz hills is increasingly exposed to wildfire risk, threatening service continuity for residents during fire emergencies.	ma-AH-RCD-01
Wildfire		Impact	ps-WF-SCW-03	Fire hydrants are designed for structure protection and may not be adequately sized, equipped, or located to support wildfire suppression in high-risk areas.	ma-WF-SCW-04
Wildfire		Threat	ps-WF-SCW-04	Limited coordination between Soquel Creek Water District and Central Fire may delay emergency response access or inhibit efficient resource deployment during wildfires.	ma-WF-SCW-03

4.5.4.1 Climate Change Impacts & Vulnerable Populations

The impacts of climate change in Santa Cruz County disproportionately burdens vulnerable populations, exacerbating challenges in water access, housing resilience, and emergency preparedness. Rising temperatures and extended droughts strain water supplies, with limited recharge mechanisms and insufficient mapping compounding the risks. These issues are particularly acute for low-income households, which often lack the resources to address water well failures, waterline repairs, or contingency planning. Many of these residents face financial barriers to implementing proactive mitigation measures or recovering from water shortages.

Within the SqCWD service area and the broader Santa Cruz Mid-County Groundwater Basin, several communities are classified as Disadvantaged Communities (DACs) under California law with median household incomes less than 80% of the statewide average. Two DAC census block groups fall entirely within SqCWD's area, housing approximately 880 and 530 residents, respectively. Additionally, nearby regions within the groundwater basin include further DACs and even Severely Disadvantaged Communities (SDACs) with populations up to 1,490, which stand to benefit indirectly from the district's resilience projects. (REGION, 2023)

These communities face heightened risk from water scarcity and potential rate impacts, particularly if groundwater supplies remain stressed. A cost-benefit analysis associated with the Pure Water Soquel initiative revealed that without the project water rates could escalate to unsustainable levels reaching nearly $12,000 per acre-foot in order to satisfy overdraft regulations. (REGION, 2023)

By advancing projects like Pure Water Soquel and integrating community-specific mitigation actions, SqCWD is not only enhancing regional water sustainability but also supporting environmental justice and equitable access to clean and affordable water. These efforts are foundational to ensuring that all residents are protected from the escalating risks of water insecurity and climate-driven hazards.

SqCWD faces multiple risks from climate change, with direct consequences for vulnerable populations in its service area. Rising seas, more intense storms, prolonged droughts, and wildfire threats compound existing infrastructure challenges, and residents who are elderly, low income, linguistically isolated, or medically dependent on uninterrupted water service are disproportionately affected when service is disrupted.

Drought: SqCWD relies heavily on groundwater, which is highly sensitive to reduced recharge during prolonged droughts. Climate change is expected to intensify these cycles, stressing the District's wells and recycled water supply from Pure Water Soquel. Over-extraction during drought increases the risk of seawater intrusion, threatening long-term drinking water quality. Vulnerable households, particularly renters and low-income residents, may be disproportionately impacted by surcharges, water-use restrictions, or service interruptions, while those with limited English proficiency may not fully benefit from drought communication campaigns.

Coastal Erosion and Sea Level Rise: Bluff erosion and rising seas pose significant risks to buried pipelines, pump stations, and valves along Capitola's coastline and near Soquel Creek. Sea level rise also raises groundwater levels, increasing pipe corrosion and seawater intrusion risks. These threats are compounded during storm surge and coastal flooding, which may leave low-lying residents and businesses without reliable water service. Vulnerable populations in coastal neighborhoods face the dual risk of property damage and water service disruption, limiting their ability to shelter in place or recover quickly.

Earthquake and Liquefaction: SqCWD infrastructure, including tanks, wells, and pump stations, lies within high seismic risk zones, with some assets also located in liquefaction-prone soils. Although not impacted by climate change, damage from earthquakes could disrupt service for entire neighborhoods, isolating vulnerable residents without access to clean water for drinking, sanitation, or medical needs. Older, lower-income households are especially at risk because they are less likely to have storage capacity, earthquake retrofits, or financial means to recover quickly.

Flooding and Slope Failure: Flooding in Bates Creek, North Main Street, and other low-lying areas has previously damaged water lines where they intersect creeks and culverts, risks that are projected to worsen with more intense atmospheric river events. Slope failures and bluff instability in hillside areas also endanger tanks, pipelines, and access roads, causing service delays and costly relocations. These risks particularly impact hillside residents who may face evacuation challenges or long delays in water restoration following storms.

Tsunami: Coastal infrastructure—including hydrants, valves, and pipelines—remains vulnerable to inundation and debris damage during tsunami events. Residents and businesses in Capitola's low-lying beachfront areas may experience prolonged service outages following an event, with renters, seniors, and tourism-dependent workers facing outsized recovery challenges.

Wildfire: Climate change is increasing fire weather conditions and vegetation stress across the Santa Cruz Hills, placing District assets in Wildland Urban Interface areas at risk. Tanks, wells, and pump stations surrounded by flammable vegetation, such as eucalyptus, are particularly vulnerable. Limited water storage

in some service zones may constrain firefighting capacity during wildfire events, endangering residents who rely on the District for fire suppression. Populations with mobility challenges or limited financial resources are less able to evacuate quickly or recover from wildfire-related service disruptions.

Overall, SqCWD's climate-related vulnerabilities illustrate how infrastructure risks translate into disproportionate impacts for sensitive populations. Integrating climate adaptation into infrastructure planning, enhancing coordination with fire and emergency partners, and ensuring equitable outreach to disadvantaged residents will be critical to protecting both water supply reliability and community resilience.

4.6 Mitigation Strategy

This section provides the framework for how the SqCWD will reduce hazard risk within its service area while supporting the broader goals of the Santa Cruz County MJHMP. It includes an overview of existing capabilities and opportunities for expanding resilience, and the district's prioritized mitigation actions. Together, these elements demonstrate how the district integrates hazard awareness into its conservation mission and contributes to a coordinated countywide approach.

Within the Santa Cruz County MJHMP, the mitigation strategy serves as the guidebook for future hazard mitigation efforts. For the SqCWD, the strategy within this annex reflects the outcomes of the countywide planning process while also capturing the district's unique priorities and program areas. The strategy is designed to reduce the vulnerabilities identified in the risk assessment, including the problem statements developed for wildfire, flood, earthquake, slope failure, drought, and climate change.

Mitigation actions identified in this annex are both policy and project oriented, advancing conservation-based approaches that directly support hazard reduction. Actions are structured to align with FEMA's requirements and to integrate with existing county and regional planning mechanisms. Each action outlines responsible parties, potential funding sources, and required resources to ensure successful implementation.

For the SqCWD, this strategy serves as a roadmap for delivering mitigation through technical assistance, watershed restoration, and partnerships with landowners. By combining its project-based capacity with the broader coordination of the countywide plan, the district contributes to a unified framework that reduces hazard risk across Santa Cruz County while also advancing its mission to protect natural and working lands. The subsections that follow describe these elements in detail:

- **Section 4.6.1 Aligning the Action Plan** provides a summary of the district's capacity to address natural hazards.
- **Section 4.6.3 Mitigation Action Plan** presents the SqCWD's prioritized actions that will guide implementation in coordination with countywide strategies.

4.6.1 Aligning the Action Plan

This section connects the SqCWD's mitigation actions with its existing capabilities and areas for growth. Capability assessments are a required element of hazard mitigation planning under the Disaster Mitigation Act of 2000 and FEMA's 2023 guidance, ensuring that actions are realistic, achievable, and aligned with available resources.

The section begins with a summary of the SqCWD's capabilities across four areas: planning and regulatory, administrative and technical, fiscal, and education and outreach. This overview highlights the tools and strengths that the district already uses to reduce hazard risk. The section then provides a detailed analysis of each capability area, identifying both current practices and opportunities to expand resilience.

4.6.1.1 Capabilities & Opportunities Assessment

To develop a realistic and actionable mitigation strategy, it must account for existing jurisdictional capabilities and what future opportunities there are to enhance those capabilities for purposes of hazard mitigation. This section provides an assessment of SqCWD's existing capabilities and future opportunities, including planning and regulatory, administrative and technical, fiscal, and public outreach and education capabilities. This assessment also identifies opportunities to integrate this MJHMP into future planning, policies, or programs to weave mitigation efforts into daily operations and address hazard problems wholistically. Capabilities are categorized into four groups and include various mechanisms.

- **Planning and Regulatory Capabilities:** Existing long-range plans, emergency response plans, hazard-specific plans, land use policies, and building and development standards.
- **Administrative and Technical Capabilities:** Available expertise in emergency services, engineering, grant management, and community planning.
- **Fiscal Capabilities:** Budgetary capacity, taxing authority, grants, and other funding mechanisms that can support mitigation projects.
- **Outreach and Education Capabilities:** Existing programs for providing technical assistance, community education, public warnings, and stakeholder engagement.

A full description of the process used to develop the capabilities assessment is provided in Volume 1, Section 2.3.3.

This capabilities and opportunities assessment for SqCWD lists the various types of capabilities along with how they have been, currently are, or will in the future be integrated into hazard mitigation planning efforts. The three "HMP Integration" columns that identify the capability's status and usage are color-coded with green, yellow, or orange shading to communicate the following:

- **Status:** If the capability is present at all and what level of use it has generally.
- **Current Mitigation Use:** If the capability is currently being used in mitigation efforts, specifically, and at what level.
- **Future Opportunity:** If there is a future opportunity to integrate the capability into mitigation efforts and at what level.

Planning & Regulatory Capabilities

As a special district with limited authority and not a municipality, SqCWD does not maintain traditional planning or regulatory tools, such as hazard-specific ordinances or development standards. That said, SqCWD possesses a range of capabilities that support its ability to manage hazard mitigation planning and implementation. From a planning and regulatory perspective, the district has established emergency response plans, water management plans, and water shortage contingency plans that form a foundation for addressing hazards and guiding development in a safe and sustainable manner. These frameworks provide essential guidance for risk reduction and resilience.

Further, SqCWD complies with all development standards and environmental review requirements for the State of California, including the California Environmental Quality Act (CEQA), and within the county and municipalities where its projects are located. These local regulatory environments are described in Volume 1 for Santa Cruz County and in the City of Capitola's municipal annex of Volume 2.

Future integration of the MJHMP will occur through various processes and mechanisms outlined across multiple mitigation actions (Table 4-8). Key opportunities for future hazard mitigation integration with SqCWD's existing planning mechanisms are to update its Capital Improvement and Asset Management Plans to account for projected coastal erosion rates, overlay current flood hazard data, and integrate sea level rise modeling (ma-CE-SCW-03, ma-FL-SCW-03, and ma-SLR-SCW-02).

Administrative & Technical Capacity

In terms of administrative and technical capabilities, the district benefits from the expertise of its staff in emergency services, public works, engineering, and community planning. This internal capacity allows the district to design and implement technical solutions, coordinate response efforts, and integrate hazard mitigation into everyday operations.

Warning Systems & Services

The SqCWD does not manage formal warning systems for hazards such as floods, wildfires, or earthquakes. Emergency notification and public alerting remain the responsibility of county and state agencies. The SqCWD's role is to support these systems by providing education, preparedness resources, and technical assistance to landowners.

Fiscal Capabilities

Fiscal capabilities are also a critical strength. The district has access to budgetary resources, state and federal grants, and other funding mechanisms that can be leveraged to finance mitigation projects. This financial flexibility enables both proactive planning and rapid response when hazard events occur.

Education & Outreach Capabilities

Lastly, the district has strong outreach and education capabilities. Existing programs for public education, community engagement, and emergency alerts help inform residents about risks and preparedness strategies. These outreach efforts play a key role in building public awareness and fostering a culture of safety throughout the community.

CAPABILITY ASSESSMENT LEGEND

HMP Integration

Status	Current Mitigation Use	Future Opportunity
Currently in use or present.	Used widely for mitigation.	Opportunity to expand and integrate.
(Sort of) Seldomly used or limited presence.	Limited use in mitigation planning.	Limited opportunity to expand and integrate.
(No) Not present or available.	Not used in mitigation planning.	No opportunity to expand or integrate.

Table 4-7: SqCWD Capabilities Assessment

Resource	HMP Integration: Status	HMP Integration: Current Mitigation Use	HMP Integration: Future Opportunity	Notes / Additional Detail
Planning and Regulatory Capabilities				
Hazard Reduction Programs (Annually Conducted)				
Capital Improvements Program (CIP) or Plan				Major capital investments are planned annually, including Pure Water Soquel, backup generators, tank upgrades, new wells, and interties
Annual Fire Prevention Plan				Fire suppression support is described; system maintains minimum pressures; not a standalone fire plan; utilize hydraulic modeling software to evaluate fire flow capacity
Seismic Safety Program (Non-structural)				Seismic risk addressed in Risk & Resilience Assessment and tank siting
Earthquake Modernization Plan (Building Safety)				Building-specific retrofits are not detailed but tank seismic upgrades are planned
Stormwater Management Program (Annual Inspections)				Stormwater not managed by SqCWD; under county or city jurisdictions

Resource	HMP Integration: Status	HMP Integration: Current Mitigation Use	HMP Integration: Future Opportunity	Notes / Additional Detail
Hazard Plans and Programs				
Floodplain Response Plan				Flooding risks noted but no formal response plan; addressed generally in ERP
Community Wildfire Protection Plan (CWPP)	N/A	N/A	N/A	Not applicable to water district
Ground Water Management Planning / Plans				Active leader in Santa Cruz Mid-County Basin GSP; co-founder of MGA
Climate Action Plan				Community Water Plan incorporates long-term sustainability, GHG reduction, and recycled water reuse
Drought Mgmt/ Contingency Plan				Detailed Water Shortage Contingency Plan includes 6 stages and mandatory conservation triggers
FireWise Communities within District				No FireWise designations in SqCWD service area
Hazard-Related Public Outreach Program				Robust outreach via WaterSmart portal, multilingual signage, direct mail, and board updates
Administrative and Technical				
Staff Capacity				
Emergency Manager				ERP assigns emergency responsibilities to designated management staff and Incident Command
Civil Engineer				Engineering Department supports infrastructure design, seismic risk review, and project delivery
Dedicated Public Outreach Personnel				Communications and Conservation staff provide public education, newsletters, and crisis messaging
GIS Specialist and Capability				GIS is used for asset management, pipeline replacement planning, and infrastructure vulnerability
Grant Manager, Writer, or Specialist				No designated grant specialist but district has secured state and federal funding for Pure Water Soquel and drought projects
Other				Technical experts and consultants are used for seismic, groundwater, and climate planning
Warning Systems/Services				
General				ERP details use of Everbridge alerts, CalWarn, SC County dispatch, and local news for alerts
Flood				District not responsible for flood response; relies on County for alerts
Wildfire				ERP considers wildfire risk, but warnings are issued via County OES and CalFire
Geological Hazards				Seismic hazard mitigation protocols in ERP and RRA, but no dedicated earthquake early warning system
Fiscal Capabilities				
Financial Resources for Hazard Mitigation				

Resource	HMP Integration: Status	HMP Integration: Current Mitigation Use	HMP Integration: Future Opportunity	Notes / Additional Detail
Levy for Specific Purposes with Voter Approval				District has used ballot measures and property-related fees to support capital investments
Utilities Fees				Water service charges fund operations, CIP, and drought response
System Development Fee				Capacity charges collected for new connections to fund infrastructure
General Obligation Bonds to Incur Debt				District prefers revenue-based financing; GO bonds are rare or not used recently
Special Tax Bonds to Incur Debt				Not used by SqCWD as of latest reports
Withheld Spending in Hazard-Prone Areas				Not applicable; facilities are driven by water resource needs
Stormwater Service Fees				Not under District's jurisdiction; handled by other local entities
Capital Improvement Project Funding				Regularly updated multi-year CIP that includes major projects such as Pure Water Soquel, seismic upgrades, and new interties. Planning efforts also consider tank sizes, locations, and main replacement sizing to ensure sufficient capacity and pressure for fire suppression.
Education / Outreach Capabilities				
Education/Outreach Resources				
Website Dedicated to Hazard Topics				Emergency updates, drought, conservation, PFAS, and Pure Water Soquel all prominently featured
Dedicated Social Media				Actively used to distribute public alerts and promote conservation programs
Hazard Info. Avail. at Library/ Planning Desk				Print outreach and brochures available, but not centralized at libraries
Annual Public Safety Events				Participates in outreach events and workshops (e.g., Water Harvest Festival, National Night Out, Fire Station Open Houses, workshops)
Ability to Field Public Tech. Assistance Requests				Dedicated Customer Service staff provide support
Public Safety Newsletters or Printed Outreach				Regular newsletters, multilingual bill inserts, and annual Water Quality Report
Fire Safe Councils				Not applicable to district's role or service area
Resource Conservation Districts				Partner with RCD on conservation and stormwater capture pilot projects
Other				Technical experts and consultants are used for seismic, groundwater, and climate planning

4.6.2 Soquel Creek Water District Mitigation Action Plan

Mitigation actions were developed based upon the jurisdiction's priorities, risk assessment results, and mitigation alternatives. The mitigation action prioritization method used by all participating jurisdictions is described in Section 4 of Volume 1. Table 4-8 lists each priority mitigation action, responsible party, time frame, potential funding source, implementation steps, and resources need to implement based upon consensus among the SqCWD's planning group members. All mitigation actions across jurisdictions are accessible through MAST (Mitigation Action Support Tool), providing comprehensive details including the mitigation goal, responsible party, timeline, potential funding sources, implementation steps, and required resources. As a dynamic document, hazard problem statements and mitigation activities will be regularly updated through MAST to reflect evolving needs and circumstances.

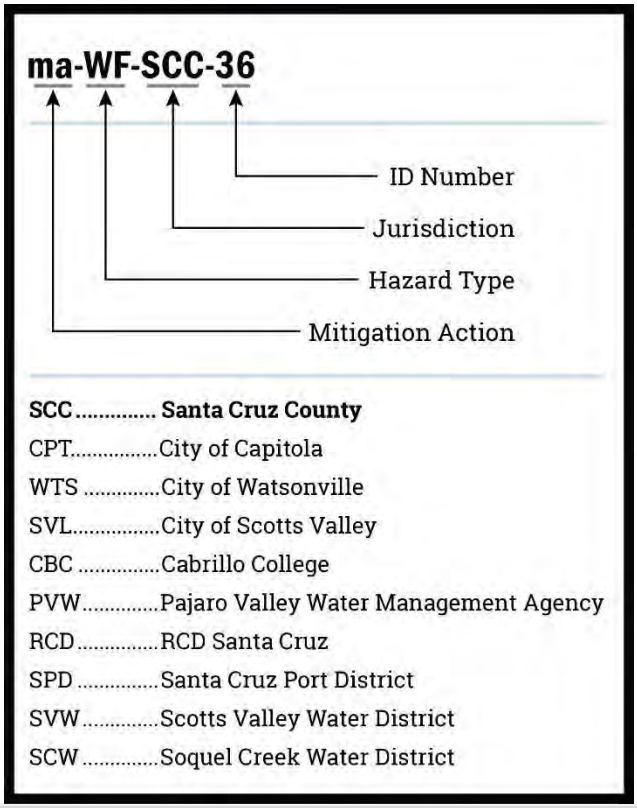


Figure 4-25: Mitigation Action Number Key

As a first-time participant in the Santa Cruz County Multi-Jurisdictional Hazard Mitigation Plan (MJHMP), SqCWD did not have any existing mitigation actions from a prior plan to evaluate. Therefore, all mitigation actions identified in this planning cycle are newly developed based on the district's updated risk assessment, local capabilities, and areas of concern identified during stakeholder engagement and interagency collaboration. These new actions were crafted to address the district's highest priority hazards, align with FEMA's hazard mitigation guidance, and reflect local infrastructure vulnerabilities and water resource challenges. The development of these mitigation strategies marks an important step in integrating resilience into the district's operations and long-term planning. All mitigation actions are documented in Volume 2, Table 4-8.

The SqCWD developed unique mitigation actions, tailored to their own unique priorities, vulnerabilities, and capabilities. Each action contains a level of detail that meets the regulatory requirements of FEMA and DMA 2000, including identifying the responsible party, time frame, potential funding source, implementation steps, and resources needed to implement. It is important to note that SqCWD is a small agency with a mostly horizontal structure. Therefore, there are no specific departments or divisions responsible for overseeing these mitigation actions; instead, responsibilities for actions will be shared across all positions in the district.

All actions are assigned a unique identification number, as illustrated in MAST and Figure 4-25, using alphanumeric characters that denote specific attributes of the action, including the type of hazard being mitigated, facilitating easy reference and management. Table 4-8 lists each mitigation action for the district.

Table 4-8: SqCWD Mitigation Action Plan

Hazard	Action ID	Action Title	Description	FEMA Mitigation Alternative	Timeline	Responsibility	Cost	Benefit	Internal Funding Source	External Funding Source	Priority (Based on Criteria)	Problems Addressed
All Hazard	**ma-AH-SCW-01**	Emergency Power Readiness	Install backup generators, batteries, or solar hybrid systems at key facilities (e.g., wells, tanks, booster stations) and establish fuel storage and contracts to support extended operation.	ES, PPRO, SP	Short 1-3 Years	SCWD + consultants	High	High	Staff Time (limited) General Fund via CIP (limited)	HMGP EPA FEMA (BRIC)	High	ps-EQ-SCW-02, ps-LQ-SCW-01
Coastal Hazards (Coastal Erosion)	**ma-CE-SCW-02**	Relocate Critical Assets from Eroding Bluffs	Relocate or protect critical assets, such as pipelines or tanks, currently located near actively eroding coastal bluffs in areas like Capitola.	SP	Medium 3-5 Years	SCWD + County, Cities	High	High	Staff Time (limited) General Fund via CIP (limited)	Prop 4 HMGP EPA FEMA (BRIC)	Medium	ps-CE-SCW-01, ps-CE-SCW-02, ps-CE-SCW-03
Coastal Hazards (Coastal Erosion)	**ma-CE-SCW-03**	Integrate Bluff Erosion Risk into Long-Range Planning	Update capital improvement and asset management plans to account for projected erosion rates and realignment needs.	PRV	Short 1-3 Years	SCWD + County	Low	High	Staff Time (limited) General Fund via CIP (limited)	N/A	Medium	ps-CE-SCW-01, ps-CE-RCD-03, ps-CE-SCW-02, ps-CE-SCW-03
Coastal Hazards (Coastal Erosion)	**ma-CE-SCW-01**	Conduct Infrastructure Risk Assessment in Bluff Erosion Zones	Identify and assess at-risk pipelines, tanks, and service roads in areas prone to coastal bluff erosion, and develop relocation or retrofit strategies.	PRV, PPRO	Short 1-3 Years	SCWD + County, RCD	Medium	High	Staff Time (limited) General Fund via CIP (limited)	Prop 4	High	ps-CE-CPT-02, ps-CE-SCW-01, ps-CE-SCW-02, ps-CE-SCW-03
Drought	**ma-DR-SCW-01**	Expand Recycled Water & Aquifer Recharge Projects	Expand the Pure Water Soquel program and pursue additional recycled water and managed aquifer recharge efforts to improve drought resilience and reduce groundwater overdraft.	PRV, NRP, SP	Short 1-3 Years	SCWD + RCD, County	High	High	General Fund via CIP (limited)	Measure Q EPA Prop 4 DWR BOR (WaterSMART)	High	ps-DR-PVW-01, ps-DR-PVW-02, ps-DR-RCD-01, ps-DR-SCW-01, ps-DR-SCW-02, ps-DR-SCW-04, ps-DR-SVW-02, ps-DR-CPT-02, ps-DR-SCW-03, ps-DR-SCW-05,ps-SLR-SCW-03
Drought	**ma-DR-SCW-02**	Improve Drought Response Communications	Strengthen drought communication plans, including multilingual alerts and conservation education during drought stages.	PE&A	Short 1-3 Years	SCWD + County	Low	High	Staff Time (limited) General Fund via CIP (limited)	DWR, Measure Q	High	ps-DR-SCW-01, ps-DR-SCW-05, ps-SF-SVW-05, ps-DR-SCW-02, ps-DR-SCW-03, ps-DR-SCW-04
Drought	**ma-DR-SCW-03**	Evaluate Long-Term Supply Diversification Options	Conduct feasibility studies for supply diversification options such as interties, additional storage, and stormwater capture to reduce drought vulnerability.	PRV	Short 1-3 Years	SCWD + County, City of Santa Cruz, other water providers	Low	Medium	Staff Time (limited) General Fund via CIP (limited)	Measure Q, DWR	High	ps-DR-SCW-01, ps-DR-SCW-02, ps-DR-SCW-03, ps-DR-SCW-04, ps-DR-SCW-05, ps-SLR-SCW-03
Earthquake	**ma-EQ-SCW-02**	Assess & Harden Infrastructure in Liquefaction Zones	Identify and retrofit pipelines, pump stations, and pressure zones located in high liquefaction hazard areas to minimize rupture and service failure.	PRV, SP	Short 1-3 Years	SCWD + consultants	High	High	Staff Time (limited) General Fund via CIP (limited)	HMGP BRIC	Medium	ps-EQ-SCW-02, ps-EQ-SVW-05, ps-EQ-SCW-01, ps-LQ-SCW-01
Earthquake	**ma-EQ-SCW-01**	Retrofit Seismically Vulnerable Water Tanks	Retrofit remaining water storage tanks to meet seismic performance standards and reduce sloshing risks during earthquake events.	SP	Short 1-3 Years	SCWD + consultants	High	High	General Fund via CIP (limited)	HMGP EPA FEMA (BRIC)	High	ps-EQ-SCW-01, ps-EQ-SCW-02, ps-LQ-SCW-01
Earthquake	**ma-EQ-SCW-03**	Develop Earthquake Scenario & Intertie Response Plan	Create a coordinated response plan for earthquake events, including fallback strategies for using interties with Central Water District and City of Santa Cruz. Assess pipeline vulnerability to model likely failure scenarios.	ES, PRV	Short 1-3 Years	SCWD + County, City of Santa Cruz, other water providers	Medium	High	Staff Time (limited) General Fund via CIP (limited)	N/A	High	ps-EQ-SCW-03, ps-EQ-SPD-02, ps-EQ-SCW-02, ps-EQ-SCW-01, ps-LQ-SCW-01

Hazard	Action ID	Action Title	Description	FEMA Mitigation Alternative	Timeline	Responsibility	Cost	Benefit	Internal Funding Source	External Funding Source	Priority (Based on Criteria)	Problems Addressed
Flood	**ma-FL-SCW-01**	Coordinate with County to Retrofit Flood-Prone Culvert Crossings	Work with Santa Cruz County to identify and retrofit or upslope culverts and bridge crossings that intersect with water mains and pipelines vulnerable to erosion and flood damage.	SP, PRV	Medium 3-5 Years	SCWD + County, RCD	High	High	Staff Time (limited) General Fund via CIP (limited)	HMGP EPA FEMA (BRIC)	Medium	ps-FL-SCW-01, ps-FL-SCW-02, ps-FL-SCW-03, ps-FL-SCW-04
Flood	**ma-FL-SCW-02**	Floodproof Production Wells & Pump Stations	Elevate or floodproof wells and pump stations located in floodplains or coastal areas vulnerable to rising waters.	SP, PPRO	Short 1-3 Years	SCWD + consultants	High	High	General Fund via CIP (limited)	Measure Q	Medium	ps-FL-SCW-03, ps-FL-SCW-01, ps-FL-SCW-04
Flood	**ma-FL-SCW-03**	Integrate Floodplain Data into Infrastructure Planning	Overlay FEMA and County floodplain data with pipeline and valve GIS layers to prioritize future maintenance, upgrades, and siting decisions.	PRV	Short 1-3 Years	SCWD + County	Low	High	Staff Time (limited) General Fund via CIP (limited)	N/A	High	ps-FL-SCW-04, ps-FL-SCW-01, ps-FL-SCW-02, ps-FL-SCW-03
Sea Level Rise	**ma-SLR-SCW-01**	Relocate or Harden Coastal Infrastructure	Relocate, elevate, or harden vulnerable coastal hydrants, pipelines, and valve access points at risk from sea level rise, inundation, and sand deposition.	SP, PPRO	Medium 3-5 Years	SCWD + County, Cities	High	High	General Fund via CIP (limited)	HMGP EPA FEMA (BRIC) Measure Q	High	ps-SLR-PVW-02, ps-SLR-SCW-01, ps-SLR-SCW-02, ps-SLR-SCW-03, ps-SLR-SPD-02, ps-SLR-SCW-04
Sea Level Rise	**ma-SLR-SCW-02**	Update Flood & Sea Level Rise Vulnerability Mapping	Integrate current sea level rise and coastal flood modeling into GIS systems to improve planning and prioritization of mitigation projects.	PRV	Short 1-3 Years	SCWD + County	Low	High	Staff Time (limited) General Fund via CIP (limited)	HMGP	High	ps-SLR-PVW-02, ps-SLR-RCD-01, ps-SLR-SCW-02, ps-SLR-SCW-03, ps-SLR-SCW-04, ps-SLR-SPD-02, ps-SLR-CPT-02, ps-SLR-SCW-01
Sea Level Rise	**ma-SLR-SCW-03**	Improve Coastal Maintenance Access	Identify and protect access routes to valves, hydrants, and tanks in beach areas that are periodically buried by sand or obstructed by coastal debris.	SP, ES	Short 1-3 Years	SCWD + County	Medium	High	Staff Time (limited) General Fund via CIP (limited)	Measure Q	High	ps-SLR-SCW-03, ps-SLR-SCW-01
Slope Failure	**ma-SF-SCW-01**	Identify & Monitor Landslide-Prone Infrastructure Sites	Conduct field inspections and geotechnical assessments of water infrastructure located near steep slopes or active landslide zones to identify stability risks.	PRV	Short 1-3 Years	SCWD + consultants	Medium	High	Staff Time (limited) General Fund via CIP (limited)	HMGP	Medium	ps-SF-SCW-03, ps-SF-SCW-01, ps-SF-SVL-03, ps-SF-SCW-02
Slope Failure	**ma-SF-SCW-02**	Stabilize or Relocate Infrastructure at Risk from Slope Failure	Based on assessment results, retrofit, relocate, or stabilize pipelines, tanks, or roads at high risk of damage from slope movement.	SP	Short 1-3 Years	SCWD + County, RCD	High	High	General Fund via CIP (limited)	HMGP EPA FEMA (BRIC)	Medium	ps-SF-CBC-02, ps-SF-SCW-02, ps-SF-SCW-03, ps-SF-SCW-01
Slope Failure	**ma-SF-SCW-03**	Integrate Slope Failure Risk into Planning Documents	Update Capital Improvement and Emergency Operations Plans to reflect known slope instability areas and critical infrastructure routes.	PRV	Short 1-3 Years	SCWD	Low	High	Staff Time (limited) General Fund via CIP (limited)	N/A	Medium	ps-SF-CBC-03, ps-SF-SCW-02, ps-SF-SCW-01
Coastal Hazards (Tsunami)	**ma-TS-SCW-01**	Assess & Retrofit Coastal Assets in Tsunami Inundation Zones	Identify and retrofit or relocate pipelines, valves, and hydrants within mapped tsunami hazard zones to withstand inundation and debris impact.	SP, PPRO	Medium 3-5 Years	SCWD + County, Cities	Medium	Medium	Staff Time (limited) General Fund via CIP (limited)	HMGP	Medium	ps-TS-SCW-01, ps-TS-SCW-02, ps-TS-SCW-03
Coastal Hazards (Tsunami)	**ma-TS-SCW-03**	Improve Access to Buried Infrastructure in Coastal Areas	Install markers and access improvements for valves and pipelines at risk of burial from tsunami debris or sand movement, ensuring post-disaster operability.	SP, ES	Short 1-3 Years	SCWD + County, Cities	Medium	High	Staff Time (limited) General Fund via CIP (limited)	Measure Q Prop 4 DWR	Medium	ps-TS-SCW-01, ps-TS-SCW-02, ps-TS-SCW-03

Hazard	Action ID	Action Title	Description	FEMA Mitigation Alternative	Timeline	Responsibility	Cost	Benefit	Internal Funding Source	External Funding Source	Priority (Based on Criteria)	Problems Addressed
Coastal Hazards (Tsunami)	**ma-TS-SCW-02**	Develop a Tsunami Infrastructure Response Plan	Create protocols for shutoff, rapid assessment, and phased restoration of coastal infrastructure following a tsunami event.	ES, PRV	Short 1-3 Years	SCWD + County	Low	Medium	Staff Time (limited) General Fund via CIP (limited)	Measure Q	Low	ps-TS-SCW-01, ps-TS-SCW-02, ps-TS-SCW-03
Wildfire	**ma-WF-SCW-01**	Maintain & Expand Defensible Space Around Infrastructure	Clear flammable vegetation and establish defensible space zones around water tanks, pump stations, and other critical infrastructure in high fire severity areas, including Larkin Valley.	NRP, SP	Short 1-3 Years	SCWD + Central Fire	Medium	High	Operating Budget	Measure Q CalFire EPA	Medium	ps-WF-SCW-01, ps-WF-SVL-04, ps-WF-SVW-01, ps-WF-WTS-03, ps-WF-SCW-02, ps-WF-SCW-03
Wildfire	**ma-WF-SCW-02**	Install Fire Department Connections (FDCs) at Storage Tanks	Equip water storage tanks in wildland-urban interface (WUI) areas with accessible FDCs to support tactical water supply for firefighting operations.	SP, ES	Short 1-3 Years	SCWD + Central Fire	High	High	Staff Time (limited) General Fund via CIP (limited)	Measure Q Prop 4	Medium	ps-WF-SVW-01, ps-WF-SCW-02, ps-WF-SCW-03, ps-WF-SCW-04
Wildfire	**ma-WF-SCW-03**	Improve Wildfire Coordination with Central Fire District	Formalize procedures and communication protocols with Central Fire for shared data, response coordination, and pre-fire planning in high-risk areas.	ES, PRV	Short 1-3 Years	SCWD + Central Fire	Low	High	Staff Time General Fund via CIP (limited)	Measure Q Prop 4	High	ps-WF-SCW-04, ps-WF-SCW-01,ps-WF-SCW-02, ps-WF-SCW-03
Wildfire	**ma-WF-SCW-04**	Water Supply & Pressure Maintenance	Partner with Santa Cruz Water and Central Water Districts to design and install interties that allow emergency water transfers during wildfire events, enhancing regional reliability and fire suppression support in high-risk zones. Also develop other strategies to reduce system strain during high demand periods, such as pre-filled water tanks ahead of red flag warnings, establishing isolation zones to protect capacity and pressure in critical areas, and fire flow strategies in coordination with fire districts.	SP, ES, PPRO	Medium 3-5 Years	SCWD + County, City of Santa Cruz, other water providers	High	High	Staff Time General Fund via CIP (limited)	Measure Q Prop 4 DWR	High	ps-WF-SCW-03

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Section 5. Scotts Valley Water District

Special District Annex

SANTA CRUZ COUNTY
MULTI-JURISDICTIONAL
HAZARD MITIGATION PLAN

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Santa Cruz County

2025 Multi-Jurisdiction Hazard Mitigation Plan Update

Volume 2, Section 5: Scotts Valley Water District (SVW)

Special District Annex

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Adoption Resolution

To comply with the Federal Disaster Mitigation Act of 2000 (DMA 2000), the Scotts Valley Water District has officially adopted this 2025 Santa Cruz County Multi-Jurisdictional Hazard Mitigation Plan, including Volume 1 in its entirety as well as this Volume 2 Special District annex. The adoption of the MJHMP recognizes the district's commitment to reducing the impacts of natural hazards within its jurisdiction and across Santa Cruz County.

A copy of the district's adoption record is provided on the following pages. Adoption records for all jurisdictions are summarized in Volume 1, Table ES-1.

ADOPTION RECORD TO BE INSERTED UPON COMPLETION

Section 5. Scotts Valley Water District

5.1 Scope & Purpose

This annex details the elements specific to the Scotts Valley Water District (SVWD) in the 2025 Santa Cruz County Multi-Jurisdictional Hazard Mitigation Plan (MJHMP). This annex is not intended to be a standalone document but appends to and supplements the information contained in the umbrella plan document (Volume 1). As such, all sections of the umbrella plan, including the planning process and other procedural requirements, apply to and were met by SVWD. This annex provides additional information specific to SVWD, with a focus on providing additional details on the planning process, risk assessment, and mitigation strategy for this jurisdiction.

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5.2 Jurisdictional Setting

The Scotts Valley Water District (SVWD) is a special district located in Santa Cruz County that provides water service to most of the City of Scotts Valley and to some adjacent unincorporated areas. Its service boundary is formally established and reviewed by the Santa Cruz County Local Agency Formation Commission (LAFCO), which also oversees the district's sphere of influence and annexations. Since the district was formed by a vote of the people in 1961, its jurisdiction has evolved to reflect growth pressures and community needs. In May 2023, LAFCO approved the annexation of 183 parcels covering approximately 1,481 acres into SVWD's service area, expanding the potential for future water connections and long-term system integration (SVWD, 2025)

Within this jurisdiction, SVWD operates approximately 4,300 service connections, supplying potable and recycled water to residential, commercial, and institutional users. Unlike many nearby agencies, SVWD relies exclusively on groundwater for its potable supply. All its water is drawn from the Santa Margarita Groundwater Basin, a geologic system composed of the Santa Margarita Sandstone, Monterey Shale, Lompico, and Butano formations. This basin is recharged primarily through rainfall and local creek systems, including Carbonera Creek and Bean Creek, both of which are tributaries of the San Lorenzo River. As a

result, SVWD is deeply tied to the hydrology of the region and is highly dependent on sustainable groundwater management for long-term service reliability.

SVWD shares the Santa Margarita Groundwater Basin with the San Lorenzo Valley Water District, the Mount Hermon Association, and more than one thousand private well users. Together, these entities formed the Santa Margarita Groundwater Agency (SMGWA), a Joint Powers Authority created under California's Sustainable Groundwater Management Act of 2014. Through the SMGWA, SVWD participates in basin-wide planning, monitoring, and implementation of the Groundwater Sustainability Plan, which was adopted to ensure the long-term viability of local water supplies. This collaborative governance structure reflects the interconnected nature of the basin and the importance of regional coordination in addressing overdraft, drought resilience, and climate variability.

The district's jurisdictional setting is also shaped by its relationship to local and regional governance frameworks. LAFCO regulates annexations, boundaries, and service expansions, while the City of Scotts Valley coordinates land use planning with the district's infrastructure capacity. The district itself owns and maintains wells, tanks, pipelines, and recycled water facilities, while the City of Scotts Valley manages sewer services and produces recycled water that SVWD distributes primarily for irrigation. This integration of municipal and district responsibilities underscores the cooperative framework in which SVWD operates and highlights its role as a critical service provider within Santa Cruz County's broader water management landscape.

- **Year of Incorporation:** 1961
- **2023 Population Served:** 11,678 (CAS 5-Year, 2018-2023)
- **Coverage Area:** 183 parcels covering approximately 1,481 acres and 5.5 square mile area

5.2.1 Geography & Climate

SVWD is located in the central portion of Santa Cruz County, north of the City of Santa Cruz covering an area of roughly 5.5 square miles that includes most of the incorporated City of Scotts Valley and some unincorporated parcels to the north. The district is situated in the Santa Margarita Groundwater Basin, a geologic and hydrologic system that provides the sole source of potable water for its customers. Figure 5-1 identifies the district boundary within Santa Cruz County. The terrain is characterized by a mix of valley lowlands, rolling hills, and forested slopes. Two major creeks within the district are Bean Creek and Carbonera Creek, which flow through the service area and are tributaries of the San Lorenzo River, which ultimately drains into the Monterey Bay. These waterways contribute to local aquifer recharge.

The district's setting in the lower Santa Cruz Mountains places it within a Mediterranean climate zone, with cool, wet winters and warm, dry summers. Average annual precipitation in Scotts Valley is approximately 40 inches, Figure 5-2, with most rainfall occurring between November and March. The region is highly variable in terms of precipitation, influenced by both Pacific storm systems and orographic effects from the Santa Cruz Mountains. Droughts have become more frequent and prolonged, stressing groundwater recharge and prompting conservation and drought contingency planning. Conversely, intense rainfall

events associated with atmospheric rivers can create short-term flooding and slope failure risks. (SVWD, 2020)

Temperature patterns in the district reflect a transitional climate zone between the cooler coastal areas of Santa Cruz and the warmer inland valleys. Average summer highs range in the mid-80s°F, while winter lows can dip into the upper 30s°F. This variability contributes to seasonal water demand cycles, with higher demand in summer due to landscape irrigation and lower demand in winter. Climate change projections suggest that the Scotts Valley area will experience longer dry spells, more intense winter storms, and greater wildfire risk in the surrounding wildland-urban interface.

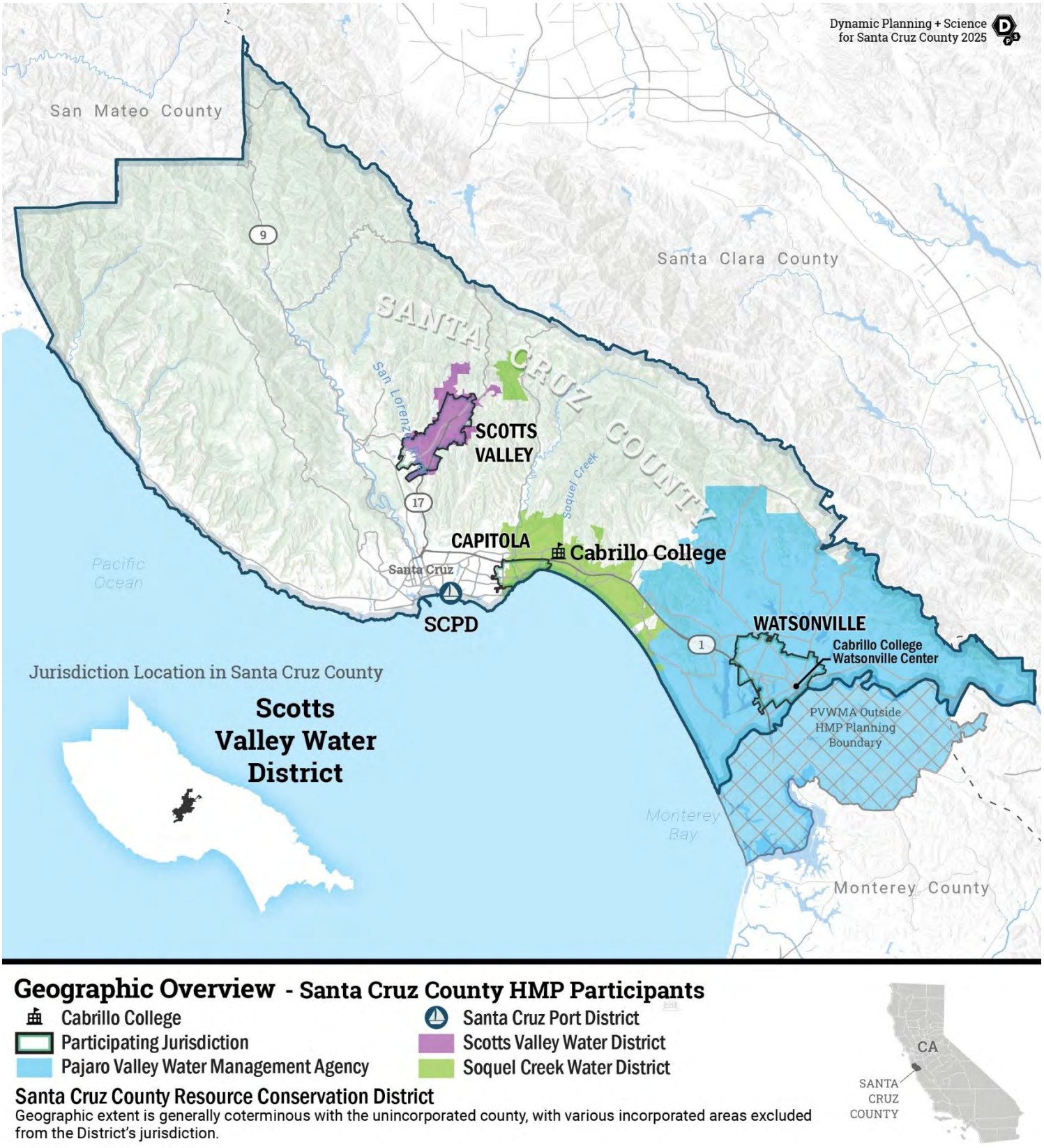


Figure 5-1: SVWD Sphere of Influence

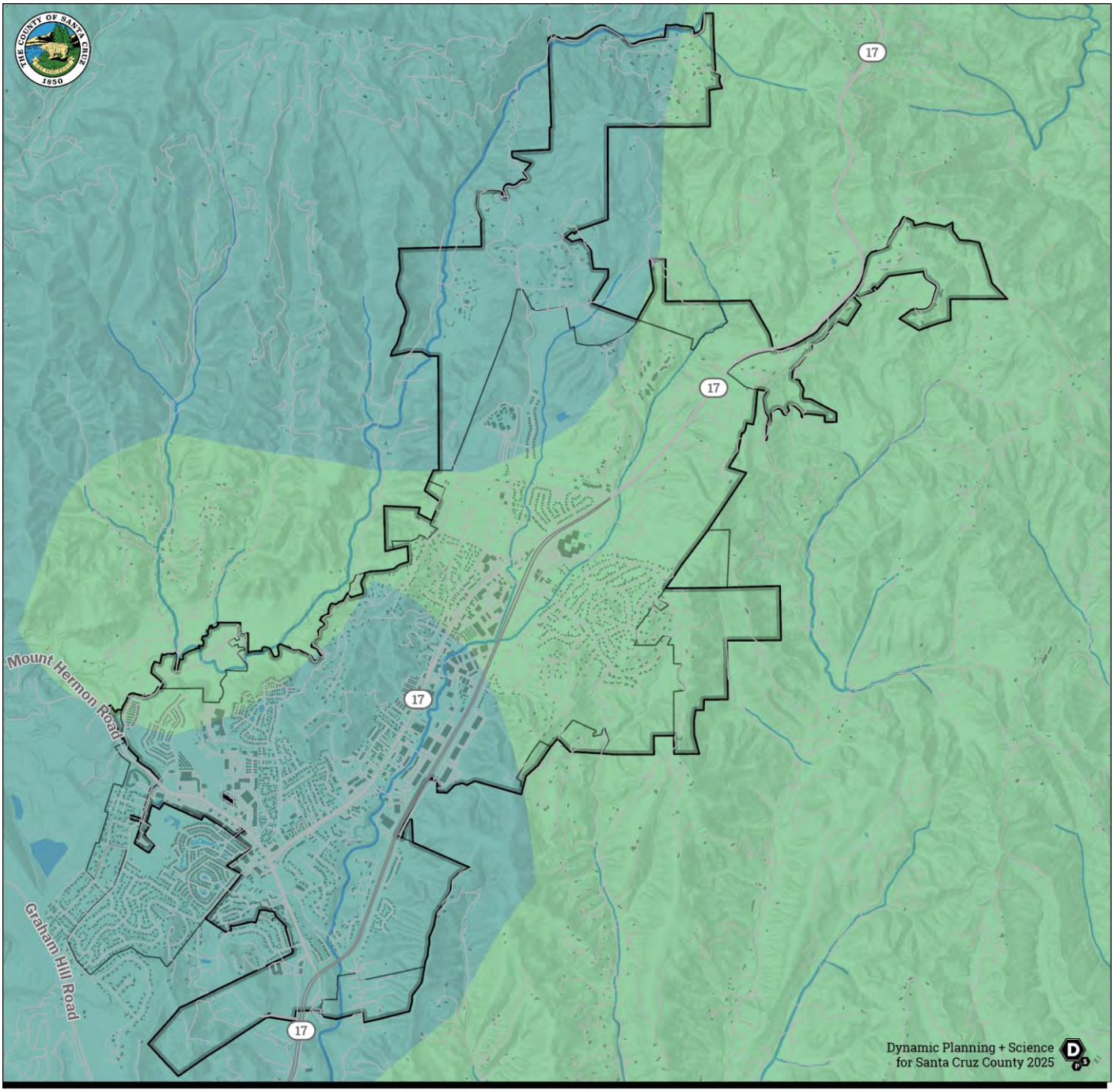


Figure 5-2: SVWD Average Annual Precipitation Map

5.2.2 Historic Overview

SVWD was established in 1961 under the California County Water District Act to provide a reliable local water supply to the growing community of Scotts Valley. At the time, Scotts Valley was transitioning from a rural, agricultural setting into a residential community with suburban development, creating the need for an organized water service provider. The district was formed as a special district with its own elected board of directors, independent finances, and authority to operate water infrastructure within its service area.

From its inception, SVWD has relied on groundwater as its sole source of potable water supply, drawing from the Santa Margarita Groundwater Basin (SMGB). In the early years, the district constructed its first production wells and storage facilities to serve a relatively small customer base. As Scotts Valley grew in population through the 1970s and 1980s, demand on the basin increased significantly. By the 1990s, evidence of groundwater overdraft and declining aquifer levels prompted the district to adopt more formal groundwater management practices. In 1994, SVWD adopted its first Groundwater Management Plan under Assembly Bill 3030, establishing long-term goals for basin monitoring, recharge, and protection.

Over the next two decades, SVWD became a regional leader in water efficiency and sustainable management. In partnership with the City of Scotts Valley, the district developed a recycled water program, using treated effluent from the City's wastewater treatment plant for non-potable irrigation of parks, schools, and landscaping. SVWD also invested in Low Impact Development (LID) projects, such as recharge basins, to enhance local aquifer replenishment. These programs became essential components of the district's drought resilience strategy, especially during California's multi-year droughts in the early 2000s and the severe 2012–2016 drought.

In 2014, the passage of California's Sustainable Groundwater Management Act (SGMA) brought new requirements for basin-wide planning. SVWD became a founding member of the SMGWA in 2017, joining with the San Lorenzo Valley Water District, the City of Scotts Valley, and Santa Cruz County to collaboratively manage the SMGB and prepare a Groundwater Sustainability Plan. This shift marked a significant evolution in the district's governance, emphasizing regional collaboration and long-term sustainability.

In recent years, SVWD has modernized its infrastructure and planning framework. The 2020 Urban Water Management Plan, developed jointly with San Lorenzo Valley Water District, integrated demand projections, drought risk assessment, and a Water Shortage Contingency Plan. The district also completed updates to its Administrative Code in 2022, codifying policies on service connections, annexations, and recycled water operations. Meanwhile, SVWD has continued to expand its capital improvement program, drilling new wells, constructing new storage tanks, and pursuing an intertie with the City of Santa Cruz to bolster long-term supply reliability.

5.2.3 Demographics & Vulnerable Populations

This section describes the demographic characteristics of SVWD to guide hazard mitigation planning efforts. Natural disasters affect communities both physically and socially, with demographic composition playing a central role in determining how impacts are distributed, particularly among vulnerable groups facing greater challenges in preparedness, response, and recovery. Understanding the area's social and economic landscape also helps assess potential social costs from infrastructure damage, including housing, industry, public facilities, essential services, and transportation.

Exploring local demographic data may help to identify groups and geographic areas with specific vulnerability to hazard events. In the context of all-hazards preparedness and response planning, at-risk individuals (often used interchangeably with "vulnerable populations") are defined federally as "children, pregnant women, senior citizens, and other individuals who have access or functional needs in the event of a public health emergency." (42 U.S.C. § 2802(b)(4)(B) (2019)) These populations may include, but are not limited to, individuals who are economically disadvantaged, living with disabilities, dependent on caregivers, from historically marginalized communities, have limited English proficiency or are non-English speaking, lack access to transportation, are experiencing homelessness, or have chronic medical conditions.

Certain populations face greater risk following a natural hazard event due to age, economic mobility, physical disability, geographic location, or a combination of factors. Vulnerability in the face of a hazard event is not a fixed characteristic; the same individual may be at risk for some hazards but not at risk for others. Planning for vulnerable populations in the context of hazard mitigation can help communities to prioritize limited resources where they will be the most effective. Refer to Volume 1, Section 1.4.3 for a more in-depth discussion of planning for vulnerable populations, at-risk individuals with access and functional needs, and environmental justice.

5.2.3.1 Income & Housing

Income and housing conditions within the SVWD reflect both the relative affluence of the community and the socioeconomic diversity that exists within its boundaries. According to the U.S. Census Bureau's American Community Survey, median household incomes in much of the SVWD service area exceed $119,000 annually, placing Scotts Valley among the higher-income communities in Santa Cruz County. However, the Figure 5-3 reveals that not all households enjoy this level of prosperity. Pockets of lower income are present, particularly in areas adjacent to the Highway 17 corridor and portions of northern Scotts Valley, where median incomes are closer to the countywide average.

Figure 5-4 shows that while much of Scotts Valley has relatively low poverty rates (less than 10 percent of residents), there are neighborhoods within the SVWD service boundary where over 24 percent of the population lives below the federal poverty line. These pockets of concentrated poverty are important to note for hazard mitigation planning, as economically disadvantaged households may face greater barriers to disaster preparedness, response, and recovery. Limited access to financial resources can make it more

difficult for residents to retrofit homes, purchase insurance, or relocate temporarily after a disaster, increasing vulnerability across the district.

Housing occupancy patterns further illustrate the community's socioeconomic structure as shown in Figure 5-5. Owner-occupancy rates are generally high across SVWD's service area, with many neighborhoods showing ownership rates above 88 percent. This reflects a relatively stable, long-term residential community, which can be a strength for hazard mitigation, as homeowners are often more likely to invest in property protection measures. However, the central corridor of Scotts Valley, particularly around downtown and multifamily housing zones, displays lower ownership rates, with some areas having less than 41 percent owner-occupied housing. These rental-heavy neighborhoods are likely to contain more vulnerable populations, such as lower-income households, younger families, and seniors in multifamily housing, who may be less able to invest in structural mitigation improvements.

Taken together, these income and housing patterns show a community with generally high levels of wealth and homeownership, but with localized areas of economic vulnerability and renter concentration that warrant careful attention in hazard mitigation planning.

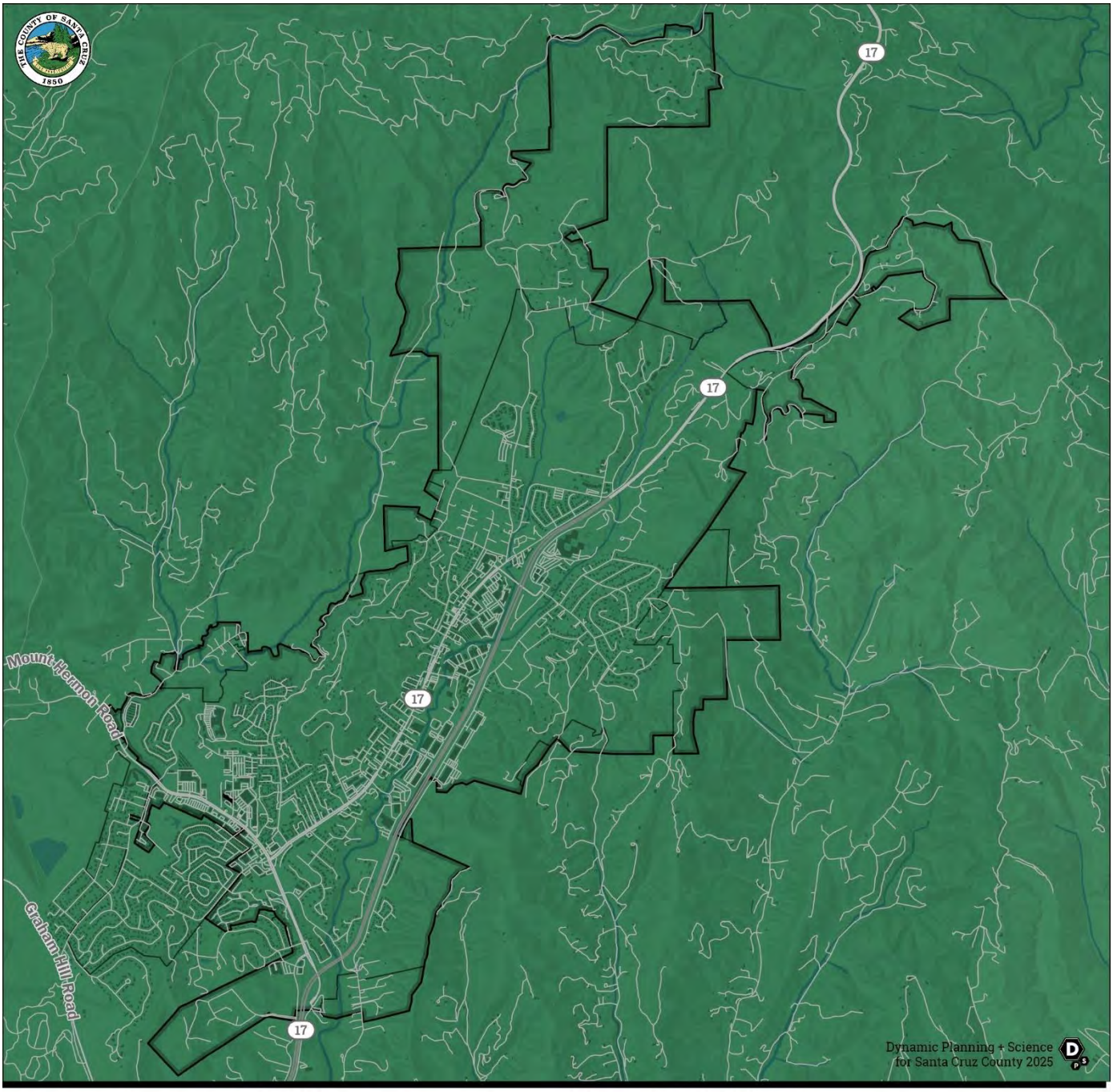


Figure 5-3: SVWD Median Household Income Map

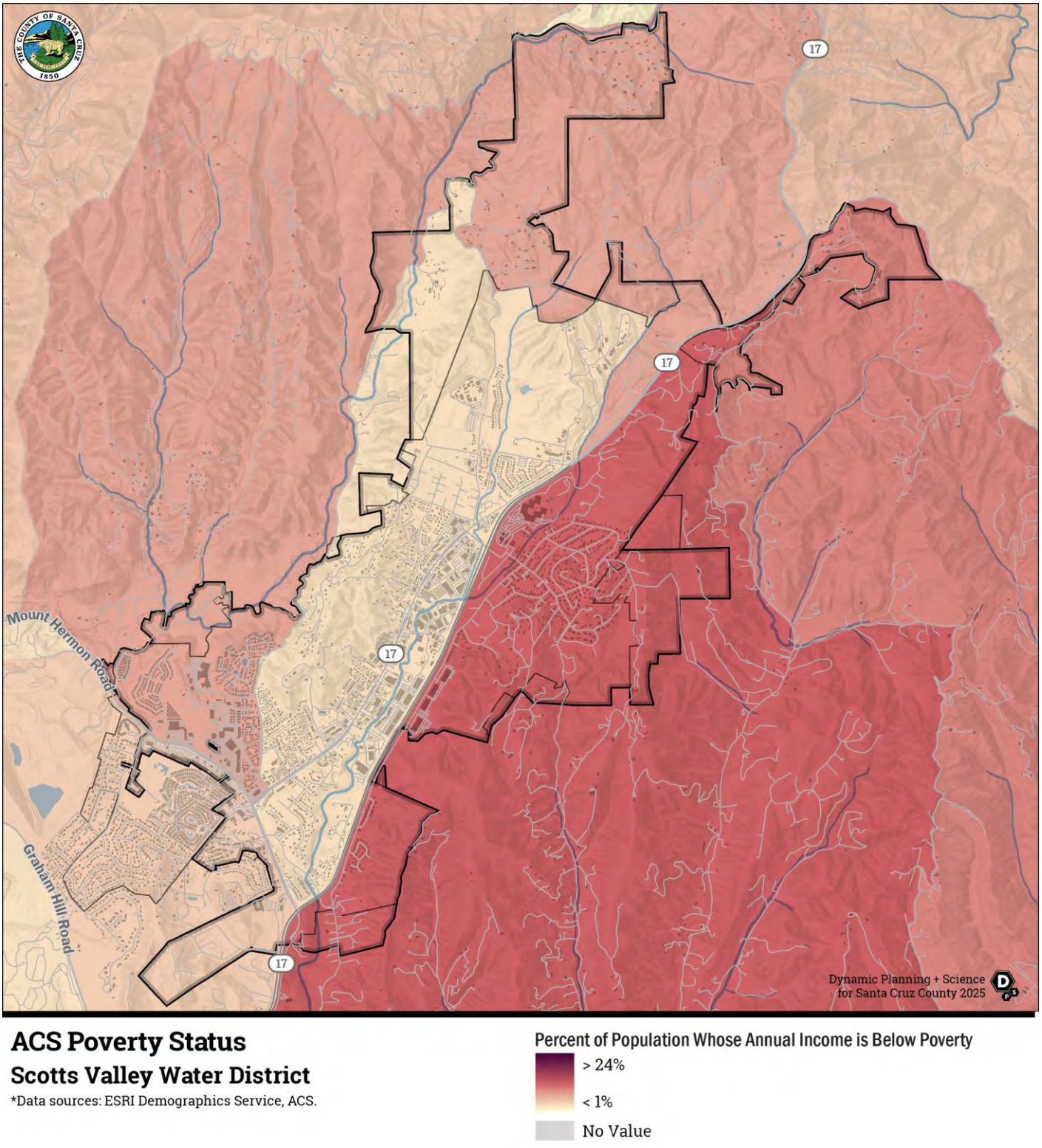


Figure 5-4: SVWD Poverty Status Map

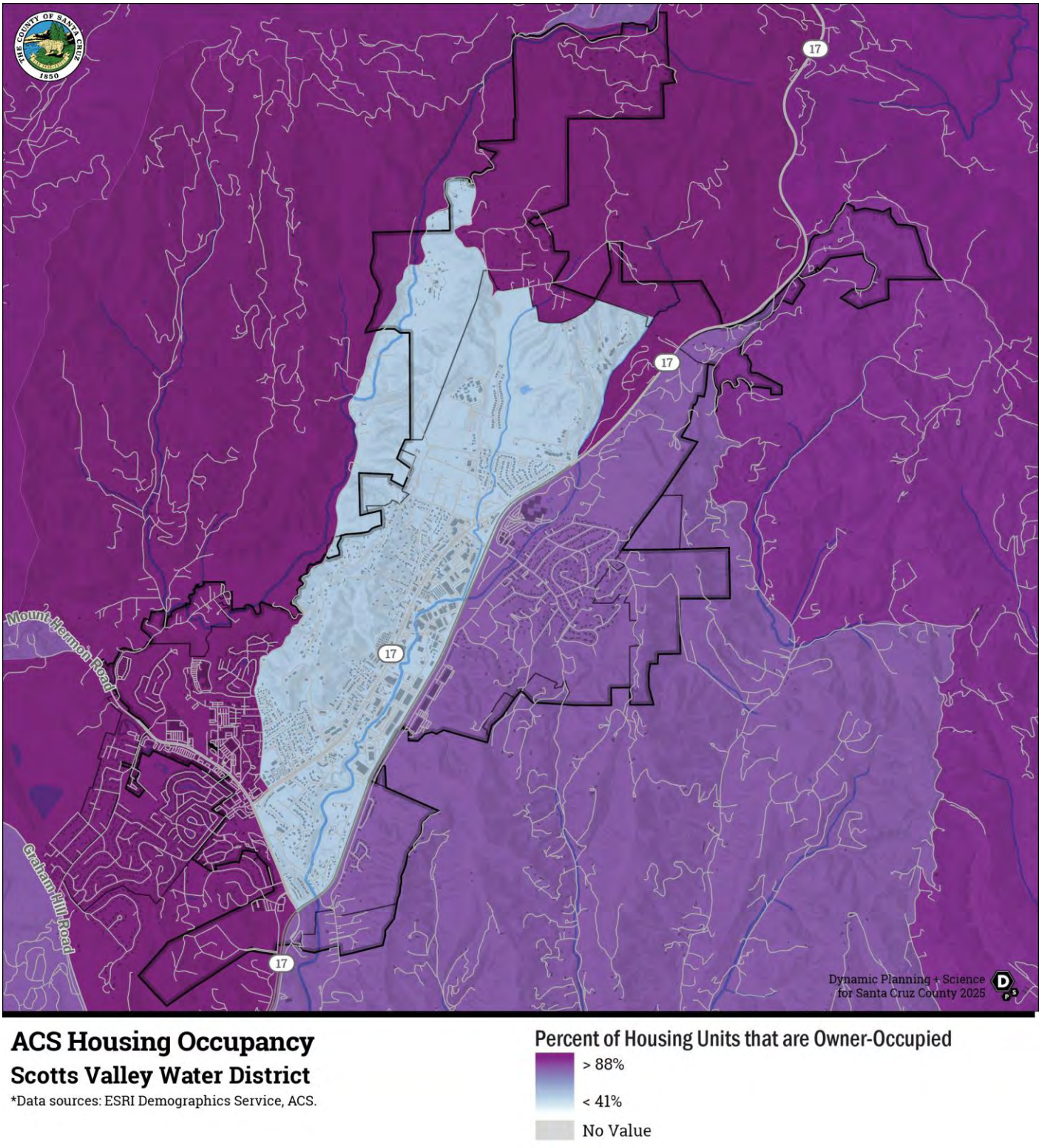


Figure 5-5: SVWD Owner-Occupied Housing Units Map

5.2.3.2 Dependent & Disabled Populations

Age and disability status play significant roles in vulnerability to natural hazards, as seniors, children, and many who experience disabilities are dependent populations who rely on caregiver networks for support and protection. Seniors and disabled persons may have mobility challenges and increased health concerns, necessitating additional assistance during evacuations and recovery. Similarly, children have limited ability to protect themselves and depend on caregivers to ensure their safety and well-being during emergencies. When combined with factors such as poverty, these vulnerabilities can be further compounded, highlighting the importance of targeted interventions to address the unique needs of dependent and disabled populations.

According to the ACS and Figure 5-6, large areas within the SVWD service boundary have more than 30 percent of the population in dependent age categories defined as children under 18 and seniors over 65. In particular, portions of the eastern and southern sections of the district show concentrations above 48 percent, indicating that nearly half of the residents in these areas may require additional support during hazard events. This demographic pattern underscores the importance of ensuring emergency communication, evacuation planning, and continuity of essential services are accessible and responsive to families with children and seniors.

The ACS Disabled Elderly, Figure 5-7 further highlights the vulnerability of older residents within SVWD. Areas in the northeastern and western edges of the district show rates exceeding 19 percent of the elderly population (65+) living with a disability, with some census tracts nearing or surpassing 47 percent. This means a significant portion of elderly residents may have mobility, sensory, or health limitations that complicate disaster preparedness, evacuation, and recovery. These populations are disproportionately impacted by service interruptions, power outages, and water supply disruptions, and they may require targeted outreach and resources such as medical support, accessible evacuation centers, and backup water distribution options.

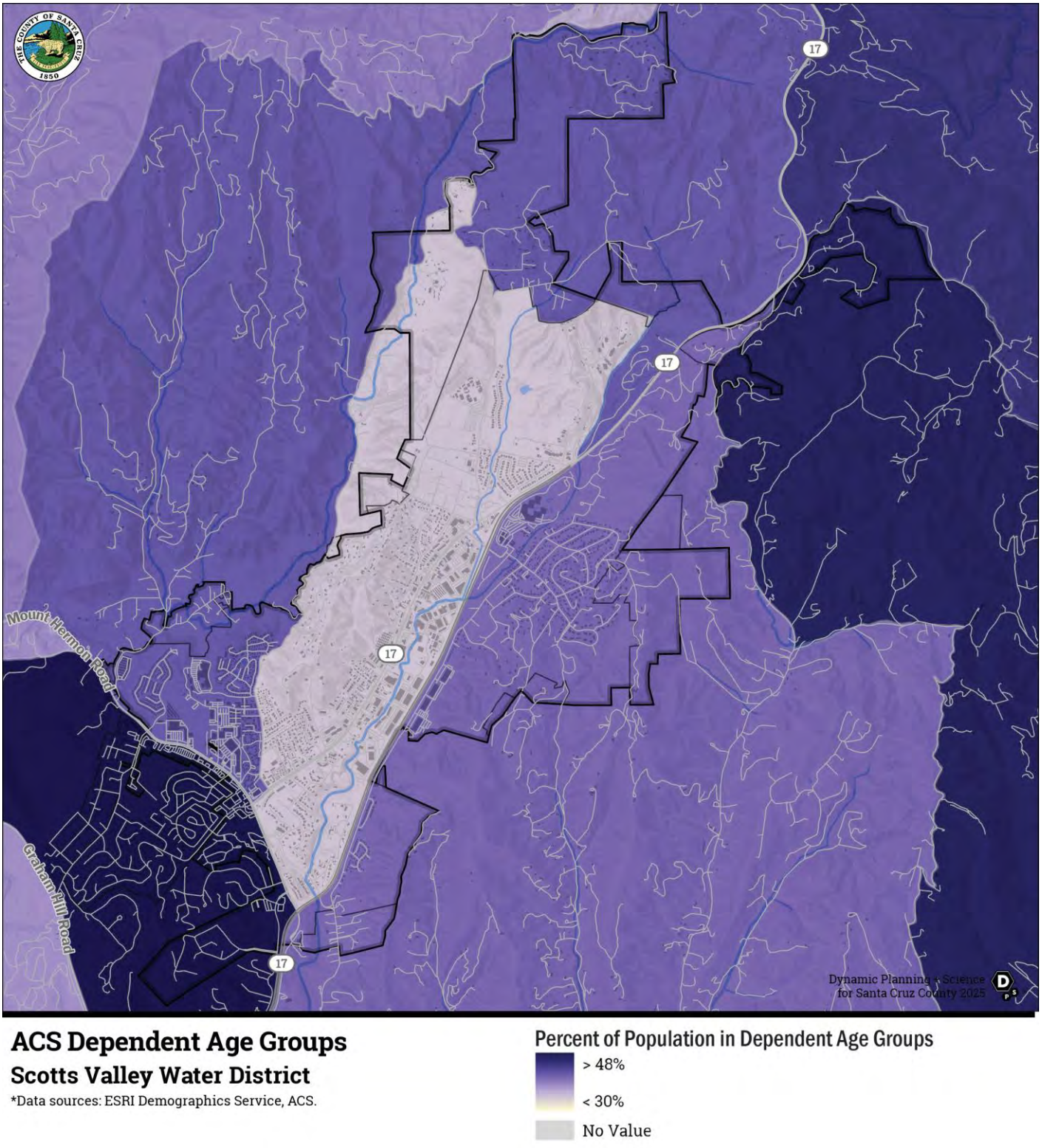


Figure 5-6: SVWD Economically Dependent Age Groups Map

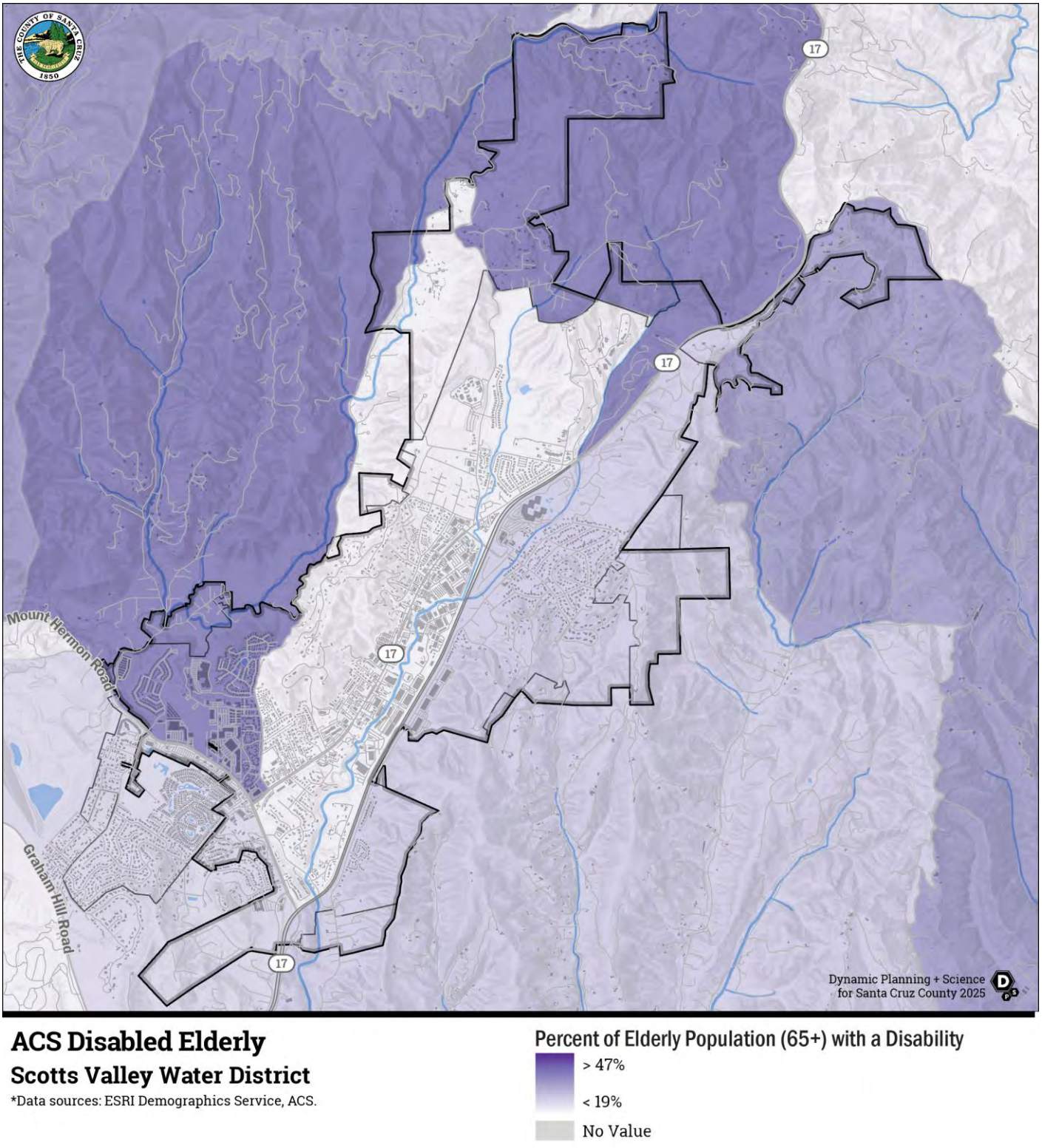


Figure 5-7: SVWD Disabled Elderly Map

5.2.3.3 Race, Ethnicity & Language

Natural disasters compound racial disparities; non-white individuals and communities receive less recovery aid from FEMA than their white counterparts, even where the amount of damage is the same. (Howell & Elliott, 2019) (National Advisory Council, 2020) The recent COVID-19 pandemic was a testament to racial disparities in disaster outcomes, with non-white persons facing morbidity rates from COVID-19 infections anywhere from 70% to 350% higher than white, non-Hispanic persons. (CDC, 2020)

These disparities are evidence of the complicated relationship between disaster recovery and overlapping social vulnerabilities including race, income, language, and health. Black and Latinx residents are more likely to be low income and renters, conditions which create barriers to navigating FEMA's Individual Assistance programs. Communities with more non-white residents may have lower tax revenue and property values, which means less investment in mitigation and rebuilding efforts before and after an emergency.

It should be noted that rural ACS estimates are often less accurate than those for urban areas because the geographic representation, broken down by smaller Census Block Groups or Tracts, becomes insignificant and the margin of error increases within these smaller sample pools. This is particularly true when referencing minority demographic groups. As such, race and ethnicity are discussed as part of a more comprehensive approach using the Center for Disease Control's (CDC) Social Vulnerability Index (SVI) in the following section. In addition, some minority households may avoid participating in Census surveys due to mistrust of government agencies or concerns about immigration status. This can lead to underreporting, further obscuring the true extent of racial, ethnic, language-related vulnerabilities.

The racial, ethnic, and linguistic composition of the SVWD provides important context for understanding community vulnerabilities and resilience. As shown in Figure 5-8, the district is predominantly White, non-Hispanic, but also includes Hispanic or Latino populations as the largest minority group.

Language diversity is another factor that shapes community needs. Figure 5-9 indicates that while most of the district has relatively low proportions of households where Spanish is spoken at home, certain census tracts along the eastern boundary and near the Highway 17 corridor show higher concentrations of Spanish-speaking households, where more than 33% of the population aged five and older speaks Spanish at home. This suggests that while English is the dominant language within SVWD, there are meaningful clusters of residents who may rely on Spanish for emergency communications and public outreach.

This linguistic pattern indicates a need for multilingual hazard communication, particularly in Spanish. It also reinforces the importance of tailoring emergency alerts, preparedness materials, and community engagement to reach Limited English Proficiency (LEP) populations, many of whom may be renters or frontline service workers in high-risk areas.

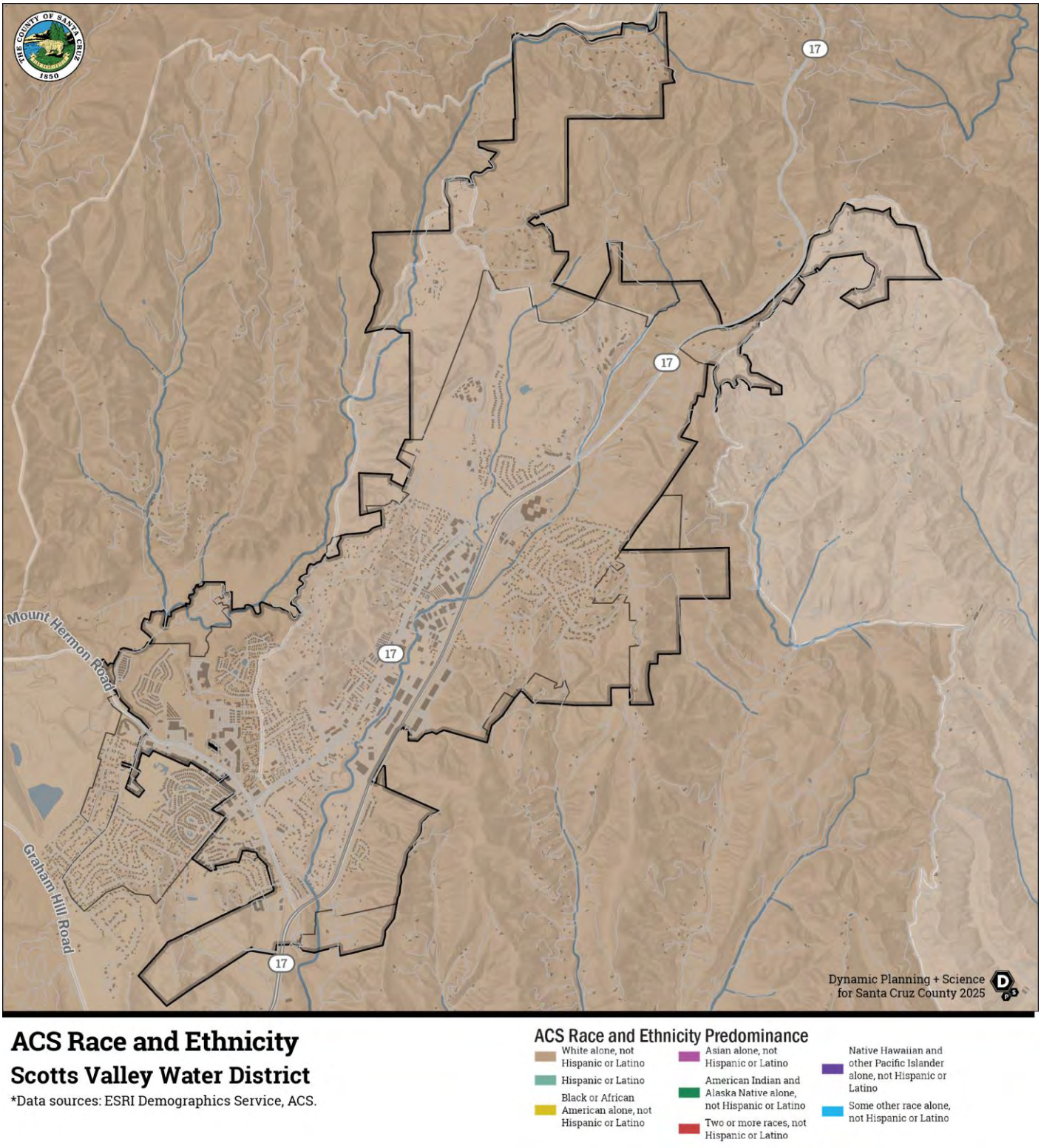


Figure 5-8: SVWD Race and Ethnicity Predominance Map

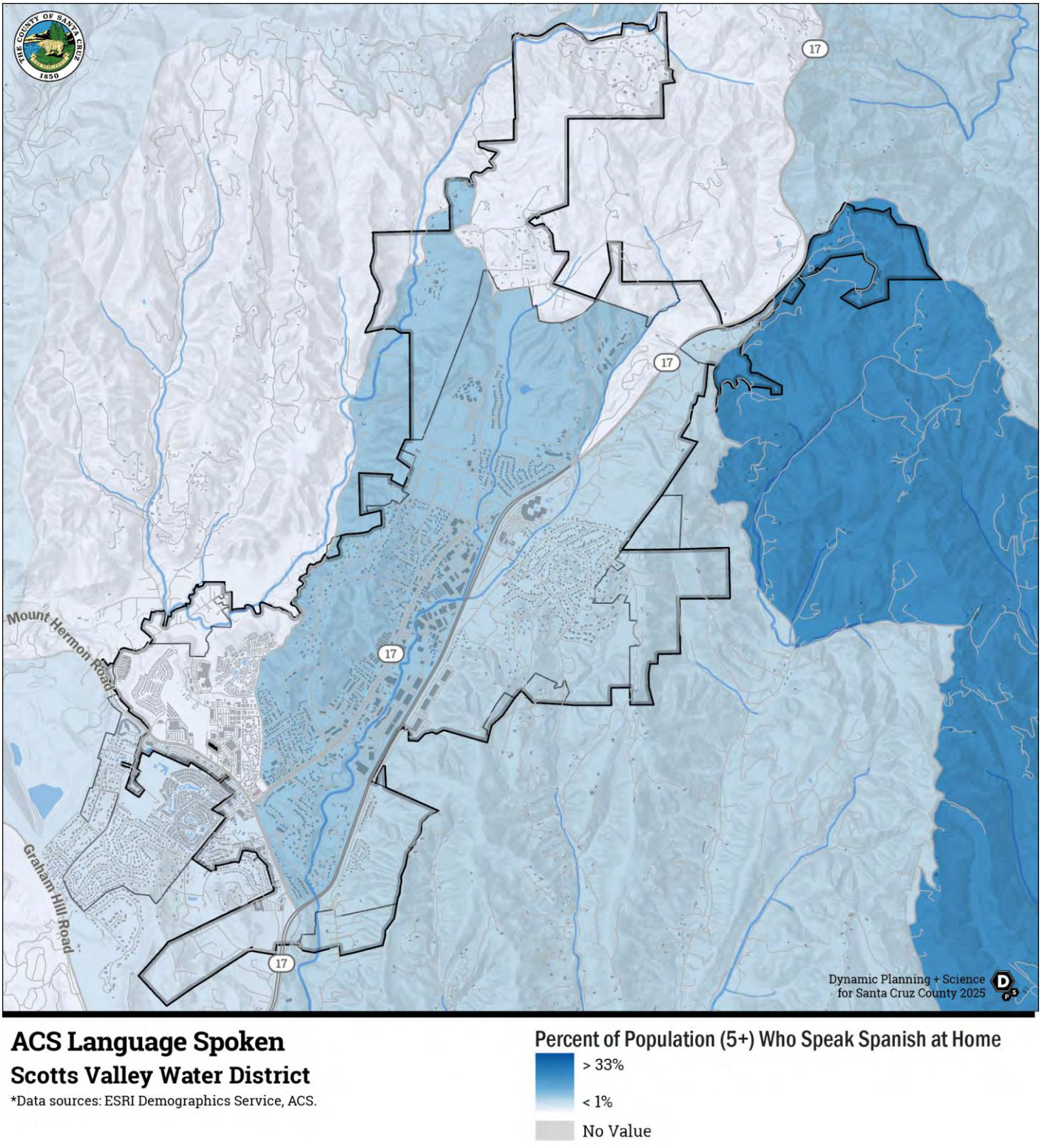


Figure 5-9: SVWD Spanish-Speaking Population Map

5.2.3.4 Social Vulnerability Index (SVI)

The Centers for Centers for Disease Control and Prevention (CDC) Social Vulnerability Index (SVI) for SVWD reveals important spatial and demographic patterns that have direct implications for equitable hazard mitigation planning. As discussed in detail in Volume 1, Section 1.4.3.6 the SVI is a composite measure developed by the CDC to identify communities that are more likely to require support before, during, and after a disaster. It incorporates a range of factors across four key dimensions: socioeconomic status, household composition and disability, minority status and language, and housing type and transportation access. The resulting index score ranges from 0 (lowest vulnerability) to 1 (highest vulnerability).

Within SVWD, most of the service area is characterized by low to moderate vulnerability, with SVI scores generally falling between 0.0–0.25 and 0.25–0.50, as shown in Figure 5-10. These lower scores align with the district's higher-than-average educational attainment, stable homeownership rates, and relatively high household incomes compared to other parts of Santa Cruz County. However, there are pockets in the northeastern edge of the District along the Highway 17 corridor where SVI scores increase into the 0.50–0.75 range. These areas reflect a concentration of factors such as older housing stock, more limited transportation access, or greater proportions of residents with lower income or limited English proficiency.

The presence of even moderately vulnerable areas is significant for hazard mitigation planning. Communities with higher social vulnerability often face challenges such as reduced emergency preparedness, longer recovery times after disasters, and limited ability to access resources such as insurance, disaster relief funds, or evacuation transportation. For SVWD, this means that while the majority of its population may be relatively well-positioned to withstand hazard impacts, targeted outreach and resources will be necessary to ensure that households in higher-vulnerability pockets are not left behind. Ensuring equitable access to hazard information, water reliability programs, and emergency response resources will be essential for reducing disproportionate impacts across the district.

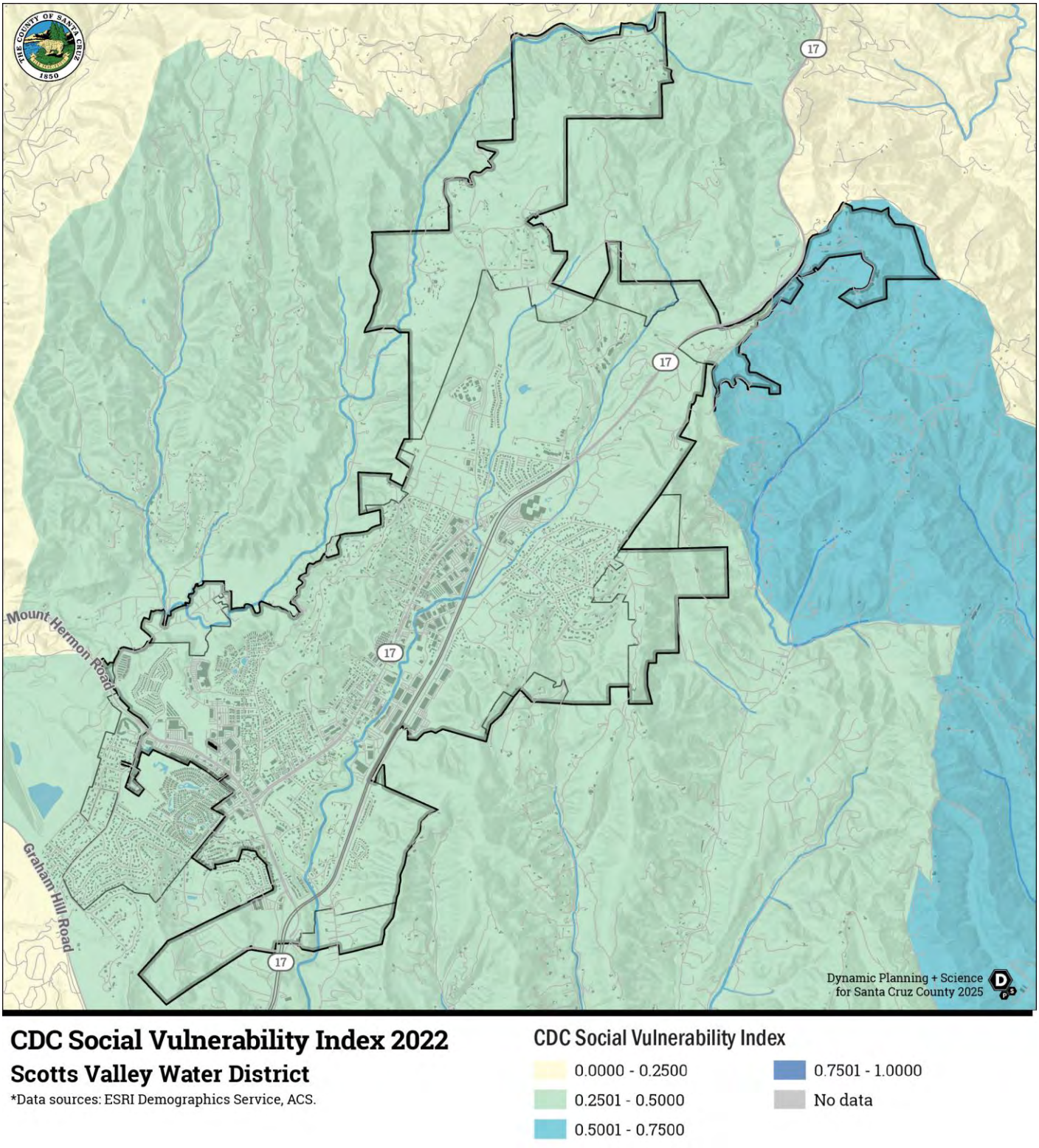


Figure 5-10: SVWD Social Vulnerability Index Map

5.2.4 Economy

SVWD does not have an economy in the conventional sense, as it functions as a special-purpose public agency rather than a commercial or industrial entity. Its primary mission is to provide safe and reliable potable water to residents, businesses, and municipal services within the City of Scotts Valley and parts of unincorporated Santa Cruz County. The district's financial structure is supported by revenues from residential and commercial water usage, connection fees, and tiered water rates.

SVWD employs a fiscally conservative approach, implementing a five-year rate schedule to ensure long-term sustainability, fund infrastructure improvements, and maintain adequate reserves. Its FY 2025 budget emphasizes capital investments, infrastructure resilience, and stable service delivery while managing rising operational costs. Although SVWD does not directly generate economic activity, its reliable water services are essential to local development, fire protection, and public health.

Within the SVWD jurisdiction itself, the economy is primarily residential, but with meaningful commercial and institutional components. SVWD supplies more water to commercial, industrial, and institutional customers than neighboring districts, indicating a somewhat more mixed-use service base.

5.2.5 Growth Trends & Future Development

Future growth in Santa Cruz County is expected to occur primarily within the cities of Santa Cruz, Watsonville, Scotts Valley, and Capitola, as identified in local General Plans and the County's housing allocations. The unincorporated areas will continue to see gradual change in rural communities, particularly in the San Lorenzo Valley, Bonny Doon, and coastal zones. While the RCD does not regulate land use or approve development, population and housing growth across the county will shape the demand for its programs and the types of hazard mitigation projects needed.

The Association of Monterey Bay Area Governments (AMBAG) projects the county's population to increase modestly over the next two decades. Watsonville and South County are expected to absorb much of this growth through new housing, including allocations for affordable units required under the Regional Housing Needs Allocation. These areas already have high concentrations of socially vulnerable populations and face risks from flooding, sea level rise, and drought. Growth in these areas will increase the need for RCD programs that improve floodplain management, groundwater recharge, and agricultural water efficiency.

In the north and mid-county, development will remain limited by geography, wildfire risk, and environmental constraints. Growth in the San Lorenzo Valley and the Santa Cruz Mountains will continue to place homes in the wildland urban interface. This will expand the need for defensible space, fuel reduction, and forest health projects that the RCD currently manages in collaboration with the Fire Safe Council and local partners. Coastal growth pressures, including redevelopment of existing sites in Capitola and Live Oak, will increase demand for shoreline and bluff protection projects that reduce erosion and maintain ecosystem function.

Future development patterns will also be influenced by groundwater sustainability planning and climate adaptation goals. The RCD partners with the Pajaro Valley Water Management Agency, the Santa Margarita Groundwater Agency, and local jurisdictions to integrate conservation projects with basin management plans. As state and federal funding becomes more closely tied to climate resilience, the RCD's grant-based structure positions it to bring significant outside resources into the county to address growth-related hazard challenges.

In summary, the RCD anticipates that countywide growth will be steady but modest, with most new development concentrated in existing urban areas. Growth in socially vulnerable communities in the south, in wildfire-prone mountain areas, and along the coast will require targeted mitigation and conservation projects. The RCD is well positioned to support these needs through its grant funding capabilities, its technical assistance programs, and its ability to coordinate across jurisdictions.

5.3 Planning Process

SVWD followed the planning process detailed in Volume 1, Section 2, including participating in the county-wide Hazard Mitigation Planning Team (HMPT) and formulating their own internal planning group to support the broader planning process.

The district's representatives in the Steering Group led stakeholder and public engagement efforts alongside the Consultant Team, with assistance from the HMPT and their internal planning team. This engagement process is described in Volume 1. Specifically, for Scotts Valley Water District, this included postings to the district website and social media as well as outreach events, as documented in Appendix B. Examples of Key Stakeholders engaged by Santa Cruz County on behalf of the district with relevance to the development of SVWD's mitigation strategy include the USDA and other federal agencies; CAL FIRE and other state agencies; City of Scotts Valley and other neighboring jurisdictions; local Fire Safe Councils; community-based groups like Watsonville Wetlands Watch; utility providers like AT&T; UC Santa Cruz and other academia; and local businesses.

All Key Stakeholders that were invited to participate in the planning process are listed in Volume 1, Section 2, and the input received from stakeholders was integrated into the district's annex, as described in Volume 1 Table 2-9. The district's internal planning participants, their positions, and how they participated in the planning process are shown in Table 5-1.

Table 5-1: SVWD Participants

Planning Group Members	Title	Description of Involvement
Nate Gillespie	Operations Manager	Lead Point of Contact; attended Kickoff Meeting, HMPT Meetings #1, #2, and #3 and Breakouts #1 and #2
David McNair	General Manager	Alternate Point of Contact; HMPT Meetings #1, #2, and #3 and Breakouts #1 and #2

Planning Group Members	Title	Description of Involvement
Brody Knutson*	Engineering Technician	Participating Stakeholder; HMPT Meetings #3

*Note: * Participants are no longer with the district but assisted in the process*

SVWD participated in a comprehensive hazard mitigation planning process as part of the 2025 Santa Cruz County MJHMP update. This included a series of breakout meetings, listed in Table 5-2 that engaged the district's planning team, which included key district personnel and stakeholders in evaluating hazards, identifying local vulnerabilities, and prioritizing mitigation strategies

The kickoff meeting held on January 27, 2025, launched the planning process by introducing the project scope and clarifying the roles of the Steering Group and participating jurisdictional teams. In the months that followed, a series of structured meetings addressed foundational elements of the plan, including a review of key changes since the 2021 Local Hazard Mitigation Plan, an overview of hazard mitigation principles, and exercises to prioritize local hazards. On July 30, 2025, participants engaged in a hexagon mapping activity designed to visually identify mitigation actions that could benefit from or require inter-jurisdictional coordination. These collaborative efforts helped shape a refined set of mitigation alternatives, establish shared planning goals, and align local strategies with FEMA's Hazard Mitigation Assistance (HMA) funding framework.

Throughout the series of breakout meetings, SVWD engaged in a structured and collaborative planning process focused on assessing hazard risks, identifying vulnerabilities, and developing targeted mitigation strategies. The meetings began with recaps of the county-wide HMPT meetings to ensure alignment of goals and progress.

During the April 3, 2025, breakout out meeting, discussions concentrated on community engagement outcomes, initial risk assessments, and the integration of demographic data to better understand vulnerable populations. Jurisdictional teams reviewed their specific hazard exposures using the Risk Assessment Mapping Platform (RAMP) and participated in prioritization exercises to identify their top hazards.

The July 15, 2025, breakout meeting shifted toward reviewing local capabilities and defining specific areas of concern, which informed the drafting of problem statements. Teams worked collaboratively to refine mitigation alternatives, align actions with FEMA guidelines, and develop a shortlist of priority mitigation actions and inter-jurisdictional collaboration opportunities.

The meetings also included consensus-building activities around hazard rankings, capabilities, and planned actions, while providing regular updates on the overall project schedule.

Table 5-2: Jurisdictional Breakout Meeting Records

Meeting & Date	Agenda / Topics	Goals / Key Inputs
County-Wide Steering Group and HMPT Meetings #1 & #2 January – March 2025		
SVWD Planning Team Breakout Meeting #1 April 3, 2025	▪ County-wide HMPT meetings #1 and #2 recaps ▪ Community engagement progress and results ▪ Risk assessment and community vulnerability ▪ Demographics and vulnerable populations ▪ Overview of jurisdiction-specific hazard risks and exposure ▪ Introduction to Risk Assessment Mapping Platform (RAMP) ▪ Jurisdiction-specific hazard risk ranking exercise ▪ Project schedule updates and next steps	▪ Consensus on jurisdiction-specific priority hazards ▪ Identify capabilities and potential mitigation actions ▪ Community engagement volunteers
County-Wide HMPT Meeting #3 June 2025		
SVWD Planning Team Breakout Meeting #2 July 15, 2025	▪ Breakout Meeting #1 and HMPT #3 recaps ▪ Review capabilities assessment ▪ Review areas of concern and define problem statements ▪ Principles of effective mitigation strategies and actions, and mitigation alternatives ▪ Refine and align jurisdiction-specific mitigation actions exercise ▪ Project schedule updates and next steps	▪ Consensus on jurisdiction-specific capabilities ▪ Consensus on jurisdiction-specific areas of concern ▪ Consensus on priority mitigation actions and collaboration opportunities ▪ Community engagement volunteers
County-Wide HMPT Meeting #4 August 2025		

5.3.1 Public Input & Draft Review

As detailed in Volume 1, Section 2, the draft plan was available for public review and comment from September 29 to October 20, 2025. Public comments received during that time were similar to those gathered throughout the public engagement process, including the need for more equity in the distribution of mitigation activities and funding and the need for enhanced cooperation among jurisdictions, utility providers, and state agencies. These comments were incorporated into the city's mitigation strategy, as appropriate; although, most were already addressed by the Mitigation Action Plan which was based on previous public input.

Public and stakeholder input was gathered and incorporated throughout the plan development process, before the public review period, such as from the online public survey (see Volume 1, Section 2.1.2 and Appendix B, for details). During the review period, jurisdictional staff and stakeholders that participated in

the plan development also reviewed the public draft and provided comments on minor corrections and revisions, which were addressed in the final plan.

5.4 What's New

This section offers an overview of the hazard mitigation planning efforts for the planning area and highlights the updates made in this 2025 MJHMP. This is the first time SVWD has participated in the MJHMP process. While not included in the 2021 plan, the district has since strengthened its focus on resilience through key efforts. Through this MJHMP process, SVWD has identified its highest-priority hazards, developed hazard-specific problem statements, and proposed actionable mitigation strategies.

5.4.1 Mitigation Activities

Although SVWD has not previously adopted formal mitigation actions within a Hazard Mitigation Plan, the district has implemented a series of projects, programs, and policies that clearly function as hazard mitigation. These efforts reflect SVWD's long-standing commitment to ensuring water supply reliability, protecting infrastructure from hazard impacts, and building resilience to drought and wildfire.

Over the past decade, SVWD has undertaken extensive infrastructure hardening and replacement. Capital projects such as the rehabilitation of the Bethany and Sequoia storage tanks, slope stabilization at Glenwood Tank, and installation of the Grace Way production well and replacement of Well 3B with Sucinto well, have reduced vulnerability to earthquake damage, landslides, and long-term supply interruptions.

The district has also advanced major drought and water conservation initiatives. Permanent water-use efficiency standards were codified through SVWD's Administrative Code, which includes demand curtailment stages during drought emergencies. The 2020 UWMP highlights the effectiveness of tiered rate structures, permanent leak detection, and deployment of Advanced Metering Infrastructure (AMI) in reducing per-capita demand. These programs directly support hazard mitigation by extending water availability during droughts and reducing stress on the groundwater basin.

Another significant achievement has been the development of a recycled water system. SVWD operates facilities that provide non-potable water for landscape irrigation, thereby reducing reliance on potable groundwater and preserving aquifer storage for emergency and drought conditions.

Regionally, SVWD has played a leadership role in the SMGWA. By co-developing and implementing the Santa Margarita Groundwater Sustainability Plan, the district has taken proactive steps to mitigate risks of overdraft and protect long-term aquifer resilience.

In terms of emergency preparedness and wildfire mitigation, SVWD has formally adopted an Emergency Management Policy that outlines continuity of operations, interagency coordination, and disaster response measures. The district has also invested in SCADA upgrades for remote system monitoring and partnered with local fire agencies to ensure hydrant reliability and fire flow capacity.

As a first-time participant in a hazard mitigation plan, SVWD had no formally adopted mitigation actions from a previous plan. However, the district continues to advance a range of ongoing and planned efforts that support hazard mitigation, climate resilience, and long-term water security. These are highlighted in this section, reflecting SVWD's continued dedication to long-term risk reduction. These actions, ranging from mitigation to community outreach initiatives, represent the city's proactive approach to addressing hazards as resources become available.

5.4.2 Mitigation Successes

Although SVWD is participating in a formal hazard mitigation plan for the first time, multiple important mitigation actions and other efforts to increase the district's resilience to hazards have been completed. Some of these endeavors in which the district collaborated with Santa Cruz County are described in Volume 1, Section 2. This section describes additional district-specific success stories, which highlight SVWD's commitment to reducing risks and building a more resilient community in the face of natural hazards.

Recycled Water System Development

SVWD's Recycled Water Treatment Facility, located near Scotts Valley High School, produces non-potable water distributed through a dedicated purple-pipe system to customers such as schools, parks, and commercial landscapes. The program offsets approximately 120 acre-feet of potable groundwater demand annually, about 10% of system supply, preserving aquifer storage for drought and emergencies. Recycled water also supports wildfire mitigation by maintaining irrigated buffer zones at schools and public facilities.



Figure 5-11: Recycled Water Program

SVWD Water Treatment Plant Upgrade

SVWD has undertaken the demolition and reconstruction of its largest water treatment facility, the Orchard Run plant. The old 38-year-old structure was dismantled in December 2020. The newly rebuilt facility now processes 1 million gallons per day and significantly enhances the taste and odor quality of the local water supply. The improvement is a response to longstanding aesthetic issues, groundwater drawn from deep wells (nearly 1,000 feet) in the Butano aquifer contains high levels of sediments, iron, and manganese, contributing to a mineral-heavy flavor and unpleasant odor. To address this, the new facility incorporates two granular activated carbon (GAC) filters, a flow-paced chlorine analyzer, a 40,000-gallon welded steel storage tank, and an odor scrubber. These upgrades substantially improved water palatability and clarity. The project also includes a connection to the sewer system. A new feature that eliminates costly septic effluent hauling, saving the district around $3,500 per month in off-hauling fees.



Figure 5-12: SVWD Water Treatment Plant Upgrade

Infrastructure Hardening & Tank Rehabilitation

The district has invested in major capital improvement projects to rehabilitate and replace aging storage tanks, including Bethany, Sequoia, and Glenwood facilities. These projects address seismic vulnerability, slope stability, and long-term reliability of water storage critical for firefighting and emergency supply.



Figure 5-13: Bethany Tank Rehabilitation Project

Groundwater Sustainability Planning

As a founding member of the SMGWA, SVWD has taken a leadership role in preparing and implementing the GSP. This regional framework addresses overdraft, groundwater quality, and long-term supply security. By reducing the risk of seawater intrusion and ensuring sustainable pumping, the GSP serves as a foundational mitigation success

Advanced Metering Infrastructure (AMI) & Leak Detection

SVWD has fully deployed AMI across its service area, giving customers near real-time water use information and enabling rapid detection of leaks. Coupled with ongoing system leak-reduction programs, this initiative has significantly lowered water loss and reduced per-capita demand, bolstering drought resilience and resource efficiency.



Figure 5-14: I-Meter Installation

Conservation & Drought Management Policies

The district has adopted permanent ordinances and rate structures that encourage conservation, establish drought response stages, and enforce efficiency standards. These policies institutionalize water-saving practices, aligning with California's "Making Conservation a California Way of Life" framework.

Emergency Management & SCADA Upgrades

Through its Emergency Management Policy, SVWD has formalized procedures for preparedness, response, and recovery. Recent Supervisory Control and Data Acquisition (SCADA) upgrades allow remote monitoring and control of the water system, enhancing operational resilience during wildfires, earthquakes, and power outages.

Public Outreach & Education Programs

These programs include multilingual conservation campaigns, school partnerships, and emergency alerts, which have increased community awareness of water-related hazards and built support for long-term mitigation efforts.



Figure 5-15: Scotts Valley Art, Wine & Beer Festival-2025

Grants & Funding

SVWD has secured substantial federal and state funding to advance its resilience and water sustainability initiatives. These projects include a $9.45 million grant from the State of California to construct the Grace Way Well—a new production well serving the Butano and Lompico aquifers and a $6.5 million grant from the California Department of Water Resources funded the Intertie Pipeline with City of Santa Cruz.

SVWD implemented a stormwater low-impact development (LID) groundwater recharge system at the Cavallaro Transit Center. This project captures and treats parking lot stormwater to enhance local recharge and was funded by the State's Urban Community Drought Relief Grant Program. (SVWD, 2025)

5.5 Risk Assessment

This section focuses on profiling hazards specific to SVWD and assessing their vulnerability independent of the broader county-wide planning area, which has been evaluated in Section 3 of Volume 1. The hazard profiles in Volume 1 discuss overall impacts to the planning area and describe relevant plans, policies, and regulations; past events; location; frequency and probability of future occurrences; severity and extent; warning time; secondary hazards; and climate change impacts. For more information on risk assessment methodologies, see Volume 1, Appendix A.

This section includes a tailored vulnerability assessment, analyzing assets at risk such as population, property, and critical facilities and infrastructure unique to the district, and information on district-specific differences in hazard vulnerability across the planning area. It also identifies total district assets at risk, including people, property, and critical facilities and infrastructure within the district. In addition, this section presents growth and development trends for the communities served, offering insights into vulnerabilities and risks that represent the broader context of assets at risk.

5.5.1 Hazard Screening & Prioritization

Members of the planning team from each participating jurisdiction came together to collaboratively decide which county-wide hazards would be included in the MJHMP and which would be excluded. The hazard screening and prioritization took place early in the process and integrated historic data, local knowledge, and consensus opinions to create a risk assessment matrix for the county as well as for each participating jurisdiction. These matrices indicate the priority of hazards prior to further refinement. Details about this process, the results of the discussion, and in-depth profiles for county-wide hazards can be found in Volume 1, Sections 2 and 3.

The final results of the hazard screening and prioritization exercises are summarized in Table 5-4, including which specific subhazards were selected by SVWD's planning team.

The SVWD's internal planning group used the same hazard identification and prioritization process as the county-wide Planning Team. They reviewed previously prepared relevant documents and past events to determine the realm of natural hazards that have the potential to affect the district. Table 5-3 provides a crosswalk of hazards identified in select planning documents, including the district's 2020 UWMP, the 2021 Santa Cruz County LHMP, and the 2023 State of California HMP. The crosswalk was used to develop a preliminary hazards list, providing a framework for the group to evaluate which hazards were truly relevant to the district and which ones were not.

The internal planning group then ranked hazards based on their probability of affecting SVWD and potential impacts on the communities it serves. Figure 5-16 displays the results of the hazard risk ranking exercise that was performed before further refinement. All hazards have been profiled in Volume 1 of this document. The purpose of this annex is to specifically address SVWD's vulnerability to specifically identified hazards.

Table 5-3: SVWD Document Review Crosswalk

Hazard	SVWD Urban Water Management Plan 2020	Santa Cruz County LHMP 2021	2023 California SHMP
Agricultural Pests			■
Avalanche			■
Climate Change	■	■	■
Coastal		■	■
Dam Failure		■	■
Drought	■	■	■
Earthquake / Liquefaction	■	■	■
Extreme Cold		■	■
Extreme Heat		■	■
Extreme Weather / Storms		■	■
Flood		■	■
Geologic / Mass Movement		■	■
Human-Caused			■
Insects			■
Levee Failure			■
Pandemic Disease			■
Sea Level Rise			■
Soil			■
Subsidence			■
Tornado			■
Tsunami / Seiche Wave			■
Volcano			■
Wildfire		■	■

Risk Assessment Matrix Definitions

PROBABILITY RATING

The likelihood of a hazard event occurring within a time period?

PROBABILITY

Highly Likely	**Highly likely** - 100% annual probability. Or Likely to occur every year in your lifetime.
Likely	**Likely** - between 10 & 100% annual probability. Or will occur several times in your lifetime.
Possible	**Possible** - between 1 & 10% annual probability. Or Likely to occur some time in your lifetime.
Unlikely	**Unlikely** - less than 1% annual probability. Or unlikely but possible to occur in your lifetime.

IMPACT RATING

In terms of injuries, damage, or death, would you anticipate impacts to be minor, limited, critical, or catastrophic when a significant hazard event occurs? The impact could be in terms of one hazard event (flooding from a culvert failure) or a large-scale event (multiple rivers flooding) in the same jurisdictional boundary.

IMPACT

Minor	Limited	Critical	Catastrophic

Minor - very few injuries, if any. Only minor property damage & minimal disruption on quality of life. Temporary shutdown of critical facilities.

Limited - minor injuries only. Approx. 10% or less of property in disaster footprint damaged or destroyed. Complete shutdown of critical facilities for more than one day.

Critical - multiple deaths/injuries possible. Between 25% and 50% of property in disaster footprint is damaged or destroyed. Complete shutdown of critical facilities for more than one week.

Catastrophic - high number of deaths/injuries possible. More than 50% of property in affected area damaged or destroyed. Complete shutdown of critical facilities for 30 days or more.

To concentrate resources, the jurisdictional planning team will focus on "High" and "Extreme" risk hazards. These hazards have the higher probability and greater impact as it relates to the jurisdictions planning area.

Hazard definitions are included in **Vol. 1** of this plan. Some hazards are discussed as subset hazards– e.g., "Dam Failure" within the "Flood" hazard profile. If a hazard is not present on the risk matrix or are grey in color, the jurisdictional planning team felt the hazard had a minimal footprint within their planning area and was not ranked.

Hazard Information / Legend:



Climate Change impacts will be addressed at the end of each hazard section and as a stand alone section for each jurisdiction.
For County and Municipal governments you will be required to address climate change impacts in the Safety Element of your General Plan. Climate change may change the frequency, duration and intensity of hazards listed above.

Scotts Valley Water District Risk Matrix

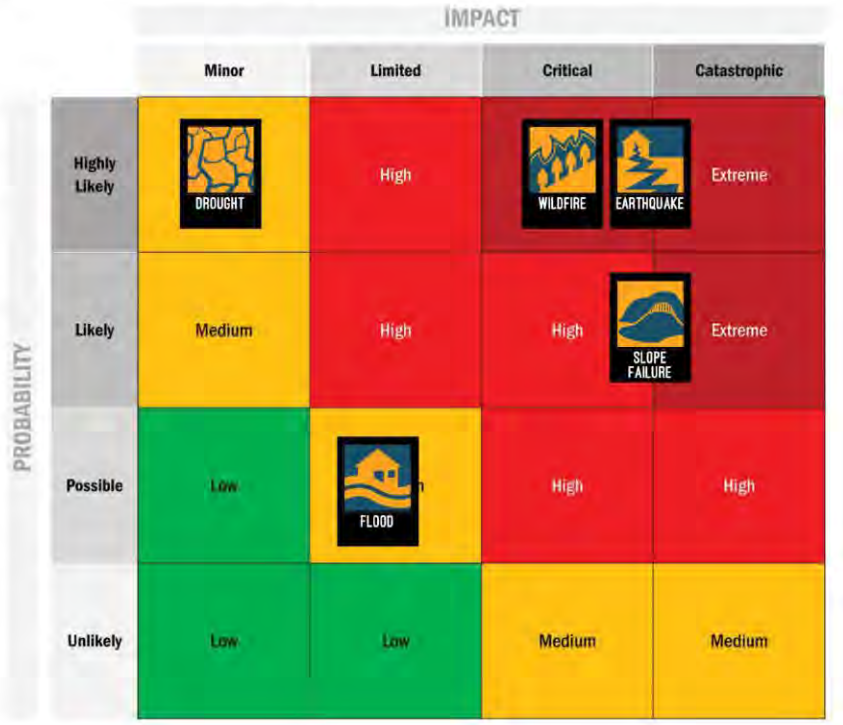


Figure 5-16: SVWD Risk Assessment Matrix

Table 5-4: SVWD Hazards Prioritization Summary

Hazard	Priority	Explanation
Wildfire	**Extreme**	Profiled in Volume 1, Section 3.2.1, and Section 5.5.2.1 in this annex
Flood	**High**	Profiled in Volume 1, Section 3.2.2, and Section 5.5.2.2 in this annex (not including Levee Failure due to no exposure)
Earthquake	**Extreme**	Profiled in Volume 1, Section 3.2.3, and Section 5.5.2.3 in this annex, including Liquefaction
Severe Weather	-	Not a priority due to being outside jurisdictional mission and authority, but discussed as a contributing factor for other hazards
Coastal Hazards	-	Not a priority due to no exposure
Slope Failure	**Extreme**	Profiled in Volume 1, Section 3.2.6, and Section 5.5.2.4 in this annex
Dam Failure	-	Not a priority due to no exposure
Drought	**High**	Profiled in Volume 1, Section 3.2.8, and Section 5.5.2.5 in this annex
Extreme Heat	-	Not a priority due to being outside jurisdictional mission and authority
Climate Change	**High**	Profiled in Volume 1, Section 3.2.10, and Section 5.5.2.6 in this annex (not including Sea-Level Rise due to no exposure)

5.5.2 Vulnerability to Specific Hazards

Assessing vulnerabilities exposes the unique characteristics of individual hazards and begins the process of narrowing down which areas within SVWD are vulnerable to specific hazard events. The vulnerability assessment considered unique local knowledge of hazards and impacts and a GIS overlaying method for examining such vulnerabilities in more depth. Using these methods, the district's planning group estimated vulnerable populations, properties, and assets, and potential losses, primarily to earthquake and wildfire. In addition, the exposure of district assets to drought, geological, and flood hazards were also considered.

Many of the hazard profiles include a snapshot map and damage estimation tables that illustrate the district's vulnerabilities to those specific hazards. These maps assisted the planning group in understanding the hazard exposure of populations, parcels, and critical facilities and infrastructure. Each snapshot map contains an exposure summary that displays the percentage of the population, the improvement and content value of parcels, and the amount of critical infrastructure that is exposed. For hazards without geospatial extents, such as drought and extreme weather, narratives are provided instead of exposure maps and tables.

Based on the hazard prioritization exercise, this vulnerability assessment focuses on six hazards for SVWD, some of which encompass subhazards such as Liquefaction.

Wildfire
SECTION 5.5.2.1



Flood
SECTION 5.5.2.2



Earthquake
SECTION 5.5.2.3



Slope Failure
SECTION 5.5.2.4



Drought
SECTION 5.5.2.5



Climate Change
SECTION 5.5.2.6



5.5.2.1 Wildfire Hazard

Wildfire poses a significant hazard to the SVWD due to its location in the WUI of the Santa Cruz Mountains, where steep terrain, dense vegetation, and dry summer conditions combine to elevate fire risk. According to Cal Fire designations (Figure 5-17), much of the SVWD service area is classified within moderate to high wildfire hazard severity zones. The maps show that nearly the entire district lies within a moderate or high hazard zone within the Local Responsibility Area (LRA), along Highway 17 and the developed corridors of Scotts Valley.

While exposure summaries indicate that no critical infrastructure or essential facilities within the district are currently identified in the "very high" hazard zones, this does not diminish the systemic vulnerability. SVWD relies on a distributed groundwater supply system, treatment facilities, and pumping infrastructure that could be disrupted by wildfire damage or secondary effects such as power outages, transportation closures, or water quality degradation from post-fire runoff and erosion.

The district's location adjacent to extensive wildland areas also means that wildfire impacts extend beyond direct damage to facilities. Fire risk in Scotts Valley includes smoke and air quality degradation, the threat of mandatory evacuations, and strain on water supply needed simultaneously for firefighting and community consumption. Importantly, SVWD's recycled water program contributes to wildfire resilience by supplying irrigation water that maintains defensible space and buffer zones around public facilities such as schools and parks. Beyond supply continuity, fires also threaten water quality through heat damage to infrastructure and the introduction of ash and firefighting chemicals, potentially forcing "Do Not Drink/Boil Water" notices and extended recovery work

Regional wildfire history, including the 2009 Lockheed Fire and 2020 CZU Lightning Complex Fire, underscores the scale of potential impacts. Though the CZU Fire did not burn directly within Scotts Valley, its proximity disrupted regional water and power systems and demonstrated the risk of embers and fire spread into suburban communities. As climate change drives hotter and drier conditions, the frequency and intensity of wildfires in the Santa Cruz Mountains are expected to increase, heightening the urgency of SVWD's ongoing hazard mitigation efforts.

The Mean Fire Return Interval (MFRI) map, Figure 5-18, for SVWD shows that most of the district falls within areas with fire return intervals between 16 and 64 years. These zones, marked in orange and red hues, indicate moderately frequent fire activity, especially in the wildland-urban interface and foothill areas. More intense pink and purple patches, primarily in the forested slopes and canyon areas along the district's western and southern edges, suggest even shorter intervals of 6–15 years, indicating higher wildfire recurrence.

However, SVWD includes areas designated as "High" wildfire hazard within both Local Responsibility Areas (LRA) and State Responsibility Areas (SRA). Approximately 7,000 residents live within these high-risk zones, primarily concentrated along the district's central and northern boundary. Within this same hazard area, roughly 2,800 parcels are exposed, representing an estimated $5 billion in combined structure and content value. In addition, critical infrastructure is at risk, including around 1,700 key assets such as storage tanks, treatment wells, pump stations, and emergency interties, as well as approximately 115 miles of essential infrastructure lines located within the "High" wildfire hazard zones.

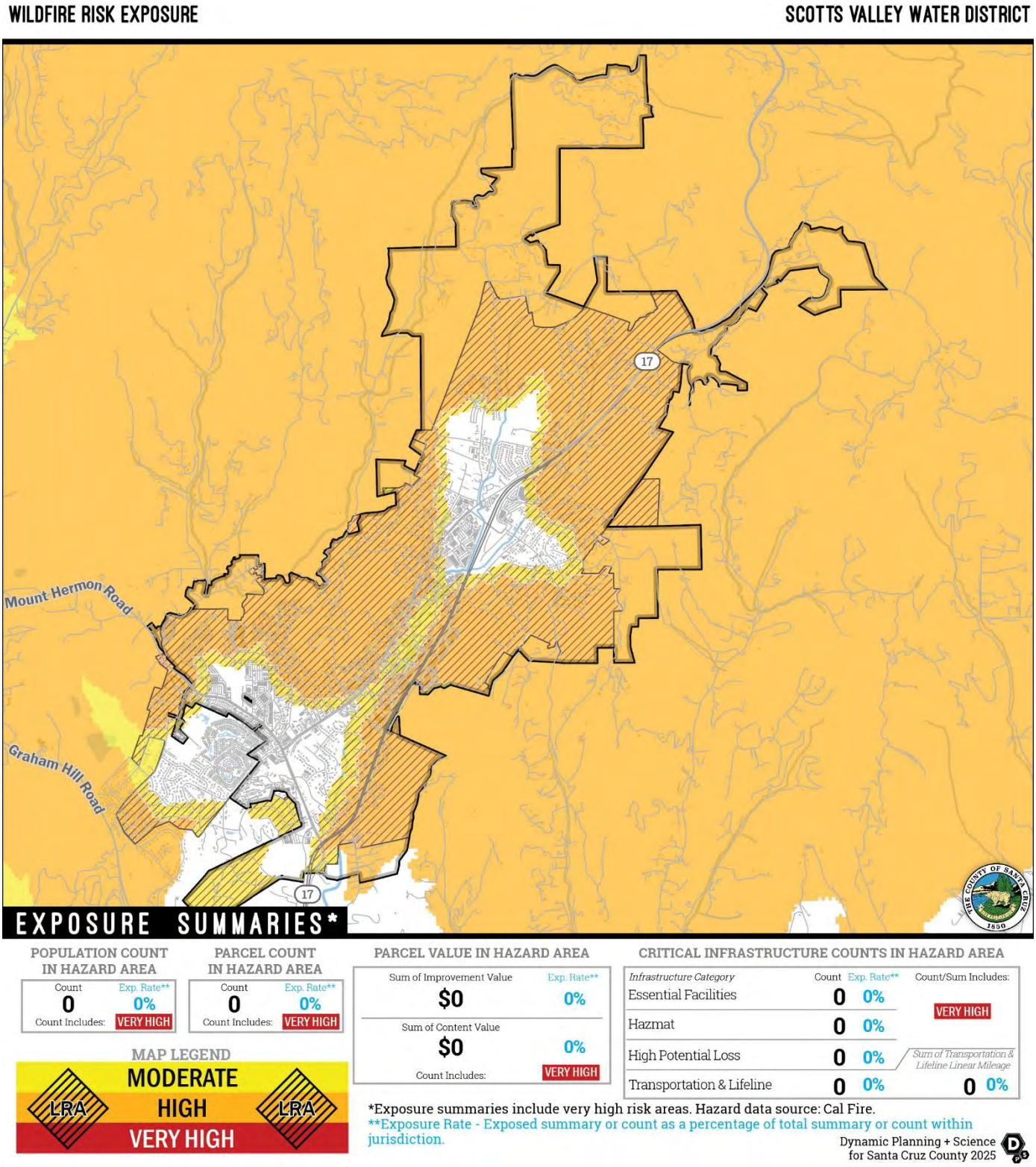


Figure 5-17: Exposure Summary - SVWD Wildfire Risk

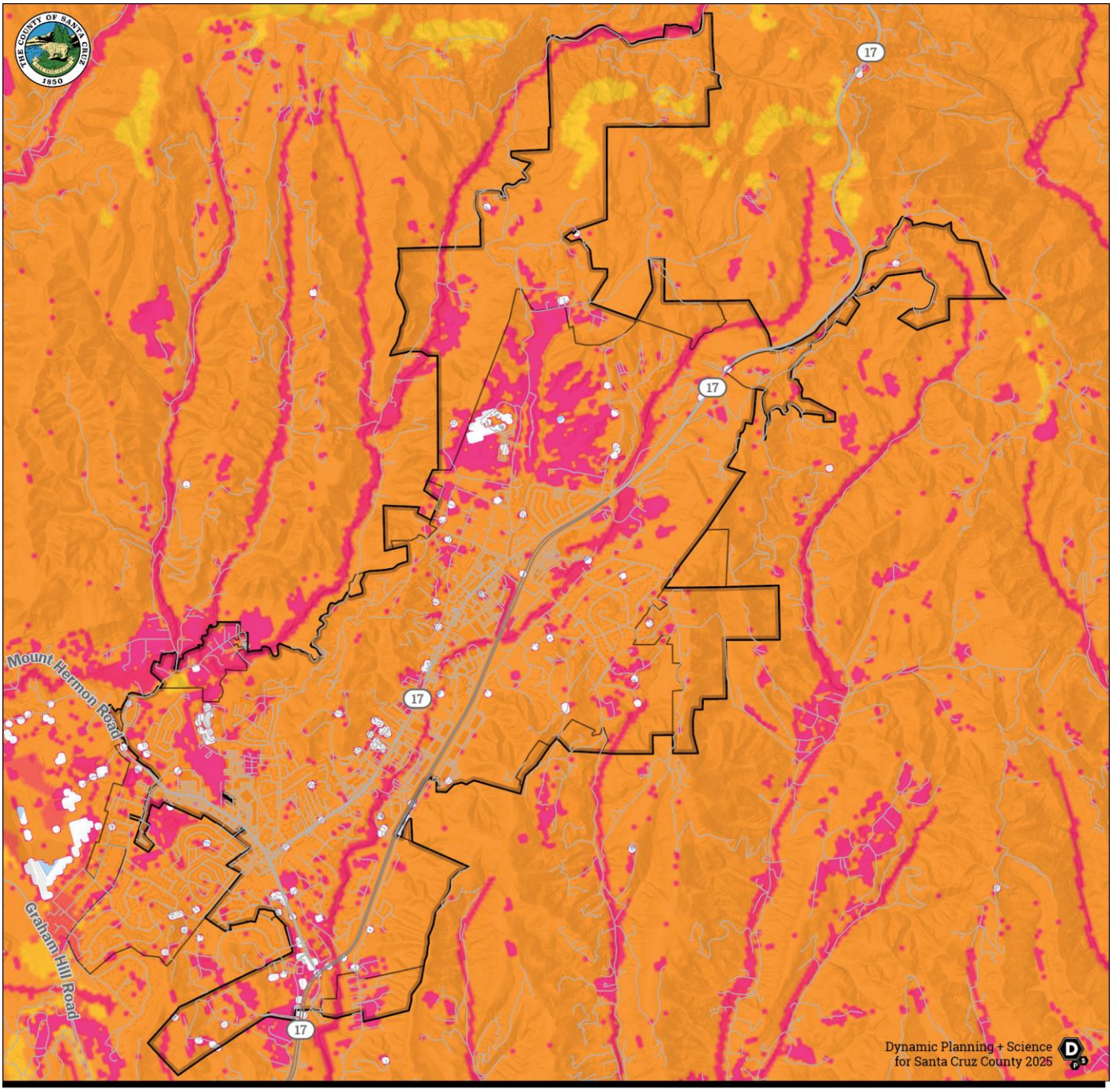


Figure 5-18: SVWD Mean Fire Return Interval Map

5.5.2.2 Flood Hazard

SVWD faces measurable but localized exposure to flood hazards (Figure 5-19), primarily associated with FEMA-designated floodplains and DWR flood awareness zones. FEMA data shown in Figure 5-19, indicates that approximately 400 residents and 70 parcels lie within the 100- and 500-year flood hazard areas, representing around 3–4% of total parcel value within the district. These areas of risk are concentrated along stream corridors that traverse Scotts Valley and flow into the San Lorenzo River watershed. The estimated parcel improvement value at risk is roughly $110 million, with a content value of about $102 million. While critical facilities such as hospitals, schools, and emergency services do not fall within mapped FEMA flood zones, 41 of the district's critical facilities and several miles of infrastructure do intersect these hazard areas, underscoring potential vulnerabilities to access and mobility during flood events.

More specifically, approximately three miles of water mains and lateral pipes are located within areas of mapped FEMA flood hazards, including 1% and 0.2% annual chance areas. There are also 20 hydrants, one tank, and numerous pressure and backflow components of the district's water system exposed to flood risks. Further, many miles of roadways used by the district to access, maintain, and repair its assets are exposed to flood hazards, potentially limiting SVWD's ability to address damages and service disruptions following a significant flood event.

Beyond FEMA mapping, the DWR flood awareness zones in Figure 5-20, highlight additional areas where localized flooding is possible during major storm events, even outside the 100- and 500-year FEMA floodplains. Within these awareness zones, approximately 120 residents, 15 parcels, and six transportation and lifeline assets could be affected, with an almost $12 million in structural improvement value and $6 million in content value at risk. While these exposure levels are comparatively modest relative to other hazards facing SVWD, they illustrate that localized flooding remains a concern, particularly where stormwater infrastructure intersects with natural drainage corridors and unstable slopes.

For SVWD, flood hazards present both direct and indirect risks. Direct risks include potential inundation of district infrastructure such as pipelines, pump stations, and access roads located within or adjacent to mapped floodplains, as well as triggering slope failures that can damage or cut off access to these critical facilities. Indirect risks stem from system dependencies, as regional flooding may damage transportation routes, power supply infrastructure, or customer properties, thereby disrupting service continuity and emergency response.

As a special district and not a municipality, SVWD does not participate in the National Flood Insurance Program (NFIP); however, the SVWD complies with all minimum floodplain development standards and environmental review requirements established by the county and municipalities where its projects are located.

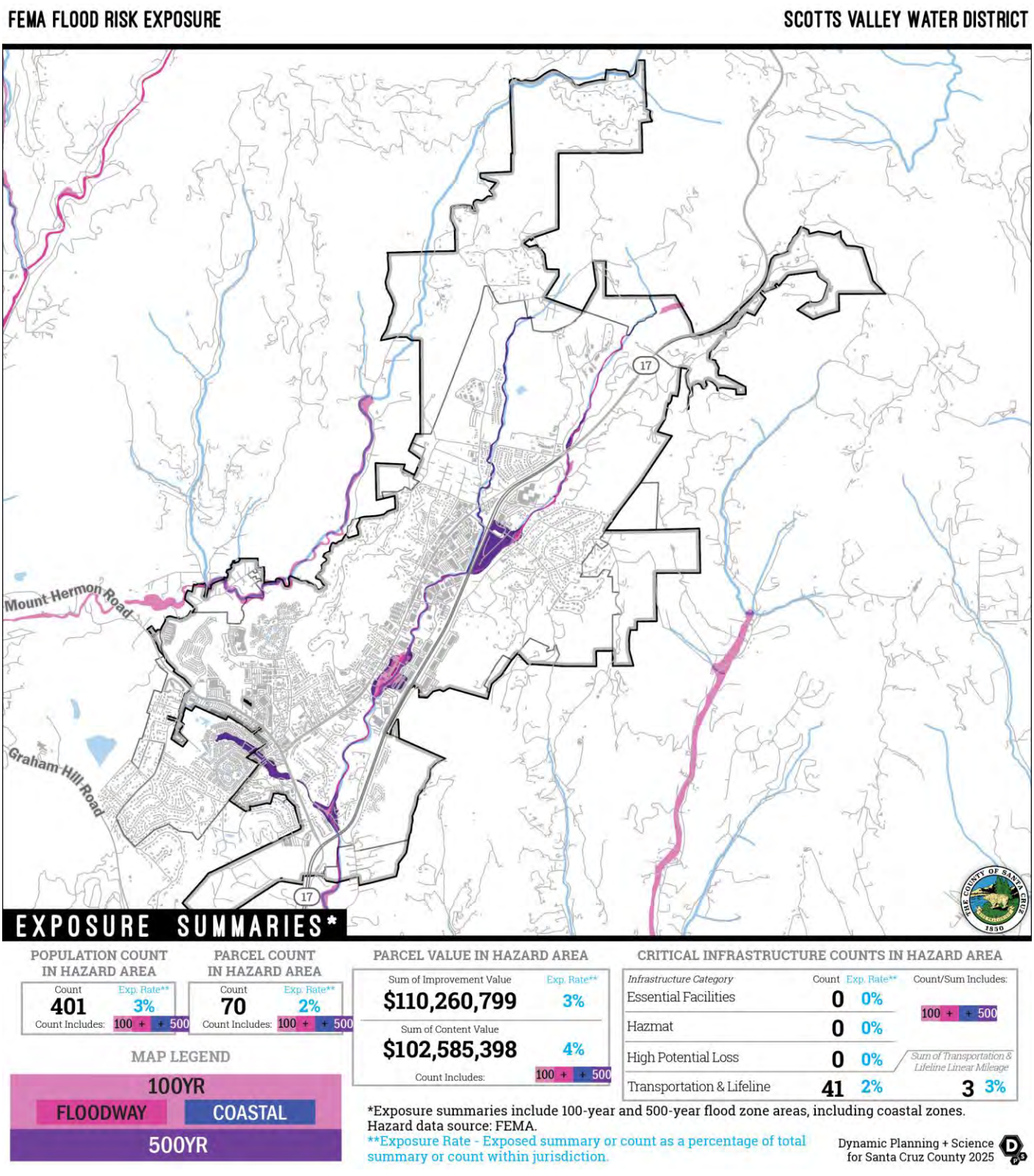


Figure 5-19: Exposure Summary - SVWD Flood Risk (FEMA Zones)

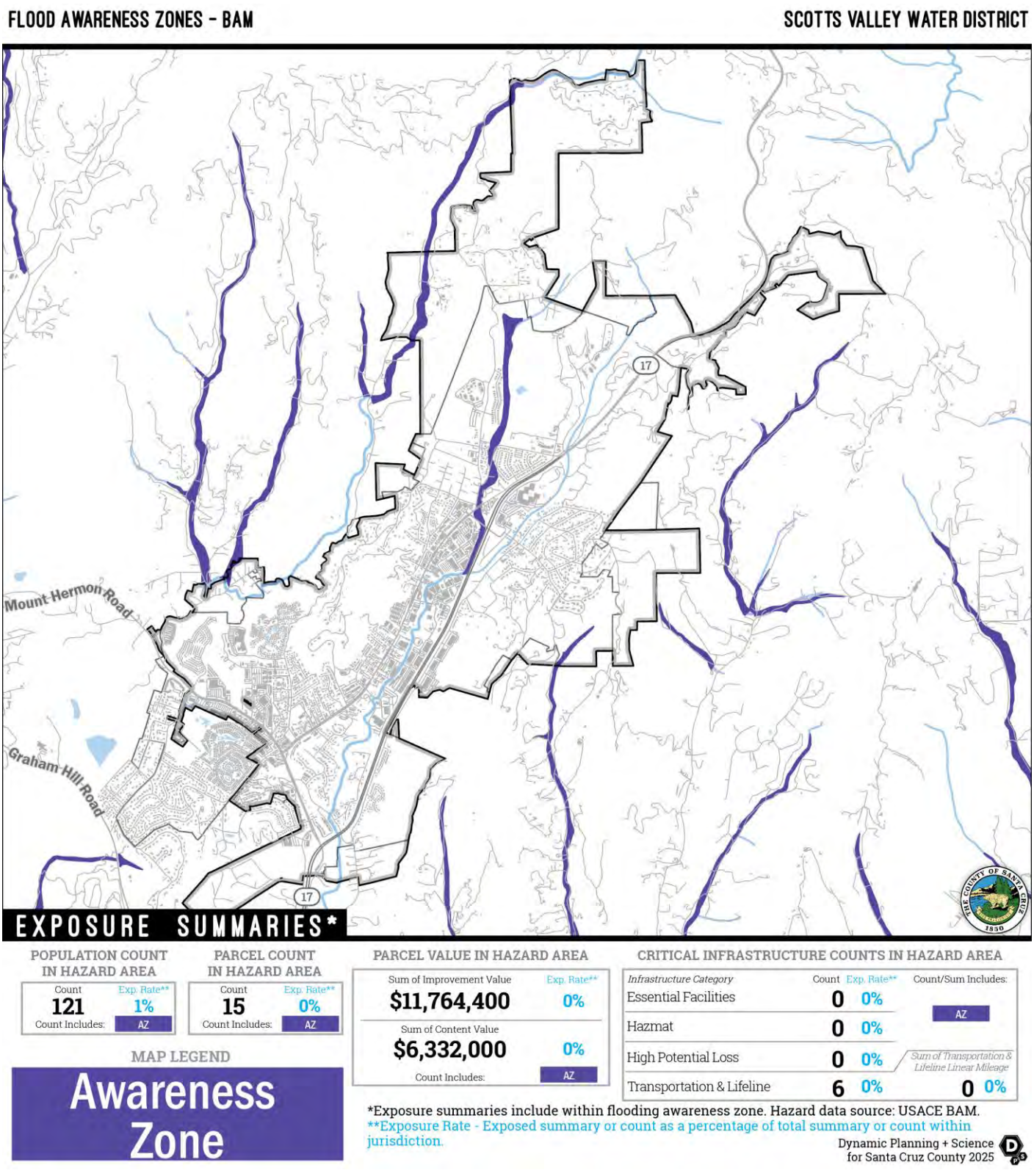


Figure 5-20: Exposure Summary - SVWD Flood Risk (DWR Awareness Zones)

5.5.2.3 Earthquake Hazard

Earthquake hazards present a notable risk to the SVWD, which is situated in the seismically active Santa Cruz Mountains region. The district lies near significant fault systems, including the San Andreas Fault, which is capable of generating major earthquakes. The hazard maps provided illustrate several key dimensions of this risk.

Perhaps most critical are the modeled earthquake scenarios shown in Figure 5-21. The U.S. Geological Survey's scenario for a magnitude 7.1 earthquake on the northern San Andreas Fault demonstrates the scale of potential impacts to Scotts Valley. The maps indicate that 100% of the SVWD service area population—approximately 11,000 people would experience "very strong" to "severe" shaking (Modified Mercalli Intensity VII–VIII). All parcels within the district, with a combined improvement value of more than $4 billion, are located within very strong modeled shake zone. Furthermore, five high-potential-loss facilities and more than 1,700 lifeline and transportation assets are at risk, suggesting widespread disruption to water delivery, emergency response, and community functioning following a major seismic event.

Figure 5-22 shows areas of potential liquefaction that are concentrated along valley floors and stream channels within the district. Liquefaction occurs when saturated soils temporarily lose strength during intense shaking, threatening the stability of underground infrastructure such as water pipelines and storage facilities. Approximately 3,700 residents (approximately 32% of the district population) and 1,300 parcels (nearly 35% of parcels) are located in areas identified as having liquefaction potential, with a combined parcel improvement value exceeding $1.5 billion (Figure 5-22). Critical infrastructure at risk includes transportation and lifeline facilities, with over 40% of those assets exposed to liquefaction hazards. These vulnerabilities highlight the importance of continued investment in seismic resilience for SVWD's wellfields, pipelines, and treatment plants.

In addition, Figure 5-23 shows fault zone areas of required investigation have been identified within SVWD's service area. These zones are designated under state and county regulations where active or potentially active fault traces are present, requiring geotechnical evaluation before new development occurs. Figure 5-23 indicates approx. 17 parcels and 13 residents within these zones, representing smaller but highly significant areas of direct fault rupture risk. Such exposure underscores the necessity for careful siting of new water infrastructure and for retrofitting existing facilities to meet seismic standards.

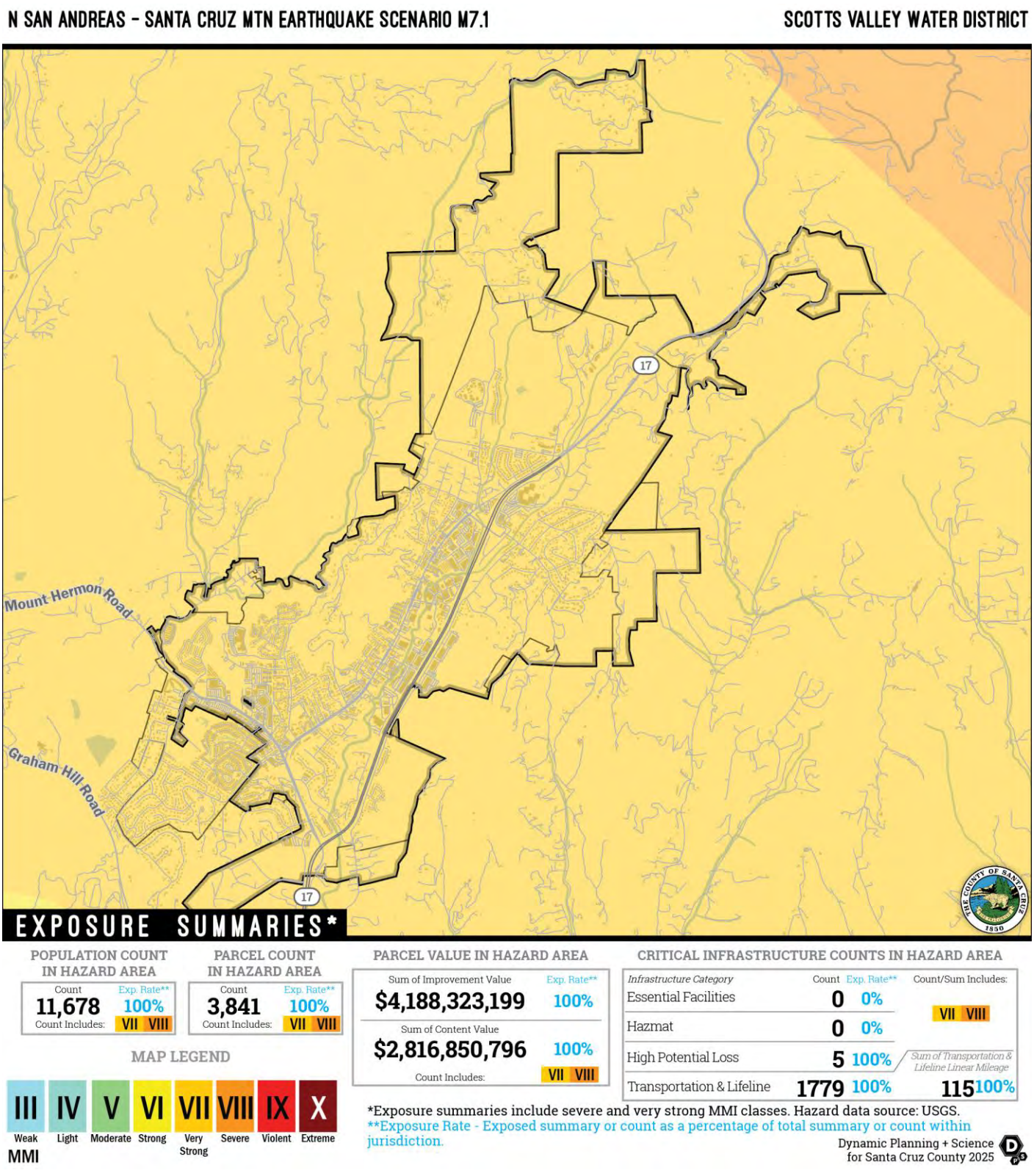


Figure 5-21: Exposure Summary - SVWD Earthquake Risk (M7.1 San Andreas Shaking)

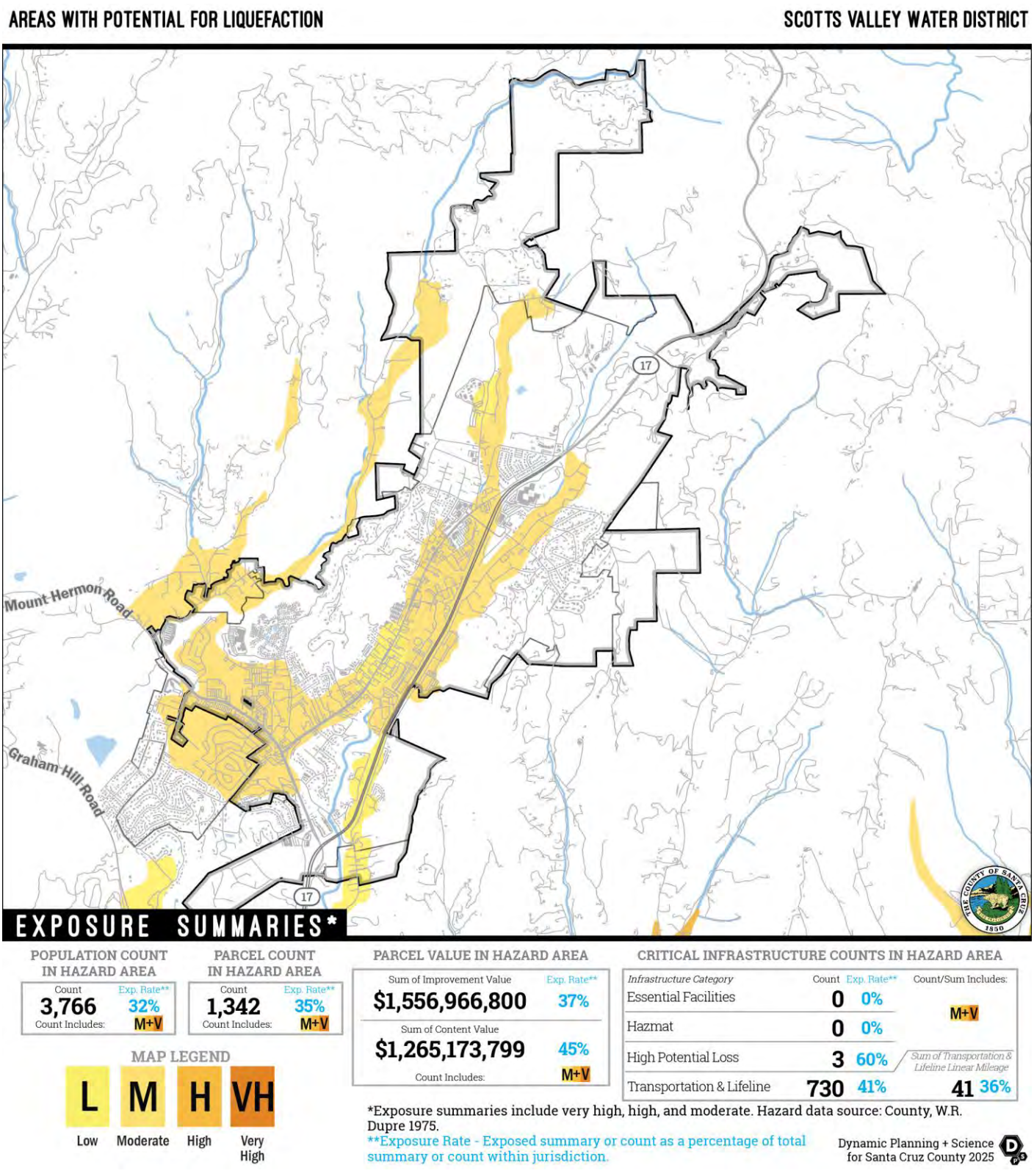


Figure 5-22: Exposure Summary - SVWD Liquefaction Risk

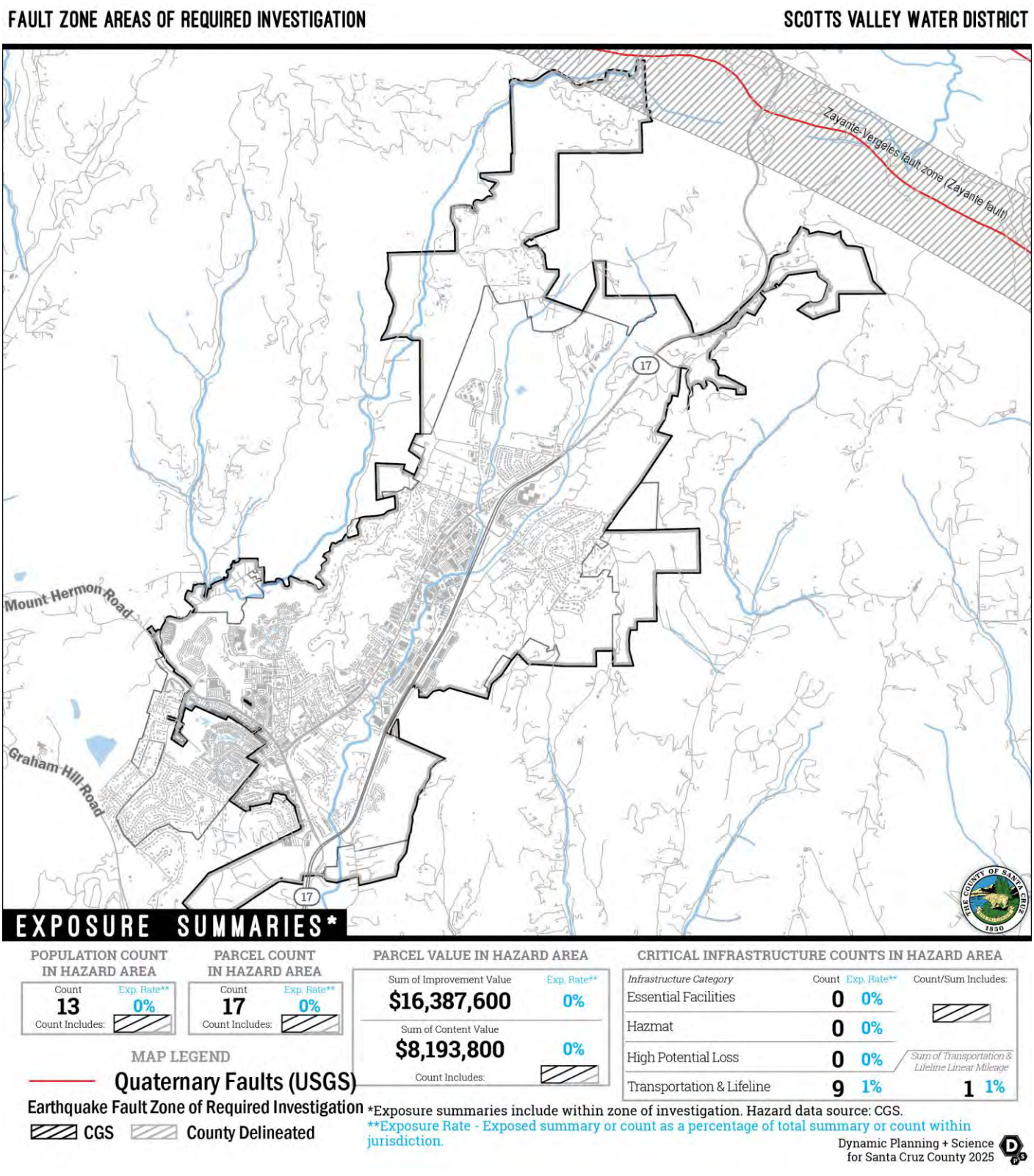


Figure 5-23: Exposure Summary - SVWD Earthquake Risk (Fault Zones)

5.5.2.4 Slope Failure Hazard

SVWD lies within the steep terrain of the Santa Cruz Mountains, where landslides and slope failures pose a significant hazard to water system infrastructure, transportation corridors, and residential development. Much of the district is located within moderate to high landslide susceptibility zones, reflecting the combination of steep slopes, fractured geologic formations, and the influence of intense winter storms. These risks are further compounded by the potential for seismic activity along the nearby San Andreas Fault and post-wildfire soil instability.

Hazard exposure data indicates that approximately 4,300 residents, or 37 percent of SVWD's population, live within high landslide hazard zones. About 900 parcels, representing roughly 24 percent of the district's land parcels, are exposed to landslide risk. The economic exposure is substantial, with over $800 million in improvement value (about 19 percent of the district's total) and nearly $414 million in content value (approximately 15 percent) located in high-hazard areas. In addition, more than 325 transportation and lifeline assets (18 percent of the system) fall within high-risk zones Figure 5-24. While no essential facilities or hazardous material sites are directly mapped within these areas, slope failures threaten the reliability of critical access routes such as Highway 17, which is essential for water district operations, repair crews, and regional emergency response.

Slope failures in this region are commonly triggered by heavy rainfall events, such as atmospheric river storms that saturate soils and destabilize slopes, as well as earthquakes that dislodge already fragile hillsides. Post-fire conditions also increase vulnerability, as the loss of vegetation can accelerate erosion and debris flows. The consequences for SVWD include potential damage to pipelines, pump stations, and reservoirs located on or near unstable slopes, as well as increased sedimentation in recharge areas and stormwater systems. Service interruptions may also result if access roads are blocked or lifeline utilities are severed.

The Santa Cruz Mountains have a well-documented history of damaging landslides, most notably during the 1982 El Niño storms and the 2017 winter storms, which forced extended closures of Highway 17 and disrupted local services. Although SVWD has not yet experienced catastrophic infrastructure loss due to slope failures, the district's high exposure values and reliance on vulnerable lifeline routes highlight an ongoing vulnerability.

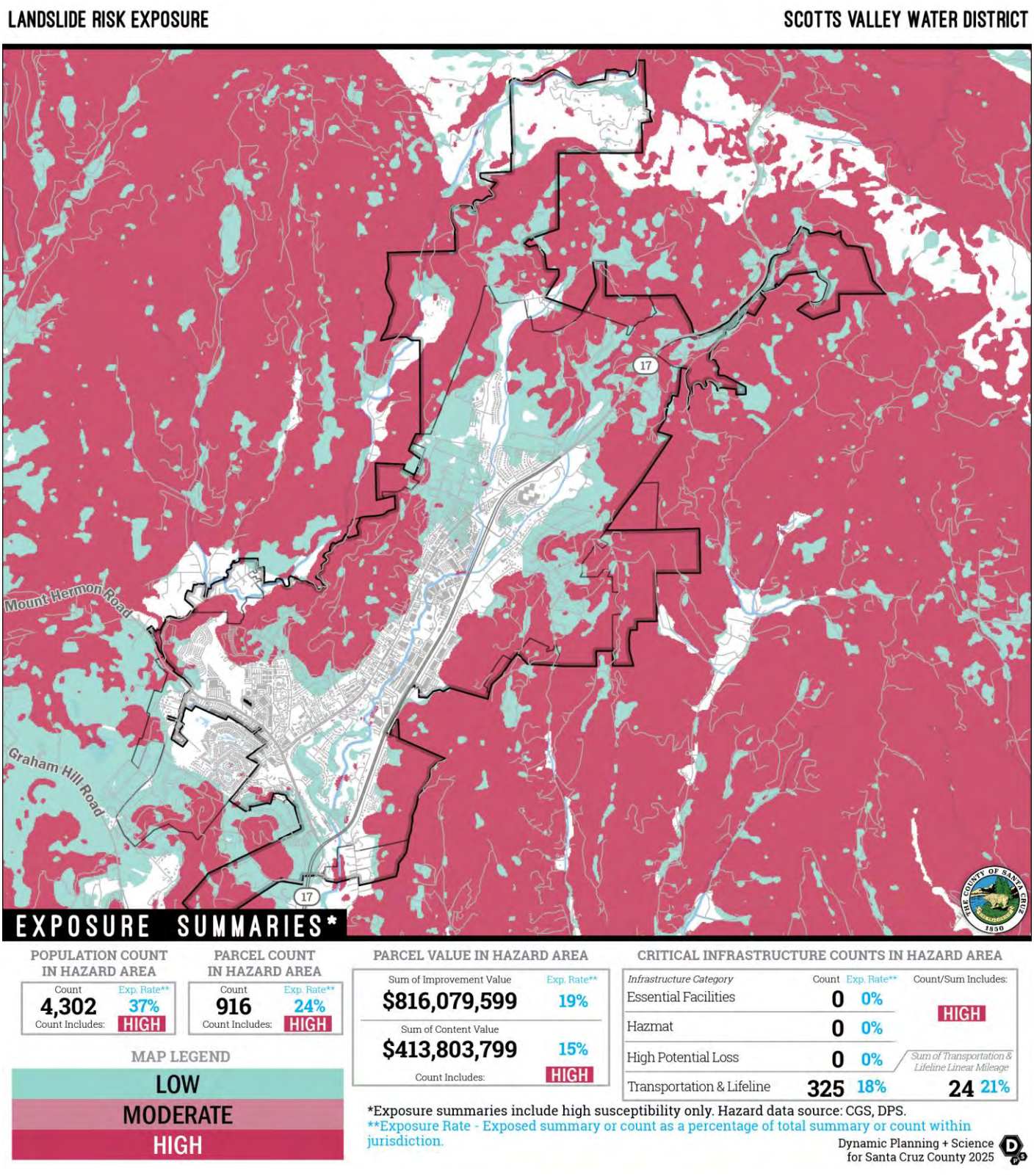


Figure 5-24: Exposure Summary - SVWD Slope Failure Risk

5.5.2.5 Drought Hazard

The National Drought Monitor provides drought data and maps nationally and on a localized, watershed scale. The National Drought Monitor is the product of 11 agencies, including the NDMC, NOAA and USDA, and is available at http://droughtmonitor.unl.edu/. The National Drought Monitor categorizes the level of drought from D0 through D4, with D4 being the highest "exceptional drought." Table 5-5 depicts drought classifications and impacts from the level of drought occurrence in California, while Figure 5-25 shows a time series of the level of drought in Santa Cruz County from 2000 to 2024 according to the National Drought Monitor.

Drought is a chronic hazard facing SVWD given its reliance on the overdrafted Santa Margarita Groundwater Basin as the primary source of supply. The district does not have access to imported surface water and is therefore uniquely vulnerable to extended dry periods that reduce recharge and elevate water demand. Climate change projections indicate hotter, drier conditions with more variable precipitation, which will likely intensify groundwater stress, increase evapotranspiration, and lengthen recovery periods between droughts.

Drought conditions reduce recharge rates and can increase the concentration of contaminants such as nitrates, naturally occurring minerals, and volatile organic compounds (VOCs). This may place additional stress on water treatment systems and create higher costs for water quality compliance. Moreover, as aquifers are drawn down further, infrastructure such as wells and pumps are subjected to greater operational demands, increasing the risk of mechanical failures or emergency outages during high-demand periods.

Drought increases the risk of reduced water supply reliability, higher costs for pumping and treatment, and potential service interruptions if storage and recharge cannot keep pace with demand. Secondary effects include elevated wildfire risk due to dry vegetation, stress on vulnerable populations with limited adaptive capacity, and economic impacts on commercial and institutional water users.

The hazard is compounded by the hydrogeologic constraints of the Santa Margarita Basin, which has a long history of overdraft and seawater intrusion risk in its coastal subareas. Although SVWD is inland, basin-wide sustainability challenges affect long-term supply reliability.

Table 5-5: Drought Classifications and Impacts

Category	Description	Possible Impacts
D0	Abnormally Dry	▪ Soil is dry; irrigation delivery begins early ▪ Dryland crop germination is stunted ▪ Active fire season begins
D1	Moderate Drought	▪ Dryland pasture growth is stunted; producers give supplemental feed to cattle ▪ Landscaping and gardens need irrigation earlier; wildlife patterns begin to change ▪ Stock ponds and creeks are lower than usual

Category	Description	Possible Impacts
D2	Severe Drought	▪ Producers increase water efficiency methods and drought-resistant crops ▪ Grazing land inadequate ▪ Fire season is longer, with high burn intensity, dry fuels, and large fire spatial extent; more fire crews on staff ▪ Lake- and river-based tourism declines; boat ramps close ▪ Trees are stressed; plants increase reproductive mechanisms; wildlife diseases increase ▪ Water temperatures increase; programs to divert water to protect fish begin ▪ River flows decrease; reservoir levels are low and banks are exposed
D3	Extreme Drought	▪ Federal water not adequate to meet irrigation contracts; extracting supplemental groundwater is expensive ▪ Fire season lasts year-round; fires occur in typically wet parts of the state; burn bans are implemented ▪ Ski and rafting business is low; mountain communities suffer ▪ Low water levels impede fish migration and cause lower survival rates ▪ Wildlife encroach on developed areas; little native food and water is available for bears, which hibernate less ▪ Water sanitation is a concern; reservoir levels drop significantly; surface water is nearly dry, flows are very low; water theft occurs ▪ Livestock need supplemental feed, cattle and horses are sold; little pasture remains ▪ Well and aquifer levels decrease; homeowners drill new wells
D4	Exceptional Drought	▪ Fire season is very costly; number of fires and areas burned are extensive ▪ Many recreational activities are affected ▪ Fields are left fallow; orchards are removed; vegetable yields are low; honey harvest is small; agricultural unemployment is high, food aid is needed ▪ Fish rescue and relocation begins; pine beetle infestation occurs; forest mortality is high; wetlands dry up; wildlife death is widespread; algae blooms appear ▪ Poor air quality affects health; greenhouse gas emissions increase as hydropower production decreases; West Nile outbreaks rise ▪ Water shortages are widespread; surface water is depleted; federal irrigation water deliveries are curtailed; water prices are extremely high; wells are dry, more and deeper wells are drilled; water quality is poor

Source: Adapted from U.S. Drought Monitor Drought Classifications and Impacts

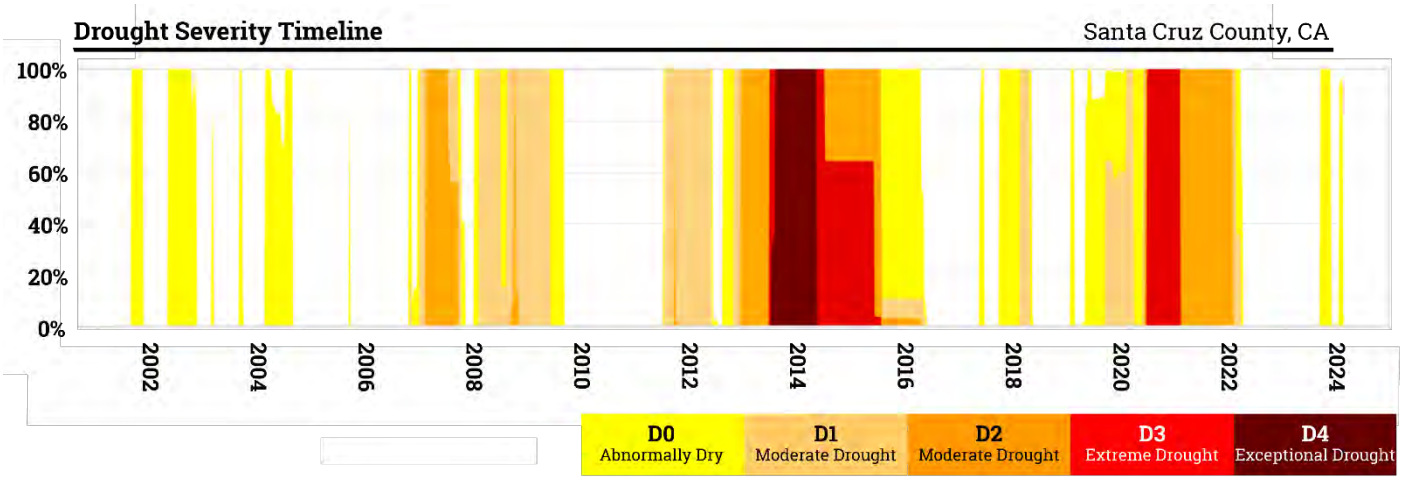


Figure 5-25: Drought Severity Timeline 2000-2024

5.5.2.6 Climate Change Impacts

Average annual temperatures across most of California have already increased by more than 1°F, with some areas experiencing rises of over 2°F when comparing the 1901–1960 average to that of 1986–2016. Daily maximum temperatures—a key indicator of extreme heat—are projected to increase by 4.4°F to 5.8°F by 2050 and by 5.6°F to 8.8°F by 2100. Heat waves that impact public health, known as heat-health events, are also expected to intensify across the state. By 2050, these events are projected to last up to two weeks longer in the Central Valley and occur four to ten times more often in the Northern Sierra region (California Natural Resources Agency, 2022).

California is already experiencing significant impacts from climate change, including prolonged drought, a lengthened wildfire season, increased coastal flooding and erosion, and widespread tree mortality. The state has observed rising average temperatures, more extreme heat days, fewer cold nights, a longer growing season, and shifts in the water cycle, with less winter precipitation falling as snow. In addition, summertime fog has declined by approximately 33%, and both snowmelt and rainwater runoff are occurring earlier in the year (Cal OES, 2018).

Long-term trends indicate a 12% to 20% decline in fog across California from 1900 through projections to 2070. Climate experts suggest that warming temperatures reduce the ability of air masses to cool enough to produce fog, which plays a critical role in supporting California's ecosystems (Grantham, Teodore; University of California, Berkeley, 2018).

Climate change is already shaping water supply and operations in SVWD, whose sole potable source is the SMGB. Because SVWD relies entirely on local groundwater, shifts in temperature and precipitation translate directly into changes in recharge, pumping stress, and drought exposure. District monitoring shows that Water Year (WY) 2020 produced only 20.3 inches of rain, about 49% of average, and that nine of the previous fourteen years were below average, indicating a drier-than-historical period since the late-2000s drought sequence. These hydrologic deficits matter because precipitation is the primary driver of basin recharge;

reduced rainfall and longer dry spells constrain aquifer recovery and tighten the margin for meeting demands in extended droughts. (UWMP, 2020)

SVWD's 2020 UWMP incorporates statewide climate guidance that anticipates "further intensification of wet and dry extremes," along with higher temperatures that increase outdoor water use while decreasing the fraction of precipitation available for groundwater recharge. In practical terms, hotter summers elevate landscape irrigation demand just as soils dry more quickly and storm-to-storm variability rises, stressing both the demand and supply sides of the ledger.

As such, this MJHMP addresses climate change as a secondary impact for each identified hazard of concern. Each chapter includes a section with a qualitative discussion on the probable impacts of climate change for that specific hazard.

5.5.3 Planning for Hazards & Growth

SVWD integrates hazard considerations into its long-term planning and infrastructure development to ensure a resilient and sustainable water system. The district's UWMP and Water Shortage Contingency Plan provides the foundation for drought preparedness, climate adaptation, and sustainable groundwater management. These plans set demand reduction measures, recycled water targets, and system reliability projections, aligning future development with the district's limited water resources.

In terms of hazard resilience, SVWD has conducted seismic risk assessments, which guide retrofits and upgrades for critical assets such as wells, tanks, and treatment facilities. These risk assessments are supported by ongoing capital improvement projects that replace aging infrastructure, enhance SCADA systems for real-time monitoring, and expand recycled water distribution. Such projects not only strengthen day-to-day operations but also improve system reliability during emergencies such as earthquakes, droughts, and wildfire.

Future development within the district will continue to be shaped by these hazard-informed planning frameworks. Growth in Scotts Valley is constrained by groundwater availability and environmental limits, which reinforces the importance of conservation, aquifer recharge, and recycled water expansion.

5.5.3.1 Development & Hazard Considerations

Future development within SVWD service area is expected to follow a modest but steady trajectory. While the overall growth rate is low compared to other urbanizing areas in California, even incremental expansion presents implications for hazard exposure and mitigation planning, particularly given SVWD's sole reliance on the Santa Margarita Groundwater Basin.

New development adds demand to a constrained groundwater resource and introduces infrastructure to hazard-prone areas, including wildfire zones, steep slopes, and zones of high seismic intensity. SVWD has long acknowledged that the most at-risk portions of its system, which include storage tanks, booster

stations, and pipelines, are often located at the wildland-urban interface (WUI) or in geologically unstable areas like the Glenwood and Bethany sites. As future housing is added in the higher elevations and outer edges of the district, these risks may be exacerbated unless new projects are conditioned on adequate fire flow, slope stability, and seismic design standards.

In wildfire-prone areas, infill and hillside construction can increase ignition risk, stress firefighting infrastructure, and hinder emergency access. SVWD's problem statements identify critical water pressure zones, particularly Northridge and Via Fontenay, as areas where growth must be balanced against fireflow constraints and booster station limitations. Expansion into these zones without simultaneous upgrades could reduce the district's ability to maintain pressure during fire events or evacuations.

Similarly, although seismic hazard is pervasive across SVWD's entire service area, development in older neighborhoods with legacy infrastructure (e.g., asbestos cement pipes) increases the vulnerability of both new and existing residents. Densifying these areas without accelerated replacement of vulnerable mains and nodes may increase the risk of water service interruption during or after an earthquake.

Importantly, SVWD's growth is constrained not only by physical hazards but also by groundwater availability. Anticipated housing growth in the region will require careful coordination of groundwater allocations, recharge projects, and use of interties (e.g., with the City of Santa Cruz) to buffer supply limitations during dry years.

5.5.4 Hazard Problem Statements

As part of the mitigation action identification process, the internal planning group for each jurisdiction identified areas of concern (aka problem statements) for their respective facilities based on the risk assessment and vulnerability analysis. Problem statements focused on the impact, victim, and the threat that the hazard could create in the jurisdiction, as described in Table 5-6. Identifying common issues and weaknesses through these problem statements assisted the planning group in understanding the realm of resources needed for mitigation.

The goal is to have at least one mitigation action for every problem statement. Projects or actions have been developed to mitigate each problem identified. See Table 5-8 for a full list of mitigation actions and corresponding problem statements that they address. Each problem statement is coded with a problem number for cross-referencing between Table 5-6 and Table 5-8.

Table 5-6: SVWD Problem Statements

Hazard	Area of Concern	Problem IS	Description	Related Mitigation Actions
Drought	Threat	ps-DR-SVW-01	Limited redundancy in the water supply system constrains the district?s ability to reliably deliver service during prolonged drought periods or multi-year dry cycles.	ma-DR-CBC-03

Hazard	Area of Concern	Problem IS	Description	Related Mitigation Actions
Drought	Threat	ps-DR-SVW-02	Existing groundwater sources are susceptible to over-extraction and have slow recharge rates during drought, increasing the district?s exposure to critical water shortages.	ma-DR-SCW-01, ma-DR-SVW-01
Drought	Victim	ps-DR-SVW-03	Water restrictions and proposed drought surcharges may disproportionately impact low-income or vulnerable residents.	ma-DR-SVW-02
Earthquake	Threat	ps-EQ-SVW-01	The entire Scotts Valley Water District lies within a ?very strong? seismic shaking zone (M7.1 scenario), placing all above- and below-ground water infrastructure at systemic risk of failure.	ma-EQ-SVL-01, ma-EQ-SVW-03, ma-EQ-SVL-02
Earthquake	Threat	ps-EQ-SVW-02	Approximately 60% of the district?s water transmission and distribution network consists of aging asbestos cement (AC) pipe, which is highly prone to cracking and rupture during ground shaking.	ma-EQ-SVW-02, ma-EQ-SVW-03
Earthquake	Victim	ps-EQ-SVW-03	Earthquake-induced damage to water mains, vaults, and critical system nodes could interrupt water service and pressure, undermining emergency response operations and community access to potable water.	ma-EQ-SVW-03
Earthquake	Impact	ps-EQ-SVW-04	Multiple key tanks?including MacDorsa, Bethany, Sequoia, Mt. Roberta, and Villa Fontenay (redwood tanks)?may lack modern seismic restraints and require engineering evaluation and potential retrofitting.	ma-EQ-SVW-01
Earthquake	Impact	ps-EQ-SVW-05	District wells are susceptible to casing damage, pump displacement, and power loss during seismic events, which may compromise groundwater supply availability and delay service restoration.	ma-EQ-SCW-02
Flood	Impact	ps-FL-SVW-01	Flooding can damage or cut off access to critical facilities like pump stations and pipelines, particularly where stormwater infrastructure intersects with natural drainage corridors and steep or unstable slopes, triggering slope failure.	ma-FL-PVW-03
Slope Failure	Threat	ps-SF-SVW-01	Multiple SVWD facilities?including Glenwood Tank, Bethany Tank, and others?are situated in slope-prone terrain, making them susceptible to landslides that could cause structural damage or access restrictions.	ma-SF-SVW-01
Slope Failure	Impact	ps-SF-SVW-02	A recent slope failure damaged the Glenwood Tank site, prompting potential emergency repairs and exposing the broader vulnerability of hillside assets. Engineering design for slope stabilization is underway.	ma-SF-SVL-02, ma-SF-SVW-01

Hazard	Area of Concern	Problem IS	Description	Related Mitigation Actions
Slope Failure	Victim	ps-SF-SVW-03	Landslides or gradual slope movement could sever buried water transmission mains, particularly in Glenwood and Bethany zones?disrupting service and compounding impacts during concurrent hazard events	ma-SF-SVW-01
Drought	Impact	ps-SF-SVW-04	The district's SGMA-aligned Groundwater Sustainability Plan (GSP) allocates 1,100 AF/year from a 1,300 AF supply, while regional housing growth (2,200 units) threatens sustainability goals. Use of City of Santa Cruz interties during wet years is being explored to enhance recharge flexibility.	ma-DR-SVW-01
Drought	Victim	ps-SF-SVW-05	Inconsistent public understanding of drought stages and conservation expectations undermines effective demand management and limits compliance with water-use restrictions.	ma-DR-SCW-02, ma-DR-CPT-01
Wildfire	Threat	ps-WF-SVW-01	Scotts Valley Water District infrastructure is located in and adjacent to Wildland-Urban Interface (WUI) zones, increasing wildfire exposure for key assets such as tanks and booster stations. SVWD maintains defensible space, but vegetation on adjacent private lands continues to pose a threat.	ma-WF-SVL-02, ma-WF-SCW-01, ma-WF-SCW-02, ma-WF-SVW-03
Wildfire	Victim	ps-WF-SVW-02	Critical zones such as Northridge (50,000-gallon redwood tank) and Villa Fontenay (30,000-gallon redwood tank) have limited water storage capacity, which could impair firefighting efforts and endanger public safety during wildfire events.	ma-WF-SVW-02

5.5.4.1 Climate Change Impacts & Vulnerable Populations

The SVWD serves a community that is increasingly vulnerable to the intersecting impacts of climate change and natural hazards. Rising temperatures, prolonged droughts, more intense storm events, and wildfire risk all threaten water supply reliability and infrastructure integrity. These risks affect all residents, but the consequences fall most heavily on vulnerable populations, including low-income households, renters, and those with limited resources to adapt to water restrictions, higher costs, or service interruptions.

Drought: Climate change is driving hotter summers and longer, more severe drought cycles that reduce natural groundwater recharge and increase reliance on limited supplies. SVWD's groundwater sources are susceptible to over-extraction, with recharge rates too slow to keep pace with growing demand. Water restrictions and proposed drought surcharges can disproportionately impact low-income households, renters, and vulnerable residents who may already struggle to pay utility bills. At the same time, inconsistent public understanding of drought stages undermines conservation compliance, leaving the

system more stressed during multi-year dry cycles. Housing growth further increases water demand, straining the district's Groundwater Sustainability Plan and amplifying inequities in water access.

Earthquake: All of SVWD lies within a very strong seismic shaking zone, and much of the district's water network consists of aging asbestos cement pipes that are prone to rupture during earthquakes. Seismic damage to tanks, wells, and mains could disrupt potable water service and fire flow, undermining emergency response. Vulnerable residents—including renters, mobile home residents, and those with limited financial means—are at greatest risk of displacement or health impacts when water service is interrupted, especially if disruptions are prolonged. Climate change compounds this risk by creating cascading hazard scenarios, such as an earthquake followed by extreme heat, in which loss of water access magnifies public health threats.

Slope Failure: More intense rainfall events linked to climate change are increasing the risk of landslides and slope failures in the Santa Cruz Mountains. Several SVWD facilities, including the Glenwood and Bethany tanks, are located in slope-prone terrain. Landslides could damage tanks, sever transmission mains, and block facility access. Residents served by these hillside assets—particularly those with mobility or financial limitations—face heightened risk of service disruptions and delayed recovery. For vulnerable households, slope failures can mean extended loss of water access during concurrent hazard events such as storms or wildfire.

Wildfire: Hotter and drier conditions are increasing the frequency and severity of wildfires in and around the WUI. SVWD infrastructure, including redwood storage tanks in Northridge and Villa Fontenay, is directly exposed to wildfire risk. Limited storage capacity in these zones could impair firefighting operations, threatening both public safety and continuity of service. Vulnerable populations—such as seniors, households with health conditions, or residents without private transportation—face greater evacuation challenges and depend heavily on reliable water for fire suppression and recovery. Climate change intensifies these risks by lengthening the fire season and stressing vegetation, increasing the likelihood of fast-moving fires that outpace firefighting resources.

SVWD's vulnerabilities illustrate the direct connection between climate change, water system reliability, and the resilience of its most at-risk residents. Equitable drought response strategies, seismic retrofits, slope stabilization, and wildfire-adapted infrastructure will be critical to ensuring that all residents, particularly vulnerable populations, maintain access to safe and reliable water in the face of compounding climate hazards.

5.6 Mitigation Strategy

This section provides the framework for how the SVWD will reduce hazard risk within its service area while supporting the broader goals of the Santa Cruz County MJHMP. It includes an overview of existing capabilities and opportunities for expanding resilience, and the district's prioritized mitigation actions. Together, these elements demonstrate how the district integrates hazard awareness into its conservation mission and contributes to a coordinated countywide approach.

Within the Santa Cruz County MJHMP, the mitigation strategy serves as the guidebook for future hazard mitigation efforts. For the SVWD, the strategy within this annex reflects the outcomes of the countywide planning process while also capturing the district's unique priorities and program areas. The strategy is designed to reduce the vulnerabilities identified in the risk assessment, including the problem statements developed for wildfire, flood, earthquake, slope failure, drought, and climate change.

Mitigation actions identified in this annex are both policy and project oriented, advancing conservation-based approaches that directly support hazard reduction. Actions are structured to align with FEMA's requirements and to integrate with existing county and regional planning mechanisms. Each action outlines responsible parties, potential funding sources, and required resources to ensure successful implementation.

For the SVWD, this strategy serves as a roadmap for delivering mitigation through technical assistance, watershed restoration, and partnerships with landowners. By combining its project-based capacity with the broader coordination of the countywide plan, the district contributes to a unified framework that reduces hazard risk across Santa Cruz County while also advancing its mission to protect natural and working lands. The subsections that follow describe these elements in detail:

- **Section 5.6.1 Aligning the Action Plan** provides a summary of the district's capacity to address natural hazards.
- **Section 5.6.3 Mitigation Action Plan** presents the SVWD's prioritized actions that will guide implementation in coordination with countywide strategies.

5.6.1 Aligning the Action Plan

This section connects the SVWD's mitigation actions with its existing capabilities and areas for growth. Capability assessments are a required element of hazard mitigation planning under the Disaster Mitigation Act of 2000 and FEMA's 2023 guidance, ensuring that actions are realistic, achievable, and aligned with available resources.

The section begins with a summary of the SVWD's capabilities across four areas: planning and regulatory, administrative and technical, fiscal, and education and outreach. This overview highlights the tools and strengths that the district already uses to reduce hazard risk. The section then provides a detailed analysis of each capability area, identifying both current practices and opportunities to expand resilience.

5.6.1.1 Capabilities & Opportunities Assessment

To develop a realistic and actionable mitigation strategy, it must account for existing jurisdictional capabilities and what future opportunities there are to enhance those capabilities for purposes of hazard mitigation. This section provides an assessment of SVWD's existing capabilities and future opportunities, including planning and regulatory, administrative and technical, fiscal, and public outreach and education capabilities. This assessment also identifies opportunities to integrate this MJHMP into future planning,

policies, or programs to weave mitigation efforts into daily operations and address hazard problems wholistically. Capabilities are categorized into four groups and include various mechanisms.

- **Planning and Regulatory Capabilities:** Existing long-range plans, emergency response plans, hazard-specific plans, land use policies, and building and development standards.
- **Administrative and Technical Capabilities:** Available expertise in emergency services, engineering, grant management, and community planning.
- **Fiscal Capabilities:** Budgetary capacity, taxing authority, grants, and other funding mechanisms that can support mitigation projects.
- **Outreach and Education Capabilities:** Existing programs for providing technical assistance, community education, public warnings, and stakeholder engagement.

A full description of the process used to develop the capabilities assessment is provided in Volume 1, Section 2.3.3.

This capabilities and opportunities assessment for the district lists the various types of capabilities along with how they have been, currently are, or will in the future be integrated into hazard mitigation planning efforts. The three "HMP Integration" columns that identify the capability's status and usage are color-coded with green, yellow, or orange shading to communicate the following:

- **Status:** If the capability is present at all and what level of use it has generally.
- **Current Mitigation Use:** If the capability is currently being used in mitigation efforts, specifically, and at what level.
- **Future Opportunity:** If there is a future opportunity to integrate the capability into mitigation efforts and at what level.

Planning & Regulatory Capabilities

As a special district with limited authority and not a municipality, SVWD does not maintain traditional planning or regulatory tools, such as hazard-specific ordinances or development standards. That said, SVWD possesses a comprehensive set of capabilities that support hazard mitigation planning, response, and long-term resilience. From a planning and regulatory perspective, the district has implemented essential frameworks such as its Urban Water Management Plan (UWMP), Water Shortage Contingency Plan, and seismic risk assessments under the American Water Infrastructure Act.

These plans provide critical guidance for drought management, seismic safety, and sustainable water supply, while capital improvement projects address infrastructure upgrades like well replacement, SCADA enhancements, and tank siting to ensure system reliability.

Further, SVWD complies with all development standards and environmental review requirements for the State of California, including the California Environmental Quality Act (CEQA), and within the county and municipalities where its projects are located. These local regulatory environments are described in Volume 1 for Santa Cruz County and in the City of Scotts Valley's municipal annex of Volume 2.

Future integration of the MJHMP will occur through various processes and mechanisms outlined across multiple mitigation actions (Table 5-8). A key opportunity for future hazard mitigation integration with SVWD's existing planning mechanisms is to update its UWMP and Water Shortage Contingency plans to incorporate the updated risk assessment contained in this plan, including coordination with the City of Santa Cruz to address overuse and recharge deficits during times of drought through new system interties (ma-DR-SVW-01).

Administrative & Technical Capacity

SVWD's administrative and technical capacity is another strength. The district employs skilled staff in engineering, operations, and technical services, enabling it to manage complex projects and emergency response efforts. Although it lacks a dedicated emergency manager, responsibilities are assigned through the Emergency Response Plan, ensuring coordinated action during events.

Technical staff maintain resilient operations through SCADA monitoring, treatment system oversight, and infrastructure design, while outreach and education functions, though not led by dedicated staff, are consistently integrated into management roles.

Warning Systems & Services

The SVWD does not manage formal warning systems for hazards such as floods, wildfires, or earthquakes. Emergency notification and public alerting remain the responsibility of county and state agencies. The SVWD's role is to support these systems by providing education, preparedness resources, and technical assistance to landowners.

Fiscal Capabilities

On the fiscal side, SVWD has multiple funding mechanisms to support resilience. Revenues from water rates, recycled water fees, system development charges, and multi-year capital improvement funding sustain both operations and mitigation projects.

The district has successfully pursued grants, including state drought relief funding, and has the potential to expand into broader fiscal tools such as general obligation bonds or voter-approved levies if needed for future resilience investments.

Education & Outreach Capabilities

Equally important are SVWD's public education and outreach capabilities, which enhance community awareness and preparedness. Through its website, WaterSmart portal, newsletters, social media, and bill inserts, the district provides residents with conservation updates, emergency information, and fire safety messaging.

While participation in annual public safety events and Fire Safe Councils remains limited, SVWD demonstrated effective communication during the CZU Lightning Complex Fire, coordinating with fire agencies and maintaining water supply for firefighting. Opportunities exist to deepen partnerships with Resource Conservation Districts and expand outreach through community events.

CAPABILITY ASSESSMENT LEGEND

HMP Integration

Status	Current Mitigation Use	Future Opportunity
Currently in use or present.	Used widely for mitigation.	Opportunity to expand and integrate.
(Sort of) Seldomly used or limited presence.	Limited use in mitigation planning.	Limited opportunity to expand and integrate.
(No) Not present or available.	Not used in mitigation planning.	No opportunity to expand or integrate.

Table 5-7: SVWD Capabilities Assessment

Resource	HMP Integration: Status	HMP Integration: Current Mitigation Use	HMP Integration: Future Opportunity	Notes / Additional Detail
Planning and Regulatory Capabilities				
Hazard Reduction Programs (Annually Conducted)				
Capital Improvements Program (CIP) or Plan				No formal plan but active program - Includes well replacement, SCADA upgrades, tank siting, and water quality system improvements
Annual Fire Prevention Plan				No formal plan - Operational coordination during CZU Complex Fire; hydrant flow support, backup power for pumps, tank monitoring
Seismic Safety Program (Non-structural)				American Water Infrastructure Act Risk and Resilience Assessment (RRA) to address seismic risks; update due 2026
Earthquake Modernization Plan (Building Safety)				No formal structural retrofit plan, but tank sitting and fire-hardening studies incorporate seismic resilience
Stormwater Management Program (Annual Inspections)				Low Impact Development (LID) projects improve groundwater recharge and runoff management
Hazard Plans and Programs				
Floodplain Response Plan				No standalone plan; opportunity to develop response triggers and interagency protocols

Resource	HMP Integration: Status	HMP Integration: Current Mitigation Use	HMP Integration: Future Opportunity	Notes / Additional Detail
Community Wildfire Protection Plan (CWPP)	N/A	N/A	N/A	No CWPP jurisdiction or direct wildland vegetation management responsibilities
Ground Water Management Planning / Plans				Member of Santa Margarita Groundwater Agency; implements SGMA-compliant GSP
Climate Action Plan				Environmental Sustainability Policy includes GHG reduction, clean energy, LEED standards
Drought Mgmt/ Contingency Plan				Water Shortage Contingency Plan integrated into 2020 UWMP (Chapter 13)
FireWise Communities within District				None formally designated by NFPA within SVWD; opportunity for partnerships with HOAs
Hazard-Related Public Outreach Program				Outreach during CZU fire, water conservation campaigns, drought updates via SVWD website and WaterSmart portal
Administrative and Technical				
Staff Capacity				
Emergency Manager				Emergency planning led by Executive Team; no dedicated Emergency Manager, but responsibility is assigned during emergencies per ERP
Civil Engineer				District regularly completes design and construction management in-house or via consultants for capital improvement projects
Dedicated Public Outreach Personnel				Outreach efforts are active (drought, fire), but no dedicated position; handled by management staff
GIS Specialist and Capability				GIS is used for infrastructure mapping and SMGWA participation; unclear if internal staff manage it
Grant Manager, Writer, or Specialist				Grant funding obtained (e.g., DWR Drought Relief), but managed by leadership or consultants; not a dedicated staff role
Other				Technical operations team includes SCADA techs, treatment operators, and field crew maintaining resilient water delivery
Warning Systems/Services				
General				Website and WaterSmart Portal provide alerts; system pressures monitored during events like CZU fire
Flood				SVWD does not issue flood warnings; may coordinate with city/county if needed; opportunity to integrate triggers via ERP
Wildfire				Fire-related communications active during CZU; SVWD monitors tank levels and pressurization under emergency protocols
Geological Hazards				Earthquake response tied to Emergency Plan; no standalone monitoring system, but seismic RRA planned
Fiscal Capabilities				

Resource	HMP Integration: Status	HMP Integration: Current Mitigation Use	HMP Integration: Future Opportunity	Notes / Additional Detail
Financial Resources for Hazard Mitigation				
Levy for Specific Purposes with Voter Approval				District has not recently proposed voter-approved hazard fees; could explore options for future resilience funding
Utilities Fees				SVWD sets water and recycled water rates that support operating reserves, drought response, and resiliency upgrades
System Development Fee				District charges connection and capacity fees to fund infrastructure expansion and modernization
General Obligation Bonds to Incur Debt				No GO bonds currently in use; potential tool if broader capital or hazard mitigation needs arise
Special Tax Bonds to Incur Debt				No record of special tax bonds used or planned by the district
Withheld Spending in Hazard-Prone Areas				No policies restricting investment based on hazard zones; not applicable to SVWD structure
Stormwater Service Fees				SVWD does not manage stormwater directly; this is handled by local government
Capital Improvement Project Funding				Extensive multi-year CIP supports drought, seismic, water quality, and pressure zone improvements
Education / Outreach Capabilities				
Education/Outreach Resources				
Website Dedicated to Hazard Topics				SVWD website and WaterSmart portal provide water shortage, fire, and emergency info
Dedicated Social Media				SVWD posts updates via social media on water use restrictions, fire safety, and service alerts
Hazard Info. Avail. at Library/ Planning Desk				Not a standard practice; outreach occurs online and via direct mail, not via civic desks
Annual Public Safety Events				No regular events, but District does participate in region-wide emergency response and public messaging campaigns
Ability to Field Public Tech. Assistance Requests				Customers can request info on water usage, leaks, rebates, and emergency status via WaterSmart and SVWD staff
Public Safety Newsletters or Printed Outreach				Conservation updates, fire prep, and drought info shared through newsletters and bill inserts
Fire Safe Councils				No formal participation in Fire Safe Councils, though collaboration with fire agencies during CZU event noted
Resource Conservation Districts				No direct integration, but opportunity exists to collaborate on water conservation or fuel treatment outreach
Other				Technical operations team includes SCADA techs, treatment operators, and field crew maintaining resilient water delivery

5.6.2 Scotts Valley Water District Mitigation Action Plan

Mitigation actions were developed based upon the jurisdiction's priorities, risk assessment results, and mitigation alternatives. The mitigation action prioritization method used by all participating jurisdictions is described in Section 4 of Volume 1. Table 5-8 lists each priority mitigation action, responsible party, time frame, potential funding source, implementation steps, and resources need to implement based upon consensus among the SVWD's planning group members. All mitigation actions across jurisdictions are accessible through MAST (Mitigation Action Support Tool), providing comprehensive details including the mitigation goal, responsible party, timeline, potential funding sources, implementation steps, and required resources. As a dynamic document, hazard problem statements and mitigation activities will be regularly updated through MAST to reflect evolving needs and circumstances.

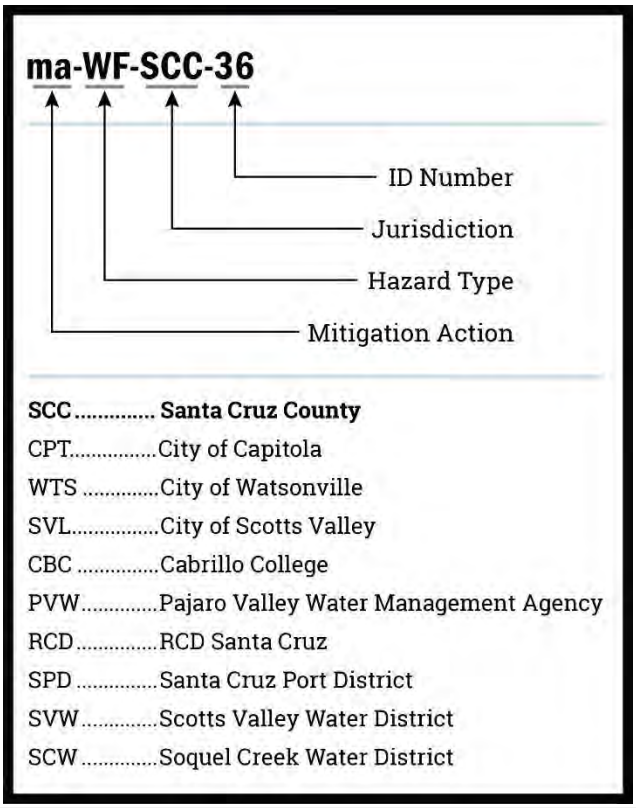


Figure 5-26: Mitigation Action Number Key

As a first-time participant in a hazard mitigation plan, SVWD did not have any existing mitigation actions from a prior plan to evaluate. Therefore, all mitigation actions identified in this planning cycle are newly developed based on the district's updated risk assessment, local capabilities, and areas of concern identified during stakeholder engagement and interagency collaboration. These new actions were crafted to address the district's highest priority hazards, align with FEMA's hazard mitigation guidance, and reflect local infrastructure vulnerabilities and water resource challenges. The development of these mitigation strategies marks an important step in integrating resilience into the district's operations and long-term planning. All mitigation actions are documented in Volume 2, Table 5-8.

SVWD developed unique mitigation actions, tailored to their own unique priorities, vulnerabilities, and capabilities. Each action contains a level of detail that meets the regulatory requirements of FEMA and DMA 2000, including identifying the responsible party, time frame, potential funding source, implementation steps, and resources needed to implement. It is important to note that SVWD is a small agency with a mostly horizontal structure. Therefore, there are no specific departments or divisions responsible for overseeing these mitigation actions; instead, responsibilities for actions will be shared across all positions in the district.

All actions are assigned a unique identification number, as illustrated in MAST and in Figure 5-26, using alphanumeric characters that denote specific attributes of the action, including the type of hazard being mitigated, facilitating easy reference and management. Table 5-8 lists each mitigation action for the district.

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Table 5-8: SVWD Mitigation Action Plan

Hazard	Action ID	Action Title	Description	FEMA Mitigation Alternative	Timeline	Responsibility	Cost	Benefit	Internal Funding Source	External Funding Source	Priority (Based on Criteria)	Problems Addressed
Drought	**ma-DR-SVW-01**	Groundwater Resilience Enhancements	Implement managed aquifer recharge, improve groundwater monitoring, and pursue intertie coordination with the City of Santa Cruz to address overuse and recharge deficits during drought.	NRP	Medium 3-5 Years	SVWD + RCD, County, City of Santa Cruz and SMGWA	Medium	High	CIP budget for physical infastructure not covered by DWR grant	DWR Grant for physical infastructure	Medium	ps-DR-RCD-01, ps-DR-SCC-03, ps-DR-SCW-01, ps-DR-SVW-02, ps-SF-SVW-04, ps-DR-SVW-01, ps-SF-SVW-04, ps-SF-SVW-05
Drought	**ma-DR-SVW-02**	Equitable Drought Education & Rate Planning	Develop bilingual public education campaigns and a tiered drought surcharge program modeled after PG&E's CARE system to reduce burden on low-income customers.	PRV, PE&A	Short 1-3 Years	SVWD + County, PG&E and regional partners	Low	High	operating budget	DWR, Measure Q	Medium	ps-DR-SVW-03, ps-DR-WTS-01, ps-DR-SVW-01, ps-DR-SVW-02, ps-SF-SVW-04, ps-SF-SVW-05
Earthquake	**ma-EQ-SVW-01**	Seismic Retrofit of Critical Facilities	Retrofit structurally vulnerable tanks including MacDorsa, Bethany, Sequoia, Mt. Roberta, and Villa Fontenay to meet seismic safety standards.	PPRO, SP	Short 1-3 Years	SVWD + consultants	High	High	seeking grant opportunities, CIP budgeting.	HMGP BRIC	High	ps-EQ-SVW-04, ps-EQ-SVW-01, ps-EQ-SVW-02, ps-EQ-SVW-03, ps-EQ-SVW-05
Earthquake	**ma-EQ-SVW-02**	Seismic Pipe Replacement Program (Phase I)	Initiate phased replacement of high-risk asbestos cement (AC) pipes in the water distribution network using seismically resilient materials.	SP	Long 5-10 Years	SVWD	High	High	CIP budget	HMGP BRIC	High	ps-EQ-SVW-02, ps-EQ-SVW-01, ps-EQ-SVW-03
Earthquake	**ma-EQ-SVW-03**	Seismic Node & Vault Hardening Initiative	Reinforce system nodes (e.g., vaults, PRVs) to withstand ground shaking and prevent service disruptions during earthquakes.	SP	Medium 3-5 Years	SVWD + County OES and Fire District	High	High	CIP budget	HMGP BRIC	High	ps-EQ-SVW-01, ps-EQ-SVW-02, ps-EQ-SVW-03, ps-EQ-CPT-02, ps-EQ-SVL-02
Flood / Slope Failure	**ma-SF-SVW-01**	Slope Stability Risk Assessment & Retrofit Plan	Conduct geotechnical evaluations of flood and slope failure-prone infrastructure sites (e.g., Glenwood, Bethany) and develop a prioritized plan for retrofits, drainage improvements, erosion control, or relocation of at-risk assets.	PRV	Short 1-3 Years	SVWD + County, FEMA and consultants	Medium	High	CIP budget	Seeking Federal EPA grant program funding.	Medium	ps-SF-SVW-01, ps-SF-SVW-02, ps-SF-SVW-03, ps-FL-SVW-01
Wildfire	**ma-WF-SVW-01**	Hydrant Maintenance & Improvement Program	Formalize a hydrant program including inspection, painting, GPS location, asset management, and an encroachment permitting system to ensure consistent WUI coverage.	SP	Short 1-3 Years	SVWD + City of Scotts Valley, Fire District	Medium	High	Operating budget	HMGP BRIC CAL FIRE CalOES Prop 4 Measure Q	Medium	ps-WF-SVL-05, ps-WF-SVW-01, ps-WF-SVW-02
Wildfire	**ma-WF-SVW-02**	Critical Zone Storage & Pressure Improvements	Upgrade wildfire zone storage and pressure delivery systems in Northridge and Villa Fontenay to improve firefighting response capabilities and protect public safety.	SP	Medium 3-5 Years	SVWD + Fire District	High	High	CIP budget	HMGP BRIC CAL FIRE CalOES Prop 4 Measure Q	High	ps-WF-SVW-02, ps-WF-SVW-01
Wildfire	**ma-WF-SVW-03**	WUI Asset Hardening & Vegetation Management Program	Establish a recurring program to harden key infrastructure in the Wildland-Urban Interface (WUI) and manage vegetation on and near SVWD property. Partner with adjacent landowners to improve defensible space.	NRP, SP, PPRO	Short 1-3 Years	SVWD + Fire District	High	High	Operating budget	HMGP BRIC CAL FIRE CalOES Prop 4 Measure Q	High	ps-WF-SVW-01, ps-WF-WTS-01, ps-WF-SVW-02

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Section 6. Pajaro Valley Water Management Agency

Special Agency Annex

SANTA CRUZ COUNTY
MULTI-JURISDICTIONAL
HAZARD MITIGATION PLAN

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Santa Cruz County

2025 Multi-Jurisdiction Hazard Mitigation Plan Update

Volume 2 Section 6: Pajaro Valley Water Management Agency (PVW)

Special District Annex

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Adoption Resolution

To comply with the Federal Disaster Mitigation Act of 2000 (DMA 2000), the Pajaro Valley Water Management Agency has officially adopted this 2025 Santa Cruz County Multi-Jurisdictional Hazard Mitigation Plan, including Volume 1 in its entirety as well as this Volume 2 Special District annex. The adoption of the MJHMP recognizes the agency's commitment to reducing the impacts of natural hazards within its jurisdiction and across Santa Cruz County.

A copy of the agency's adoption record is provided on the following pages. Adoption records for all jurisdictions are summarized in Volume 1, Table ES-1.

ADOPTION RECORD TO BE INSERTED UPON COMPLETION.

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Section 6. Pajaro Valley Water Management Agency

6.1 Scope & Purpose

This annex details the elements specific to the Pajaro Valley Water Management Agency (PV Water) in the 2025 Santa Cruz County Multi-Jurisdictional Hazard Mitigation Plan (MJHMP). This annex is not intended to be a standalone document but appends to and supplements the information contained in the umbrella plan document (Volume 1). As such, all sections of the umbrella plan, including the planning process and other procedural requirements, apply to and were met by PV Water. This annex provides additional information specific to PV Water, with a focus on providing additional details on the planning process, risk assessment, and mitigation strategy for this jurisdiction.

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6.2 Jurisdictional Setting

PV Water is a state-chartered special district established in 1984 under the Pajaro Valley Water Management Agency Act (Act 760) to manage groundwater and supplemental water supplies within the Pajaro Valley Groundwater Subbasin. PV Water's jurisdictional boundary closely aligns with the hydrologic extent of the Pajaro Valley Subbasin (DWR Basin No. 3-002.01), which spans approximately 75,000 acres across southern Santa Cruz County, northern Monterey County, and a small portion of San Benito County. It includes the City of Watsonville, unincorporated communities such as Freedom, Pajaro, and Aromas, and large expanses of prime agricultural land. The agency was formed in response to long-term groundwater overdraft and the resulting seawater intrusion, both of which pose serious threats to the region's water quality and agricultural economy.

As the exclusive Groundwater Sustainability Agency (GSA) for the Pajaro Valley under the California Sustainable Groundwater Management Act (SGMA), PV Water has full legal authority within its statutory boundary to develop and implement groundwater management plans, adopt conservation ordinances, levy fees, and oversee local water use practices. Its primary legal mandate is to manage and preserve

groundwater supplies in a sustainable manner without causing significant and unreasonable impacts such as declining groundwater levels, degraded water quality, or land subsidence.

PV Water's service area falls within the lower portion of the Pajaro River Watershed, a hydrologically and politically complex region shared by Santa Cruz, Monterey, San Benito, and Santa Clara counties. While PV Water does not deliver potable water, it manages and distributes non-potable water for agricultural use in the coastal area through its Coastal Distribution System. Potable water service within its boundaries is provided by local agencies such as the City of Watsonville, Pajaro/Sunny Mesa Community Services District, and Aromas Water District.

PV Water's boundaries are officially defined through legislation and local agency formation documents and have been evaluated periodically by the Santa Cruz Local Agency Formation Commission (LAFCO) for consistency with service responsibilities, water supply needs, and environmental planning goals. The agency's boundary and sphere of influence maps demonstrate its alignment with both groundwater basin hydrology and community needs.

The region features a mix of coastal plains, slough systems, and gently rolling foothills. Low-lying coastal areas are subject to tidal flooding, storm surge, and riverine flooding from the Pajaro River, while inland areas face drought stress, erosion, and sedimentation issues. Proximity to the ocean increases vulnerability to sea level rise, coastal erosion, and seawater intrusion, which threaten municipal, agricultural, and environmental water resources.

PV Water is governed by a seven-member Board of Directors representing electoral districts within the service area. The Board sets policy, adopts budgets, and oversees implementation of the Agency's Basin Management Plan. Day-to-day operations are managed by the General Manager and professional staff, supported by consultants and contractors for specialized programs.

- **Year of Incorporation**: 1984
- **2023 Population Served**: Approximately 70,000 (CAS 5-Year, 2018-2023)
- **Coverage Area**: 75,000 acres across Santa Cruz, Monterey, and San Benito Counties

6.2.1 Geography & Climate

PV Water is located along the Central Coast of California, primarily within southern Santa Cruz County, with parts extending into northern Monterey County and a small portion of San Benito County. Figure 6-1 show this area as it lies within the lower Pajaro River watershed, draining westward into Monterey Bay, and spans approximately 117 square miles (75,000 acres).

Geographically, the region is defined by a mix of coastal plains, marine terraces, and valley floor floodplains, all surrounded by upland areas including the Santa Cruz Mountains to the north and the Gabilan Range to the southeast. Much of the Pajaro Valley consists of fertile alluvial soils, making it one of the most productive agricultural areas in the state. This geology also contributes to significant groundwater storage capacity, although its coastal setting leaves the aquifer system vulnerable to seawater intrusion, especially where groundwater levels have dropped below sea level.

The Pajaro Valley's hydrology is shaped by surface water features such as the Pajaro River, Salsipuedes Creek, Watsonville Slough, Harkins Slough, and College Lake, which provide critical habitat, stormwater conveyance, and sources for groundwater recharge.

Climatically, the PV Water region experiences a Mediterranean coastal climate, characterized by cool, wet winters and warm, dry summers. Annual precipitation ranges from approximately 18 to over 50 inches. The coastal and valley floor areas, particularly around the City of Watsonville and Highway 1, typically receive 18 to 25 inches per year. As one moves north and east toward the upland areas of the Santa Cruz Mountains and foothills, precipitation gradually increases to 25–35 inches, and in some areas beyond PV Water's northern boundary, it reaches 45 inches or more annually, shown in Figure 6-2. The region's proximity to the Pacific Ocean moderates temperatures year-round, with average highs in the low 70s °F in summer and lows in the mid-40s °F in winter. However, precipitation is highly variable, and multi-year droughts are common, particularly under climate change scenarios. The region is also subject to climate extremes, including longer dry seasons, more intense storm events, and rising sea levels, all of which pose risks to groundwater quality and supply reliability.

The combination of fertile soil, coastal proximity, and a moderate climate has made the Pajaro Valley a cornerstone of California's specialty crop agriculture. However, this geography and climate also create substantial challenges for water management, necessitating PV Water's long-term focus on groundwater sustainability, seawater intrusion prevention, and adaptive infrastructure planning in the face of a changing climate.

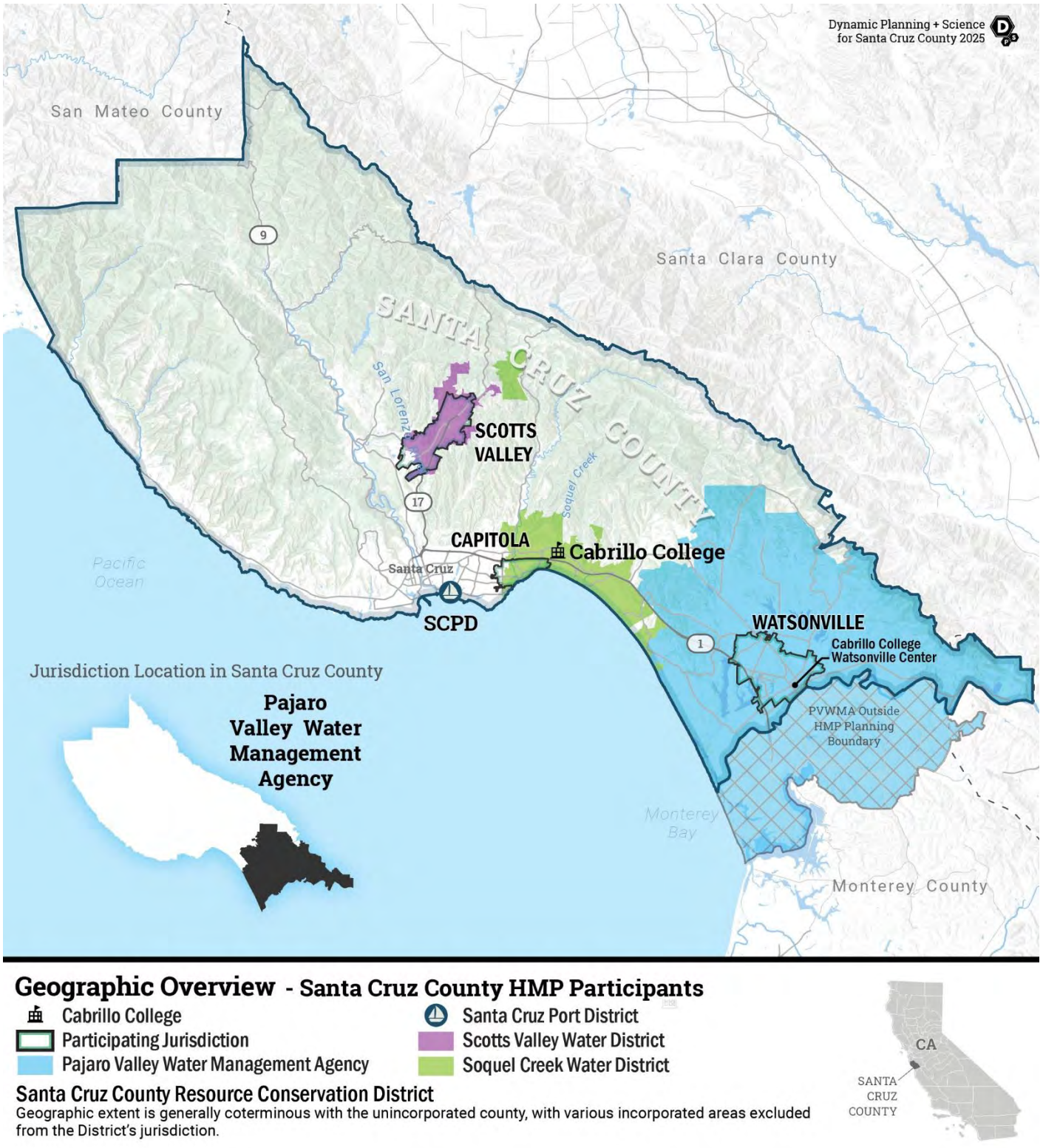


Figure 6-1: PV Water Sphere of Influence

Note: This is PV Water agency boundary within Santa Cruz *County only; not entire* service area that extends to Monterey and San Benito Counties

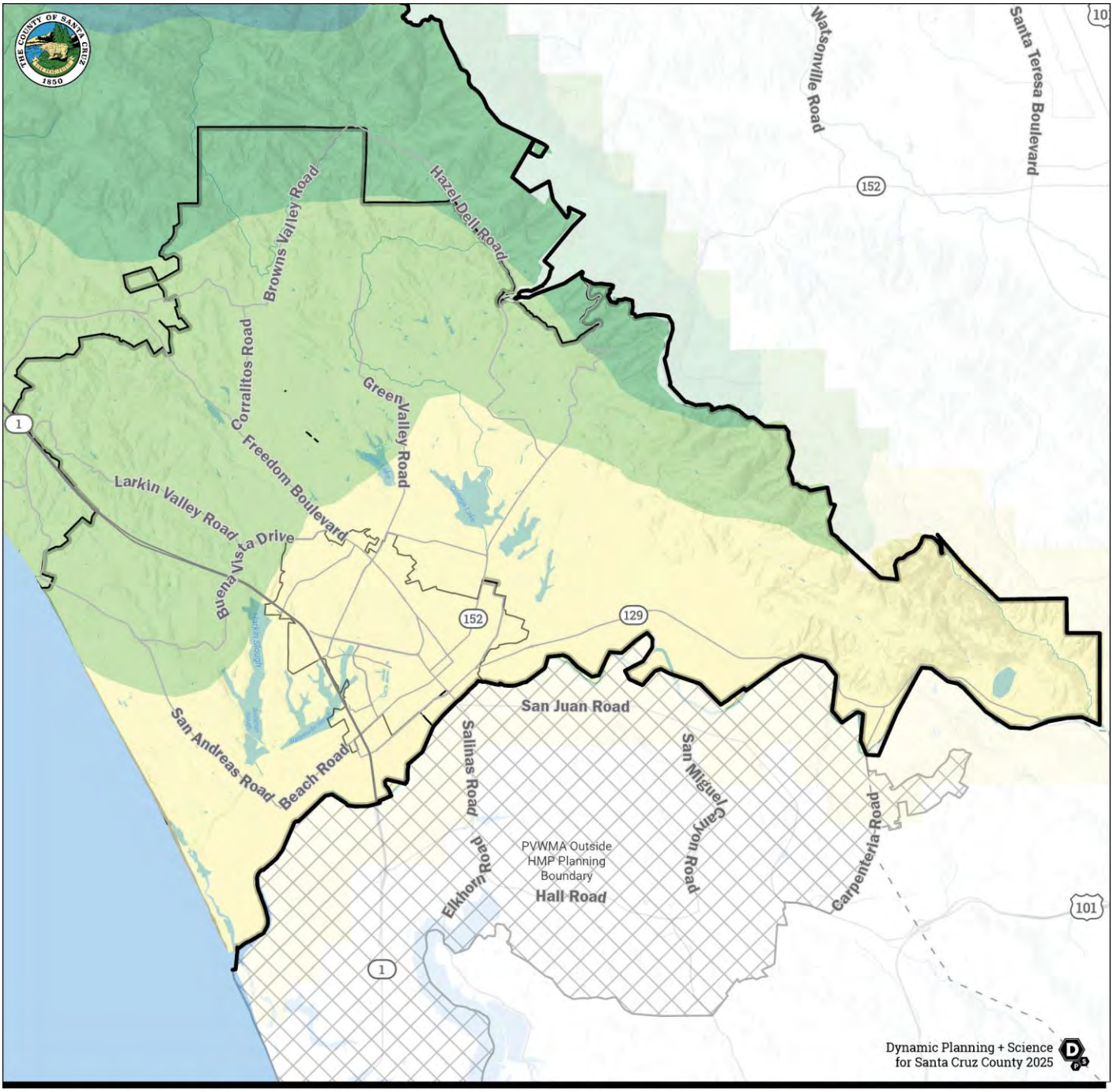


Figure 6-2: PV Water Average Annual Precipitation Map

Note: This is PV Water agency boundary within Santa Cruz County only; not entire service area that extends to Monterey and San Benito Counties

6.2.2 Historic Overview

PVMWA was established in 1984 by the California Legislature through passage of the Pajaro Valley Water Management Agency Act (Act 760) in response to worsening groundwater overdraft and seawater intrusion in the Pajaro Valley. These issues were first documented as early as 1953, when researchers identified falling groundwater levels and increasing salinity in wells near the coast, threatening the region's agricultural productivity and long-term water supply reliability.

Created as a special agency with broad authority to manage groundwater resources and supplemental water supplies within its boundaries, PV Water was designed to serve as a locally controlled solution to an escalating regional water crisis. Over the next several decades, the agency implemented a series of planning initiatives and capital improvements aimed at reversing overdraft, improving water quality, and enhancing long-term basin sustainability.

In the 1990s, PV Water adopted its first Basin Management Plan (BMP), which outlined a roadmap for balancing groundwater use with supply. This plan was revised in 2002 and again in 2014, each time incorporating new data, engineering studies, and public input to refine the agency's approach. The 2014 BMP Update introduced a phased portfolio of infrastructure projects, including the Harkins Slough Recharge Facility, Watsonville Recycled Water Facility, and the Coastal Distribution System, all of which were constructed and operated to reduce pumping from overdrafted aquifers and mitigate seawater intrusion.

With the passage of the SGMA in 2015, PV Water was officially designated as the Groundwater Sustainability Agency (GSA) for the Pajaro Valley Subbasin. In 2021, PV Water adopted the Groundwater Sustainability Update 2022 to satisfy SGMA's requirements for long-term basin management. The update integrated recent modeling, monitoring, and stakeholder engagement efforts and was approved by the California Department of Water Resources (DWR) in 2024.

Major capital efforts continued into the 2020s, most notably the College Lake Integrated Resources Management Project, which broke ground in 2023. Designed to capture and store surface water for use in lieu of groundwater pumping, the project is expected to reduce overdraft and improve resilience to climate-driven hydrologic variability. PV Water has also initiated planning for the Watsonville Slough System Managed Aquifer Recharge and Recovery Project and continues to partner with local agencies to promote agricultural water conservation and recharge net metering strategies.

Today, PV Water remains the lead agency responsible for managing one of California's most intensively farmed and hydrologically challenged groundwater basins. Through a combination of infrastructure development, policy innovation, and regional collaboration, the agency continues to advance its mission to achieve sustainable groundwater resources for the Pajaro Valley while supporting the economic and environmental vitality of the region.

6.2.3 Demographics & Vulnerable Populations

This section describes the demographic characteristics of PV Water to guide hazard mitigation planning efforts. Natural disasters affect communities both physically and socially, with demographic composition

playing a central role in determining how impacts are distributed, particularly among vulnerable groups facing greater challenges in preparedness, response, and recovery. Understanding the area's social and economic landscape also helps assess potential social costs from infrastructure damage, including housing, industry, public facilities, essential services, and transportation.

Exploring local demographic data may help to identify groups and geographic areas with specific vulnerability to hazard events. In the context of all-hazards preparedness and response planning, at-risk individuals (often used interchangeably with "vulnerable populations") are defined federally as "children, pregnant women, senior citizens, and other individuals who have access or functional needs in the event of a public health emergency." (42 U.S.C. § 2802(b)(4)(B) (2019)) These populations may include, but are not limited to, individuals who are economically disadvantaged, living with disabilities, dependent on caregivers, from historically marginalized communities, have limited English proficiency or are non-English speaking, lack access to transportation, are experiencing homelessness, or have chronic medical conditions.

Certain populations face greater risk following a natural hazard event due to age, economic mobility, physical disability, geographic location, or a combination of factors. Vulnerability in the face of a hazard event is not a fixed characteristic; the same individual may be at risk for some hazards but not at risk for others. Planning for vulnerable populations in the context of hazard mitigation can help communities to prioritize limited resources where they will be the most effective. Refer to Volume 1, Section 1.4.3 for a more in-depth discussion of planning for vulnerable populations, at-risk individuals with access and functional needs, and environmental justice.

PV Water serves a socially and economically diverse region spanning southern Santa Cruz County, northern Monterey County, and a portion of San Benito County. The service area includes both urban centers, such as the City of Watsonville and the unincorporated communities of Pajaro, Freedom, and Las Lomas, as well as expansive agricultural lands that support one of California's most productive specialty crop regions.

6.2.3.1 Income & Housing

Low-income households and communities face disproportionate financial burden from costs associated with disaster preparedness, response, and recovery. Disasters create unexpected expenses which may serve as "tipping points" for families and individuals living on the edge of poverty or homelessness. Low-income residents and renters are also less likely to purchase insurance, meaning that those with the most to lose during an event are also the least prepared to deal with potential losses. Renters are also more vulnerable to natural hazards because the decision to make major structural or property improvements typically lies with the property owner. Major hazard events in recent history, such as the CZU Lightning Complex Fire and the 2022 tsunami, emphasize the need for inclusive planning that addresses systemic vulnerabilities, improves access to recovery resources, and fosters community resilience to reduce future disparities during hazard events.

Within PV Water's service area, household income and housing characteristics reflect significant disparities that shape community vulnerability and resilience. Much of the Pajaro Valley, particularly the City of

Watsonville and adjacent unincorporated areas such as Pajaro and Freedom, includes neighborhoods with median household incomes below $37,800, far beneath state and regional averages, shown in Figure 6-3. These areas are distinctly visible in the light purple and gray tones on the ACS Median Household Income map, which highlight low-income census tracts concentrated in the urbanized core of the PV Water boundary. In contrast, some outlying areas along the northern edge of the service area show higher incomes, in excess $119,300, demonstrating a stark economic gradient within the region.

Figure 6-4 further reveals that many of these same lower-income areas are burdened by high poverty rates, with several tracts showing over 24 percent of the population living below the federal poverty line. The darkest maroon areas on the map correspond to Watsonville and nearby census tracts, underscoring the compounded socioeconomic stressors faced by large portions of the population. These include limited access to health care, economic precarity due to seasonal or low-wage employment, and heightened sensitivity to service disruptions or disaster recovery delays.

Housing characteristics add another layer of vulnerability. Figure 6-5 illustrates that urban and agricultural labor communities within PV Water have low rates of homeownership, with less than 41 percent of housing units owner-occupied in many census tracts. These areas are represented by the lightest shades of blue. Renters face greater risk of displacement and reduced access to resources in the aftermath of hazard events. The lower housing stability associated with low ownership rates may also affect the ability of residents to invest in preparedness measures such as seismic retrofitting, floodproofing, or backup power systems.

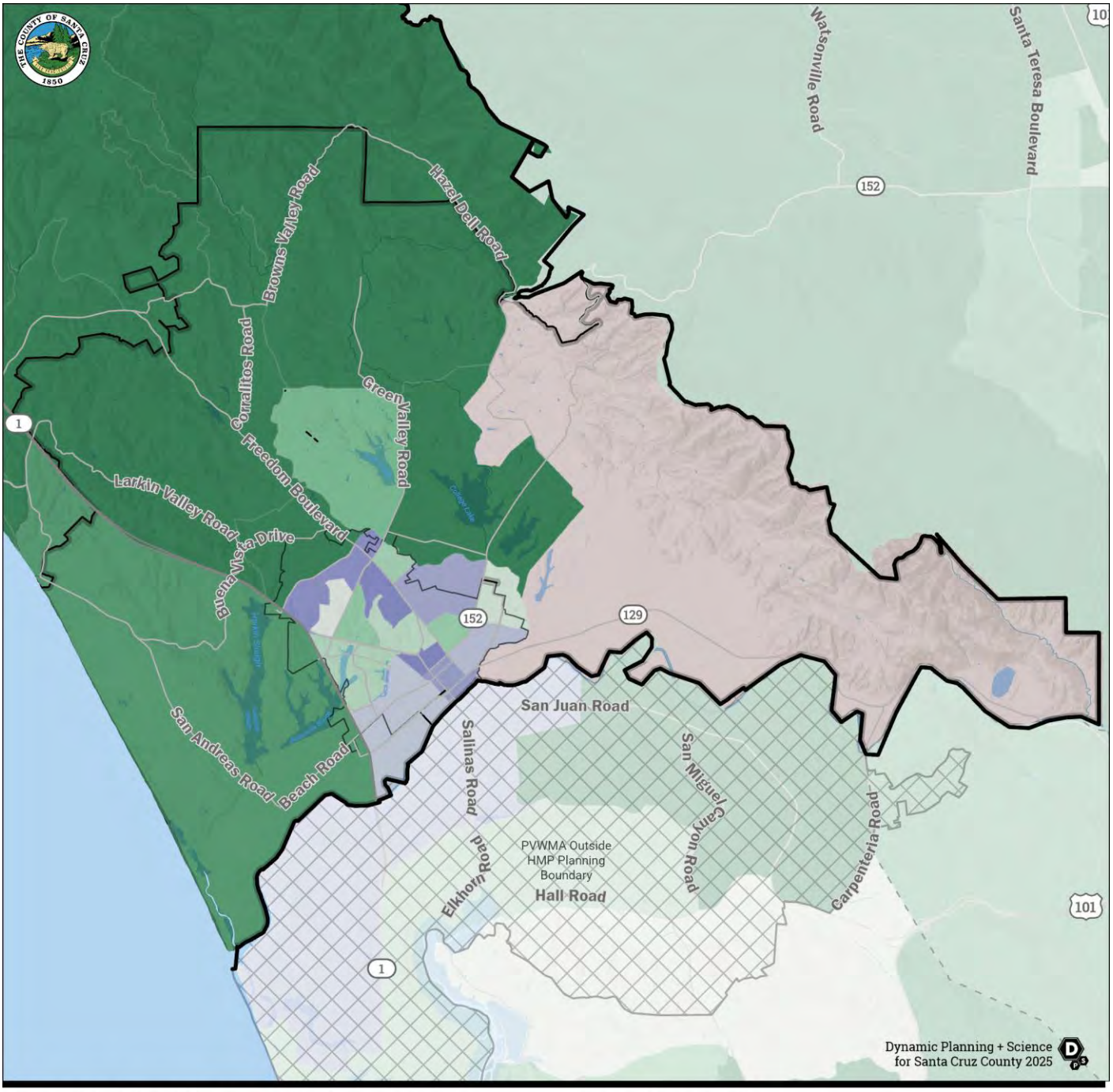


Figure 6-3: PV Water Median Household Income Map

Note: This is PV Water agency boundary within Santa Cruz County only; not entire service area that extends to Monterey and San Benito Counties

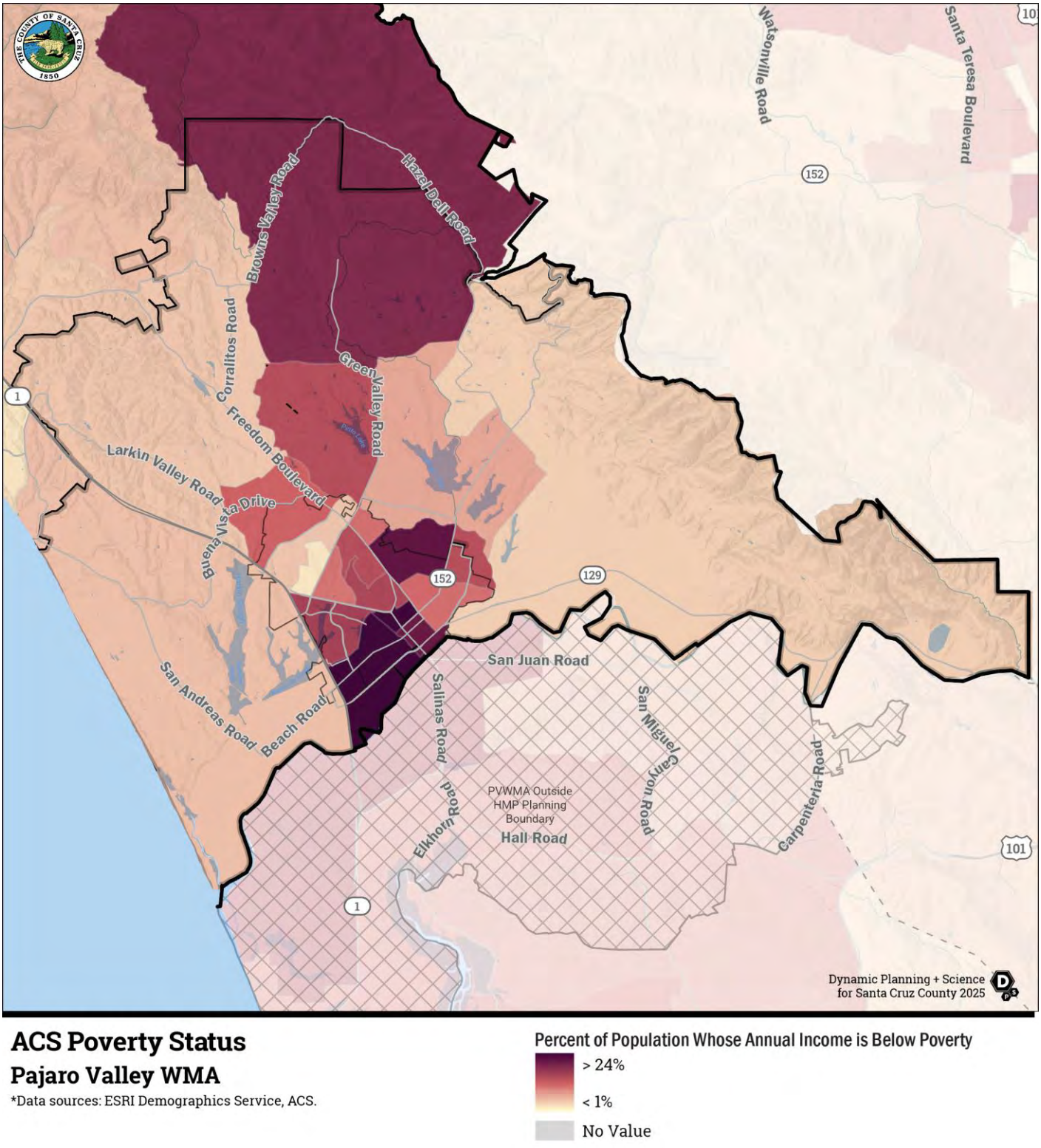


Figure 6-4: PV Water Poverty Status Map

Note: This is PV Water agency boundary within Santa Cruz County only; not entire service area that extends to Monterey and San Benito Counties

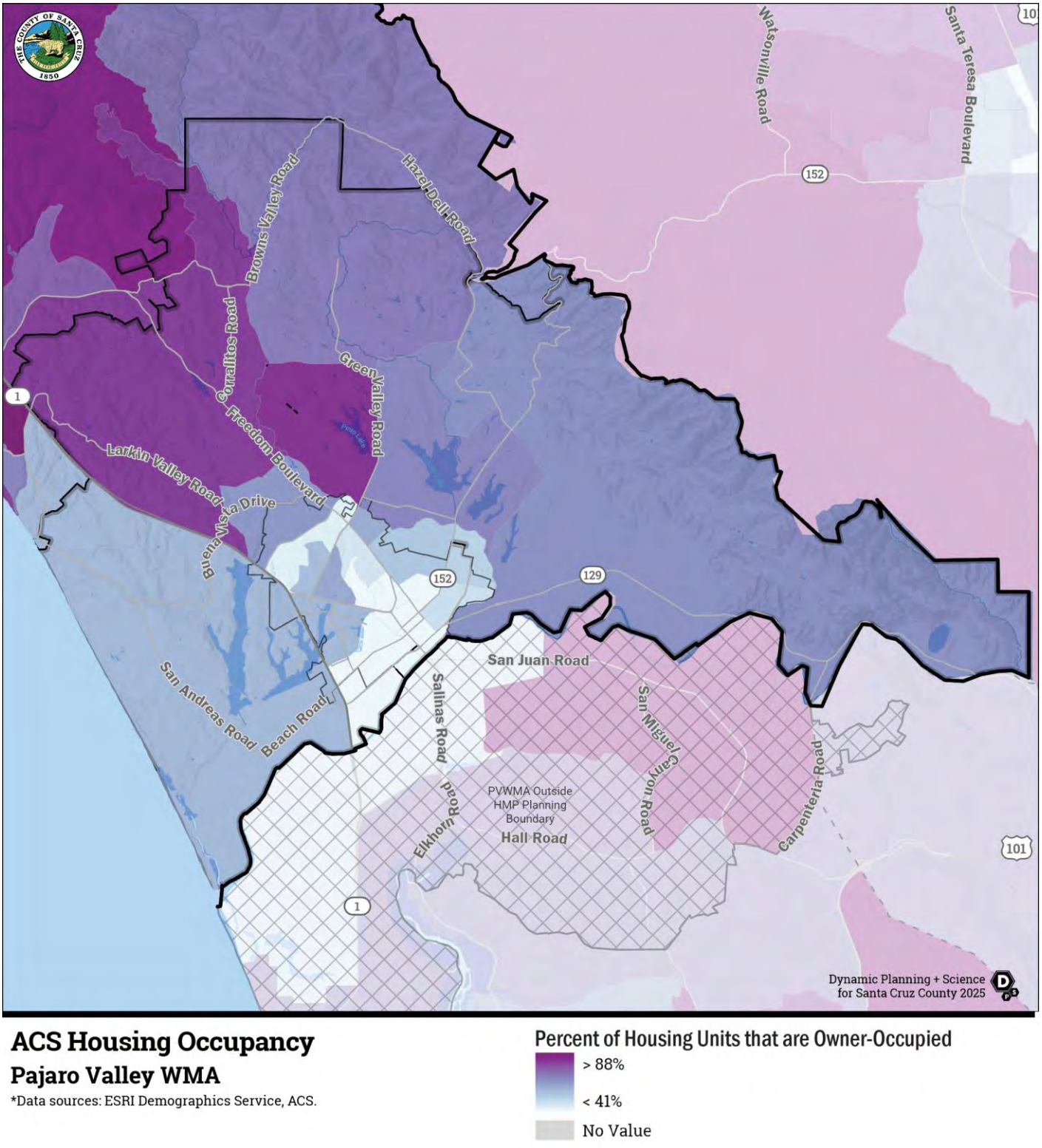


Figure 6-5: PV Water Owner-Occupied Housing Units Map

Note: This is PV Water agency boundary within Santa Cruz County only; not entire service area that extends to Monterey and San Benito Counties

6.2.3.2 Dependent & Disabled Populations

Age and disability status play significant roles in vulnerability to natural hazards, as seniors, children, and many who experience disabilities are dependent populations who rely on caregiver networks for support and protection. Seniors and disabled persons may have mobility challenges and increased health concerns, necessitating additional assistance during evacuations and recovery. Similarly, children have limited ability to protect themselves and depend on caregivers to ensure their safety and well-being during emergencies. When combined with factors such as poverty, these vulnerabilities can be further compounded, highlighting the importance of targeted interventions to address the unique needs of dependent and disabled populations.

PV Water's service area includes several communities with notably high percentages of dependent and disabled populations, underscoring the importance of equity-focused hazard mitigation and emergency response strategies. Figure 6-6 shows over 48% of the population in key census tracts within Watsonville and the surrounding areas of the Pajaro Valley fall within dependent age groups, which includes children under 18 and adults over 65. These areas are marked in the darkest shades of purple on the ACS Dependent Age Groups map, indicating some of the highest concentrations of dependent individuals in Santa Cruz and northern Monterey Counties. High dependency ratios may increase the strain on households and public services during emergencies, as these groups often require additional assistance in preparedness, evacuation, and recovery.

Similarly, data on Figure 6-7 shows the elderly population with disabilities shows significant vulnerability in the PV Water service area. Specific census tracts in central and eastern Watsonville exhibit elderly disability rates exceeding 47%. These individuals may face mobility, sensory, or cognitive challenges that limit their ability to respond to hazard warnings, access emergency services, or recover from disaster impacts without support. These overlapping vulnerabilities magnify risks in both natural and human-caused hazard events, including flooding, drought, and earthquakes, which are all threats in the PV Water area.

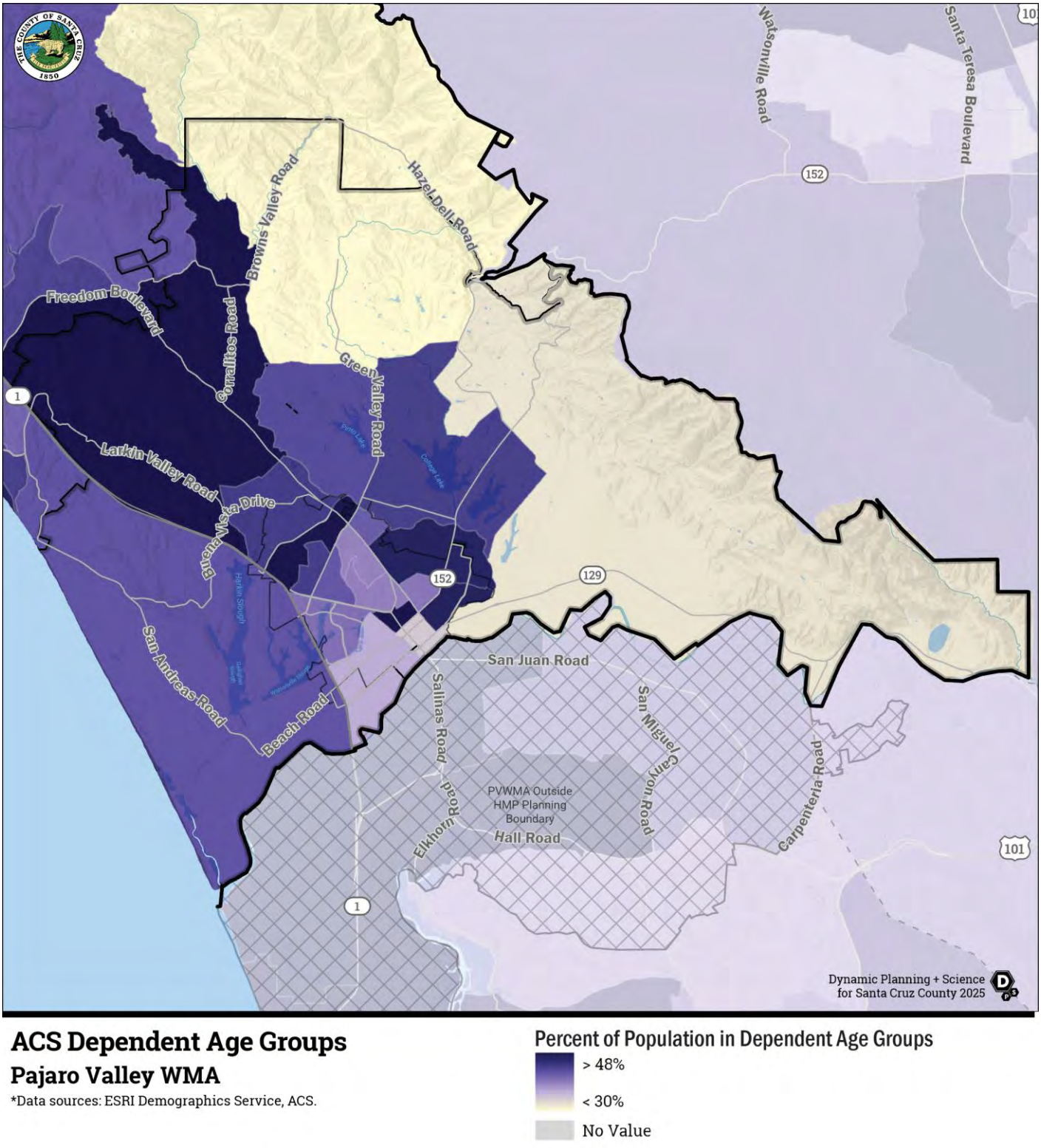


Figure 6-6: PV Water Economically Dependent Age Groups Map

Note: This is PV Water agency boundary within Santa Cruz County only; not entire service area that extends to Monterey and San Benito Counties

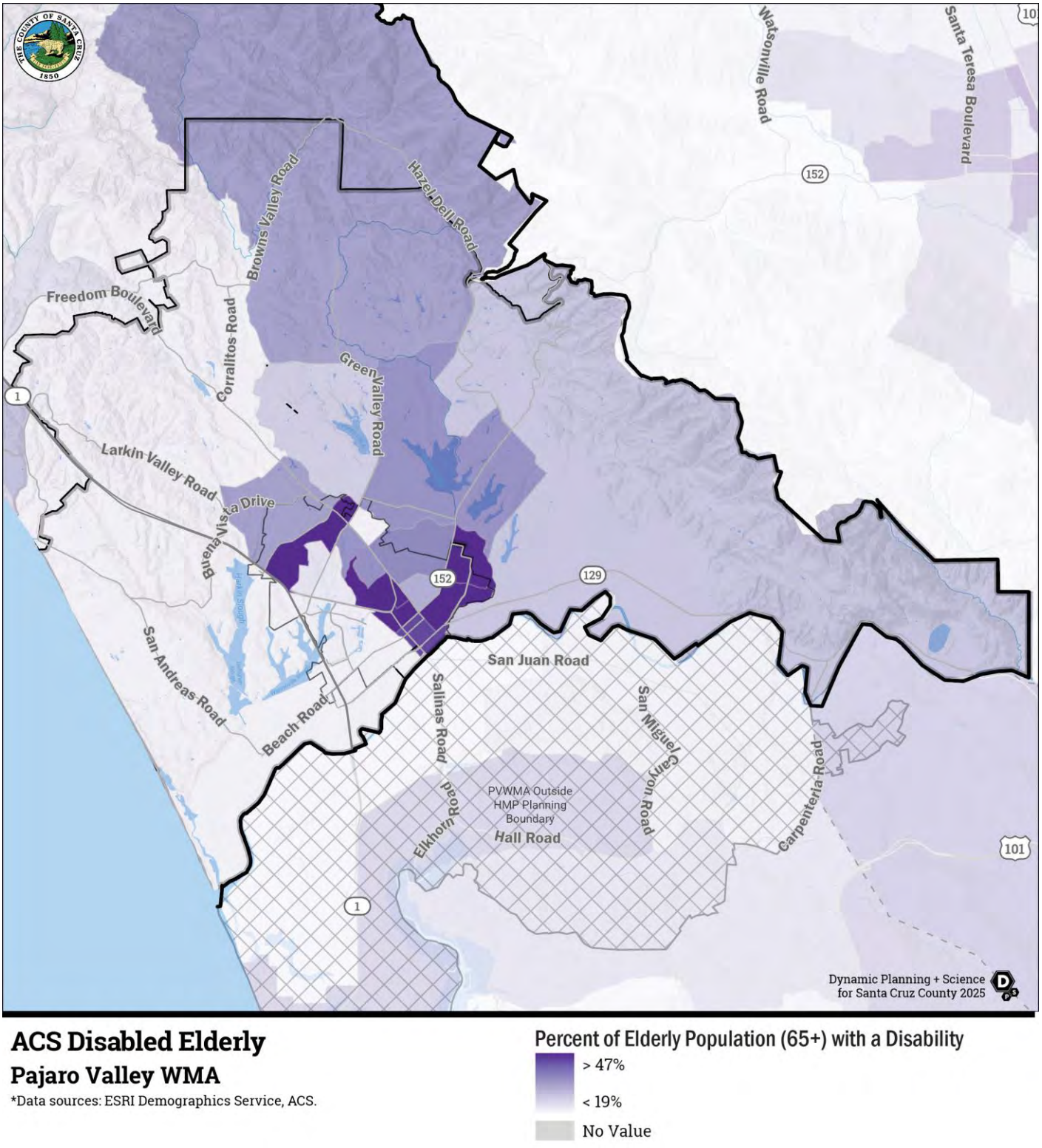


Figure 6-7: PV Water Disabled Elderly Map

Note: This is PV Water agency boundary within Santa Cruz County only; not entire service area that extends to Monterey and San Benito Counties

6.2.3.3 Race, Ethnicity & Language

Natural disasters compound racial disparities; non-white individuals and communities receive less recovery aid from FEMA than their white counterparts, even where the amount of damage is the same. (Howell & Elliott, 2019) (National Advisory Council, 2020) The recent COVID-19 pandemic was a testament to racial disparities in disaster outcomes, with non-white persons facing morbidity rates from COVID-19 infections anywhere from 70% to 350% higher than white, non-Hispanic persons. (CDC, 2020)

These disparities are evidence of the complicated relationship between disaster recovery and overlapping social vulnerabilities including race, income, language, and health. Black and Latinx residents are more likely to be low income and renters, conditions which create barriers to navigating FEMA's Individual Assistance programs. Communities with more non-white residents may have lower tax revenue and property values, which means less investment in mitigation and rebuilding efforts before and after an emergency.

It should be noted that rural ACS estimates are often less accurate than those for urban areas because the geographic representation, broken down by smaller Census Block Groups or Tracts, becomes insignificant and the margin of error increases within these smaller sample pools. This is particularly true when referencing minority demographic groups. As such, race and ethnicity are discussed as part of a more comprehensive approach using the Center for Disease Control's (CDC) Social Vulnerability Index (SVI) in the following section. In addition, some minority households may avoid participating in Census surveys due to mistrust of government agencies or concerns about immigration status. This can lead to underreporting, further obscuring the true extent of racial, ethnic, language-related vulnerabilities.

PV Water's service area is characterized by a highly diverse population, with significant concentrations of Hispanic or Latino residents and widespread use of Spanish as a primary language. According to American Community Survey (ACS) data, most census tracts within the PV Water boundary are predominantly Hispanic or Latino, with only a few areas to the north and east showing a predominance of non-Hispanic White populations, see Figure 6-8. This aligns with long-standing demographic patterns in the Pajaro Valley, where agriculture has shaped both economic and social structures, drawing Latino farmworker families to the region over generations.

Language data on Figure 6-9 further reinforces the significance of cultural and linguistic diversity within the service area. In most areas of the PV Water, more than 33 percent of residents aged five and older speak Spanish at home. These high rates of Spanish language use are consistent throughout the densely populated urban areas in and around Watsonville, extending into rural agricultural zones to the south and east. This linguistic landscape underscores the importance of culturally and linguistically appropriate outreach, especially during hazard events, emergencies, and recovery periods. Populations with limited English proficiency are more likely to face barriers in accessing timely warnings, understanding evacuation orders, or navigating disaster assistance programs, factors that can increase vulnerability to hazard impacts and prolong recovery.

This linguistic pattern indicates a need for multilingual hazard communication, particularly in Spanish. It also reinforces the importance of tailoring emergency alerts, preparedness materials, and community

engagement to reach Limited English Proficiency (LEP) populations, many of whom may be renters or frontline service workers in high-risk areas.

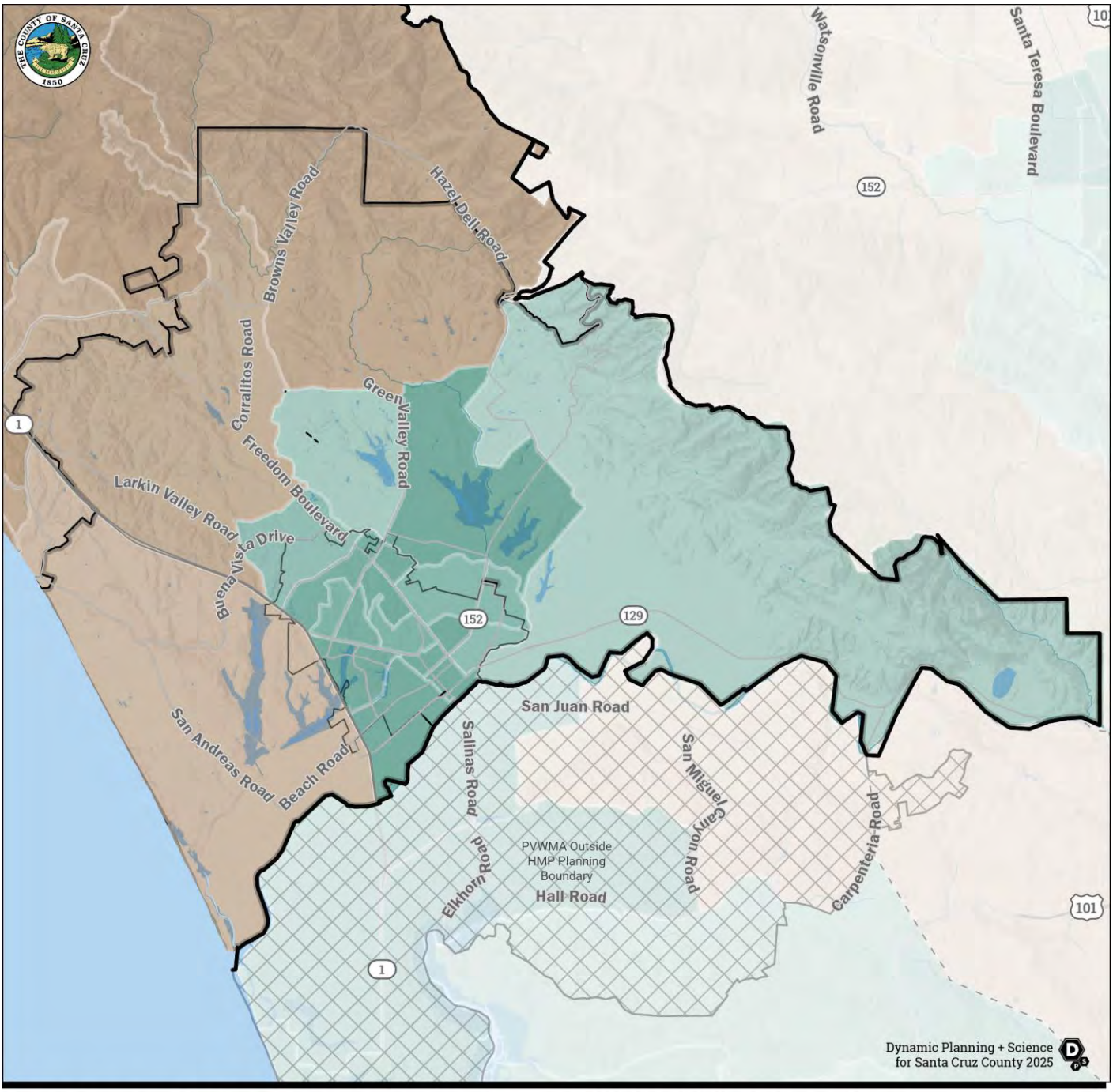


Figure 6-8: PV Water Race and Ethnicity Predominance Map

Note: This is PV Water agency boundary within Santa Cruz County only; not entire service area that extends to Monterey and San Benito Counties

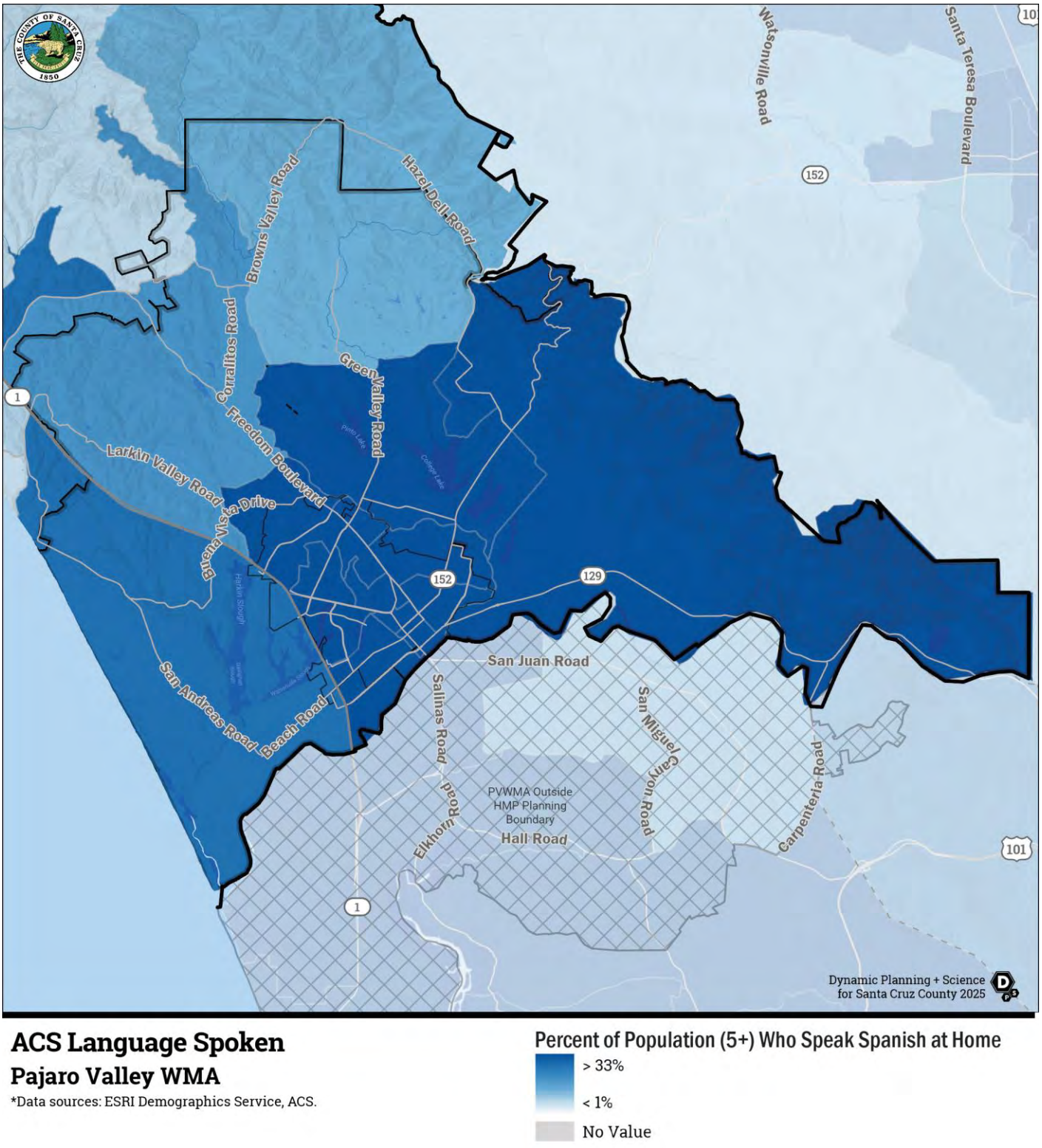


Figure 6-9: PV Water Spanish-Speaking Population Map

Note: This is PV Water agency boundary within Santa Cruz County only; not entire service area that extends to Monterey and San Benito Counties

6.2.3.4 Social Vulnerability Index (SVI)

The Centers for Disease Control and Prevention (CDC) Social Vulnerability Index (SVI) for PV Water reveals important spatial and demographic patterns that have direct implications for equitable hazard mitigation planning. As discussed in detail in Volume 1, Section 1.4.3.6, the SVI is a composite measure developed by the CDC to identify communities that are more likely to require support before, during, and after a disaster. It incorporates a range of factors across four key dimensions: socioeconomic status, household composition and disability, minority status and language, and housing type and transportation access. The resulting index score ranges from 0 (lowest vulnerability) to 1 (highest vulnerability).

Within the PV Water region, the highest levels of social vulnerability, those with SVI values between 0.7501 and 1.000, are concentrated in the southern portion of the planning area, particularly in and around the City of Watsonville and unincorporated communities extending into northern Monterey County. See Figure 6-10. These communities are more likely to face overlapping challenges such as high poverty rates, limited English proficiency, lower educational attainment, and crowded living conditions. These factors contribute to reduced preparedness, limited mobility in emergencies, and slower recovery following disasters.

In contrast, central and eastern areas of the PV Water exhibit moderate vulnerability, with SVI values generally ranging between 0.5001 and 0.7500. These areas may still face social and economic challenges but at a lesser intensity than the southernmost zones. Meanwhile, the northern and northeastern parts of the PV Water region, especially those nearer to the Santa Cruz Mountains, show the lowest SVI scores—typically in the 0.0000 to 0.2500 range which indicates relatively strong social resilience. These areas are likely characterized by higher household incomes, higher levels of education, greater English fluency, and increased access to private transportation.

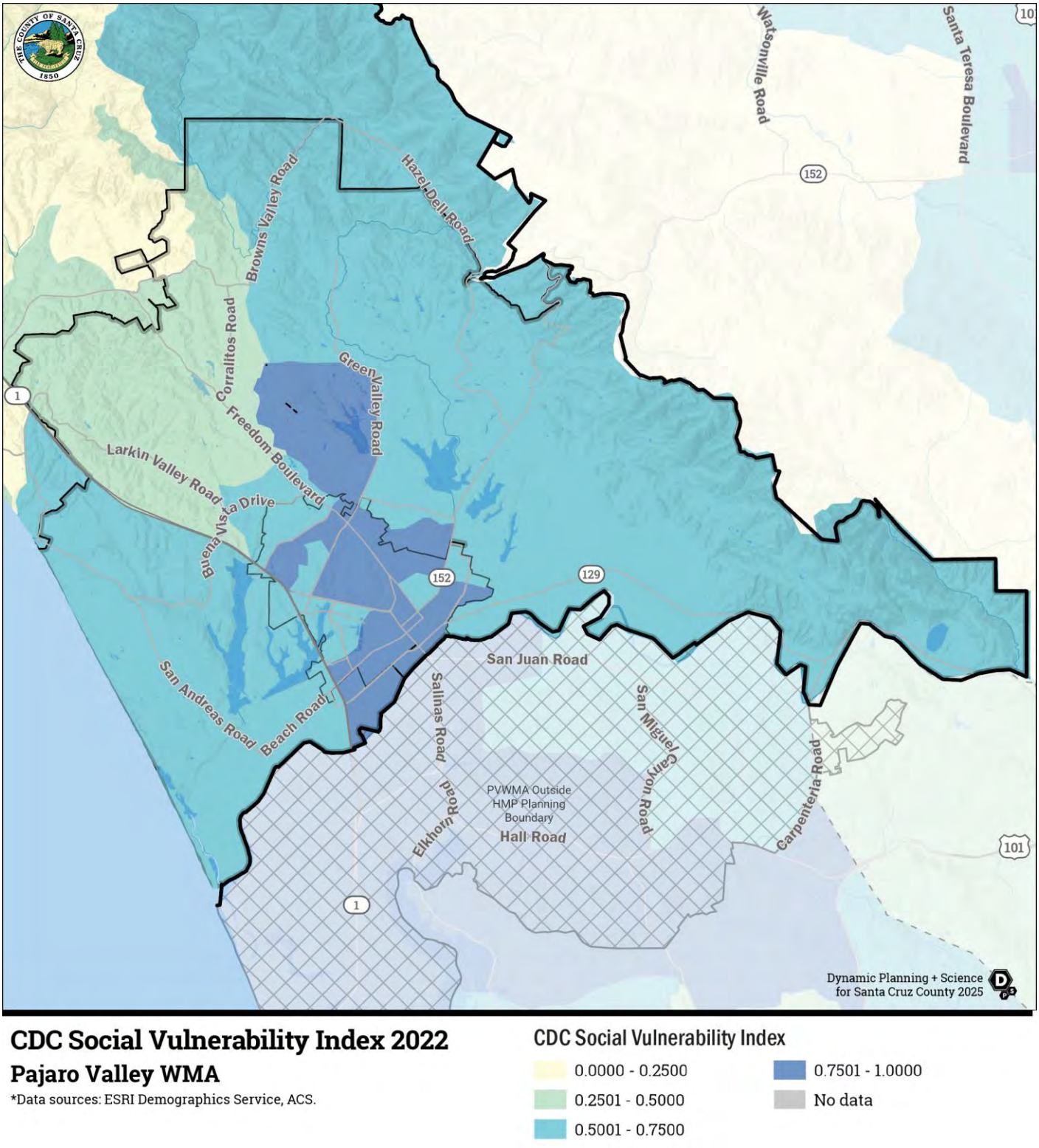


Figure 6-10: PV Water Social Vulnerability Index Map

Note: This is PV Water agency boundary within Santa Cruz County only; not entire service area that extends to Monterey and San Benito Counties

6.2.4 Economy

The economy of the PV Water service area is deeply interconnected with the agricultural backbone of the Pajaro Valley, a nationally significant producer of berries and leafy greens. PV Water supplies its service area's agricultural users' water that supports the region's highly productive farmland, which includes large-scale strawberry, raspberry, blackberry, lettuce, and spinach operations. These crops are central to both the local economy and the national fresh produce supply chain, with agricultural activities supporting thousands of jobs in farming, processing, packaging, transportation, and related services. In addition to its agricultural base. Ensuring the resilience of the water supply is therefore critical not only to community well-being, but also to maintaining the economic vitality of one of the most important fresh produce growing regions in the United States.

6.2.5 Growth Trends & Future Development

Population forecasts and planning documents point to ongoing urban growth around Watsonville, which serves as a central hub for residential and agricultural activity within the PV Water jurisdiction. Future growth is expected to drive increased demand for water supply in and around urban areas, particularly Watsonville Despite fluctuations in population, recent county-level growth data suggests only a minor decline in unincorporated areas, with a −0.6% decrease (about 879 people) in 2023. (Cruz, 2024)

While overall population may be relatively stable, PV Water's long-term planning considers growth pressures, especially from agricultural expansion and housing demand. This underscores the urgency of developing supplemental supplies.

In response, PV Water leaders have advanced several major water infrastructure projects to address future demand while mitigating overdraft and seawater intrusion. These include College Lake Integrated Resources Management, Watsonville Slough System Managed Aquifer Recharge, and expansions of the recycled water facility, which are designed to enhance supply reliability in the face of growth Santa Cruz LAFCO.

According to PV Water planning documents and local agricultural reports, the region's long-term economic health depends on balancing groundwater sustainability with the irrigation demands of its high-value crops. Water supply availability, particularly in the context of overdraft reduction and seawater intrusion prevention, is a key factor influencing land use and agricultural production. The Agency's portfolio of projects, including recycled water deliveries through the Coastal Distribution System, managed aquifer recharge facilities, and irrigation efficiency programs, are designed to protect the groundwater resource while sustaining agricultural productivity.

6.3 Planning Process

PV Water followed the planning process detailed in Volume 1, Section 2, including participating in the county-wide Hazard Mitigation Planning Team (HMPT) and formulating their own internal planning group to support the broader planning process.

The agency's representatives in the Steering Group led stakeholder and public engagement efforts alongside the Consultant Team, with assistance from the HMPT and their internal planning team. This engagement process is described in Volume 1. Specifically, for Pajaro Valley Water Management Agency, this included postings to the agency website and social media as well as outreach events, as documented in Appendix B. Examples of Key Stakeholders engaged by Santa Cruz County on behalf of the agency with relevance to the development of PV Water's mitigation strategy include the USDA and other federal agencies; DWR and other state agencies; City of Watsonville and other neighboring jurisdictions; community-based organizations such as Watsonville Wetlands Watch; utility providers like AT&T; UC Santa Cruz and other academia; and local businesses.

All Key Stakeholders that were invited to participate in the planning process are listed in Volume 1, Section 2, and the input received from stakeholders was integrated into the agency's annex, as described in Volume 1 Table 2-9. The agency's internal planning participants, their positions, and how they participated in the planning process are shown in Table 6-1.

Table 6-1: PV Water Participants

Planning Group Members	Title	Description of Involvement
Brian Lockwood	General Manager / Hydrogeologist	Lead Point of Contact; attended Kickoff Meeting, HMPT Meetings #1, #2, and #3 and Breakouts #1 and #2
Casey Meusel	Associate Hydrologist	Alternate Point of Contact, HMPT Meetings #2 and Breakouts #1 and #2
Isabel Magana	Water Resources Technician	Participating Stakeholder
Marcus Mendiola	Water Conservation & Outreach Specialist	Participating Stakeholder, HMPT Meetings #1 and #3 and Breakouts #1
Shinehah Bigham	Operations and Maintenance Manager	Participating Stakeholder; Breakouts #1

PV Water participated in a comprehensive hazard mitigation planning process as part of the 2025 Santa Cruz County MJHMP update. This included a series of breakout meetings, listed in Table 6-2 that engaged the agency's planning team, which included key city personnel and stakeholders in evaluating hazards, identifying local vulnerabilities, and prioritizing mitigation strategies

The kickoff meeting held on January 27, 2025, launched the planning process by introducing the project scope and clarifying the roles of the Steering Group and participating jurisdictional teams. In the months that followed, a series of structured meetings addressed foundational elements of the plan, including a review of key changes since the 2021 Local Hazard Mitigation Plan, an overview of hazard mitigation principles, and exercises to prioritize local hazards. On July 30, 2025, participants engaged in a hexagon mapping activity designed to visually identify mitigation actions that could benefit from or require inter-jurisdictional coordination. These collaborative efforts helped shape a refined set of mitigation alternatives,

establish shared planning goals, and align local strategies with FEMA's Hazard Mitigation Assistance (HMA) funding framework.

Throughout the series of breakout meetings, PV Water engaged in a structured and collaborative planning process focused on assessing hazard risks, identifying vulnerabilities, and developing targeted mitigation strategies. The meetings began with recaps of the county-wide HMPT meetings to ensure alignment of goals and progress.

During the April 25, 2025, breakout out meeting, discussions concentrated on community engagement outcomes, initial risk assessments, and the integration of demographic data to better understand vulnerable populations. Jurisdictional teams reviewed their specific hazard exposures using the Risk Assessment Mapping Platform (RAMP) and participated in prioritization exercises to identify their top hazards.

The July 18, 2025, breakout meeting shifted toward reviewing local capabilities and defining specific areas of concern, which informed the drafting of problem statements. Teams worked collaboratively to refine mitigation alternatives, align actions with FEMA guidelines, and develop a shortlist of priority mitigation actions and inter-jurisdictional collaboration opportunities.

The meetings also included consensus-building activities around hazard rankings, capabilities, and planned actions, while providing regular updates on the overall project schedule.

Table 6-2: Jurisdictional Breakout Meeting Records

Meeting & Date	Agenda / Topics	Goals / Key Inputs
County-Wide Steering Group and HMPT Meetings #1 & #2 January – March 2025		
PV Water Planning Team Breakout Meeting #1 April 25, 2025	▪ County-wide HMPT meetings #1 and #2 recaps ▪ Community engagement progress and results ▪ Risk assessment and community vulnerability ▪ Demographics and vulnerable populations ▪ Overview of jurisdiction-specific hazard risks and exposure ▪ Introduction to Risk Assessment Mapping Platform (RAMP) ▪ Jurisdiction-specific hazard risk ranking exercise ▪ Project schedule updates and next steps	▪ Consensus on jurisdiction-specific priority hazards ▪ Identify capabilities and potential mitigation actions ▪ Community engagement volunteers
County-Wide HMPT Meeting #3 June 2025		
PV Water Planning Team Breakout Meeting #2 July 18, 2025	▪ Breakout Meeting #1 and HMPT #3 recaps ▪ Review capabilities assessment ▪ Review areas of concern and define problem statements ▪ Principles of effective mitigation strategies and actions, and mitigation alternatives ▪ Refine and align jurisdiction-specific mitigation actions exercise ▪ Project schedule updates and next steps	▪ Consensus on jurisdiction-specific capabilities ▪ Consensus on jurisdiction-specific areas of concern ▪ Consensus on priority mitigation actions and collaboration opportunities ▪ Community engagement volunteers

Meeting & Date	Agenda / Topics	Goals / Key Inputs
County-Wide HMPT Meeting #4 August 2025		

6.3.1 Public Input & Draft Review

As detailed in Volume 1, Section 2, the draft plan was available for public review and comment from September 29 to October 20, 2025. Public comments received during that time were similar to those gathered throughout the public engagement process, including the need for more equity in the distribution of mitigation activities and funding and the need for enhanced cooperation among jurisdictions, utility providers, and state agencies. These comments were incorporated into the city's mitigation strategy, as appropriate; although, most were already addressed by the Mitigation Action Plan which was based on previous public input.

Public and stakeholder input was gathered and incorporated throughout the plan development process, before the public review period, such as from the online public survey (see Volume 1, Section 2.1.2 and Appendix B, for details). During the review period, jurisdictional staff and stakeholders that participated in the plan development also reviewed the public draft and provided comments on minor corrections and revisions, which were addressed in the final plan.

6.4 What's New

This section offers an overview of the hazard mitigation planning efforts for the planning area and highlights the updates made in this 2025 MJHMP. This is the first time PV Water has participated in the MJHMP process. While not included in the 2021 plan, the agency has since strengthened its focus on resilience through key efforts. Through this MJHMP process, PV Water has identified its highest-priority hazards, developed hazard-specific problem statements, and proposed actionable mitigation strategies.

6.4.1 Mitigation Activities

Although PV Water has not previously participated in a formal hazard mitigation plan, it has proactively implemented a range of projects that align with FEMA's mitigation goals and reduce vulnerability to natural hazards. One of the most significant efforts is the Coastal Distribution System (CDS). The CDS is a pressurized recycled water pipeline network designed to deliver a blend of recycled water, blend water, and limited well water to coastal agricultural users in areas most at risk of seawater intrusion. This infrastructure diverts irrigation demand away from the aquifer, particularly along the vulnerable coastal fringe of the basin, where over-pumping historically caused saltwater to infiltrate the freshwater aquifer. By providing a reliable, alternative source of irrigation supply, the CDS directly supports PV Water's mission to stop seawater intrusion and achieve groundwater balance.

PV Water's 2024 Strategic Plan specifically includes the objective to update its Disaster Response and Recovery Plan to ensure operational feasibility under emergency conditions. This commitment reflects a proactive approach to safeguarding water delivery and infrastructure reliability in the face of hazards such as earthquakes, floods, and droughts.

In addition to internal planning, PV Water leads the Pajaro River Watershed Resilience Program (PRWRP), a multi-sector initiative funded by the California Department of Water Resources. The PRWRP engages local governments, community organizations, tribes, and regional agencies in developing a Watershed Resilience Plan that addresses a range of hazards, including flooding, drought, and wildfire. The program's first public workshop in March 2025 brought together stakeholders to identify priorities and coordinate actions that will strengthen the watershed's capacity to prepare for, respond to, and recover from disaster events.

Emergency considerations are also integrated into PV Water's capital projects. For example, the College Lake Integrated Resources Project includes specific emergency drainage protocols to mitigate public health risks, such as mosquito-borne disease outbreaks, following flooding. This type of planning ensures that infrastructure investments not only meet long-term water supply goals but also include contingency measures for protecting public health and safety during hazard events.

As a first-time participant in a hazard mitigation plan, SVWD had no formally adopted mitigation actions from a previous plan. However, the district continues to advance a range of ongoing and planned efforts that support hazard mitigation, climate resilience, and long-term water security. These are highlighted in this section, reflecting SVWD's continued dedication to long-term risk reduction. These actions, ranging from mitigation to community outreach initiatives, represent the district's proactive approach to addressing hazards as resources become available.

6.4.2 Mitigation Successes

Although PV Water is participating in a formal hazard mitigation plan for the first time, multiple important mitigation actions and other efforts to increase the agency's resilience to hazards have been completed. Some of these endeavors in which the agency collaborated with Santa Cruz County are described in Volume 1. This section describes additional agency-specific success stories, which highlight PV Water's commitment to reducing risks and building a more resilient community in the face of natural hazards.

Pajaro Valley Multi-Benefit Land Repurposing Program (MLRP)

PV Water is implementing four pilot projects under the California DOC's MLRP, using an $8.89 million block grant to support the transition of marginal farmland. Initiatives including Beach Ranch restoration, College Lake Project, conservation easements, and recharge net metering are innovative strategies that reduce groundwater demand, improve habitat, and support community resilience.

Grants & Funding

PV Water has secured significant state funding to support its long-term groundwater sustainability and coastal seawater intrusion prevention projects. The California Department of Water Resources awarded PV Water a $7.6 million SGM Grant to advance key elements of the Basin Management Plan. This funding supports construction of critical supply and delivery infrastructure, including components of the College Lake Integrated Resources Management Project and the Watsonville Slough System Managed Aquifer Recharge & Recovery Project. The grant also funds monitoring, modeling, and stakeholder engagement activities that enhance the agency's capacity to manage groundwater resources adaptively.

Coastal Distribution System (CDS)

PV Water's flagship coastal water program reduces groundwater pumping near the coast to slow and reverse seawater intrusion. Highly treated recycled water produced at the Watsonville Area Water Recycling Facility is conveyed through the Coastal Distribution System (CDS): a pipeline network serving approximately 5,500 acres of coastal farmland to supply growers with a non-potable irrigation source, blended as needed with other supplemental supplies. The recycled water program is designed for around 4,000 AFY of tertiary-treated water, blended to an approximate 6,000 AFY delivered supply, and is a core Basin Management Plan project for overdraft reduction and intrusion control.



Figure 6-11: The Coastal Distribution System (CDS)

College Lake Integrated Resources Management Project

The College Lake project develops a new surface-water supply to substitute for coastal groundwater pumping. Project elements include a weir and intake on Salsipuedes Creek / College Lake, a water treatment plant, and a nearly 6-mile pipeline to connect to PV Water's existing CDS network (which totals around 22 miles). When in operation, College Lake is expected to provide approximately 1,800–2,300 AFY on average for agricultural use, improving basin balance and helping prevent further seawater intrusion.



Figure 6-12: College Lake, with Kelly Lake in background

Watsonville Slough System Managed Aquifer Recharge & Recovery

The Watsonville Slough System Managed Aquifer Recharge and Recovery Projects (WSS-MARR) are a major initiative by PV Water to enhance groundwater sustainability by capturing high winter flows from the Watsonville Slough system, approximately 800 acres of coastal wetlands, and diverting them for recharge into the San Andreas Terrace aquifer. Similar to the existing Harkins Slough Facility, which has recharged over 8,700 acre-feet since 2002, the WSS-MARR project includes filtration, recharge basins, and recovery wells to store and later extract water for agricultural use via the Coastal Distribution System (CDS). The project reduces groundwater overdraft and seawater intrusion. After an extensive environmental review, the project was approved in 2021 and is now progressing through design and construction phases, including upgrades to Harkins Slough facilities and new recovery wells.



Figure 6-13: Watsonville Slough system

Public Outreach & Education Programs

These programs include multilingual conservation campaigns, school partnerships, and emergency alerts, which have increased community awareness of water-related hazards and built support for long-term mitigation efforts.



Figure 6-14: Pajaro River Watershed Resilience Program Bilingual Public Meeting Folder

6.5 Risk Assessment

This section focuses on profiling coastal and other hazards specific to PV Water and assessing their vulnerability independent of the broader county-wide planning area, which has been evaluated in Section 3 of Volume 1. The hazard profiles in Volume 1 discuss overall impacts to the planning area and describe relevant plans, policies, and regulations; past events; location; frequency and probability of future occurrences; severity and extent; warning time; secondary hazards; and climate change impacts. For more information on risk assessment methodologies, see Volume 1, Appendix A.

This section includes a tailored vulnerability assessment, analyzing PV Water assets at risk such as critical water supply facilities, the recycled water system and CDS, recharge basins, diversion structures, pipelines and operational sites as well as the agricultural lands, populations, and partner agencies dependent on PV Water's water deliveries. In addition, this section presents growth, land use, and agricultural production trends in the communities served, offering insights into vulnerabilities and risks that represent the broader context of assets at risk.

6.5.1 Hazard Screening & Prioritization

Members of the planning team from each participating jurisdiction came together to collaboratively decide which county-wide hazards would be included in the MJHMP and which would be excluded. The hazard screening and prioritization took place early in the process and integrated historic data, local knowledge, and consensus opinions to create a risk assessment matrix for the county as well as for each participating jurisdiction. These matrices indicate the priority of hazards prior to further refinement. Details about this process, the results of the discussion, and in-depth profiles for county-wide hazards can be found in Volume 1, Sections 2 and 3.

The final results of the hazard screening and prioritization exercises are summarized in Table 6-4, including which specific subhazards were selected by PV Water's planning team.

PV Water internal planning group used the same hazard identification and prioritization process as the county-wide Planning Team. They reviewed previously prepared relevant documents and past events to determine the realm of natural hazards that have the potential to affect the agency. Table 6-3 provides a crosswalk of hazards identified in select planning documents, including PV Water's 2022 Groundwater Sustainability Plan, the 2021 Santa Cruz County LHMP, and the 2023 State of California HMP. The crosswalk was used to develop a preliminary hazards list, providing a framework for the group to evaluate which hazards were truly relevant to the agency and which ones were not.

The internal planning group then ranked hazards based on their probability of affecting PV Water and potential impacts on the communities it serves. Figure 6-15 displays the results of the hazard risk ranking exercise that was performed before further refinement. All hazards have been profiled in Volume 1 of this document. The purpose of this annex is to specifically address PV Water's vulnerability to specifically identified hazards.

Table 6-3: PV Water Document Review Crosswalk

Hazard	PV Water 2022 Groundwater Sustainability Plan	Santa Cruz County LHMP 2021	2023 California SHMP
Agricultural Pests			■
Avalanche			■
Climate Change	■	■	■
Coastal		■	■
Dam Failure		■	■
Drought	■	■	■
Earthquake / Liquefaction		■	■
Extreme Cold		■	■
Extreme Heat		■	■
Extreme Weather / Storms		■	■
Flood	■	■	■
Geologic / Mass Movement		■	■
Human-Caused			■
Insects			■
Levee Failure			■
Pandemic Disease			■
Sea Level Rise	■		■
Soil			■
Subsidence			■
Tornado			■
Tsunami / Seiche Wave			■
Volcano			■
Wildfire	■	■	■

Risk Assessment Matrix Definitions

PROBABILITY RATING

The likelihood of a hazard event occurring within a time period?

PROBABILITY

Highly Likely	**Highly likely** - 100% annual probability. Or Likely to occur every year in your lifetime.
Likely	**Likely** - between 10 & 100% annual probability. Or will occur several times in your lifetime.
Possible	**Possible** - between 1 & 10% annual probability. Or Likely to occur some time in your lifetime.
Unlikely	**Unlikely** - less than 1% annual probability. Or unlikely but possible to occur in your lifetime.

IMPACT RATING

In terms of injuries, damage, or death, would you anticipate impacts to be minor, limited, critical, or catastrophic when a significant hazard event occurs? The impact could be in terms of one hazard event (flooding from a culvert failure) or a large-scale event (multiple rivers flooding) in the same jurisdictional boundary.

IMPACT

Minor	Limited	Critical	Catastrophic

Minor - very few injuries, if any. Only minor property damage & minimal disruption on quality of life. Temporary shutdown of critical facilities.

Limited - minor injuries only. Approx. 10% or less of property in disaster footprint damaged or destroyed. Complete shutdown of critical facilities for more than one day.

Critical - multiple deaths/injuries possible. Between 25% and 50% of property in disaster footprint is damaged or destroyed. Complete shutdown of critical facilities for more than one week.

Catastrophic - high number of deaths/injuries possible. More than 50% of property in affected area damaged or destroyed. Complete shutdown of critical facilities for 30 days or more.

To concentrate resources, the jurisdictional planning team will focus on "High" and "Extreme" risk hazards. These hazards have the higher probability and greater impact as it relates to the jurisdictions planning area.

Hazard definitions are included in **Vol. 1** of this plan. Some hazards are discussed as subset hazards– e.g., "Dam Failure" within the "Flood" hazard profile. If a hazard is not present on the risk matrix or are grey in color, the jurisdictional planning team felt the hazard had a minimal footprint within their planning area and was not ranked.

Hazard Information / Legend:



Climate Change impacts will be addressed at the end of each hazard section and as a stand alone section for each jurisdiction.
For County and Municipal governments you will be required to address climate change impacts in the Safety Element of your General Plan. Climate change may change the frequency, duration and intensity of hazards listed above.

Pajaro Valley Water Management Agency Risk Matrix

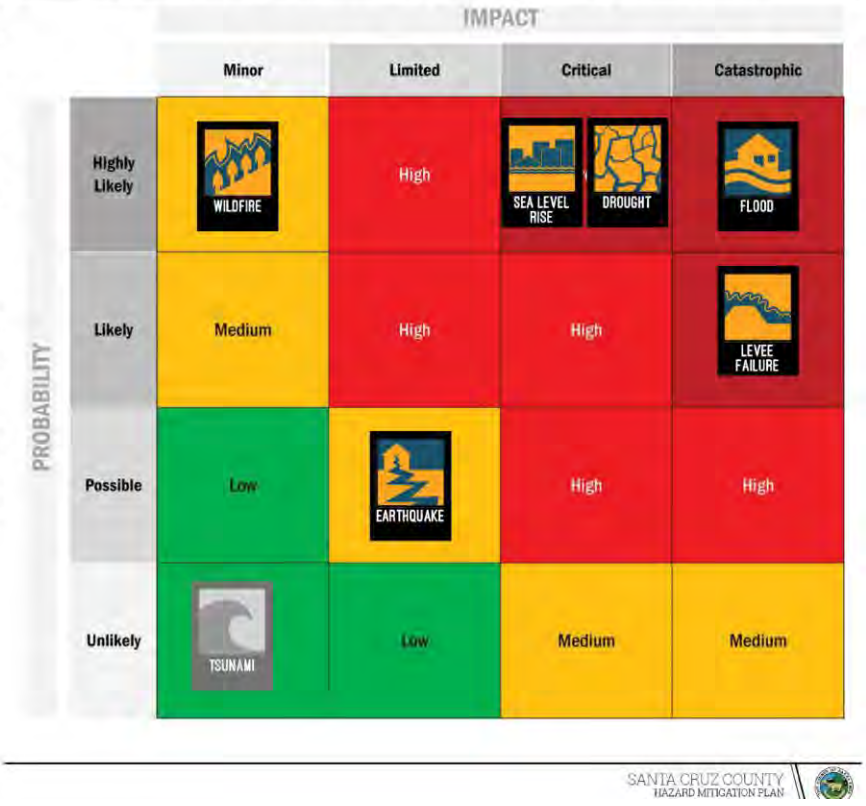


Figure 6-15: PV Water Risk Assessment Matrix

Table 6-4: PV Water Hazards Prioritization Summary

Hazard	Priority	Explanation
Wildfire	**Medium**	Profiled in Volume 1, Section 3.2.1, and Section 6.5.2.1 in this annex
Flood	**Extreme**	Profiled in Volume 1, Section 3.2.2, and Section 6.5.2.2 in this annex, including Levee Failure
Earthquake	**Medium**	Profiled in Volume 1, Section 3.2.3, and Section 6.5.2.3 in this annex, including Liquefaction
Severe Weather	-	Not a priority due to being outside jurisdictional mission and authority, but discussed in the context of Flood in Section 6.5.2.2
Coastal Hazards	-	Not a priority due to low probability and limited impact potential
Slope Failure	-	Not a priority due to low probability and limited impact potential
Dam Failure	-	Not a priority due to low probability and limited impact potential
Drought	**Extreme**	Profiled in Volume 1, Section 3.2.8, and Section 6.5.2.4 in this annex
Extreme Heat	-	Not a priority due to being outside jurisdictional mission and authority
Climate Change	**Extreme**	Profiled in Volume 1, Section 3.2.10, and Section 6.5.2.5 in this annex, including Sea-Level Rise

6.5.2 Vulnerability to Specific Hazards

Assessing vulnerabilities exposes the unique characteristics of individual hazards and begins the process of narrowing down which areas within PV Water are vulnerable to specific hazard events. The vulnerability assessment considered unique local knowledge of hazards and impacts and a GIS overlaying method for examining such vulnerabilities in more depth. Using these methods, the agency's planning group estimated vulnerable populations, properties, and assets, and potential losses, primarily to coastal hazards. In addition, the exposure of agency assets to drought, geological, earthquake, wildfire and flood hazards was also considered.

Many of the hazard profiles include a snapshot map and damage estimation tables that illustrate the agency's vulnerabilities to those specific hazards. These maps assisted the planning group in understanding the hazard exposure of populations, parcels, and critical facilities and infrastructure. Each snapshot map contains an exposure summary that displays the percentage of the population, the improvement and content value of parcels, and the amount of critical infrastructure that is exposed. For hazards without geospatial extents, such as drought and extreme weather, narratives are provided instead of exposure maps and tables.

Based on the hazard prioritization exercise, this vulnerability assessment focuses on five hazards for PV Water, some of which encompass subhazards such as Levee Failure, Liquefaction, and Sea Level Rise.

Wildfire
SECTION 0



Flood
SECTION 6.5.2.2



Earthquake
SECTION 6.5.2.3



Drought
SECTION 6.5.2.4



Climate Change
SECTION 6.5.2.5



6.5.2.1 Wildfire Hazard

Based on the wildfire risk maps (Figure 6-16), several key characteristics emerge regarding fire hazard exposure, population and infrastructure vulnerability, and historical fire recurrence.

Wildfire hazard within the PV Water region is primarily concentrated in the northern and southeastern parts of the service area. These zones are predominantly classified as Moderate Fire Hazard Severity Zones, with isolated bands of High and Very High hazard areas located in rugged, vegetated terrain. Very High hazard zones are most prevalent in dense hillside areas, particularly along the northern edge of the agency near the Santa Cruz Mountains and in portions of the southeast. In contrast, the urban core and central agricultural valley, where most of PV Water's groundwater recharge and distribution infrastructure is located, fall outside of these high-risk zones.

According to the wildfire exposure summary (Figure 6-16), only a small proportion of the PV Water service population and land area falls within the highest hazard designations. Approximately 433 residents live in Very High Fire Hazard Severity Zones, which accounts for about one percent of the total service area population. Similarly, about 220 parcels fall within these zones, representing one percent of all parcels in the jurisdiction. The total estimated value of improvements and contents in these parcels is nearly $300 million, also amounting to about one percent of overall parcel value in the agency's area. Importantly, no critical infrastructure are currently sited within Very High wildfire hazard zones.

The mean fire return interval map (Figure 6-17), based on USGS LANDFIRE data, reveals that much of the wildland-urban interface and surrounding hillsides in the PV Water planning area experience fire recurrence on average every 10 to 35 years. In higher-risk foothill and woodland areas, fire return intervals can be as short as six to twelve years, indicating that these landscapes are fire-adapted and prone to recurring wildfire events.

However, PV Water includes areas designated as "High" wildfire hazard within both Local Responsibility Areas (LRA) and State Responsibility Areas (SRA). Approximately 6,500 residents live within these high-risk zones, primarily concentrated along the agency's northern boundary. Within this same hazard area, roughly 2,000 parcels are exposed, representing an estimated $3 billion in combined structure and content value. In addition, critical infrastructure is at risk, including approximately 150 key assets such as water supply facilities, as well as approximately 21 miles of essential infrastructure lines located within the "High" wildfire hazard zones.

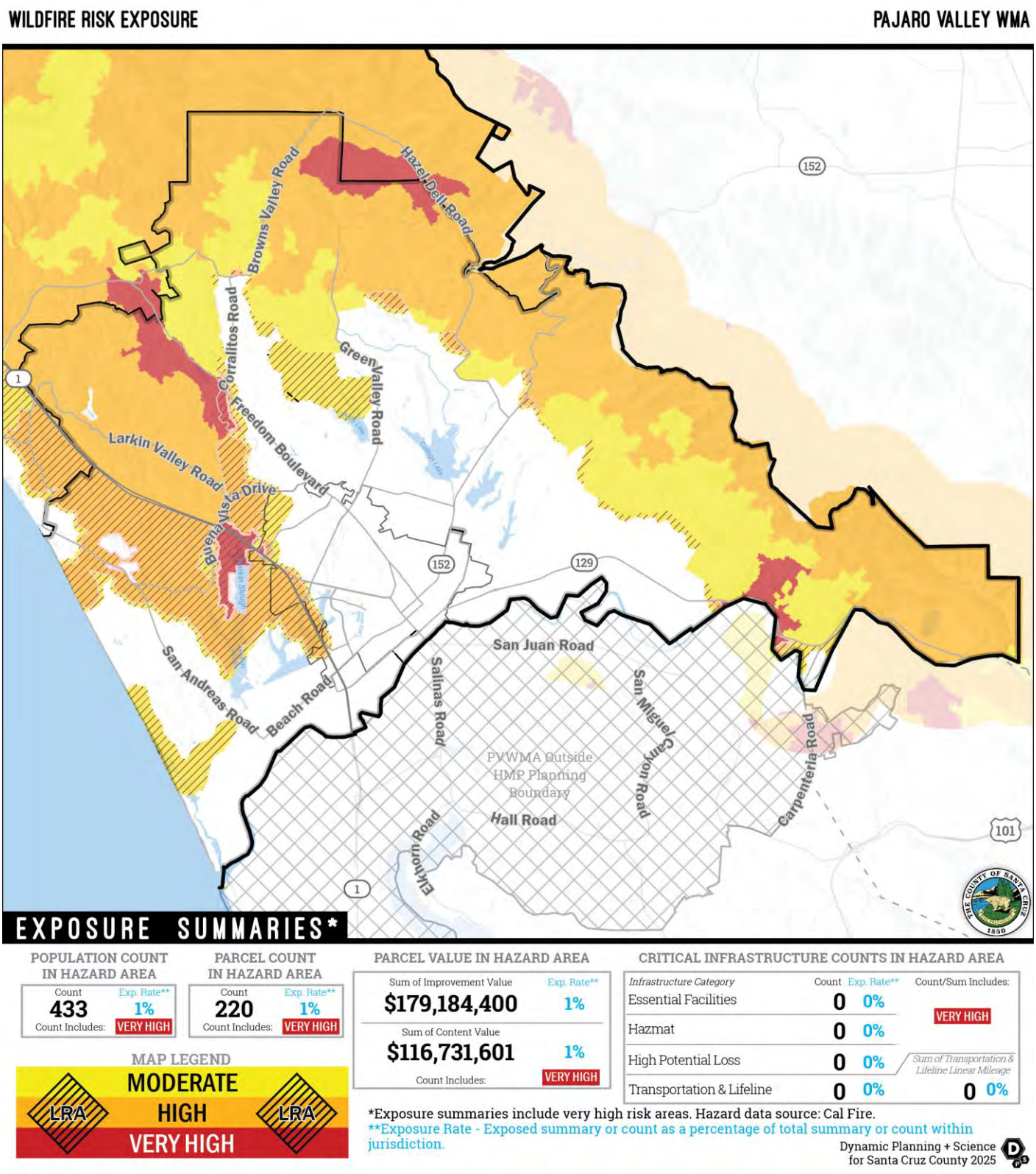


Figure 6-16: Exposure Summary - PV Water Wildfire Risk

Note: This is PV Water agency boundary within Santa Cruz County only; not entire service area that extends to Monterey and San Benito Counties

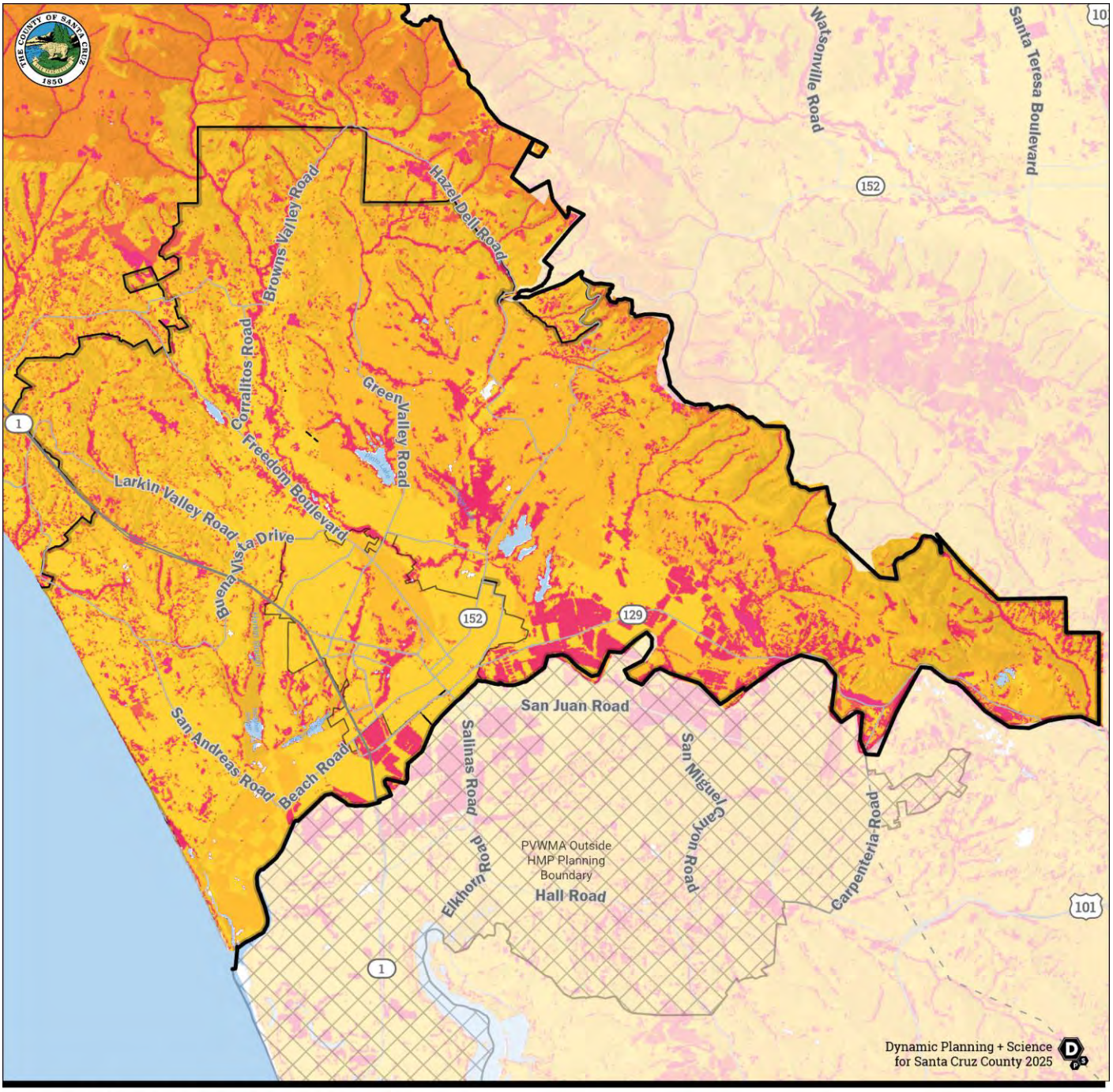


Figure 6-17: PV Water Mean Fire Return Interval Map

Note: This is PV Water agency *boundary within Santa Cruz County only; not entire service area that extends to Monterey and San Benito Counties*

6.5.2.2 Flood Hazard

PV Water faces substantial flood risk, primarily concentrated in the southern half of its service area along the lower Pajaro River and its tributaries (Figure 6-18). FEMA-designated Special Flood Hazard Areas (SFHAs), including 100-year floodplains, floodways, and coastal flood zones, stretch extensively across Watsonville and surrounding agricultural lands, posing repeated threats to homes, infrastructure, and farmland. Within these mapped zones shown, approximately 16,000 residents live in high-risk areas, and 3,100 developed parcels are exposed to potential flooding. The combined assessed value of improvements and contents in these areas totals over $4.6 billion, representing 19% and 23% of jurisdictional improvement and content value, respectively.

In addition to exposure of buildings and population, the flood hazard zones encompass nearly 65 lifeline and transportation assets, 13% of such assets within the PV Water area. These critical systems are especially vulnerable to closure or damage during storm-driven flood events.

The PV Water service area contains no identified DWR Flood Awareness Zones, indicating that all identified risk areas are already captured in the FEMA-mapped 100- and 500-year floodplains shown in Figure 6-18.

Collectively, this data demonstrates that PV Water's flood vulnerability is highly concentrated in the Pajaro River floodplain and adjacent slough systems, where both residential communities and critical water infrastructure overlap with high-risk zones.

As a special district and not a municipality, PV Water does not participate in the National Flood Insurance Program (NFIP); however, the agency complies with all minimum floodplain development standards and environmental review requirements established by the county and municipalities where its projects are located.

Levee Failure

Levee failure poses a substantial hazard to PV Water, particularly in the low-lying areas west of Highway 1, where the community relies on aging levee infrastructure along the lower Pajaro River for flood protection. This area is characterized by flat terrain, extensive agricultural lands, and residential development, making it especially vulnerable to inundation if levees are breached or overtopped during high-flow events.

The existing levee system, much of which was constructed in the mid-20th century, has been identified as structurally deficient and inadequate to handle a 100-year flood event under current FEMA standards. Past evaluations by the U.S. Army Corps of Engineers (USACE) and local flood control agencies have documented issues such as erosion, slope instability, limited freeboard, and under-seepage, all of which increase the risk of failure during sustained high flows. The lower Pajaro River, in particular, has a history of overtopping and levee breaches during major storms, including significant flood events in 1955, 1995, and 2023. These incidents resulted in widespread damage to homes, critical infrastructure, and farmlands, especially in the unincorporated communities of Pajaro and Watsonville.

The USACE-led Pajaro River Flood Risk Management Project. This project is a major initiative currently underway that aims to address these vulnerabilities through levee setback, channel widening, and levee

reconstruction. Once completed, the project will provide 100-year flood protection to key areas within the PV Water service boundary. However, until construction is finalized, large swaths of the agency's service area remain at risk from a potential levee failure.

Recent flood history underscores these ongoing risks. In March 2023, a breach in the Pajaro River levee on the Monterey County side caused major inundation in the town of Pajaro, resulting in widespread evacuations and agricultural damages exceeding $300 million. Similarly, overtopping and near failures in earlier storm events such as in 1995, 2017, and earlier years reinforce the inadequacy of the current levee system. (United State Army Corps of Engineers, 2025)

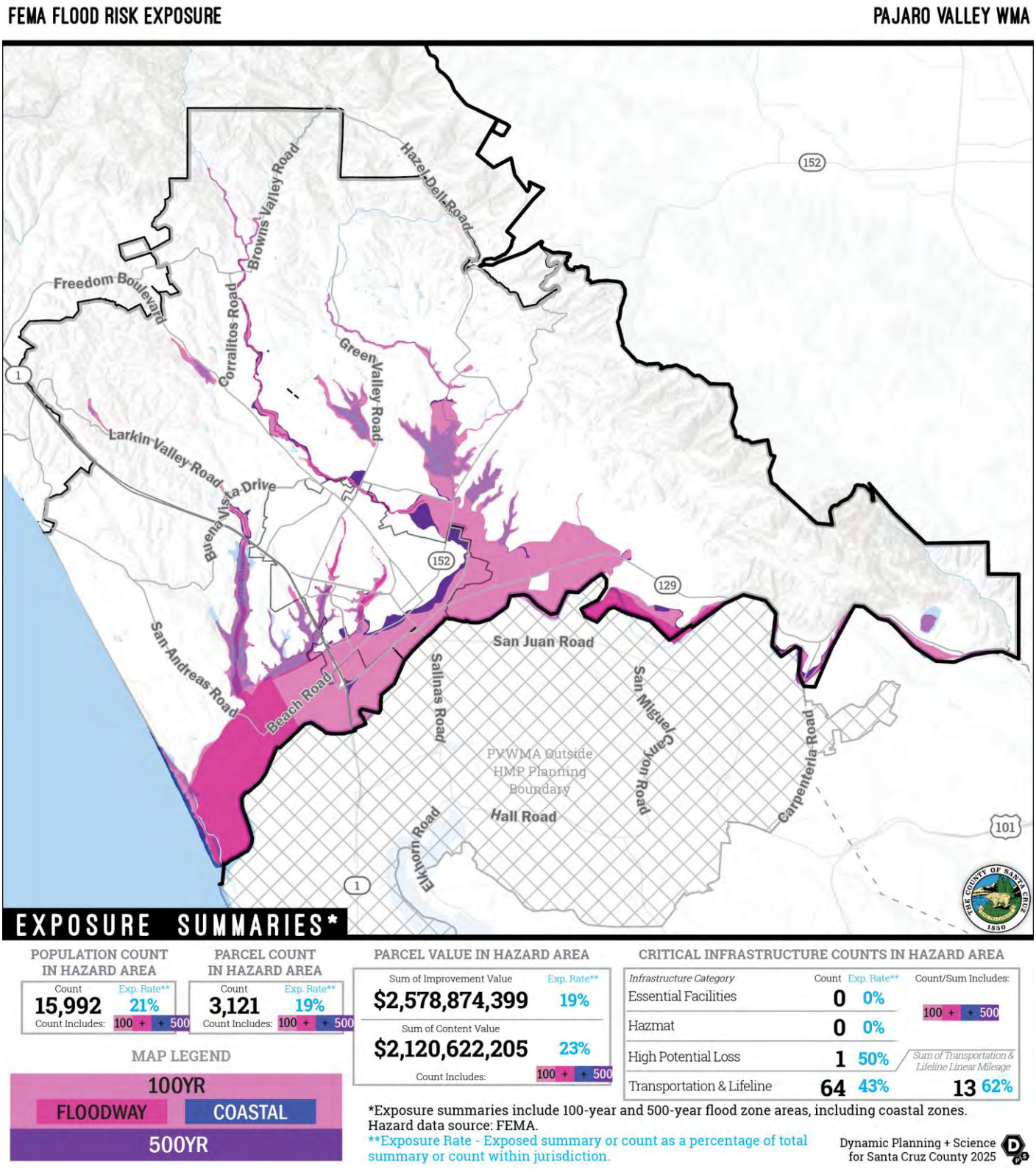


Figure 6-18: Exposure Summary - PV Water Flood Risk (FEMA Zones)

Note: This is PV Water agency boundary within Santa Cruz County only; not entire service area that extends to Monterey and San Benito Counties

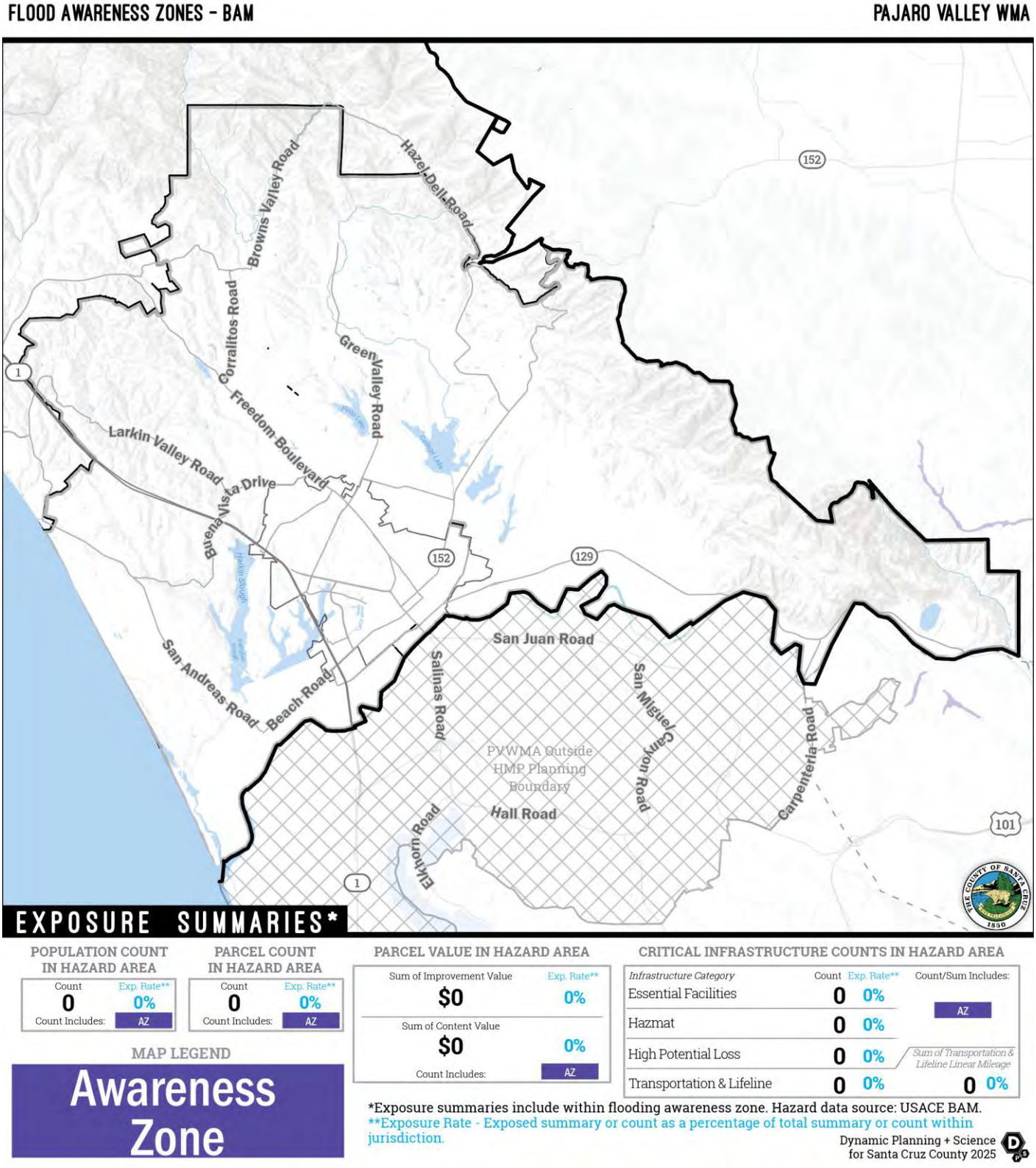


Figure 6-19: Exposure Summary - PV Water Flood Risk (DWR Awareness Zones)

Note: This is PV Water agency boundary within Santa Cruz County only; not entire service area that extends to Monterey and San Benito Counties

6.5.2.3 Earthquake Hazard

PV Water faces significant earthquake hazards due to its geographic location near the San Andreas Fault system, particularly the North San Andreas–Santa Cruz Mountains segment. Scenario mapping for a magnitude 7.1 earthquake on this fault line indicates that nearly the entire PV Water service area lies within zones of "very strong" (MMI VII) to "severe" (MMI VIII) ground shaking (Figure 6-20). This includes 100% of the estimated population and around 99% of all parcels within the planning area. The scenario estimates over $13.5 billion in improvement value and $9.2 billion in land value exposed to shaking intensities of MMI VII or greater. See Figure 6-20 for exposure summaries.

In addition to strong ground motion risks, PV Water is exposed to areas of high liquefaction potential, primarily concentrated in low-lying zones adjacent to river channels and the coastal plain which is shown in Figure 6-21. Mapping shows approximately 32,000 residents and more than 6,600 parcels fall within moderate to very high liquefaction susceptibility zones, representing 42% and 40% of the jurisdiction's total population and parcel count, respectively. The total exposed structural value in these zones exceeds $5.4 billion.

PV Water also includes multiple fault zones subject to California's Alquist-Priolo Earthquake Fault Zoning Act, which requires special geotechnical investigations prior to new development. Figure 6-21 shows these zones concentrated along mapped Quaternary fault traces in the northern and eastern portions of the service area. Exposure in these zones is more limited, affecting about 5,700 residents and 1,750 parcels—they still represent over $2 billion in combined improvement and land value which is shown in Figure 6-22.

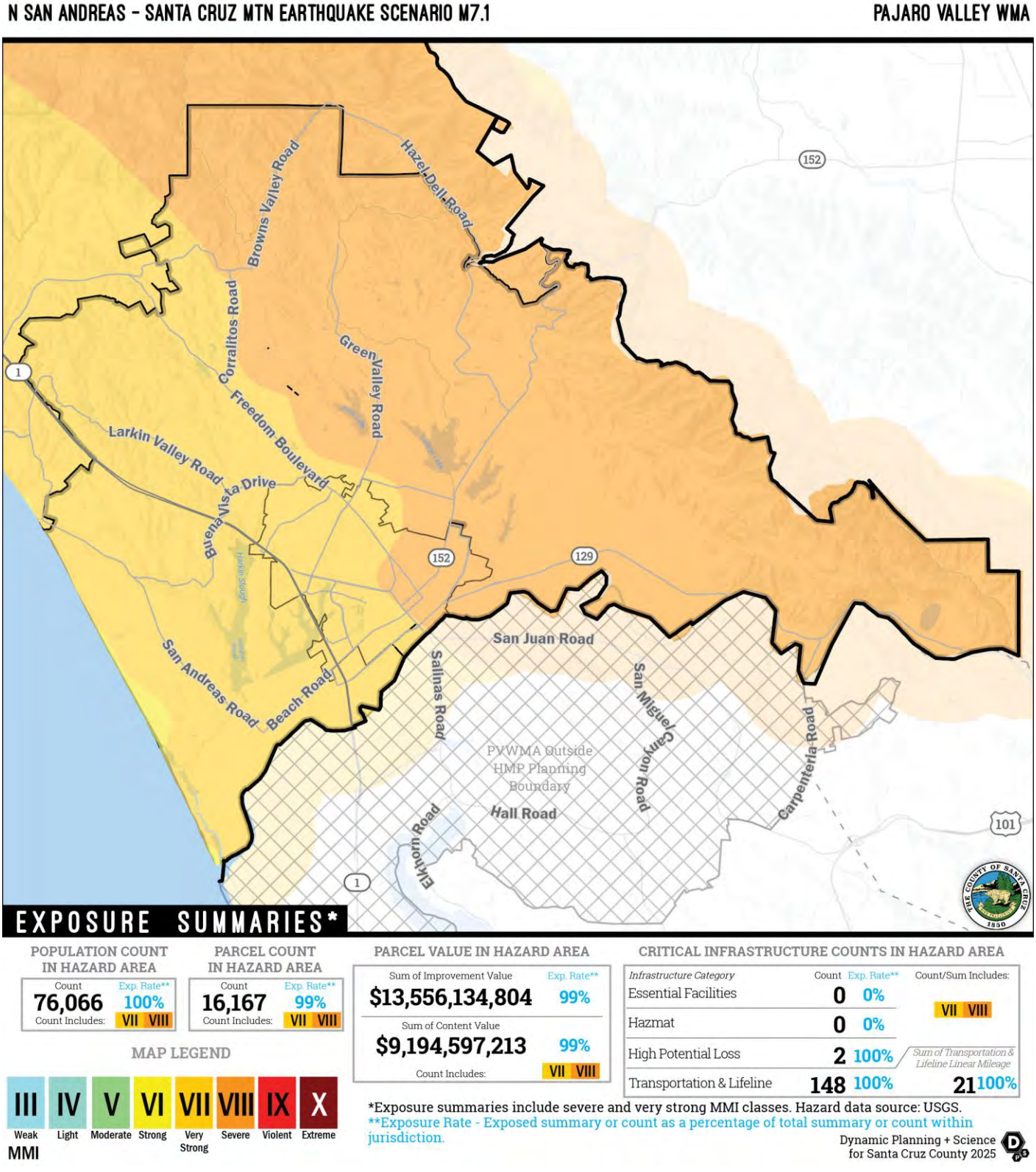


Figure 6-20: Exposure Summary - PV Water Earthquake Risk (M7.1 San Andreas Shaking)

Note: This is PV Water agency boundary within Santa Cruz County only; not entire service area that extends to Monterey and San Benito Counties

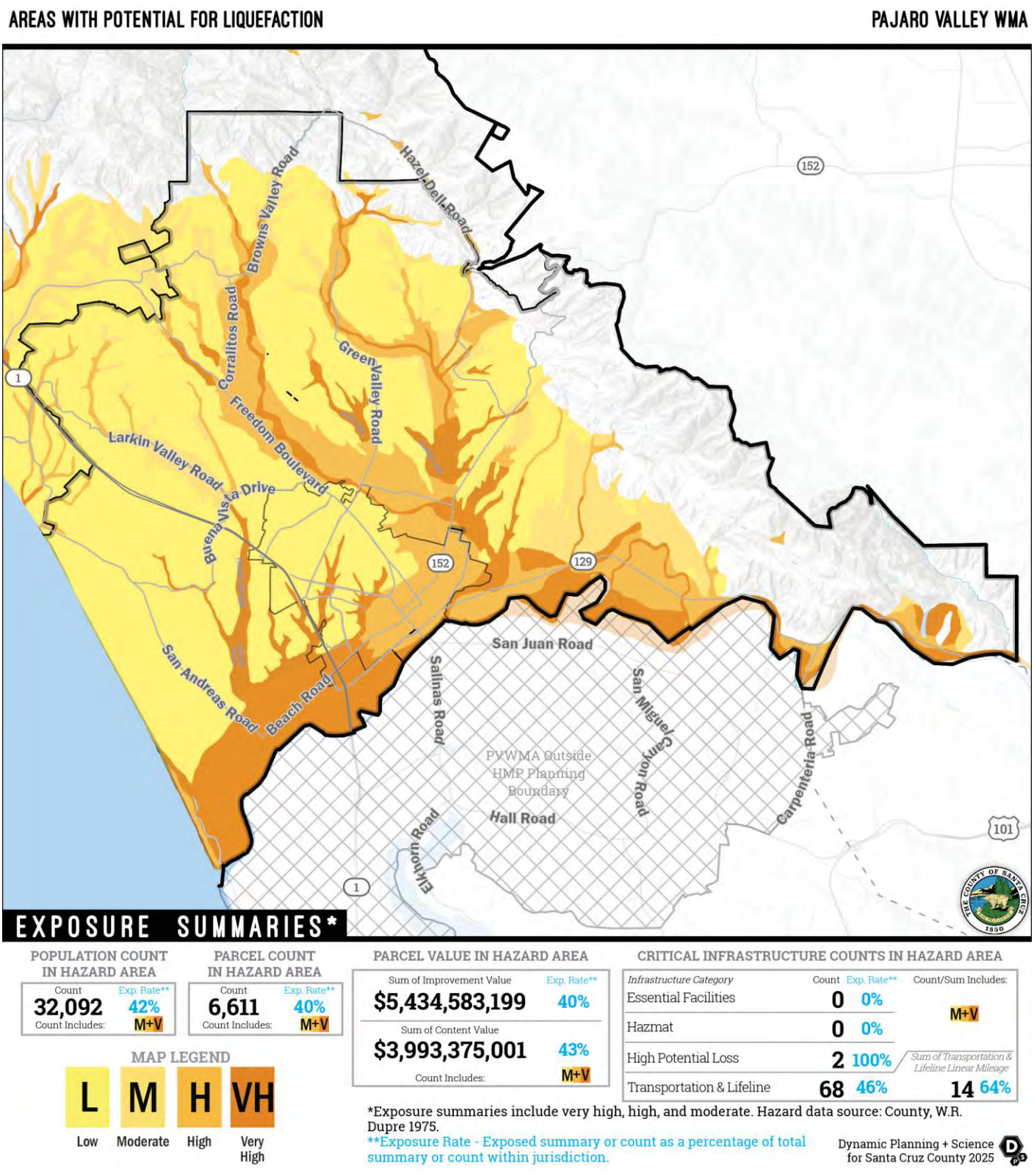


Figure 6-21: Exposure Summary - PV Water Liquefaction Risk

Note: This is PV Water agency boundary within Santa Cruz County only; not entire service area that extends to Monterey and San Benito Counties

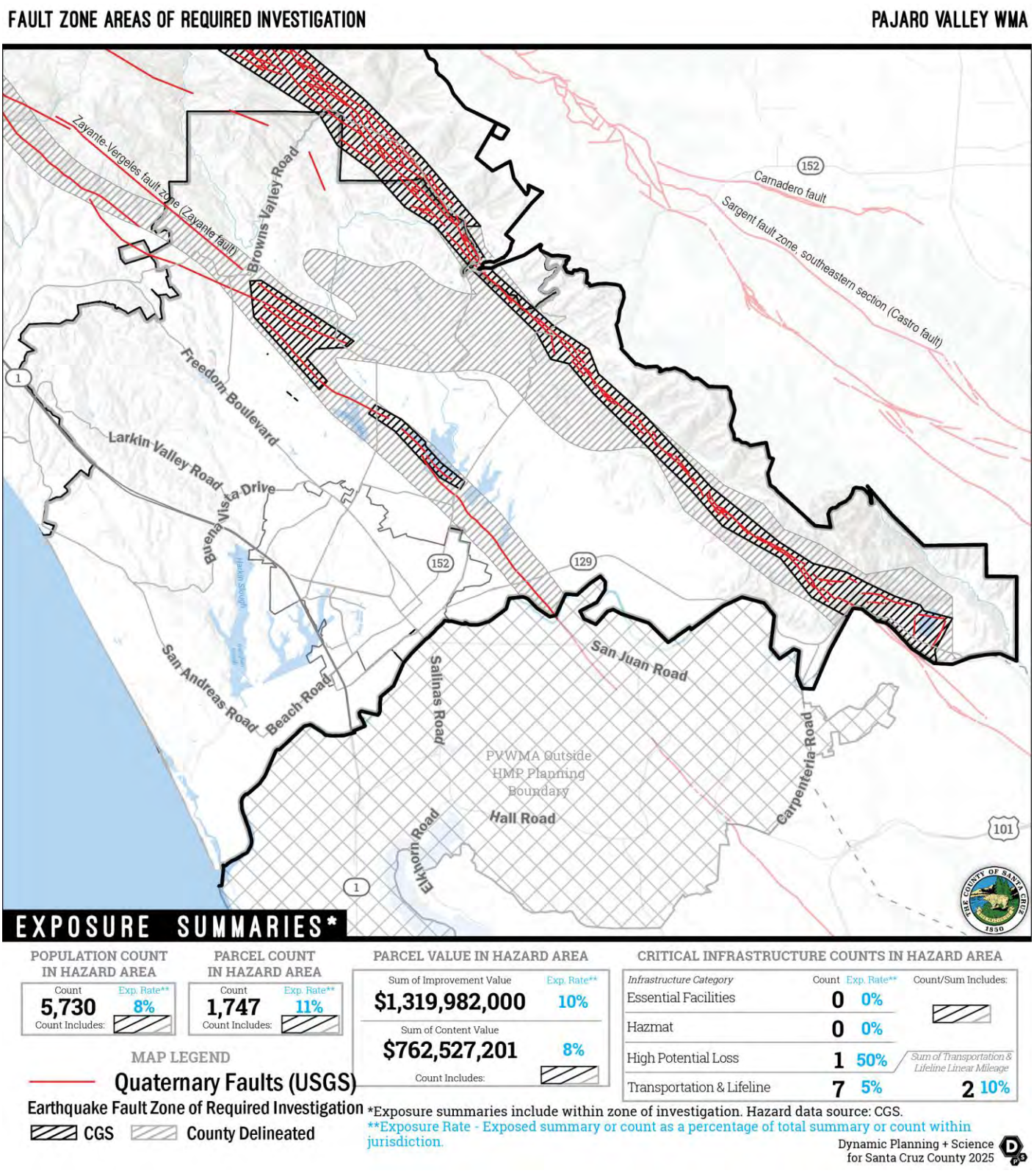


Figure 6-22: Exposure Summary - PV Water Earthquake Risk (Fault Zones)

Note: This is PV Water agency boundary within Santa Cruz County only; not entire service area that extends to Monterey and San Benito Counties

6.5.2.4 Drought Hazard

The National Drought Monitor provides drought data and maps nationally and on a localized, watershed scale. The National Drought Monitor is the product of 11 agencies, including the NDMC, NOAA and USDA, and is available at http://droughtmonitor.unl.edu/. The National Drought Monitor categorizes the level of drought from D0 through D4, with D4 being the highest "exceptional drought." Table 6-5 depicts drought classifications and impacts from the level of drought occurrence in California, while Figure 6-23 shows a time series of the level of drought in Santa Cruz County from 2000 to 2024 according to the National Drought Monitor.

Drought presents one of the most severe and chronic hazards for PV Water largely because the agency relies almost exclusively on the Pajaro Valley Groundwater Basin (DWR Basin No. 3-002) for its water supply. The basin, spanning Santa Cruz, Monterey, and San Benito Counties, is designated by the California Department of Water Resources as critically overdrafted. This means that even in "normal" water years, demand exceeds natural recharge, and during drought years, conditions worsen substantially, increasing both overdraft and the risk of seawater intrusion.

Stakeholders view drought not only as a long-term challenge but also as an immediate vulnerability affecting agriculture, rural residents, and disadvantaged communities. Highlighting drought conditions in recent decades have required mandatory pumping restrictions, groundwater augmentation projects, and conservation mandates, yet aquifer levels continue to show stress. Many small-scale and rural water users, particularly those reliant on shallow wells, experience failures and water quality degradation during prolonged dry periods.

Table 6-5: Drought Classifications and Impacts

Category	Description	Possible Impacts
D0	Abnormally Dry	▪ Soil is dry; irrigation delivery begins early ▪ Dryland crop germination is stunted ▪ Active fire season begins
D1	Moderate Drought	▪ Dryland pasture growth is stunted; producers give supplemental feed to cattle ▪ Landscaping and gardens need irrigation earlier; wildlife patterns begin to change ▪ Stock ponds and creeks are lower than usual
D2	Severe Drought	▪ Producers increase water efficiency methods and drought-resistant crops ▪ Grazing land inadequate ▪ Fire season is longer, with high burn intensity, dry fuels, and large fire spatial extent; more fire crews on staff ▪ Lake- and river-based tourism declines; boat ramps close ▪ Trees are stressed; plants increase reproductive mechanisms; wildlife diseases increase ▪ Water temperatures increase; programs to divert water to protect fish begin ▪ River flows decrease; reservoir levels are low and banks are exposed

Category	Description	Possible Impacts
D3	Extreme Drought	▪ Federal water not adequate to meet irrigation contracts; extracting supplemental groundwater is expensive ▪ Fire season lasts year-round; fires occur in typically wet parts of the state; burn bans are implemented ▪ Ski and rafting business is low; mountain communities suffer ▪ Low water levels impede fish migration and cause lower survival rates ▪ Wildlife encroach on developed areas; little native food and water is available for bears, which hibernate less ▪ Water sanitation is a concern; reservoir levels drop significantly; surface water is nearly dry, flows are very low; water theft occurs ▪ Livestock need supplemental feed, cattle and horses are sold; little pasture remains ▪ Well and aquifer levels decrease; homeowners drill new wells
D4	Exceptional Drought	▪ Fire season is very costly; number of fires and areas burned are extensive ▪ Many recreational activities are affected ▪ Fields are left fallow; orchards are removed; vegetable yields are low; honey harvest is small; agricultural unemployment is high, food aid is needed ▪ Fish rescue and relocation begins; pine beetle infestation occurs; forest mortality is high; wetlands dry up; wildlife death is widespread; algae blooms appear ▪ Poor air quality affects health; greenhouse gas emissions increase as hydropower production decreases; West Nile outbreaks rise ▪ Water shortages are widespread; surface water is depleted; federal irrigation water deliveries are curtailed; water prices are extremely high; wells are dry, more and deeper wells are drilled; water quality is poor

Source: Adapted from U.S. Drought Monitor Drought Classifications and Impacts

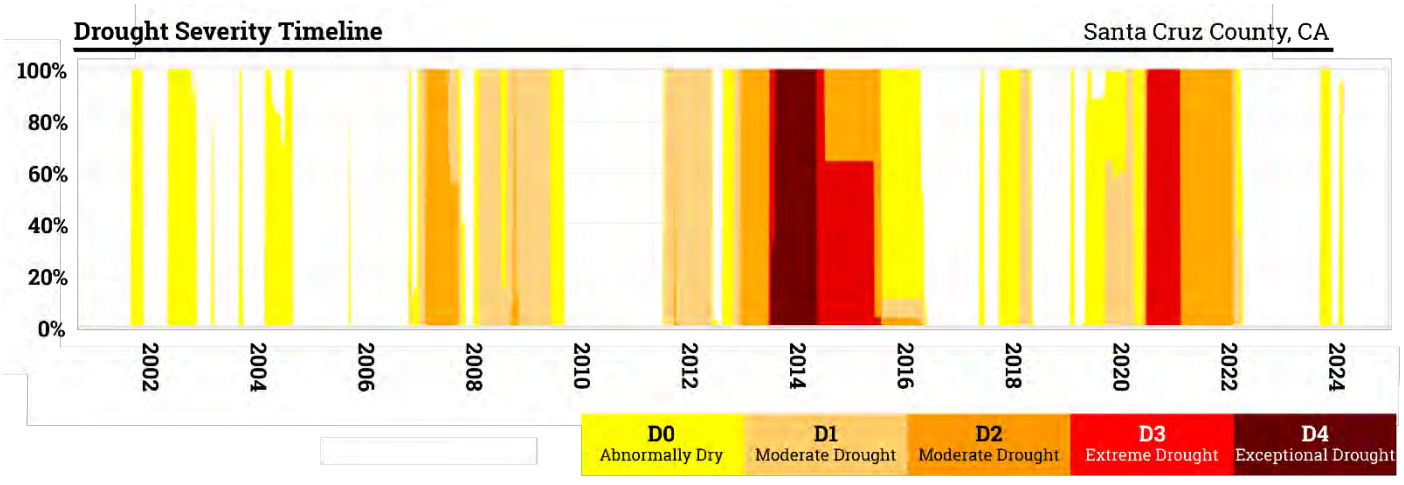


Figure 6-23: Drought Severity Timeline 2000-2024

6.5.2.5 Climate Change Hazard

Average annual temperatures across most of California have already increased by more than 1°F, with some areas experiencing rises of over 2°F when comparing the 1901–1960 average to that of 1986–2016. Daily maximum temperatures—a key indicator of extreme heat—are projected to increase by 4.4°F to 5.8°F by 2050 and by 5.6°F to 8.8°F by 2100. Heat waves that impact public health, known as heat-health events, are also expected to intensify across the state. By 2050, these events are projected to last up to two weeks longer in the Central Valley and occur four to ten times more often in the Northern Sierra region (California Natural Resources Agency, 2022).

California is already experiencing significant impacts from climate change, including prolonged drought, a lengthened wildfire season, increased coastal flooding and erosion, and widespread tree mortality. The state has observed rising average temperatures, more extreme heat days, fewer cold nights, a longer growing season, and shifts in the water cycle, with less winter precipitation falling as snow. In addition, summertime fog has declined by approximately 33%, and both snowmelt and rainwater runoff are occurring earlier in the year (Cal OES, 2018).

Long-term trends indicate a 12% to 20% decline in fog across California from 1900 through projections to 2070. Climate experts suggest that warming temperatures reduce the ability of air masses to cool enough to produce fog, which plays a critical role in supporting California's ecosystems (Grantham, Teodore; University of California, Berkeley, 2018).

Climate change poses a range of interrelated threats to PV Water, especially in the context of managing a critically overdrafted coastal groundwater basin. Climate change is projected to intensify existing water management challenges through reduced precipitation, prolonged droughts, sea level rise, and temperature-driven evapotranspiration increases.

One of the most pressing climate impacts for PV Water is the exacerbation of seawater intrusion. Rising sea levels, when combined with declining groundwater levels due to chronic overdraft, accelerate the inland migration of saline water from the Pacific Ocean. This contamination of the freshwater aquifer threatens the region's primary source of irrigation water, which is vital for local agriculture.

Decreased surface water availability is another anticipated impact. As precipitation becomes more variable and droughts more frequent and severe, recharge opportunities for the aquifer will decline. PV Water relies on managed aquifer recharge (MAR) through stormwater capture from slough systems like Harkins and Watsonville Sloughs. With fewer high-flow events, the agency's ability to divert and store freshwater for later use will be compromised.

Additionally, rising temperatures contribute to increased evapotranspiration and greater crop water demand, further straining an already limited groundwater supply.

As such, this MJHMP addresses climate change as a secondary impact for each identified hazard of concern. Each chapter includes a section with a qualitative discussion on the probable impacts of climate change for that specific hazard.

Sea Level Rise

Figure 6-24 shows that sea level rise poses an emerging threat to coastal portions of the PV Water planning area, particularly in the low-lying coastal plains near the Monterey Bay shoreline. Based on COSMOS v3.1 data, a scenario involving 50 cm of sea level rise combined with a 100-year storm event shows a narrow but significant band of inundations extending inland from the coast. The area most impacted lies near the southern boundary of PV Water, where coastal parcels lie at or near current sea level and lack protective elevation.

Within this modeled sea level rise inundation area, Figure 6-24 shows approximately 100 residents are at risk, as well as 2 parcels with an estimated $981,600 in improvement value and $682,800 in content value, though these values represent less than 1% of the jurisdictional total.

While the geographic extent of direct sea level rise exposure is limited relative to the broader inland service area, the consequences for coastal infrastructure, groundwater salinity, and emergency access could be significant. Saltwater intrusion risks may increase with rising sea levels, potentially complicating groundwater management and increasing pressure on inland recharge efforts.

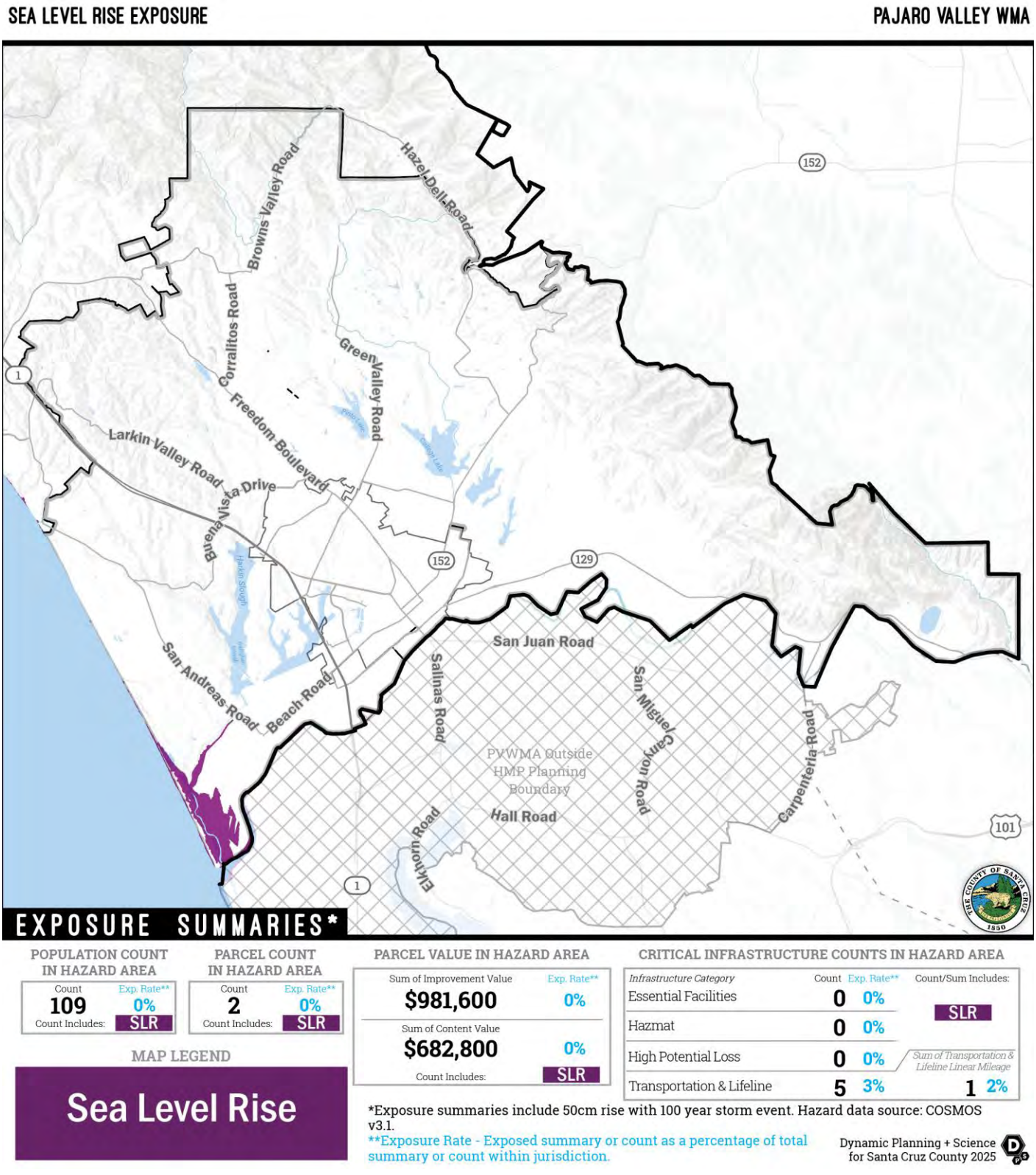


Figure 6-24: Exposure Summary - PV Water Sea Level Rise Risk

Note: This is PV Water agency boundary within Santa Cruz County only; not entire service area that extends to Monterey and San Benito Counties

6.5.3 Planning for Hazards & Growth

PV Water serves a region with diverse hazard exposures and increasing demands on water infrastructure. As the regional groundwater sustainability agency for the Pajaro Basin, PV Water plays a vital role in managing a finite resource while planning for both environmental resilience and future development. The agency must balance groundwater supply reliability with the multiple intersecting risks of flooding, drought, seawater intrusion, seismic activity, and climate change-driven hazards like sea level rise.

Growth in the Pajaro Valley, particularly near Watsonville and surrounding agricultural areas, is expected to increase water demand, strain groundwater supplies, and put additional pressure on PV Water's distribution, recharge, and monitoring systems. While PV Water does not have land use authority, it must coordinate closely with local jurisdictions such as the City of Watsonville and Santa Cruz County, to ensure land use planning is aligned with sustainable water management and hazard mitigation goals.

The agency's 2022 update to the BMP outlines a portfolio of strategies to sustain groundwater supply considering growing demands and mounting climate risks. These strategies include expanding recycled water use, developing additional recharge basins, implementing managed aquifer recharge with stormwater, and optimizing inland water sources to reduce reliance on coastal wells.

6.5.3.1 Development & Hazard Considerations

Development within PV Water service area has the potential to influence both existing hazard conditions and future risk exposure. As agricultural lands and open spaces are converted into residential, commercial, or industrial uses, the impervious surface area increases, which can exacerbate flooding and reduce groundwater recharge, which is an especially critical concern in an area already dealing with overdrafted aquifers and saltwater intrusion.

Urban expansion into areas previously buffered by natural vegetation can also elevate wildfire risk by increasing the wildland-urban interface, where homes and infrastructure are more vulnerable to fire. Moreover, development along the low-lying coastal zone and floodplains increases community exposure to sea level rise, levee failure, and stormwater inundation hazards. This growth may also strain existing water infrastructure, potentially reducing system redundancy and resilience during hazard events.

6.5.4 Hazard Problem Statements

As part of the mitigation action identification process, the internal planning group for each jurisdiction identified areas of concern (aka problem statements) for their respective facilities based on the risk assessment and vulnerability analysis. Problem statements focused on the impact, victim, and the threat that the hazard could create in the jurisdiction, as described in Table 6-6. Identifying common issues and weaknesses through these problem statements assisted the planning group in understanding the realm of resources needed for mitigation.

The goal is to have at least one mitigation action for every problem statement. Projects or actions have been developed to mitigate each problem identified. See Table 6-8 for a full list of mitigation actions and

corresponding problem statements that they address. Each problem statement is coded with a problem number for cross-referencing between Table 6-6 and Table 6-8.

Table 6-6: PV Water Problem Statements

Hazard	Area of Concern	Problem IS	Description	Related Mitigation Actions
Drought	Victim	ps-DR-PVW-01	Prolonged drought reduces groundwater recharge and increases demand for delivered water and groundwater pumping. Increased costs associated with additional water needs may especially affect disadvantaged and small-scale agricultural users.	ma-DR-SCW-01, ma-DR-PVW-01
Drought	Impact	ps-DR-PVW-02	Extended drought periods intensify groundwater pumping and leads to declines of groundwater levels, exacerbating overdraft and seawater intrusion. This can be compounded when City of Watsonville?s recycled water flows decrease due conservation measures.	ma-DR-SCW-01, ma-DR-PVW-02
Drought	Threat	ps-DR-PVW-03	Climate change is expected to increase the frequency and severity of drought events, reducing natural recharge and threatening the reliability of long-term water supply projects and basin resiliency.	ma-DR-PVW-02
Earthquake	Impact	ps-EQ-PVW-01	Ground shaking and soil displacement from a major earthquake could severely damage PV Water?s Coastal Distribution System, Recycled Water Facility, and other key infrastructure, resulting in damage, loss of access, and prolonged service outages.	ma-EQ-PVW-01
Earthquake	Threat	ps-EQ-PVW-02	PV Water facilities are near multiple active faults and may face seismic damage risks, including pipeline rupture and restricted facility access.	ma-EQ-PVW-01
Flood	Impact	ps-FL-PVW-01	Floodwaters can damage or temporarily disable PV Water?s coastal distribution system and recycled water infrastructure, reducing service delivery and increasing reliance on groundwater pumping during emergencies.	ma-FL-PVW-04
Flood	Threat	ps-FL-PVW-02	Aging, uncertified levees and outdated flood mapping, especially west of Highway 1 and near sloughs and the Pajaro River, leave PV Water and partner agencies vulnerable to facility flooding and agricultural disruptions during major storm or tidal events.	ma-FL-PVW-02, ma-FL-PVW-03, ma-FL-PVW-04, ma-FL-SCC-03, ma-FL-PVW-01
Flood	Impact	ps-FL-PVW-03	Flood inundation can contaminate groundwater wells which are also conduits for contaminated floodwaters to enter aquifers, decreasing water quality and increasing treatment costs.	ma-FL-PVW-03

Hazard	Area of Concern	Problem IS	Description	Related Mitigation Actions
Flood	Victim	ps-FL-PVW-04	Owners of private wells located in flood-prone areas are at risk of damage to the electrical well operating systems and contamination from a major flood event.	ma-FL-CBC-03
Sea Level Rise	Victim	ps-SLR-PVW-01	Agricultural groundwater users in the coastal zone face growing seawater intrusion risk, threatening crop viability, degrading soil quality, and increasing salinity in agricultural wells.	ma-SLR-PVW-02
Sea Level Rise	Threat	ps-SLR-PVW-02	Rising sea levels combined with storm-driven coastal flooding put PV Water?s infrastructure?including the Coastal Distribution System and monitoring wells?at risk of inundation, corrosion, and functional loss. Coastal flooding and brackish water impacts also reduce operability of managed aquifer recharge projects which worsen with sea level rise	ma-SLR-SCW-01, ma-SLR-SCW-02, ma-SLR-PVW-01, ma-SLR-PVW-02
Sea Level Rise	Impact	ps-SLR-PVW-03	Without sufficient protective infrastructure or adaptive pumping strategies, sea level rise will continue to degrade groundwater quality through inland migration of saltwater into the aquifer. This threat also exists for saltwater incursions into the lower Watsonville Sloughs and Pajaro River.	ma-SLR-SCC-02, ma-SLR-PVW-02
Wildfire	Impact	ps-WF-PVW-01	Post-fire conditions increase the risk of sediment and ash runoff into lakes, creeks, rivers, sloughs, and recharge zones, potentially degrading water quality and impairing managed aquifer recharge and surface water supply facility operations.	ma-WF-PVW-01
Wildfire	Threat	ps-WF-PVW-02	Increasing fire weather conditions, combined with dry vegetation and limited defensible space near isolated facilities, elevate PV Water?s vulnerability to wildfire-related disruptions, including extended power outages during PSPS events.	ma-WF-PVW-02

6.5.4.1 Climate Change Impacts & Vulnerable Populations

The impacts of climate change in Santa Cruz County disproportionately burdens vulnerable populations, exacerbating challenges in water access, housing resilience, and emergency preparedness. Rising temperatures and extended droughts strain water supplies, with limited recharge mechanisms and insufficient mapping compounding the risks. These issues are particularly acute for low-income households, which often lack the resources to address water well failures, waterline repairs, or contingency planning. Many of these residents face financial barriers to implementing proactive mitigation measures or recovering from water shortages.

PV Water serves a region that includes several Disproportionately Impacted Communities (DICs), areas where residents face heightened social, economic, and environmental vulnerabilities that intersect with water-related hazards such as seawater intrusion, drought, and climate change. These communities are predominantly located in and around the City of Watsonville and parts of unincorporated Santa Cruz and Monterey Counties, where socio-economic stressors increase sensitivity to environmental challenges. (PV Water, 2022)

The area exhibits high proportions of low-income households, non-English-speaking residents, and individuals with limited access to reliable transportation and digital infrastructure. For example, the region's agricultural economy supports a large population of farm workers, many of whom live in substandard or overcrowded housing, lack secure employment, and are particularly vulnerable to water shortages and degraded water quality.

Within the PV Water service area, several communities meet California's definition of Disadvantaged Communities (DACs), with median household incomes below 80% of the statewide average. Based on the 2022 PV Water Groundwater Sustainability Plan and statewide mapping tools, multiple census block groups in the Pajaro Valley qualify as DACs and some as Severely Disadvantaged Communities (SDACs), where incomes fall below 60% of the state average. These areas are particularly vulnerable to water-related hazards, including drought, seawater intrusion, and groundwater overdraft. Residents in these communities face elevated risks from service disruptions and infrastructure failures due to limited financial capacity to repair or replace wells and maintain water access during shortages.

The Pajaro Valley Water Management Agency plays a central role in ensuring long-term groundwater sustainability for the Pajaro Valley, where agriculture is the economic backbone and groundwater is the primary source of supply. Vulnerability to climate change and natural hazards is closely tied to water security, infrastructure resilience, and the unique needs of disadvantaged users who rely on affordable and reliable water access. Prolonged droughts, sea level rise, seismic hazards, and flooding all present interconnected risks that threaten groundwater quality, availability, and delivery systems.

Drought: Drought is the most pressing climate-driven hazard for PV Water, as extended dry periods reduce natural recharge and increase reliance on groundwater pumping and delivered water. This exacerbates existing overdraft conditions and accelerates seawater intrusion into coastal aquifers. Agricultural users—particularly small-scale and disadvantaged farmers—are disproportionately impacted by increased costs for supplemental water and the limited availability of alternative supplies. During drought, recycled water production may also decline due to municipal conservation, further stressing agricultural operations.

Flooding and Storms: Flood events present dual challenges for PV Water. Inundation can damage or disable critical infrastructure, including the Coastal Distribution System and recycled water facilities, reducing service capacity when it is most needed. Floodwaters also threaten groundwater quality, as private and production wells located in flood-prone areas may become conduits for contaminated water entering aquifers, increasing treatment needs and costs. Outdated levees and floodplain mapping, especially near the Pajaro River and coastal sloughs, compound these risks.

Sea Level Rise: Sea level rise magnifies the chronic threat of seawater intrusion into the Pajaro Valley Basin, placing agricultural water users at risk of crop loss, soil degradation, and long-term reductions in groundwater quality. Rising seas also threaten PV Water's monitoring wells, managed aquifer recharge projects, and Coastal Distribution System infrastructure with inundation, corrosion, and functional loss. Without adaptive pumping strategies and protective infrastructure, saltwater migration inland will continue to erode the resilience of the water supply.

Earthquakes: PV Water facilities are located near multiple active fault systems, leaving them vulnerable to pipeline rupture, soil displacement, and restricted access following major seismic events. Damage to critical infrastructure such as the Recycled Water Facility and Coastal Distribution System would result in service interruptions and greater reliance on groundwater pumping at a time when regional systems may already be compromised.

Wildfire: Wildfire poses indirect but significant threats to PV Water operations. Post-fire runoff containing sediment and ash can degrade surface water quality and impair recharge projects. Facilities located in more isolated areas face direct exposure to fire weather conditions, limited defensible space, and prolonged service interruptions during public safety power shutoff (PSPS) events.

The impacts of climate change on PV Water's mission to achieve groundwater sustainability are substantial, particularly for disadvantaged agricultural users who face economic constraints in adapting to rising costs and uncertain water availability. Proactive investment in infrastructure hardening, adaptive water management strategies, and regional collaboration will be necessary to ensure that Pajaro Valley's communities and agricultural economy remain resilient in the face of evolving climate-driven hazards.

6.6 Mitigation Strategy

This section provides the framework for how the PV Water will reduce hazard risk within its service area while supporting the broader goals of the Santa Cruz County MJHMP. It includes an overview of existing capabilities and opportunities for expanding resilience, and the district's prioritized mitigation actions. Together, these elements demonstrate how the district integrates hazard awareness into its conservation mission and contributes to a coordinated countywide approach.

Within the Santa Cruz County MJHMP, the mitigation strategy serves as the guidebook for future hazard mitigation efforts. For the PV Water, the strategy within this annex reflects the outcomes of the countywide planning process while also capturing the district's unique priorities and program areas. The strategy is designed to reduce the vulnerabilities identified in the risk assessment, including the problem statements developed for wildfire, flood, earthquake, slope failure, drought, and climate change.

Mitigation actions identified in this annex are both policy and project oriented, advancing conservation-based approaches that directly support hazard reduction. Actions are structured to align with FEMA's requirements and to integrate with existing county and regional planning mechanisms. Each action outlines responsible parties, potential funding sources, and required resources to ensure successful implementation.

For the PV Water, this strategy serves as a roadmap for delivering mitigation through technical assistance, watershed restoration, and partnerships with landowners. By combining its project-based capacity with the broader coordination of the countywide plan, the district contributes to a unified framework that reduces hazard risk across Santa Cruz County while also advancing its mission to protect natural and working lands. The subsections that follow describe these elements in detail:

- **Section 6.6.1 Aligning the Action Plan** provides a summary of the district's capacity to address natural hazards.
- **Section 6.6.3 Mitigation Action Plan** presents the PV Water's prioritized actions that will guide implementation in coordination with countywide strategies.

6.6.1 Aligning the Action Plan

This section connects the PV Water's mitigation actions with its existing capabilities and areas for growth. Capability assessments are a required element of hazard mitigation planning under the Disaster Mitigation Act of 2000 and FEMA's 2023 guidance, ensuring that actions are realistic, achievable, and aligned with available resources.

The section begins with a summary of the PV Water's capabilities across four areas: planning and regulatory, administrative and technical, fiscal, and education and outreach. This overview highlights the tools and strengths that the district already uses to reduce hazard risk. The section then provides a detailed analysis of each capability area, identifying both current practices and opportunities to expand resilience.

6.6.1.1 Capabilities & Opportunities Assessment

To develop a realistic and actionable mitigation strategy, it must account for existing jurisdictional capabilities and what future opportunities there are to enhance those capabilities for purposes of hazard mitigation. This section provides an assessment of PV Water's existing capabilities and future opportunities, including planning and regulatory, administrative and technical, fiscal, and public outreach and education capabilities. This assessment also identifies opportunities to integrate this MJHMP into future planning, policies, or programs to weave mitigation efforts into daily operations and address hazard problems wholistically. Capabilities are categorized into four groups and include various mechanisms.

- **Planning and Regulatory Capabilities:** Existing long-range plans, emergency response plans, hazard-specific plans, land use policies, and building and development standards.
- **Administrative and Technical Capabilities:** Available expertise in emergency services, engineering, grant management, and community planning.
- **Fiscal Capabilities:** Budgetary capacity, taxing authority, grants, and other funding mechanisms that can support mitigation projects.
- **Outreach and Education Capabilities:** Existing programs for providing technical assistance, community education, public warnings, and stakeholder engagement.

A full description of the process used to develop the capabilities assessment is provided in Volume 1, Section 2.3.3.

This capabilities and opportunities assessment for PV Water lists the various types of capabilities along with how they have been, currently are, or will in the future be integrated into hazard mitigation planning efforts. The three "HMP Integration" columns that identify the capability's status and usage are color-coded with green, yellow, or orange shading to communicate the following:

- **Status:** If the capability is present at all and what level of use it has generally.
- **Current Mitigation Use:** If the capability is currently being used in mitigation efforts, specifically, and at what level.
- **Future Opportunity:** If there is a future opportunity to integrate the capability into mitigation efforts and at what level.

Planning & Regulatory Capabilities

As a special agency with limited authority and not a municipality, PV Water does not maintain traditional planning or regulatory tools, such as hazard-specific ordinances or development standards or a general plan. Its planning authority is focused on water resource management, particularly implementation of its GSP as the designated Groundwater Sustainability Agency for the Pajaro Basin. The agency is also the lead for several long-term planning tools, including a Basin Management Plan, Salt and Nutrient Management Plan, and a Water Quality Control Plan.

Although it does not operate a Capital Improvement Program in the conventional municipal sense, PV Water does maintain a capital projects list and funds infrastructure improvements such as recharge basins, pipelines, and treatment facilities through its planning frameworks. It does not manage floodplain planning, wildfire safety, or seismic safety codes, relying instead on coordination with counties and cities within its service area.

PV Water's hazard mitigation potential is most visible in its implementation of drought and groundwater protection strategies. Its plans and regulations are tied to compliance with the SGMA, providing a strong regulatory foundation for long-term water supply reliability and hazard resilience.

PV Water complies with all development standards and environmental review requirements for the State of California, including the California Environmental Quality Act (CEQA), and within the county and municipalities where its projects are located. These local regulatory environments are described in Volume 1 for Santa Cruz County and in the City of Watsonville's municipal annex of Volume 2.

Future integration of the MJHMP will occur through various processes and mechanisms outlined across multiple mitigation actions (Table 6-8). Key opportunities for future hazard mitigation integration with PV Water's existing planning mechanisms are to update its groundwater basin models and capital improvements planning with climate change projections that account for precipitation variability and drought intensity (ma-DR-PVW-02), as well as with updated flood hazard studies that include levee conditions (ma-FL-PVW-01).

Administrative & Technical Capacity

PV Water maintains a small but technically proficient staff. Core functions include engineering, hydrologic modeling, water quality monitoring, and infrastructure planning. The agency also manages environmental compliance and capital project development. While it does not employ emergency management staff, it coordinates with regional and county emergency response agencies as needed.

The agency's in-house GIS capacity is limited, and much of its spatial data work is supported through external consultants or inter-agency collaboration. Grant writing, project management, and contracting are handled internally, with demonstrated success in securing state and federal funding for infrastructure and planning efforts.

PV Water also has a strong track record in implementing projects that integrate science, engineering, and landowner partnerships. These include managed aquifer recharge projects, recycled water distribution, and groundwater monitoring networks.

Warning Systems & Services

PV Water does not manage formal warning systems for hazards such as floods, wildfires, or earthquakes. Emergency notification and public alerting remain the responsibility of county and state agencies. PV Water's role is to support these systems by providing education, preparedness resources, and technical assistance to landowners.

Fiscal Capabilities

PV Water is primarily funded through water user fees, pumping assessments, augmentation charges, and grants. These revenues support operations, infrastructure projects, and compliance with SGMA and other state mandates. The agency does not use general obligation bonds or property taxes, but it has developed effective strategies for leveraging its revenue base as match funding for competitive grant programs.

The agency's long-term financial planning is guided by its annual budget and multi-year capital improvement plan. It maintains reserves to support project delivery and drought response, ensuring fiscal resilience even as groundwater challenges intensify.

Education & Outreach Capabilities

PV Water engages in targeted education and outreach to support water conservation, drought response, and groundwater sustainability. Outreach activities include public meetings, newsletters, bilingual materials, school programs, and informational signage at project sites.

While its communications resources are modest compared to a city or county, the agency partners with local stakeholders, including agricultural groups, municipalities, and nonprofit organizations, to amplify its messaging. These efforts are critical to achieving compliance with conservation targets and expanding public understanding of groundwater issues in the Pajaro Valley.

CAPABILITY ASSESSMENT LEGEND

HMP Integration

Status	Current Mitigation Use	Future Opportunity
Currently in use or present.	Used widely for mitigation.	Opportunity to expand and integrate.
(Sort of) Seldomly used or limited presence.	Limited use in mitigation planning.	Limited opportunity to expand and integrate.
(No) Not present or available.	Not used in mitigation planning.	No opportunity to expand or integrate.

Table 6-7: PV Water Capabilities Assessment

Resource	HMP Integration: Status	HMP Integration: Current Mitigation Use	HMP Integration: Future Opportunity	Notes / Additional Detail
Planning and Regulatory Capabilities				
Hazard Reduction Programs (Annually Conducted)				
Capital Improvements Program (CIP) or Plan				PV Water maintains and implements a Capital Improvements Program through its long-range planning and budgeting process as well as Basin Management Plan Updates, currently implementing the 2014 BMP Update which is also part of our Groundwater Sustainability Plan Alternative under the Sustainable Groundwater Management Act in combination with other plans, reports, and documents including the Basin Management Plan 2022 (GSU22). Projects such as College Lake Project, Recycled Water Facility Improvements, the Watsonville Slough System Managed Aquifer Recharge and Recovery Project, and more are included.
Annual Fire Prevention Plan				PV Water does not maintain its own fire prevention plan. Vegetation management occurs as part of general site operations, particularly near rural infrastructure.
Seismic Safety Program (Non-structural)				Seismic risk is evaluated in CEQA compliance, project design, and appropriate seismic mitigation measures and practices are implemented during construction of projects and facilities.
Earthquake Modernization Plan (Building Safety)				No formal modernization plan exists, but with almost all our infrastructure constructed after 2000, most of our facilities and equipment were constructed with modern earthquake safety in mind.
Stormwater Management Program (Annual Inspections)	N/A	N/A	N/A	PV Water is not responsible for stormwater management; this function is under local public works departments such as the County of Santa Cruz/Monterey or the City of Watsonville in PV Water's service area.
Hazard Plans and Programs				

Resource	HMP Integration: Status	HMP Integration: Current Mitigation Use	HMP Integration: Future Opportunity	Notes / Additional Detail
Floodplain Response Plan				PV Water does not have a formal flood response plan but collaborates with Pajaro Regional Flood Management Agency and designs projects (e.g., College Lake) with design to not increase flood risk.
Community Wildfire Protection Plan (CWPP)				PV Water is not a CWPP lead, but its facilities are located in rural WUI areas. Coordination with local fire agencies and defensible space programs occurs informally.
Ground Water Management Planning / Plans				PV Water is the GSA for the Pajaro Valley Basin and maintains and updates, an adopted Groundwater Sustainability Plan (GSP) Alternative with robust implementation and reporting per SGMA.
Climate Action Plan				No standalone CAP, but climate adaptation is integrated through hydrologic modeling, drought planning, and seawater intrusion reduction projects.
Drought Mgmt/ Contingency Plan				The GSP Alternative, GSU22, and 2024+ Strategic Plan address drought response / resilience with projects like College Lake, managed recharge, recycled water optimization, and more.
FireWise Communities within District	N/A	N/A	N/A	No FireWise Communities currently exist within PV Water's operational area.
Hazard-Related Public Outreach Program				PV Water conducts outreach on water conservation and planning, but hazard-specific materials are limited.
Administrative and Technical				
Staff Capacity				
Emergency Manager				PV Water does not have a designated Emergency Manager, but senior staff coordinate with local OES and operationalize response via infrastructure crews and mutual aid if needed.
Civil Engineer				PV Water does not have an in-house civil engineer. Engineering services are provided by consultants on a project basis (e.g., College Lake, CDS upgrades).
Dedicated Public Outreach Personnel				Outreach responsibilities are distributed across staff. Strategic and conservation communications are managed collaboratively with a staff person as an outreach specialist.
GIS Specialist and Capability				PV Water does not have a full-time GIS specialist. It relies on consultants, internal staff ArcGIS capacity, and the sharing of data with others and leveraging data from other entities.
Grant Manager, Writer, or Specialist				Senior PVWMA staff, particularly administrative and technical leads, are deeply experienced in grant writing and regularly secure funding from DWR, Coastal Conservancy, and federal programs
Other				PVWMA employs technical staff with deep expertise in hydrology, groundwater modeling, recycled water systems, and agricultural conservation. External consultants supplement capacity as needed
Warning Systems/Services				

Resource	HMP Integration: Status	HMP Integration: Current Mitigation Use	HMP Integration: Future Opportunity	Notes / Additional Detail
General				SCADA is used internally for operational alerts; issuing public alerts is not within the district's authority, scope, or purpose
Flood	N/A	N/A	N/A	Not within district's authority, scope, or purpose
Wildfire	N/A	N/A	N/A	Not within district's authority, scope, or purpose
Geological Hazards	N/A	N/A	N/A	Not within district's authority, scope, or purpose
Fiscal Capabilities				
Financial Resources for Hazard Mitigation				
Levy for Specific Purposes with Voter Approval				PV Water does not currently levy voter-approved taxes but may coordinate with regional ballot initiatives. It could explore this as a long-term resilience funding strategy.
Utilities Fees				PV Water collects water augmentation and delivered water fees from all water users, which support operations, basin management, planning, capital projects, and match for grants.
System Development Fee				Groundwater users pay augmentation fees on a per A/F rate basis. There is a higher rate for groundwater wells inside the zone that receives delivered water. These fees help fund infrastructure improvements and are regularly reviewed.
General Obligation Bonds to Incur Debt				PV Water does not currently use general obligation bonds. Legal authority exists but has not been exercised due to administrative complexity and ratepayer considerations.
Special Tax Bonds to Incur Debt				Special tax bonds have not been issued but may be explored for major long-term resilience or recharge projects.
Withheld Spending in Hazard-Prone Areas	N/A	N/A	N/A	PV Water does not use this practice; infrastructure investments are instead designed to be resilient in place.
Stormwater Service Fees	N/A	N/A	N/A	PV Water does not manage stormwater systems and therefore does not collect associated fees.
Capital Improvement Project Funding				PV Water actively implements a capital improvement program, funded by user fees, grants, and project-specific contributions. Projects include College Lake, Watsonville Slough System Managed Aquifer Recharge and Recovery Project, CDS expansions, and more.
Education / Outreach Capabilities				
Education/Outreach Resources				
Website Dedicated to Hazard Topics				PV Water's website includes sections on water conservation, GSP Alternative implementation, and project updates, but does not specifically highlight hazard topics.
Dedicated Social Media				PV Water maintains an active social media presence.
Hazard Info. Avail. at Library/ Planning Desk	N/A	N/A	N/A	PV Water does not operate a public planning desk or maintain materials at libraries. Outreach is primarily digital and through partner events.

Resource	HMP Integration: Status	HMP Integration: Current Mitigation Use	HMP Integration: Future Opportunity	Notes / Additional Detail
Annual Public Safety Events				PV Water does not lead or host public safety events but occasionally participates in partner-led community or ag-focused workshops.
Ability to Field Public Tech. Assistance Requests				Staff regularly respond to grower, NGO, public agency, and landowner inquiries related to conservation, water deliveries, hydrology, recharge, and more. Technical assistance is a routine agency function.
Public Safety Newsletters or Printed Outreach				PV Water distributes quarterly newsletters focused on water planning and project updates. Hazard-specific messaging could be integrated in future editions.
Fire Safe Councils				PV Water does not formally engage with Fire Safe Councils but may benefit from doing so to support defensible space or fuel reduction around key sites.
Resource Conservation Districts				PV Water regularly partners with the RCD of Santa Cruz County for grant implementation, landowner outreach, technical expertise, and conservation practices.
Other				PVWMA employs technical staff with deep expertise in hydrology, groundwater modeling, recycled water systems, and agricultural conservation. External consultants supplement capacity as needed

6.6.2 Pajaro Valley Water Management Agency Mitigation Action Plan

Mitigation actions were developed based upon the jurisdiction's priorities, risk assessment results, and mitigation alternatives. The mitigation action prioritization method used by all participating jurisdictions is described in Section 4 of Volume 1. Table 6-8 lists each priority mitigation action, responsible party, time frame, potential funding source, implementation steps, and resources need to implement based upon consensus among the PV Water's planning group members. All mitigation actions across jurisdictions are accessible through MAST (Mitigation Action Support Tool), providing comprehensive details including the mitigation goal, responsible party, timeline, potential funding sources, implementation steps, and required resources. As a dynamic document, hazard problem statements and mitigation activities will be regularly updated through MAST to reflect evolving needs and circumstances.

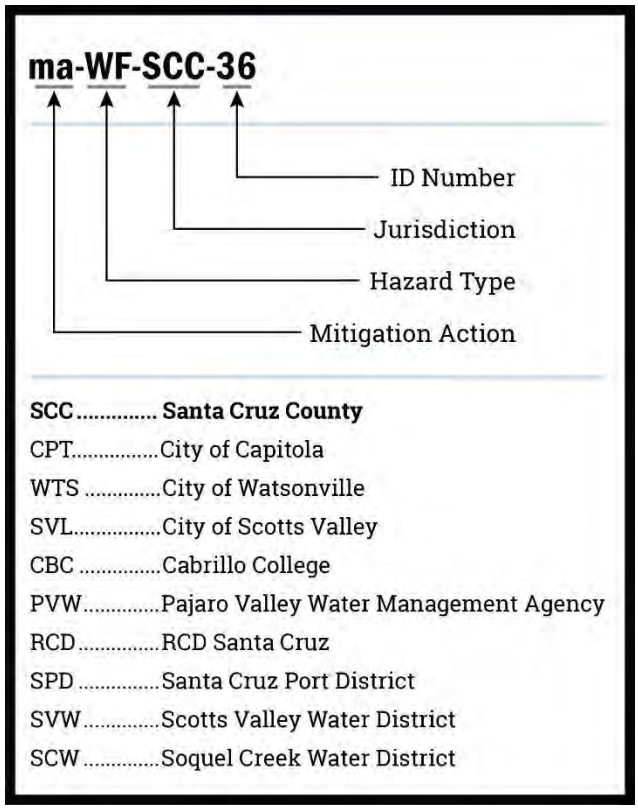


Figure 6-25: Mitigation Action Number Key

As a first-time participant in a hazard mitigation plan, PV Water did not have any existing mitigation actions from a prior plan to evaluate. Therefore, all mitigation actions identified in this planning cycle are newly developed based on the agency's updated risk assessment, local capabilities, and areas of concern identified during stakeholder engagement and interagency collaboration. These new actions were crafted to address the agency's highest priority hazards, align with FEMA's hazard mitigation guidance, and reflect local infrastructure vulnerabilities and water resource challenges. The development of these mitigation strategies marks an important step in integrating resilience into the agency's operations and long-term planning. All mitigation actions are documented in Volume 2, Table 6-8

The PVWMD developed unique mitigation actions, tailored to their own unique priorities, vulnerabilities, and capabilities. Each action contains a level of detail that meets the regulatory requirements of FEMA and DMA 2000, including identifying the responsible party, time frame, potential funding source, implementation steps, and resources needed to implement. It is important to note that PV Water is a small agency with a mostly horizontal structure. Therefore, there are no specific departments or divisions responsible for overseeing these mitigation actions; instead, responsibilities for actions will be shared across all positions in the agency.

All actions are assigned a unique identification number, as illustrated in MAST and Figure 6-25, using alphanumeric characters that denote specific attributes of the action, including the type of hazard being mitigated, facilitating easy reference and management. Table 6-8 lists each mitigation action for the agency.

Table 6-8: PV Water Mitigation Action Plan

Hazard	Action ID	Action Title	Description	FEMA Mitigation Alternative	Timeline	Responsibility	Cost	Benefit	Internal Funding Source	External Funding Source	Priority (Based on Criteria)	Problems Addressed
Drought	**ma-DR-PVW-01**	Drought Contingency Planning	Create a drought contingency plan with thresholds and strategies prioritizing water equity and emergency support for disadvantaged growers.	PE&A, PRV	Medium 3-5 Years	PV Water + RCD, major growers, municipal purveyors, and irrigation districts	Low	Medium	Staff Time / Agency Budget	DWR DOC HMGP BRIC Prop 4 Measure Q	High	ps-DR-PVW-01, ps-DR-PVW-02,ps-DR-PVW-03
Drought	**ma-DR-PVW-02**	Groundwater Modeling Enhancement	Update future climate projections (e.g., precipitation variability, drought intensity) into groundwater basin models, capital improvements planning, and infrastructure investment prioritization.	PRV	Short 1-3 Years	PV Water + DWR, climate scientists, and basin engineers	Medium	High	Staff Time / Agency Budget	DWR DOC HMGP BRIC Prop 4 Measure Q	High	ps-DR-PVW-01, ps-DR-PVW-02, ps-DR-PVW-03, ps-DR-WTS-04, ps-DR-WTS-05, ps-DR-SVL-04, ps-SLR-PVW-01, ps-SLR-PVW-02
Earthquake	**ma-EQ-PVW-01**	Water System Seismic Safety Retrofits	Assess earthquake risk and design and implement seismic retrofits for the most vulnerable facilities and infrastructure, including pipelines and access roads, to improve earthquake resilience.	SP	Medium 3-5 Years	PV Water + structural engineers	High	High	Agency Budget	HMGP BRIC	Low	ps-EQ-CPT-03, ps-EQ-PVW-01, ps-EQ-PVW-02, ps-EQ-WTS-04
Flood	**ma-FL-PVW-01**	Update Flood Hazard Maps & Levee Data	Conduct mapping studies of flood hazards, including levee conditions, in coordination with Santa Cruz County, PRFMA, DWR, FEMA, and the U.S. Army Corps of Engineers.	PRV	Short 1-3 Years	PV Water + County, PRFMA, DWR, FEMA, and USACE	Medium	High	Staff Time / Agency Budget	Measure Q DWR USACE	Medium	ps-FL-PVW-02
Flood	**ma-FL-PVW-02**	Levee Improvements	Stabilize, retrofit, replace, or otherwise improve high-risk levees protecting critical infrastructure or vulnerable populations.	SP	Long 5-10 Years	PV Water + PRFMA, County, DWR, FEMA, and engineering consultants	High	High	Staff Time / Agency Budget	BRIC HMGP Measure Q DWR	Medium	ps-FL-PVW-01, ps-FL-PVW-02, ps-FL-PVW-03, ps-FL-PVW-04
Flood	**ma-FL-PVW-03**	Elevate or Floodproof Key Infrastructure	Design and implement flood protection retrofits (e.g., elevation, floodproofing) for critical facilities and infrastructure vulnerable to flooding.	SP, PPRO	Medium 3-5 Years	PV Water + engineering consultants	High	High	Staff Time / Agency Budget	BRIC HMGP Measure Q DWR	Medium	ps-FL-PVW-01, ps-FL-PVW-02, ps-FL-PVW-03, ps-FL-SCC-03, ps-FL-CPT-06, ps-FL-SVL-01, ps-FL-SVW-01
Flood	**ma-FL-PVW-04**	Emergency Power & Pumping for Flood Resilience	Design and install backup generators and mobile pumping units at critical PV Water infrastructure vulnerable to flood-related outages. Prioritize facilities serving disadvantaged areas.	SP, PPRO, ES	Medium 3-5 Years	PV Water + County, engineering consultants, and CalOES	High	High	Staff Time / Agency Budget	BRIC HMGP Measure Q DWR	High	ps-FL-PVW-01, ps-FL-PVW-02, ps-FL-PVW-03, ps-FL-PVW-04
Sea Level Rise	**ma-SLR-PVW-02**	Coastal Flood Risk Modeling	In collaboration with USACE and other partners, develop enhanced coastal flood risk models that incorporate updated sea level rise projections, slough dynamics, and groundwater-seawater interaction data.	PRV	Medium 3-5 Years	PV Water + USACE, UCSC, and consultants	Medium	Medium	Staff Time / Agency Budget	Measure Q, Coastal Conservancy USACE HMGP BRIC NOAA	Medium	ps-SLR-PVW-01, ps-SLR-PVW-02, ps-SLR-PVW-03, ps-SLR-SCW-04
Sea Level Rise	**ma-SLR-PVW-01**	Managed Aquifer Recharge Projects	Implement more recharge projects aligned with land conservation and coastal flood resilience strategies, including programs to incentivize private recharge infiltration systems.	SP	Medium 3-5 Years	PV Water + DWR, RCD, and regional water agencies	High	High	Staff Time / Agency Budget	Measure Q EPA Prop 4 DWR BOR (WaterSMART)	High	ps-SLR-PVW-01, ps-SLR-PVW-02, ps-SLR-PVW-03
Wildfire	**ma-WF-PVW-01**	Post-Fire Runoff Reduction Projects	Implement erosion control and sediment filtration projects to protect lakes, creeks, rivers, sloughs, and recharge zones from post-fire runoff.	SP, NRP	Short 1-3 Years	PV Water + RCD and NRCS	High	High	Staff Time / Agency Budget	HMGP BRIC CAL FIRE CalOES Prop 4 Measure Q	Medium	ps-WF-PVW-01, ps-WF-PVW-02

Hazard	Action ID	Action Title	Description	FEMA Mitigation Alternative	Timeline	Responsibility	Cost	Benefit	Internal Funding Source	External Funding Source	Priority (Based on Criteria)	Problems Addressed
Wildfire	**ma-WF-PVW-02**	Defensible Space at Remote Facilities	Manage vegetation and install fire-resistant buffers around isolated PV Water facilities to reduce wildfire vulnerability. Establish ongoing maintenance schedule.	NRP	Short 1-3 Years	PV Water + CAL FIRE	Medium	High	Staff Time / Agency Budget	HMGP BRIC CAL FIRE CalOES Prop 4 Measure Q	Low	ps-WF-PVW-02

Section 7. Resource Conservation District of Santa Cruz County

Special District Annex

SANTA CRUZ COUNTY
MULTI-JURISDICTIONAL
HAZARD MITIGATION PLAN

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Santa Cruz County

2025 Multi-Jurisdiction Hazard Mitigation Plan Update

Volume 2, Section 7: Resource Conservation District of Santa Cruz County (RCD)

Special District Annex

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Adoption Resolution

To comply with the Federal Disaster Mitigation Act of 2000 (DMA 2000), the Resource Conservation District has officially adopted this 2025 Santa Cruz County Multi-Jurisdictional Hazard Mitigation Plan, including Volume 1 in its entirety as well as this Volume 2 Special District annex. The adoption of the MJHMP recognizes the district's commitment to reducing the impacts of natural hazards within its jurisdiction and across Santa Cruz County.

A copy of the district's adoption record is provided on the following pages. Adoption records for all jurisdictions are summarized in Volume 1, Table ES-1.

ADOPTION RECORD TO BE INSERTED UPON COMPLETION.

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Section 7. Resource Conservation District of Santa Cruz County (RCD)

7.1 Scope & Purpose

This Jurisdictional Annex for the Resource Conservation District of Santa Cruz County (RCD) of the 2025 Santa Cruz County Multi-Jurisdictional Hazard Mitigation Plan (MJHMP) details the hazard mitigation planning elements specific to the district's planning area. This annex is not intended to be a standalone document but appends to and supplements the information contained in the umbrella plan document (Volume 1). As such, all sections of the umbrella plan, including the planning process and other procedural requirements, apply to and were met by the RCD. This annex provides additional information specific to the district, with a focus on hazard identification and risk assessment, vulnerability assessment, problem statements, mitigation strategy, and capabilities assessments.

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7.2 Jurisdictional Setting

The Resource Conservation District of Santa Cruz County (RCD) is a special district established under Division 9 of the California Public Resources Code. Unlike a water or fire district, RCD is a non-regulatory entity whose mission is to help people protect, conserve, and restore natural resources through technical assistance, outreach, and on-the-ground projects. While the RCD's tax-based service boundary encompasses only the City of Capitola and the unincorporated areas of Santa Cruz County, its sphere of influence (SOI) as established by the Local Agency Formation Commission (LAFCO) extends to include all the cities within the county, notably Santa Cruz, Scotts Valley, and Watsonville. This distinction means that, although the district does not receive property tax revenue from these city areas, it retains the authority and capacity to provide technical assistance, conservation programs, and potentially annexation services across a broader jurisdictional footprint. In practical terms, the RCD can plan and prepare for natural resource and hazard mitigation work at a fully countywide level. The RCD works across watersheds, coastal areas, and rural landscapes where natural resource and hazard mitigation needs intersect.

The RCD does not operate a water distribution system or fire suppression service. Instead, its core functions include watershed restoration, stewardship in agriculture and regional collaboration. The RCD leads or partners on programs such as floodplain reconnection projects, streambank stabilization, forest fuel reduction and shaded fuel breaks, aquifer recharge, stormwater infiltration, agricultural water conservation, and coastal wetland restoration. Through its Partners in Restoration Permit Coordination Program, the RCD streamlines regulatory approvals for landowners to implement conservation practices, enabling faster and more cost-effective delivery of hazard mitigation and ecosystem projects.

The RCD's capabilities are primarily natural infrastructure, and it uses grant funds to implement projects that protect it. It employs staff in grant and project management, technical assistance, and public outreach, and supplements limited engineering and GIS functions in voluntary partnership with public and private landowners and managers. Fiscal support comes mainly from competitive grants, contracts, and local partnerships, but beginning in Fiscal Year (FY) 2025-2026 the district will also benefit from Measure Q, a voter-approved parcel tax dedicated to wildfire resilience, water resource protection, habitat restoration, and technical assistance to landowners. This funding provides reliable local match for state and federal mitigation grants and enables expansion of community-facing programs such as chipping, defensible space, stormwater management, agricultural irrigation efficiency, and recharge projects.

While the RCD does not perform emergency response, it provides post-disaster technical assistance to landowners via recovery and restoration assistance. Programs such as its forest health initiatives, chipping and defensible space assistance, drought resilience projects, and floodplain restoration directly reduce community exposure and vulnerability to wildfire, drought, flooding, slope failure, and climate-driven hazards. The RCD also serves as a convener and collaborator, working with the Fire Safe Council of Santa Cruz County, County OR3, Pajaro Valley Water Management Agency, water and fire districts, land managers, and local nonprofits to integrate hazard mitigation into land stewardship and climate adaptation.

The district is governed by a seven-member Board of Directors, appointed by the Santa Cruz County Board of Supervisors. The Board provides strategic direction, adopts annual budgets, and oversees financial accountability, while the Executive Director manages staff and program implementation.

The following is a summary of key information about the jurisdiction:

- **Year Established**: 1942 (one of the earliest conservation districts in California; organized under Division 9 PRC)
- **Population Served**: Entire Santa Cruz County (approx. 266,000 residents indirectly benefit through land stewardship, conservation, and hazard mitigation projects)
- **Coverage Area**: Countywide jurisdiction (approx. 446 square miles, spanning coastal zones, valleys, and upland forests)
- **Primary Services**: Non-regulatory technical assistance, natural resource management, watershed restoration, stewardship in agriculture, hazard mitigation, public outreach, and grant-funded implementation projects

7.2.1 Geography & Climate

The Resource Conservation District of Santa Cruz County (RCD) encompasses a countywide service area of approximately 446 square miles, covering both incorporated cities and unincorporated communities. While the district's formal jurisdictional boundary includes Capitola and the unincorporated areas of the county, its sphere of influence, as recognized by the Santa Cruz County Local Agency Formation Commission (LAFCO), extends across all cities, including Santa Cruz, Watsonville, and Scotts Valley. This arrangement allows RCD to implement conservation and hazard mitigation programs on a countywide scale.

The district's service area spans a diverse landscape, from the coastal bluffs and estuaries of Monterey Bay to the steep, forested slopes of the Santa Cruz Mountains. This geography creates varied hazard conditions: coastal erosion and sea level rise threaten beaches, dunes, lagoons, and agricultural lands in low-lying coastal areas, while the entire County is subject to slope failures, landslides, and debris flows. Extensive wildland–urban interface (WUI) areas place rural communities at high risk of wildfire, where dense vegetation, limited ingress/egress, and prolonged drought stress increase ignition and suppression challenges.

The steep ridges and sandstone formations of the mountains are prone to erosion and sediment delivery, degrading streams and threatening roads. In contrast, the county's productive valleys face recurring flooding, particularly in the Pajaro River and slough systems, where aging culverts and undersized crossings contribute to access and drainage problems.

The climate of Santa Cruz County is Mediterranean, marked by wet winters and dry summers. Winter storms bring heavy rainfall that can trigger flooding, landslides, and coastal storm damage, while prolonged summer droughts stress ecosystems, reduce stream baseflows, and increase agricultural vulnerability. In recent decades, climate change has amplified these risks by producing longer dry periods, hotter summers, and more variable storm patterns, leading to more frequent drought emergencies, increased wildfire activity, and rising flood losses. Along the coast, sea level rise and stronger storm surges further compound risks to estuaries, wetlands, and groundwater resources.

Figure 7-1 identifies the Resource Conservation District's formal boundary and sphere of influence within Santa Cruz County.

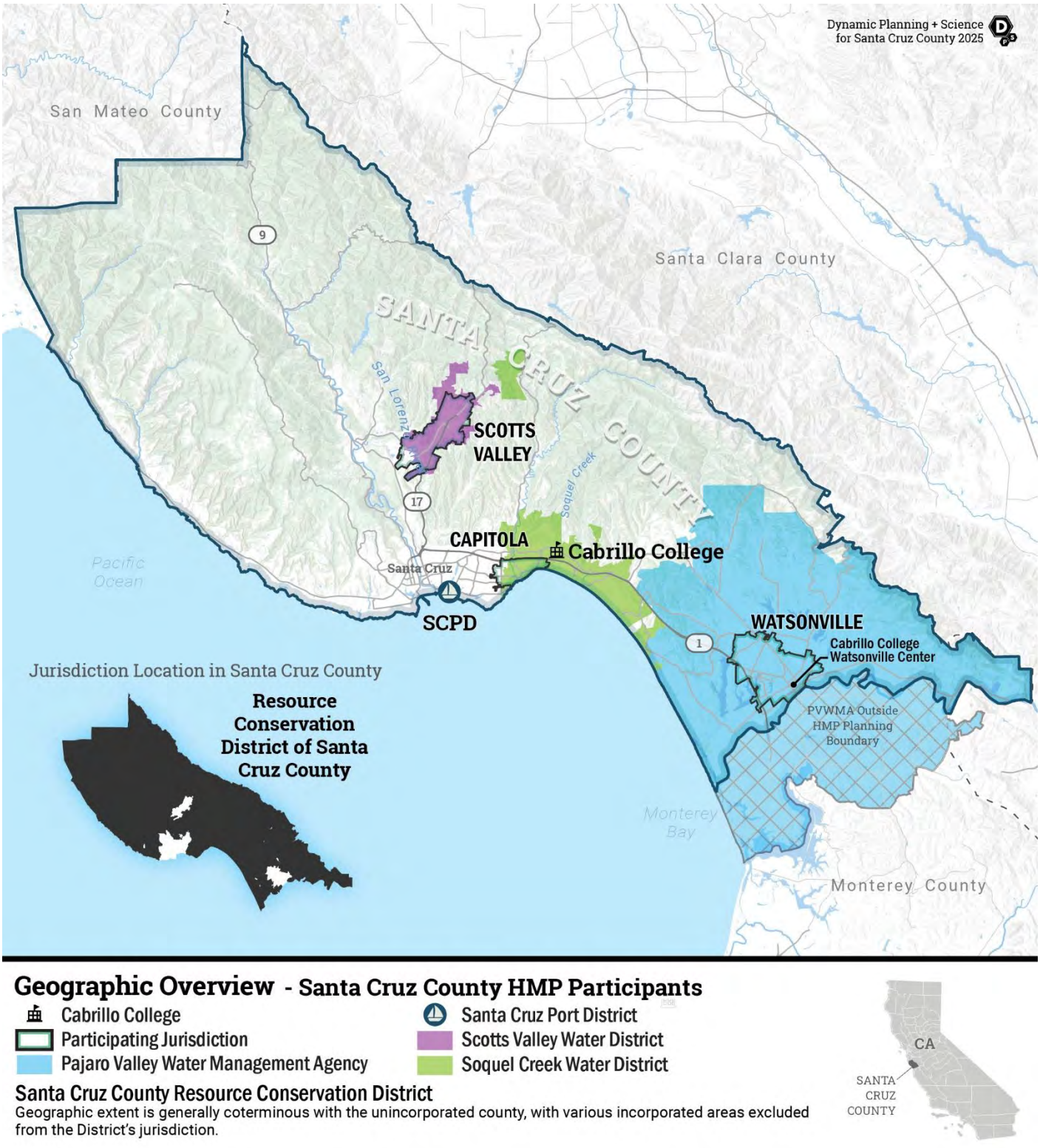


Figure 7-1: RCD Sphere of Influence

RCD's jurisdictional boundary covers Capitola and unincorporated Santa Cruz County, while its LAFCO-designated sphere of influence extends across all cities in the county.

7.2.2 Historic Overview

The RCD has a long history rooted in community collaboration and the need for organized natural resource management. Established in 1942, the RCD was formed to help landowners address soil erosion, water conservation, and watershed health at a time when agricultural productivity and land stewardship were critical local priorities.

Over the decades, the district has evolved significantly, to meet the changing needs of the community for resource conservation, from soil and water conservation to include forest health, wildfire preparedness, floodplain restoration, drought resilience, sustainable agriculture, and coastal resource protection. This evolution reflects the county's changing landscape and the increasing challenges posed by climate change, population growth in rural areas, and the expanding wildland–urban interface.

The RCD's history highlights its role as a trusted convener and technical resource, working alongside landowners, agricultural producers, and public agencies to deliver on-the-ground projects. Through initiatives such as the Partners in Restoration Permit Coordination Program, the Integrated Watershed Restoration Program, the RCD has secured capacity to accelerate conservation and hazard mitigation work.

Over time, the district has adapted to new challenges by expanding partnerships with local, state, and federal agencies, and by leveraging grant funding to deliver projects that protect people, infrastructure, and ecosystems through nature-based solutions. The underlying objective can be summed up as "Caring for nature so nature can care for us."

7.2.3 Demographics & Vulnerable Populations

This section describes the demographic characteristics of RCD Sphere of Influence (SOI) to guide hazard mitigation planning efforts. Natural disasters affect communities both physically and socially, and demographic composition plays a central role in determining how impacts are distributed, particularly among vulnerable groups with greater barriers to preparedness, response, and recovery. Understanding the county's social and economic landscape helps assess the potential social costs of hazard events, including impacts to housing, agriculture, public facilities, and essential services.

Exploring local demographic data highlights groups and geographic areas with specific vulnerabilities. Federal law defines at-risk individuals as "children, pregnant women, senior citizens, and other individuals who have access or functional needs in the event of a public health emergency" (42 U.S.C. § 2802(b)(4)(B) (2019)). These populations also include residents who are economically disadvantaged, live with disabilities, are dependent on caregivers, have limited English proficiency, lack access to transportation, experience homelessness, or manage chronic medical conditions. Vulnerability is not fixed, rather, risk can vary depending on the hazard type. Planning for these populations ensures limited resources are directed where they will be most effective.

Certain populations face greater risk following a natural hazard event due to age, economic mobility, physical disability, geographic location, or a combination of factors. Vulnerability in the face of a hazard event is not a fixed characteristic; the same individual may be at risk for some hazards but not at risk for

others. Planning for vulnerable populations in the context of hazard mitigation can help communities to prioritize limited resources where they will be the most effective. Refer to Volume 1, Section 1.4.3, for a more in-depth discussion of planning for vulnerable populations, at-risk individuals with access and functional needs, and environmental justice.

7.2.3.1 Income & Housing

Income and housing conditions across the RCD highlight both the economic diversity of the county and the structural vulnerabilities that influence community resilience to natural hazards. As a non-regulatory, grant- and partnership-driven agency focused on land stewardship and hazard mitigation, the RCD's mission aligns closely with the needs of underserved communities and geographies identified as having elevated vulnerability due to socioeconomic conditions.

Income & Poverty Distribution

According to American Community Survey (ACS) data, median household income varies significantly across the RCD's countywide service area (Figure 7-2). While large portions of the Santa Cruz Mountains and certain unincorporated coastal areas report median household incomes exceeding $119,300, indicative of relative affluence, there are notable pockets where median income falls below $37,800 annually. These lower-income census tracts are concentrated in:

- **South County**, particularly in and around the City of Watsonville and the Pajaro Valley agricultural corridor;
- **The San Lorenzo Valley**, where rural topography, infrastructure challenges, and isolation contribute to reduced economic opportunity;
- **Parts of Live Oak and urban Santa Cruz**, which host concentrations of low-wage workers, renters, and communities of color.

The Poverty Status Map (Figure 7-3) reinforces this pattern by showing that more than 24% of the population lives below the poverty line in several areas of South County and within Watsonville, as well as parts of central Santa Cruz and Live Oak. These communities are often at higher risk during hazard events due to limited access to financial resources, barriers to insurance, and reduced capacity for recovery or property retrofitting.

The RCD's work in these regions, particularly through agricultural water conservation, erosion control, and floodplain reconnection is especially critical, as these hazard mitigation measures directly support economically vulnerable residents who are more likely to be disproportionately affected by disasters.

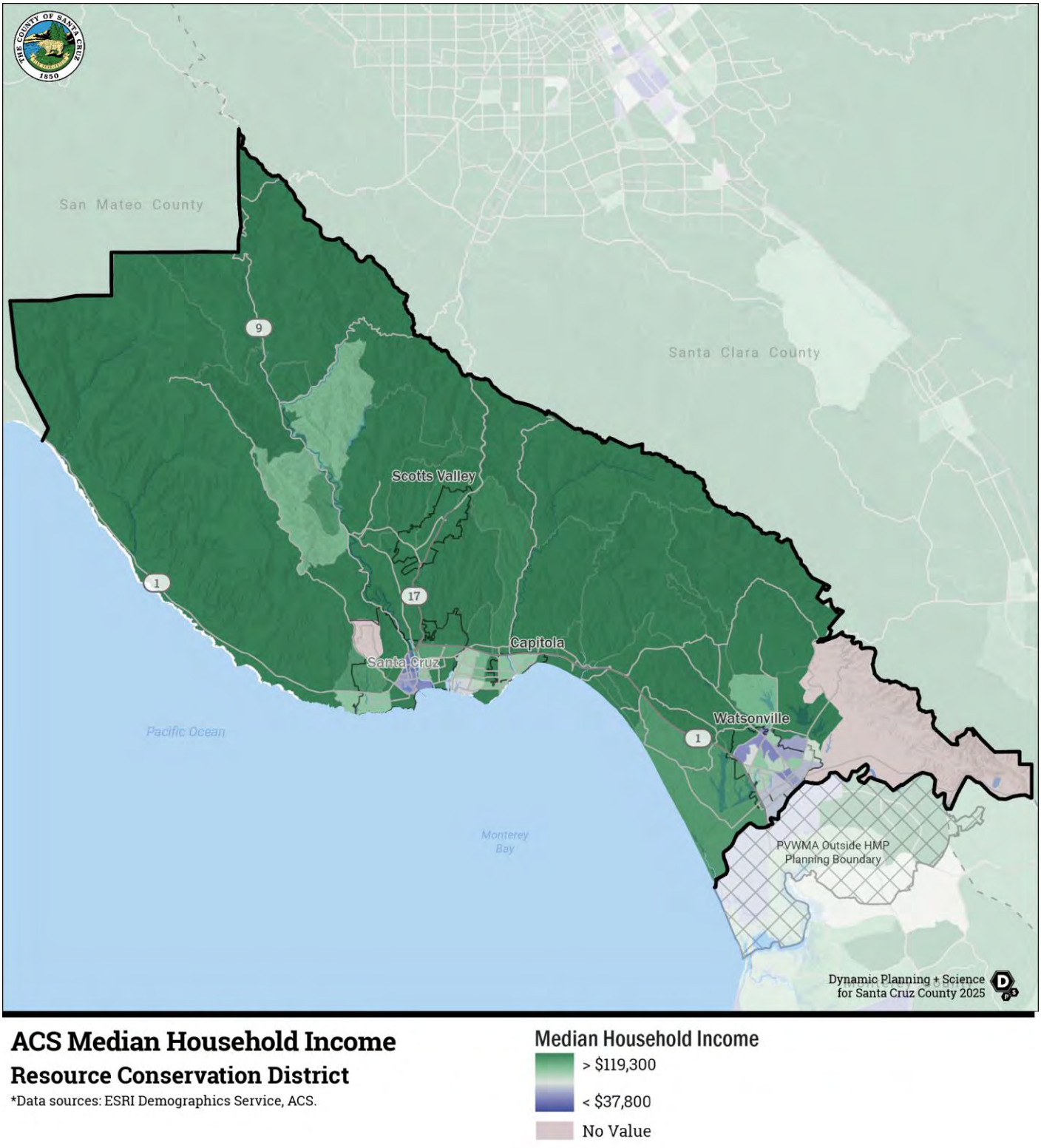
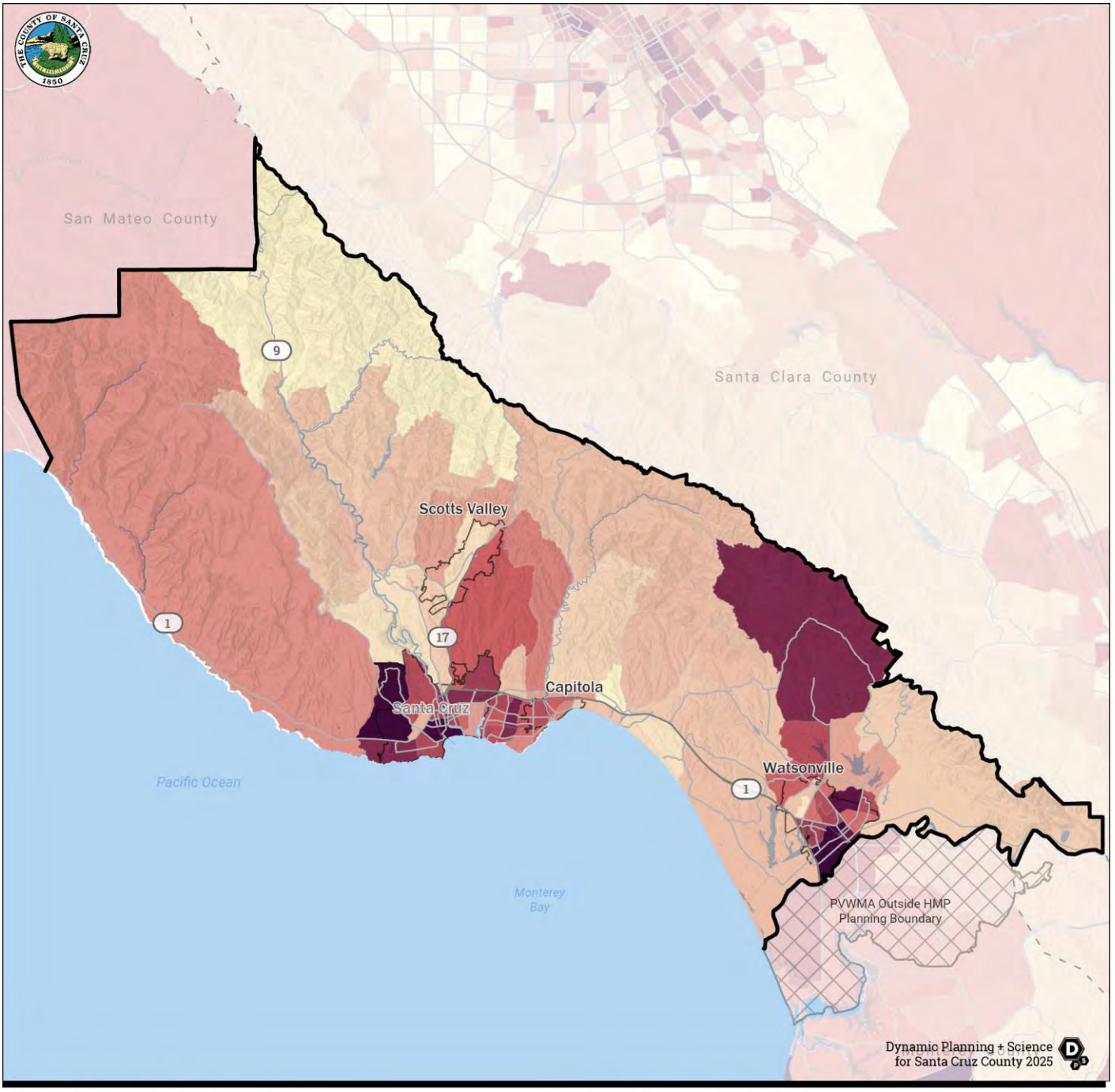


Figure 7-2: RCD Median Household Income Map



ACS Poverty Status

Resource Conservation District

*Data sources: ESRI Demographics Service, ACS.

Percent of Population Whose Annual Income is Below Poverty

> 24%

< 1%

No Value

Figure 7-3: RCD Poverty Status Map

Housing Occupancy & Stability

Housing tenure also varies widely within the RCD's jurisdiction (Figure 7-4). Owner-occupancy rates exceed 88% in much of the mountainous interior and in parts of Aptos and Soquel, indicating a more stable and potentially better-resourced residential base. In contrast, lower rates of owner occupancy—below 41%—are found in urban centers such as Watsonville, central Santa Cruz, and parts of Live Oak. These areas contain higher concentrations of renters, seasonal laborers, and multifamily housing units, which correlate with increased social vulnerability and reduced investment in hazard-resistant improvements.

Renter-heavy communities often face challenges with infrastructure maintenance, insurance access, and evacuation resources. These same neighborhoods frequently intersect with hazard-prone geographies, such as low-lying flood zones, fire-exposed WUI areas, and regions with degraded stormwater systems. The RCD's chipping programs, recharge and infiltration projects, and streambank stabilization efforts provide protective benefits to these populations, helping reduce the long-term risk of displacement and disaster loss.

From a mitigation planning standpoint, these demographic disparities underscore the importance of aligning RCD programs with the communities most in need. Lower-income, high-renter areas often lack the political and financial capital to initiate large-scale resilience projects. However, because of the nature of the RCD's mission, it typically works with landowners—whether they live on their land or not—hence, household status is typically not a factor in its day-to-day operations. Through its technical assistance model and partnerships with local agencies and nonprofits, the RCD serves as a bridge to bring resources, permitting expertise, and ecological restoration to places that would otherwise remain underserved.

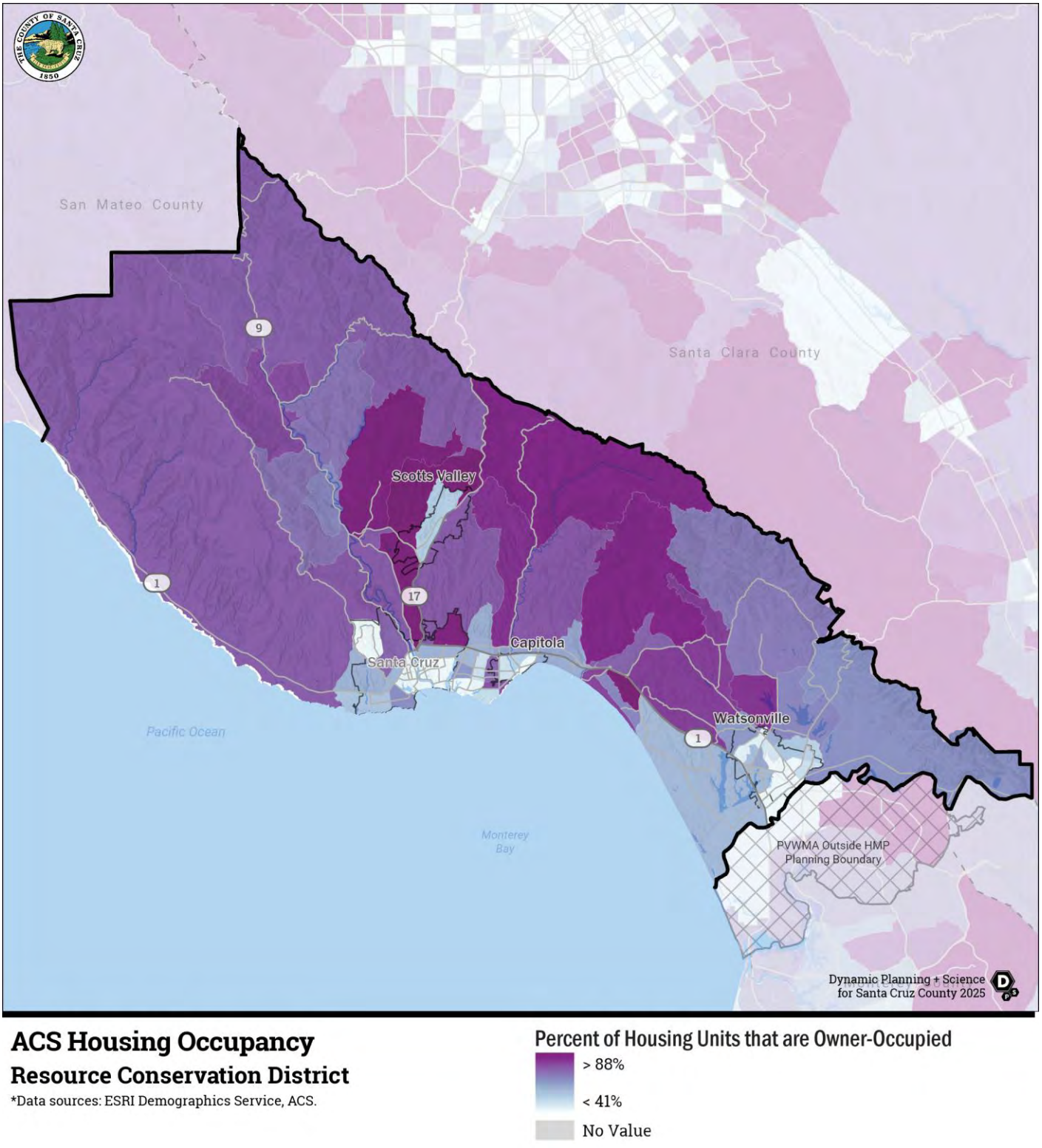


Figure 7-4: RCD Owner-Occupied Housing Units Map

7.2.3.2 Dependent & Disabled Populations

Age and disability status significantly influence vulnerability to natural hazards. Children, older adults, and individuals with disabilities often require support from others during emergencies. These groups may face challenges with mobility, communication, or decision-making. During disasters, they are more likely to experience difficulties with evacuation, access to medical care, and recovery.

These vulnerabilities can become worse when combined with poverty, language barriers, or unstable housing. As a result, targeted planning is necessary to meet the specific needs of these populations. The RCD will consider these factors when developing and implementing hazard mitigation programs.

According to data from the ACS, many areas in the RCD service region have high percentages of dependent populations. Dependent age groups include individuals under age 18 and those over age 65. Age Dependency Ratios are often used to measure the financial pressure on the actively working population of a community. Figure 7-5 shows that in some areas of South County and the Pajaro Valley, more than 48 percent of residents are in these age groups. Other areas with similar concentrations include parts of the San Lorenzo Valley, Aptos Hills, and several rural communities.

These demographic patterns suggest that many households in the RCD service area include individuals who may need additional support to improve safety and resilience at the household level. The presence of children and older adults highlights the importance of inclusive communication, accessible guidance, and reliable support for implementing mitigation projects in and around the home.

Figure 7-6 shows the percentage of older adults living with disabilities. In some census tracts in South County, Live Oak, and rural inland areas, more than 47 percent of residents aged 65 or older report having a disability. These disabilities may include mobility impairments, vision or hearing loss, or chronic health conditions. These factors can delay evacuation, reduce access to emergency warnings, or increase the need for uninterrupted utilities and medical care.

The demographic data in this section helps guide decisions about project location and design. It ensures that the RCD's mitigation strategy is targeted in areas where vulnerability is highest. By focusing on the needs of children, older adults, and people with disabilities, the RCD supports community resilience and reduces long-term disaster impacts across Santa Cruz County. As two examples, the RCD's Ag Stewardship team woks with socially disadvantaged farmers and ranchers, and it also provides wood chipping for the disabled and elderly.

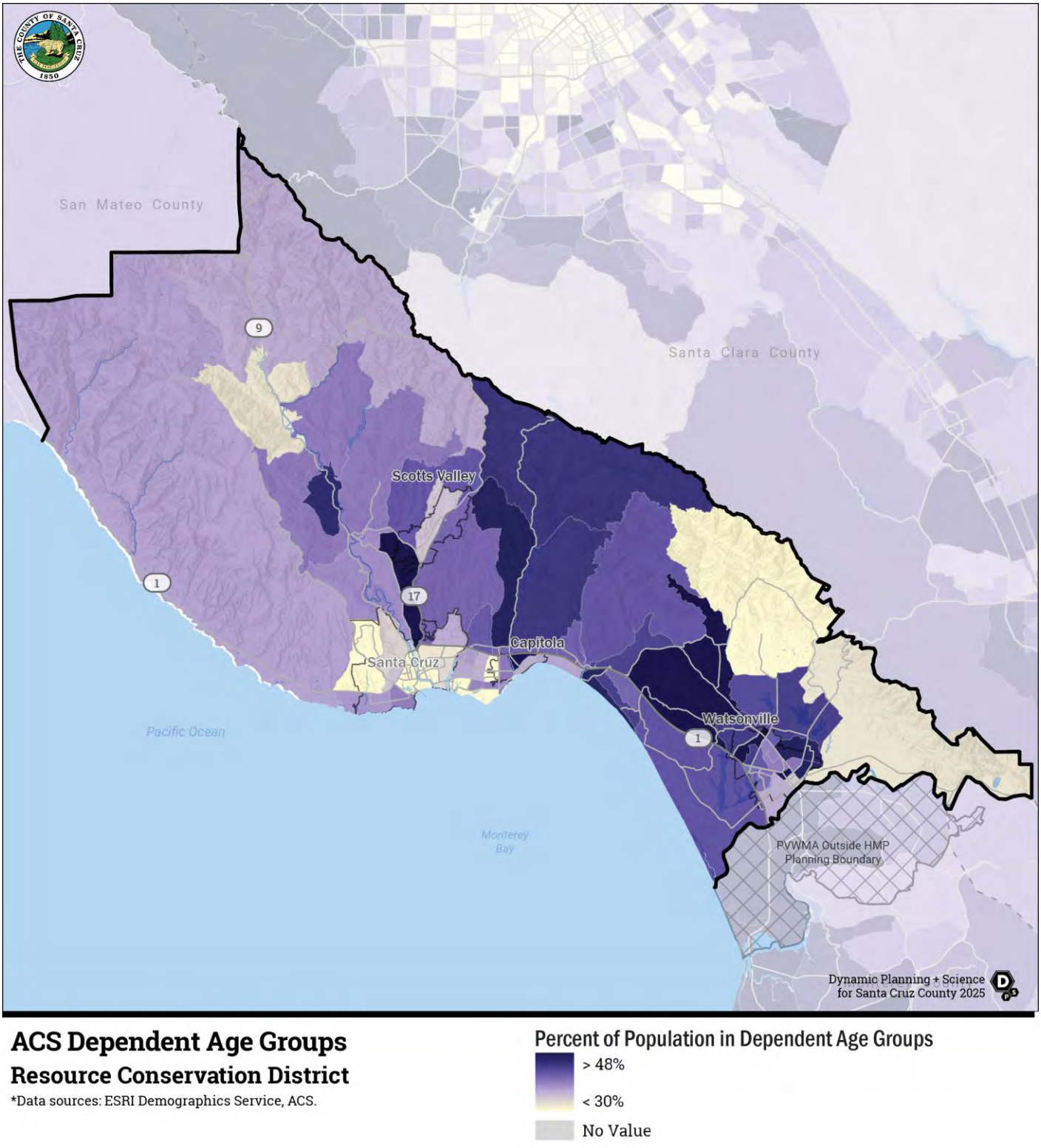


Figure 7-5: RCD Economically Dependent Age Groups Map

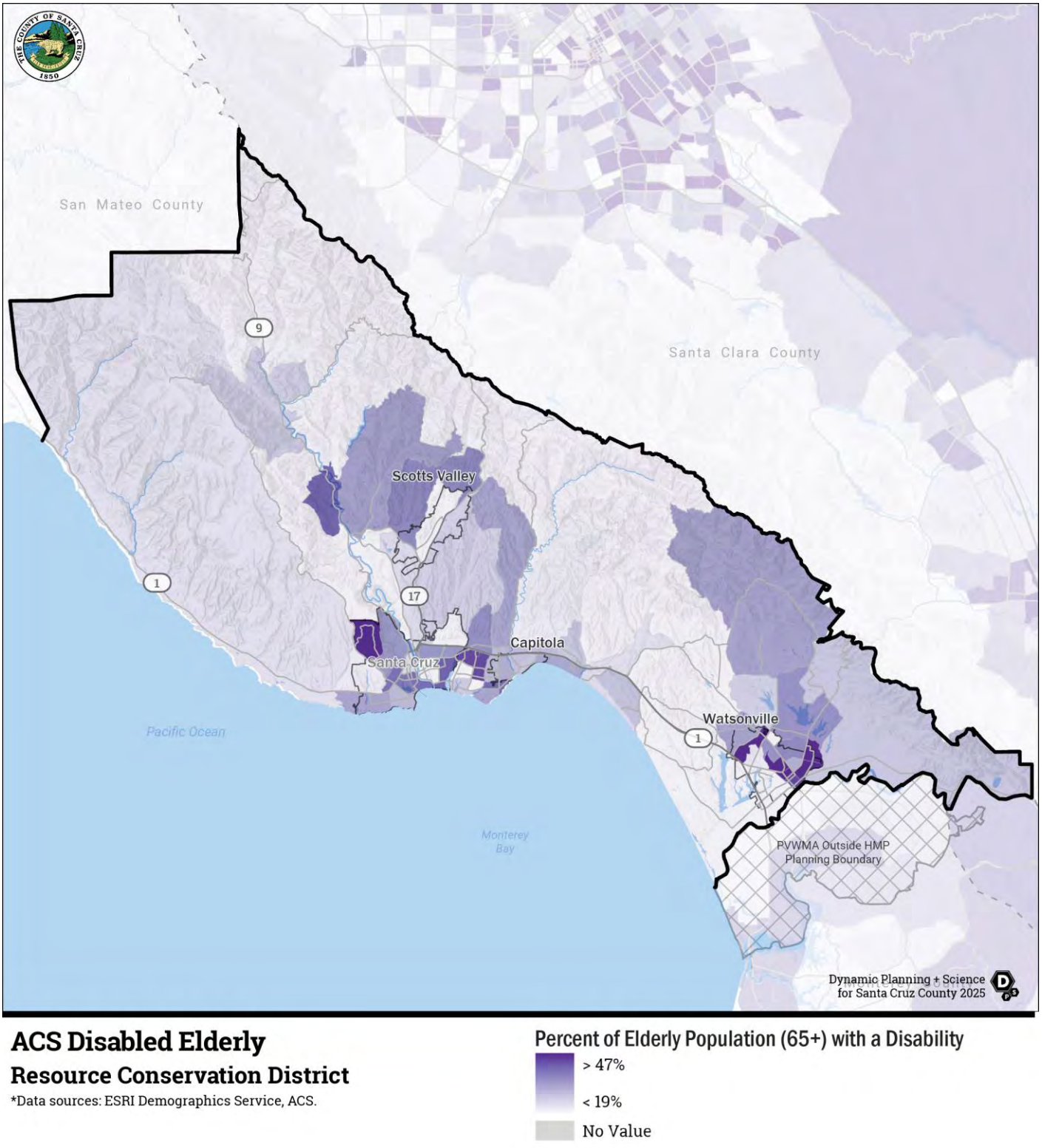


Figure 7-6: RCD Disabled Elderly Map

7.2.3.3 Race, Ethnicity & Language

Natural disasters compound racial disparities; non-white individuals and communities receive less recovery aid from FEMA than their white counterparts, even where the amount of damage is the same. (Howell, Junia; Elliott, James R., 2019) (National Advisory Council, 2020) These disparities are evidence of the complicated relationship between disaster recovery and overlapping social vulnerabilities including race, income, language, and health. Black and Latinx residents are more likely to be low income and renters, conditions which create barriers to navigating FEMA's Individual Assistance programs. Communities with more non-white residents may have lower tax revenue and property values, which means less investment in mitigation and rebuilding efforts before and after an emergency.

The racial, ethnic, and linguistic composition of communities in Santa Cruz County provides important context for hazard mitigation planning and outreach. The RCD works across diverse communities, many of which have historically experienced unequal access to resources for disaster preparedness, mitigation for long-term resilience.

According to the ACS Race and Ethnicity data (Figure 7-7), the unincorporated areas of Santa Cruz County are predominantly White, non-Hispanic. However, the region also includes large Hispanic or Latino populations, especially in South County. The City of Watsonville and surrounding unincorporated areas have a majority Latino population. These areas include agricultural communities and farmworker households that face persistent socioeconomic and environmental risks.

Figure 7-8 shows that the use of Spanish in the home is widespread in the southern and eastern parts of the county. In many census tracts around Watsonville, more than 33 percent of residents aged five and older speak Spanish at home. Spanish-speaking populations are also present in parts of Live Oak, Soquel, and the Corralitos area.

Language access is an essential part of equitable hazard mitigation. Households that rely on Spanish may not receive emergency alerts or mitigation guidance in a timely way unless materials are translated and distributed through trusted channels. These households may also include Limited English Proficiency (LEP) individuals who are less likely to participate in public workshops or government meetings without targeted outreach.

The RCD provides post-disaster recovery assistance, and also plays a key role in building resilience before disasters occur. Many of its programs benefit frontline communities that include LEP populations. These programs include stormwater infiltration, floodplain restoration, defensible space, and agricultural water conservation. As the RCD expands its outreach and Measure Q-funded programs, it is important to continue developing Spanish-language materials, community workshops, and trusted partnerships in these areas.

By integrating language and cultural considerations into program delivery, the RCD will ensure its mitigation efforts are inclusive and accessible to all parts of the county.

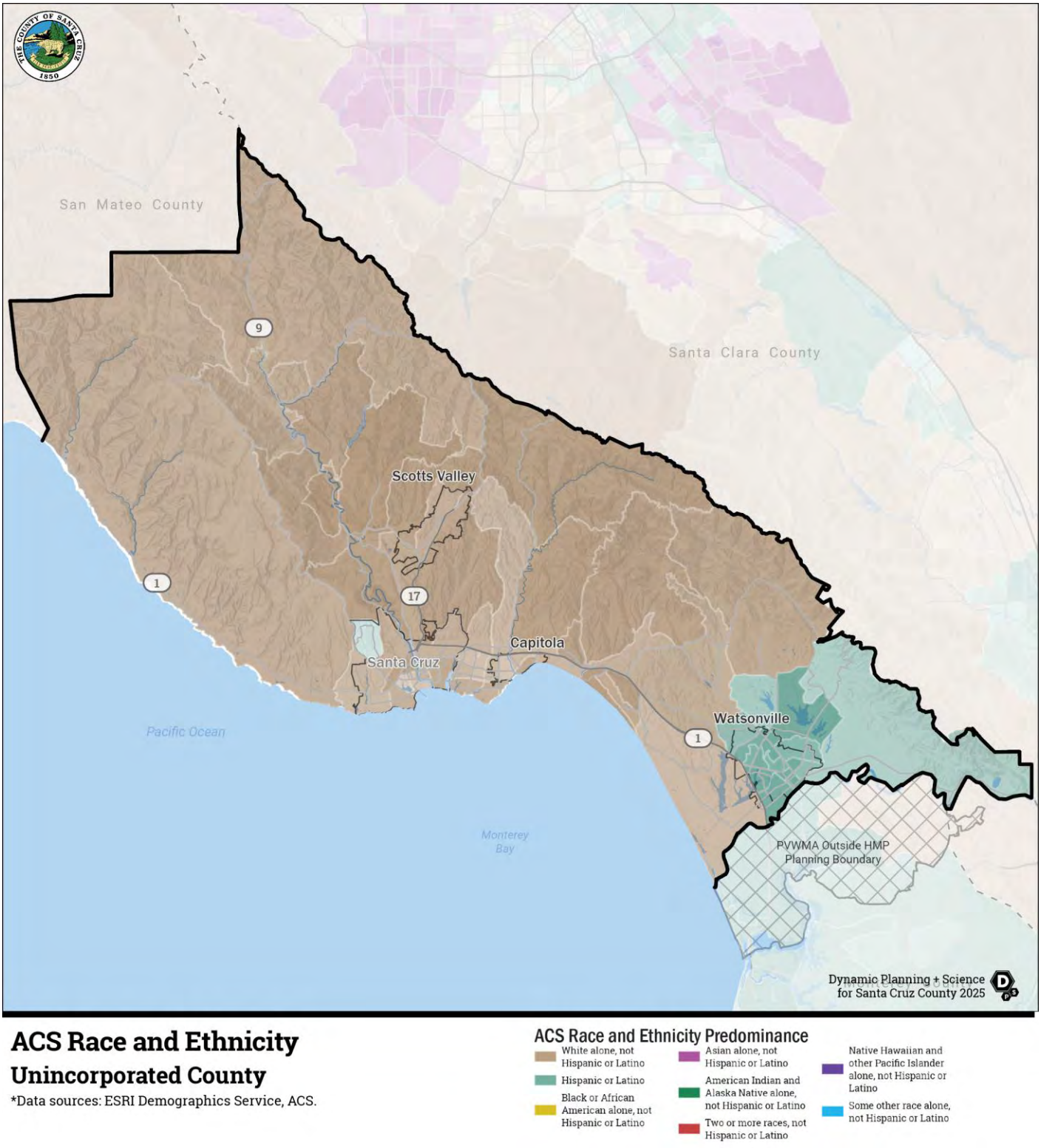


Figure 7-7: RCD Race and Ethnicity Predominance Map

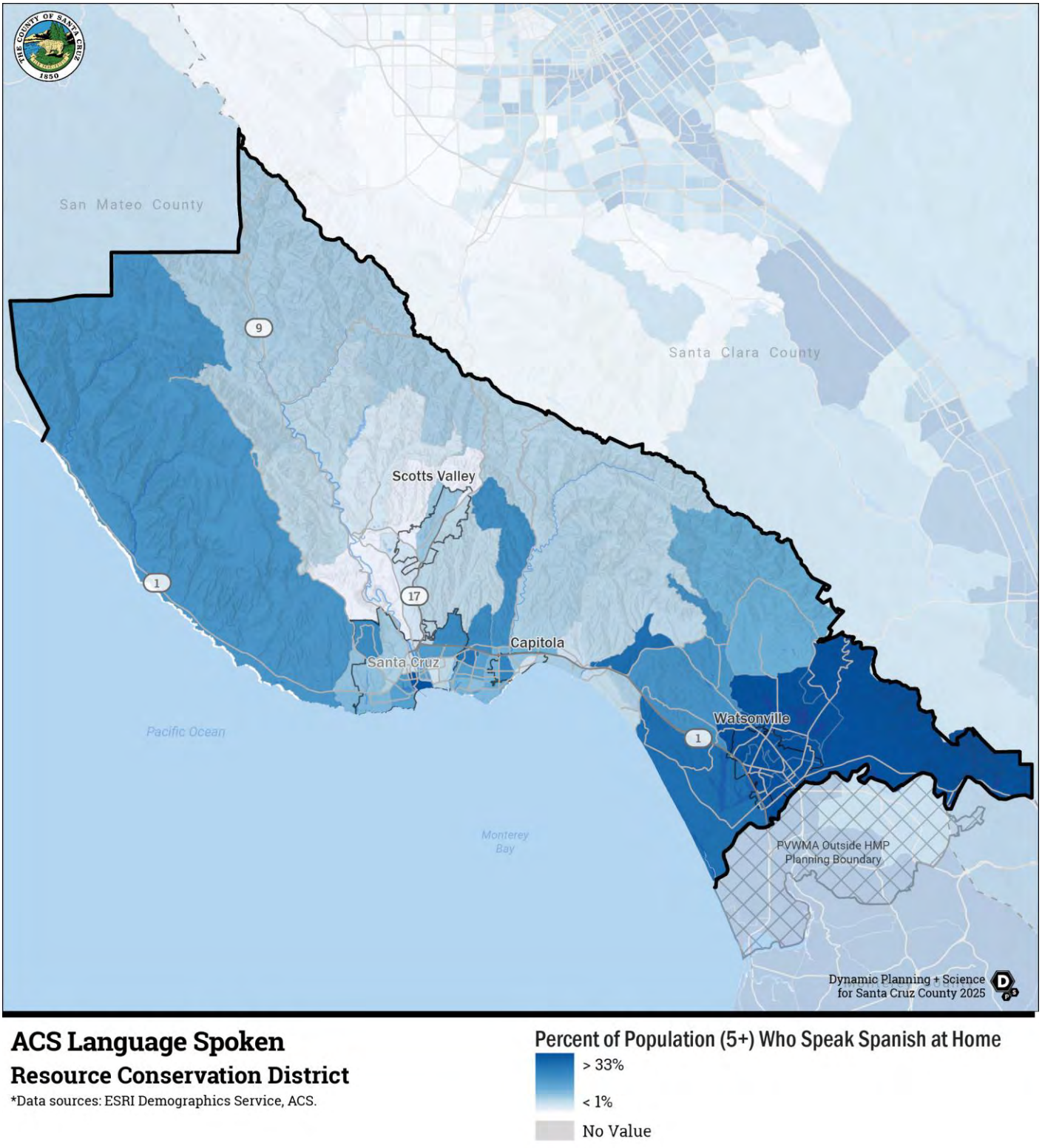


Figure 7-8 RCD Spanish-Speaking Population Map

7.2.3.4 Social Vulnerability Index (SVI)

The CDC Social Vulnerability Index (SVI) for the RCD reveals important spatial and demographic patterns that have direct implications for equitable hazard mitigation planning. As discussed in detail in Volume 1, Section 1.4.3.6, the SVI is a composite measure developed by the CDC to identify communities that are more likely to require support before, during, and after a disaster. It incorporates a range of factors across four key dimensions: socioeconomic status, household composition and disability, minority status and language, and housing type and transportation access. The resulting index score ranges from 0 (lowest vulnerability) to 1 (highest vulnerability).

The SVI map in Figure 7-9 shows that social vulnerability within the RCD service area is unevenly distributed. Much of the unincorporated mid and north county areas, including Scotts Valley, Bonny Doon, and Aptos Hills, fall within the low vulnerability range of 0.00 to 0.25. These communities generally have higher household incomes, higher rates of homeownership, and greater access to resources for recovery.

In contrast, south county communities around Watsonville and the Pajaro Valley show higher vulnerability scores of 0.50 to 1.00. These areas contain large numbers of agricultural workers, renters, and households where Spanish is the primary language spoken at home. Many of these communities face challenges such as limited access to transportation, lower household incomes, and higher rates of dependent populations. These conditions can make disaster preparedness and recovery more difficult.

Moderate vulnerability scores of 0.25 to 0.50 appear in Live Oak, Soquel, and the San Lorenzo Valley. These communities include older housing stock, concentrations of seniors, and households with limited emergency evacuation options. Narrow mountain roads and flood prone areas increase the difficulty of safe evacuation.

The presence of higher social vulnerability in parts of the RCD service area highlights the importance of targeted hazard mitigation strategies. Households in these areas may face greater barriers to implementing mitigation projects. They may also face difficulties in purchasing insurance or accessing recovery assistance. The RCD programs such as defensible space projects, chipping services in wildfire prone areas, recharge and floodplain restoration and stormwater infiltration in the Pajaro Valley.

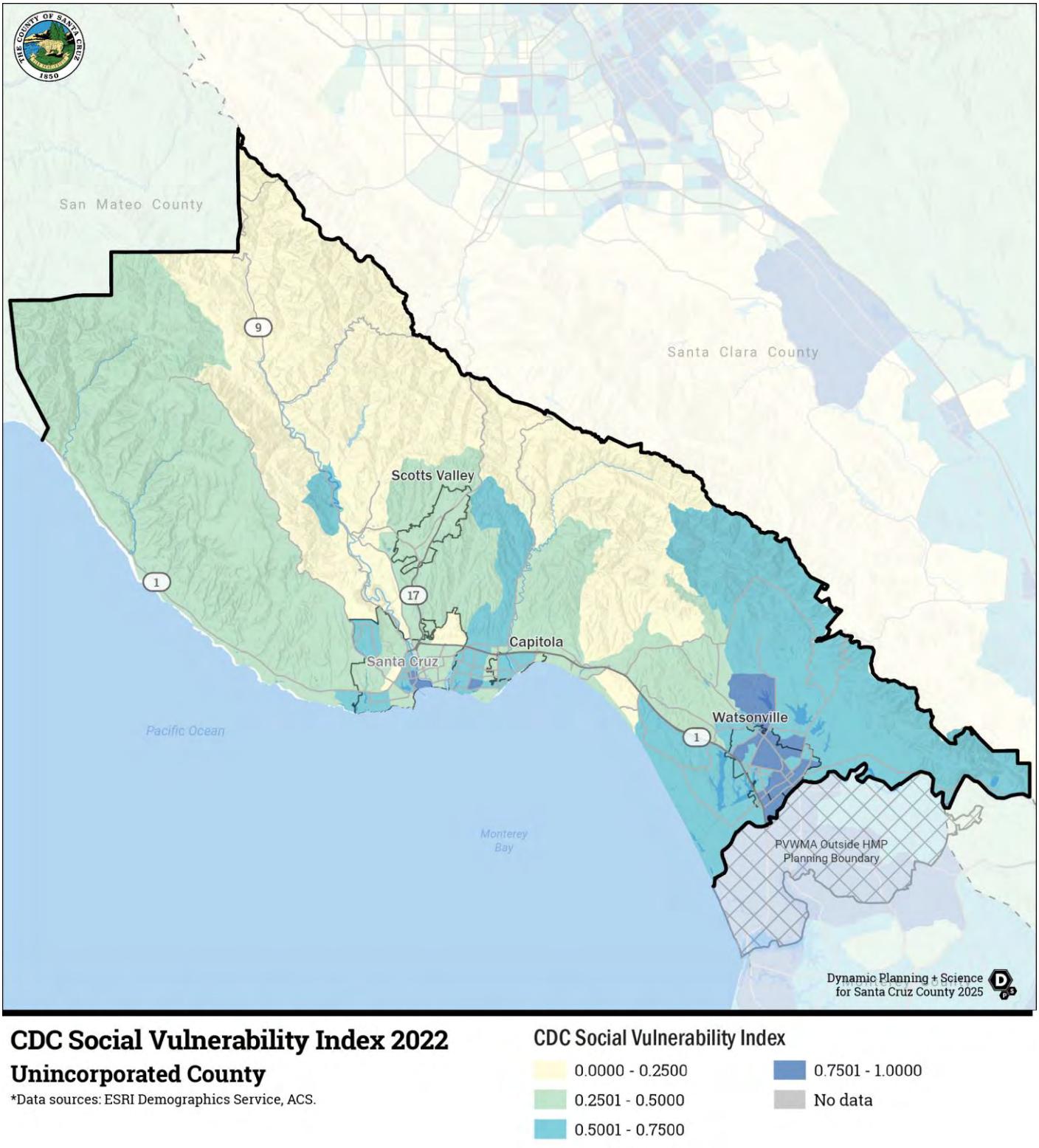


Figure 7-9: RCD - CDC Social Vulnerability Index 2022 Map

7.2.4 Economy

The RCD does not operate like a traditional service provider that collects fees or property taxes for most of its programs. Instead, the RCD relies on competitive grants, contracts, and partnerships to support its work. This funding model links the RCD directly to broader state and federal economic trends, since many of its resources come from water resource and habitat restoration programs, agricultural land and water stewardship programs, forest health and wildfire prevention programs, and climate adaptation initiatives.

Beginning in FY 2025-2026, the RCD will also receive support from Measure Q. This local parcel tax provides a dedicated funding stream for wildfire preparedness, water resource protection, habitat restoration, and technical assistance to landowners. Measure Q serves as a reliable local match for larger state and federal mitigation grants. It improves the district's ability to leverage outside funding by meeting grant requirements that demand cost sharing or community investment.

The RCD's grant funded programs are directly and indirectly tied to hazard mitigation and climate adaptation. Funding from agencies such as CAL FIRE, DWR, and NRCS has supported fuel reduction, recharge projects, floodplain restoration, and agricultural water conservation. These projects not only reduce risks of hazards but also generate economic benefits. They protect farmland, preserve infrastructure, and reduce the long-term costs of disaster recovery.

The local economy also shapes the demand for RCD programs. Agriculture remains a major employer in South County, where many workers face economic and housing insecurity. Grant funded RCD projects in this region provide essential protections by improving flood control, providing technical assistance to socially disadvantaged farmers and ranchers, reducing erosion, work on private roads, and conserving water resources. In mountain communities where tourism and recreation are key economic drivers, RCD wildfire and forest health programs protect both homes, ecosystems, and the economic base of the region.

The ability of the RCD to secure grant funding is a critical part of Santa Cruz County's resilience. Each successful grant brings outside dollars into the local economy, supports contractors and technical staff, and reduces future losses from disasters. Underscoring this point, the RCD leverages each tax dollar to bring on average more than $33 in federal, state, and other funds to Santa Cruz County. By combining local funds such as Measure Q with external resources, the RCD strengthens the financial capacity of the region to invest in long term hazard mitigation.

7.2.5 Growth Trends & Future Development

Future growth in Santa Cruz County is expected to occur primarily within the cities of Santa Cruz, Watsonville, Scotts Valley, and Capitola, as identified in local General Plans and the County's housing allocations. The unincorporated areas will continue to see gradual change in rural communities, particularly in the San Lorenzo Valley, Bonny Doon, and coastal zones. While the RCD does not regulate land use or approve development, population and housing growth across the county will shape the demand for its programs and the types of hazard mitigation projects needed.

The Association of Monterey Bay Area Governments (AMBAG) projects the county's population to increase modestly over the next two decades. Watsonville and South County are expected to absorb much of this growth through new housing, including allocations for affordable units required under the Regional Housing Needs Allocation. These areas already have high concentrations of socially vulnerable populations and face risks from flooding, sea level rise, and drought. Growth in these areas will increase the need for RCD programs that improve floodplain management, groundwater recharge, and agricultural water efficiency.

In the north and mid-county, development will remain limited by geography, wildfire risk, and environmental constraints. Growth in the San Lorenzo Valley and the Santa Cruz Mountains will continue to place homes in the wildland urban interface. This will expand the need for defensible space, fuel reduction, and forest health projects that the RCD currently manages in collaboration with CALFIRE, local fire departments/districts, the Fire Safe Council and local partners. Coastal growth pressures, including redevelopment of existing sites in Capitola and Live Oak, will increase demand for shoreline and bluff protection projects that reduce erosion and maintain ecosystem function.

Future development patterns will also be influenced by groundwater sustainability planning and climate adaptation goals. The RCD partners with the City of Santa Cruz, City of Watsonville, Pajaro Valley Water Management Agency, the Santa Margarita Groundwater Agency, and Soquel Creek Water District to integrate conservation projects with basin management plans. As state and federal funding becomes more closely tied to climate resilience, the RCD's grant-based structure positions it to bring significant outside resources into the county to address growth-related hazard challenges.

In summary, the RCD anticipates that countywide growth will be steady but modest, with most new development concentrated in existing urban areas. Growth in socially vulnerable communities in the south, in wildfire-prone mountain areas, and along the coast will require targeted mitigation and conservation projects. The RCD is well positioned to support these needs through its grant funding capabilities, its technical assistance programs, and its ability to coordinate across jurisdictions.

7.3 Planning Process

The RCD followed the planning process detailed in Volume 1, Section 2, including participating in the county-wide Hazard Mitigation Planning Team (HMPT) and formulating their own internal planning team to support the broader planning process.

The district's representatives in the Steering Group led stakeholder and public engagement efforts alongside the Consultant Team, with assistance from the HMPT and their internal planning team. This engagement process is described in Volume 1. Specifically, for the RCD, this included postings to the district website, announcements in its newsletter, and presentations to district leadership, as documented in Appendix B. Examples of Key Stakeholders engaged by Santa Cruz County on behalf of the district with relevance to the development of the RCD's mitigation strategy include the USDA and other federal agencies; CAL FIRE and other state agencies; the City of Santa Cruz and other neighboring jurisdictions; local Fire Safe Councils; community-based organizations like Watsonville Wetlands Watch; utility providers like AT&T and water districts; UC Santa Cruz and other academia; and local businesses.

All Key Stakeholders that were invited to participate in the planning process are listed in Volume 1, Section 2, and the input received from stakeholders was integrated into the district's annex, as described in Volume 1 Table 2-9. The district's internal planning participants, their positions, and how they participated in the planning process are shown in Table 7-1.

Table 7-1: RCD Participants

Planning Group Members	Title	Description of Involvement
Lisa Lurie	Executive Director	Lead Point of Contact; HMPT Meetings #2 and #4; Breakouts #1 and #2
Cameron McDonald	Ag Program Assistant	Alternate Point of Contact; HMPT Meetings #1, #2, #3 and #4; Breakouts #1 and #2
Angela Gruys	Senior Program and Communications Specialist	Participating Stakeholder; HMPT Meetings #2 and #4; Breakouts #1 and #2
Matt Abernathy	Forest Health Program Manager	Participating Stakeholder; HMPT Meetings #1, #2, and #3; Breakouts #1 and #2

The RCD participated in a comprehensive hazard mitigation planning process as part of the 2025 Santa Cruz County MJHMP update. This included a series of breakout meetings, listed in Table 7-2 that engaged the district's planning team, which included key district personnel and stakeholders in evaluating hazards, identifying local vulnerabilities, and prioritizing mitigation strategies

The kickoff meeting held on January 27, 2025, launched the planning process by introducing the project scope and clarifying the roles of the Steering Group and participating jurisdictional teams. In the months that followed, a series of structured meetings addressed foundational elements of the plan, including a review of key changes since the 2021 Local Hazard Mitigation Plan, an overview of hazard mitigation principles, and exercises to prioritize local hazards. On July 30, 2025, participants engaged in a hexagon mapping activity designed to visually identify mitigation actions that could benefit from or require inter-jurisdictional coordination. These collaborative efforts helped shape a refined set of mitigation alternatives, establish shared planning goals, and align local strategies with FEMA's Hazard Mitigation Assistance (HMA) funding framework.

Throughout the series of breakout meetings, RCD engaged in a structured and collaborative planning process focused on assessing hazard risks, identifying vulnerabilities, and developing targeted mitigation strategies. The meetings began with recaps of the county-wide HMPT meetings to ensure alignment of goals and progress.

During the May 12, 2025, breakout out meeting, discussions concentrated on community engagement outcomes, initial risk assessments, and the integration of demographic data to better understand vulnerable

populations. Jurisdictional teams reviewed their specific hazard exposures using the Risk Assessment Mapping Platform (RAMP) and participated in prioritization exercises to identify their top hazards.

The July 17, 2025, breakout meeting shifted toward reviewing local capabilities and defining specific areas of concern, which informed the drafting of problem statements. Teams worked collaboratively to refine mitigation alternatives, align actions with FEMA guidelines, and develop a shortlist of priority mitigation actions and inter-jurisdictional collaboration opportunities.

The meetings also included consensus-building activities around hazard rankings, capabilities, and planned actions, while providing regular updates on the overall project schedule.

Table 7-2: Jurisdictional Breakout Meeting Records

Meeting & Date	Agenda / Topics	Goals / Key Inputs
County-Wide Steering Group and HMPT Meetings #1 & #2 January – March 2025		
RCD Planning Team Breakout Meeting #1 May 12, 2025	▪ County-wide HMPT meetings #1 and #2 recaps ▪ Community engagement progress and results ▪ Risk assessment and community vulnerability ▪ Demographics and vulnerable populations ▪ Overview of jurisdiction-specific hazard risks and exposure ▪ Introduction to Risk Assessment Mapping Platform (RAMP) ▪ Jurisdiction-specific hazard risk ranking exercise ▪ Project schedule updates and next steps	▪ Consensus on jurisdiction-specific priority hazards ▪ Identify capabilities and potential mitigation actions ▪ Community engagement volunteers
County-Wide HMPT Meeting #3 June 2025		
RCD Planning Team Breakout Meeting #2 July 17, 2025	▪ Breakout Meeting #1 and HMPT #3 recaps ▪ Review capabilities assessment ▪ Review areas of concern and define problem statements ▪ Principles of effective mitigation strategies and actions, and mitigation alternatives ▪ Refine and align jurisdiction-specific mitigation actions exercise ▪ Project schedule updates and next steps	▪ Consensus on jurisdiction-specific capabilities ▪ Consensus on jurisdiction-specific areas of concern ▪ Consensus on priority mitigation actions and collaboration opportunities ▪ Community engagement volunteers
County-Wide HMPT Meeting #4 August 2025		

7.3.1 Public Input & Draft Review

As detailed in Volume 1, Section 2, the draft plan was available for public review and comment from September 29 to October 20, 2025. Public comments received during that time were similar to those gathered

throughout the public engagement process, including the need for more equity in the distribution of mitigation activities and funding and the need for enhanced cooperation among jurisdictions, utility providers, and state agencies. These comments were incorporated into the city's mitigation strategy, as appropriate; although, most were already addressed by the Mitigation Action Plan which was based on previous public input.

Public and stakeholder input was gathered and incorporated throughout the plan development process, before the public review period, such as from the online public survey (see Volume 1, Section 2.1.2 and Appendix B, for details). During the review period, jurisdictional staff and stakeholders that participated in the plan development also reviewed the public draft and provided comments on minor corrections and revisions, which were addressed in the final plan.

7.4 What's New

This section offers an overview of the hazard mitigation planning efforts for the planning area and highlights the updates made in this 2025 MJHMP. This is the first time RCD has participated in the MJHMP process. Through this MJHMP process, the RCD has identified its highest-priority hazards, developed hazard-specific problem statements, and proposed actionable mitigation strategies.

7.4.1 Mitigation Activities

Although the RCD has not previously adopted formal mitigation actions within a Hazard Mitigation Plan, the district has implemented a wide range of projects, programs, and policies that function as hazard mitigation. These efforts demonstrate the RCD's long-standing commitment to conserving natural resources, reducing community exposure to hazards, and supporting long-term resilience. The district's work in areas such as drought resilience, floodplain restoration, forest health, and wildfire preparedness provides direct mitigation benefits while also strengthening the capacity of communities and landowners to adapt to changing conditions.

Over the past several decades, the RCD has advanced a wide range of natural resource and hazard mitigation projects across Santa Cruz County. Major efforts have included floodplain reconnection and streambank stabilization in the Pajaro Valley and Watsonville Slough, coastal wetland restoration along Monterey Bay, improvement of rural roads, and removal of fish passage barriers that also improve flood capacity. These projects reduce vulnerability to flooding, erosion, and habitat loss while supporting both ecological and community resilience.

The district has also expanded programs that address drought and agricultural water conservation. Through the Community Water Dialogue and Pajaro Valley agricultural partnerships (including Pajaro Valley Water Management Agency), the RCD has promoted efficient irrigation practices, aquifer recharge projects, and soil health initiatives that increase water retention and reduce groundwater overdraft. These measures help extend water availability during droughts and protect long-term agricultural viability.

Forest health and wildfire preparedness have been another significant focus. The RCD coordinates shaded fuel breaks, defensible space assistance, and chipping programs to all landowners in the wildland urban interface that reduce wildfire risk in the San Lorenzo Valley, Bonny Doon, and other high-risk areas. Partnerships with the Fire Safe Council of Santa Cruz County and Cal Fire have expanded the scale and impact of these efforts, protecting both communities and critical watershed resources.

Regionally, the RCD has played a leadership role in advancing integrated watershed management. Through the Integrated Watershed Restoration Program, the Early Mitigation Partnership, and the Santa Cruz Regional Conservation Investment Strategy, the district has coordinated funding, permitting, and planning across multiple jurisdictions. These efforts allow conservation and hazard mitigation projects to be delivered more quickly and at larger scales.

The district has also improved permitting efficiency for landowners and partner agencies. The Partners in Restoration Program and Public Works Plan streamline regulatory approvals for conservation and mitigation projects. This reduces project delays and costs while enabling faster implementation of erosion control, stormwater management, and habitat restoration practices as well as forest health and wildfire resilience projects that also function as hazard mitigation.

As a first-time participant in a hazard mitigation plan, the RCD had no formally adopted mitigation actions from a previous plan. However, the RCD continues to advance a range of ongoing and planned efforts that support hazard mitigation, climate resilience, and long-term water security. These are highlighted in this section, reflecting the district's continued dedication to long-term risk reduction. These actions, ranging from mitigation to community outreach initiatives, represent the RCD's proactive approach to addressing hazards as funding and partnerships allow.

7.4.2 Mitigation Successes

Although the RCD is participating in a formal hazard mitigation plan for the first time, multiple important mitigation actions and other efforts to increase the district's resilience to hazards have been completed. Some of these endeavors in which the district collaborated with other agencies are described in Volume 1, Section 1.5.2.1 This section describes additional district-specific success stories, which highlight the RCD's commitment to reducing risks and building a more resilient community in the face of natural hazards.

Managed Aquifer Recharge

The RCD supports Managed Aquifer Recharge (MAR) to address groundwater overdraft and seawater intrusion in the Pajaro Valley, which depends entirely on groundwater for agriculture, communities, and ecosystems. MAR projects capture stormwater and direct it into infiltration basins and other recharge systems, increasing natural aquifer storage and drought resilience.

A major initiative is the Recharge Net Metering (ReNeM) Program, which provides rebates to landowners for water infiltrated on their property. This incentive encourages private participation and expands recharge benefits, and was done in partnership with the Pajaro Valley Water Management Agency and the University of California Santa Cruz.

Funding for MAR projects comes from the Pajaro Valley Water Management Agency, the California State Coastal Conservancy, the U.S. Department of Agriculture, the California Department of Water Resources, and partner grants managed by the RCD. These investments protect long-term water supply, improve drought preparedness, and reduce hazard risks tied to groundwater depletion.

Chipping Program

The Chipping Program is a cornerstone of the RCD's wildfire mitigation efforts. This free program helps residents dispose of woody material created through defensible space and vegetation management. By providing chipping services, the RCD reduces hazardous fuel accumulation around homes and along access



Figure 7-10: RCD Chipping Program

routes, particularly in rural and wildland urban interface communities. The program is supported by Cal Fire grants and partnerships with Fire Safe Councils. It directly lowers wildfire risk for households that might not otherwise have the means to manage fuel safely and effectively.

Scott Creek Coastal Resiliency Project

Along the coast, the RCD is a key partner in the Scott Creek Coastal Resiliency Project and other coastal wetland restoration and transportation infrastructure resiliency efforts efforts. These projects restore coastal bluffs, dunes, and estuaries to buffer wave action and storm surge. They also address risks from coastal erosion and sea level rise. Funding has been provided by the California State Coastal Conservancy, the California Department of Transportation (Caltrans), and federal partners such as NOAA. By restoring ecosystem dynamism, these projects help protect Highway 1, coastal neighborhoods, and sensitive ecosystems from accelerating coastal hazards.



Figure 7-11: Scotts Creek Resiliency Project

7.5 Risk Assessment

This section focuses on profiling hazards specific to the RCD and assessing their vulnerability independent of the broader county-wide planning area, which has been evaluated in Section 3 of Volume 1. The hazard profiles in Volume 1 discuss overall impacts to the planning area and describe relevant plans, policies, and regulations; past events; location; frequency and probability of future occurrences; severity and extent; warning time; secondary hazards; and climate change impacts. For more information on risk assessment methodologies, see Volume 1, Appendix A.

This section includes a tailored vulnerability assessment, analyzing assets at risk such as population, property, and critical facilities and infrastructure unique to the district, and information on district-specific differences in hazard vulnerability across the planning area. It also identifies total district assets at risk, including people, property, and critical facilities and infrastructure within the district. In addition, this section presents growth and development trends for the communities served, offering insights into vulnerabilities and risks that represent the broader context of assets at risk.

7.5.1 Hazard Screening & Prioritization

Members of the planning team from each participating jurisdiction came together to collaboratively decide which county-wide hazards would be included in the MJHMP and which would be excluded. The hazard screening and prioritization took place early in the process and integrated historic data, local knowledge, and consensus opinions to create a risk assessment matrix for the county as well as for each participating jurisdiction. These matrices indicate the priority of hazards prior to further refinement. Details about this process, the results of the discussion, and in-depth profiles for county-wide hazards can be found in Volume 1, Sections 2 and 3, and as outlined in Section 7.3 of this annex.

It should be noted that the RCD's primary mission of land stewardship, as well as its limited authority over development other than that associated with its natural resource conservation projects, further narrowed the list of priority hazards. The final results of the hazard screening and prioritization exercises are summarized in Table 7-4, including which specific subhazards were selected by the RCD's planning team.

The RCD's internal planning group used the same hazard identification and prioritization process as the county-wide Planning Team. They reviewed previously prepared relevant documents and past events to determine the realm of natural hazards that have the potential to affect the district. Table 7-3 provides a crosswalk of hazards identified in select planning documents, including the 2020 Santa Cruz County General Plan Safety Element, 2021 Santa Cruz County LHMP, and 2023 State of California HMP. The crosswalk was used to develop a preliminary hazards list, providing a framework for the group to evaluate which hazards were truly relevant to the district and which ones were not.

The internal planning group then ranked hazards based on their probability of affecting the RCD and potential impacts on the communities it serves, and also reviewed hazards for relevance to the district's purpose and within its limited authority. Figure 7-12 displays the results of the hazard risk ranking exercise that was performed before further refinement. All hazards have been profiled in Volume 1 of this document. The purpose of this annex is to specifically address RCD's vulnerability to specifically identified hazards.

Table 7-3: RCD Document Review Crosswalk

Hazard	2020 Santa Cruz County General Plan Safety Element	2021 Santa Cruz County HMP	2023 California SHMP
Agricultural Pests			■
Avalanche			■
Climate Change		■	■
Coastal	■	■	■
Dam Failure	■	■	■
Drought		■	■
Earthquake / Liquefaction	■	■	■
Extreme Cold		■	■
Extreme Heat		■	■
Extreme Weather / Storms	■	■	■
Flood	■	■	■
Geologic / Mass Movement	■	■	■
Human-Caused	■		■
Insects			■
Levee Failure		■	■
Pandemic Disease			■
Sea Level Rise	■	■	■
Soil	■	■	■
Subsidence		■	■
Tornado			■
Tsunami / Seiche Wave	■	■	■
Volcano			■
Wildfire	■	■	■

Risk Assessment Matrix Definitions

PROBABILITY RATING

The likelihood of a hazard event occurring within a time period?

PROBABILITY

Highly Likely	**Highly likely** - 100% annual probability. Or Likely to occur every year in your lifetime.
Likely	**Likely** - between 10 & 100% annual probability. Or will occur several times in your lifetime.
Possible	**Possible** - between 1 & 10% annual probability. Or Likely to occur some time in your lifetime.
Unlikely	**Unlikely** - less than 1% annual probability. Or unlikely but possible to occur in your lifetime.

IMPACT RATING

In terms of injuries, damage, or death, would you anticipate impacts to be minor, limited, critical, or catastrophic when a significant hazard event occurs? The impact could be in terms of one hazard event (flooding from a culvert failure) or a large-scale event (multiple rivers flooding) in the same jurisdictional boundary.

IMPACT

Minor	Limited	Critical	Catastrophic

Minor - very few injuries, if any. Only minor property damage & minimal disruption on quality of life. Temporary shutdown of critical facilities.

Limited - minor injuries only. Approx. 10% or less of property in disaster footprint damaged or destroyed. Complete shutdown of critical facilities for more than one day.

Critical - multiple deaths/injuries possible. Between 25% and 50% of property in disaster footprint is damaged or destroyed. Complete shutdown of critical facilities for more than one week.

Catastrophic - high number of deaths/injuries possible. More than 50% of property in affected area damaged or destroyed. Complete shutdown of critical facilities for 30 days or more.

To concentrate resources, the jurisdictional planning team will focus on "High" and "Extreme" risk hazards. These hazards have the higher probability and greater impact as it relates to the jurisdictions planning area.

Hazard definitions are included in **Vol. 1** of this plan. Some hazards are discussed as subset hazards– e.g., "Dam Failure" within the "Flood" hazard profile. If a hazard is not present on the risk matrix or are grey in color, the jurisdictional planning team felt the hazard had a minimal footprint within their planning area and was not ranked.

Hazard Information / Legend:

CLIMATE CHANGE

Climate Change impacts will be addressed at the end of each hazard section and as a stand alone section for each jurisdiction.
For County and Municipal governments you will be required to address climate change impacts in the Safety Element of your General Plan. Climate change may change the frequency, duration and intensity of hazards listed above.

Resource Conservation District Risk Matrix

IMPACT

PROBABILITY

	Minor	Limited	Critical	Catastrophic
Highly Likely	Medium	High	SEA LEVE RISE, SLOPE FAILURE, FLOOD	Extreme
Likely	COASTAL EROSION	High	DROUGHT, WILDFIRE	Extreme
Possible	Low	DAM FAILURE	High	High
Unlikely	Low	Low	Medium	Medium

Figure 7-12: RCD Risk Assessment Matrix

Table 7-4: RCD Hazards Prioritization Summary

Hazard	Priority	Explanation
Wildfire	**High**	Profiled in Volume 1, Section 3.2.1, and Section 7.5.2.1 in this annex
Flood	**Extreme**	Profiled in Volume 1, Section 3.2.2, and Section 7.5.2.2 in this annex (not including Levee Failure due to being outside jurisdictional mission and authority)
Earthquake	-	Not a priority due to being outside jurisdictional mission and authority
Severe Weather	-	Not a priority due to being outside jurisdictional mission and authority
Coastal Hazards	**Medium**	Profiled in Volume 1, Section 3.2.5, and Section 7.5.2.4 in this annex, including Coastal Erosion (Coastal Storm and Wave Run-Up and Surge recognized as compounding hazards but are not RCD's focus; Tsunami not included due to being outside jurisdictional mission and authority)
Slope Failure	**Extreme**	Profiled in Volume 1, Section 3.2.6, and Section 7.5.2.3 in this annex
Dam Failure	**Medium**	Profiled in Volume 1, Section 3.2.7, and Section 7.5.2.6 in this annex
Drought	**High**	Profiled in Volume 1, Section 3.2.8, and Section 7.5.2.5 in this annex
Extreme Heat	-	Not a priority due to being outside jurisdictional mission and authority
Climate Change	**Extreme**	Profiled in Volume 1, Section 3.2.10, and Section 7.5.2.7 in this annex, including Sea-Level Rise

7.5.2 Vulnerability to Specific Hazards

Assessing vulnerabilities exposes the unique characteristics of individual hazards and begins the process of narrowing down which areas within RCD are vulnerable to specific hazard events. The vulnerability assessment considered unique local knowledge of hazards and impacts and a GIS overlaying method for examining such vulnerabilities in more depth. Using these methods, the district's planning group estimated vulnerable populations, properties, and assets, and potential losses, primarily to earthquake and wildfire. In addition, the exposure of district assets to drought, geological, and flood hazards were also considered.

Many of the hazard profiles include a snapshot map and damage estimation tables that illustrate the district's vulnerabilities to those specific hazards. These maps assisted the planning group in understanding the hazard exposure of populations, parcels, and critical facilities and infrastructure. Each snapshot map contains an exposure summary that displays the percentage of the population, the improvement and content value of parcels, and the amount of critical infrastructure that is exposed. For hazards without geospatial extents, such as drought, narratives are provided instead of exposure maps and tables.

Based on the hazard prioritization exercise, this vulnerability assessment focuses on six hazards for RCD, some of which encompass subhazards such as Coastal Erosion and Sea Level Rise.

Wildfire
SECTION 7.5.2.1



Flood
SECTION 7.5.2.2



Slope Failure
SECTION 7.5.2.3



Coastal Hazards
SECTION 7.5.2.4



Drought
SECTION 7.5.2.5



Dam Failure
SECTION 7.5.2.6



Climate Change
SECTION 7.5.2.7



7.5.2.1 Wildfire Hazard

The RCD has a service area and sphere of influence that extend across the entire county. This means that the district's planning footprint is coterminous with the county boundary. Wildfire risk is widespread throughout this area and exposure to fire hazards does not differ between the RCD service area and the county as a whole. What does differ is the role of the RCD in addressing these risks.

Wildfire risk is pronounced across much of Santa Cruz County, especially in unincorporated, wildland–urban interface areas. According to the exposure data (Table 7-5):

- Approximately 58% of all parcels in the county fall within moderate, high, or very high wildfire hazard zones.
- This includes 8,886 parcels (19%) in moderate risk, 16,308 parcels (33%) in high risk, and 2,526 parcels (5%) in very high-risk zones.
- The total estimated property value at risk is over $31 billion—directly aligning with heightened hazard potential in these areas.

Although the RCD does not own or manage infrastructure, it serves communities disproportionately located in high-risk fire zones by advocating for the natural infrastructure. As shown in Figure 7-13, these include rural neighborhoods and mountain communities in the San Lorenzo Valley, Bonny Doon, and Corralitos, where rugged terrain and limited access elevate vulnerability. Many of the approximately 27,700 parcels at risk in the county coincide with RCD's service areas and represent tens of thousands of residents who could benefit from mitigation support.

Climate conditions are making wildfire more frequent and more severe. The 2020 CZU Lightning Complex Fire demonstrated that fires burning near RCD communities can still cause major disruption. As shown in Figure 7-14, much of the county falls within areas where fire recurrence is expected every 16 to 64 years, with shorter intervals of 6 to 15 years in the San Lorenzo Valley and other mountain slopes. These conditions mean that communities will continue to face repeated fire events. The impacts include power outages, poor air quality from smoke, mandatory evacuations, and erosion that damages infrastructure and affects community health.

The RCD's wildfire mitigation programs address these vulnerabilities by empowering residents to reduce fuel and create defensible space. Signature efforts include the Chipping Program (free removal of vegetation from properties), shaded fuel break projects, and forest health restoration across heavily exposed landscapes. These programs reduce risk for households and watersheds alike.

By focusing on areas where parcel exposure intersects with high hazard zones, the RCD ensures its mitigation efforts reach those facing the greatest wildfire threats. This targeted work supports regional resilience through funding sources like Cal Fire, helping safeguard both community safety and ecological health.

Table 7-5: County-Wide Wildfire Risk Data

	Total Parcels	Total Market Value ($)	Total Content Value ($)	Total Value ($)
Unincorporated County	47,630	$35,189,614,790	$19,116,504,796	$54,306,119,586

Wildfire Severity Zone (FHSZ)	Parcel Count	% of Total	Market Value Exposure ($)	Content Value Exposure ($)	Total Exposure ($)	% of Total
Moderate	**8,886**	**18.66%**	**$6,767,219,997**	**$3,638,488,998**	**$10,405,708,995**	**19%**
LRA Moderate	2,507	*5.3%*	$2,101,182,397	$1,176,609,598	$3,277,791,995	*6.0%*
SRA Moderate	6,379	*13.4%*	$4,666,037,600	$2,461,879,400	$7,127,917,000	*13.1%*
High	**16,308**	**34.24%**	**$11,895,609,999**	**$6,137,691,999**	**$18,033,301,998**	**33%**
LRA High	1,610	*3.4%*	$1,207,929,601	$638,923,400	$1,846,853,001	*3.4%*
SRA High	14,698	*30.9%*	$10,687,680,398	$5,498,768,599	$16,186,448,997	*29.8%*
Very High	**2,526**	**5.30%**	**$1,706,991,201**	**$911,415,601**	**$2,618,406,801**	**5%**
LRA Very High	46	*0.1%*	$36,790,000	$26,774,000	$63,564,000	*0.1%*
SRA Very High	2,480	*5.2%*	$1,670,201,201	$884,641,600	$2,554,842,801	*4.7%*
Total	**27,720**	**58.2%**	**$20,369,821,197**	**$10,687,596,598**	**$31,057,417,795**	**57.2%**

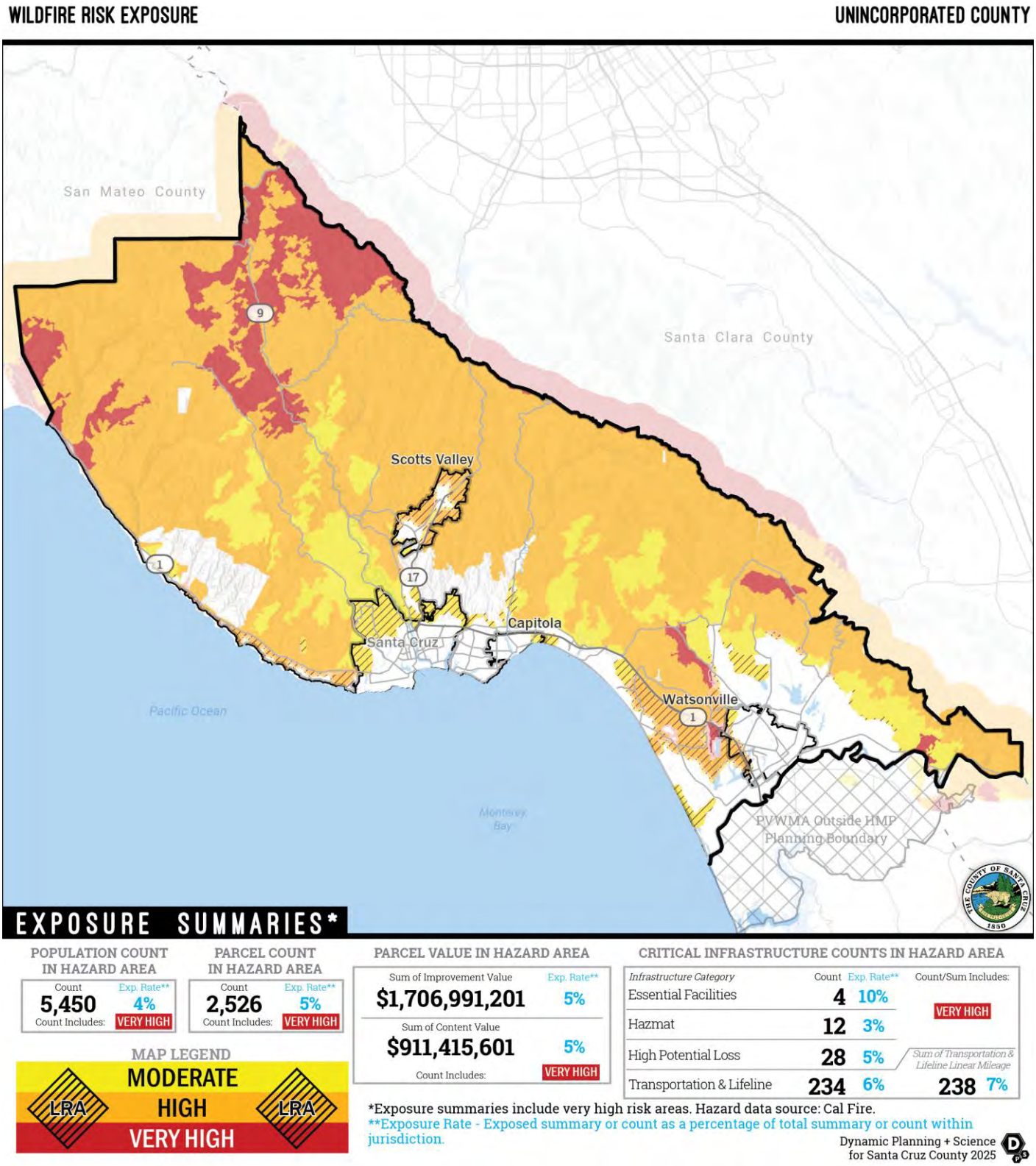
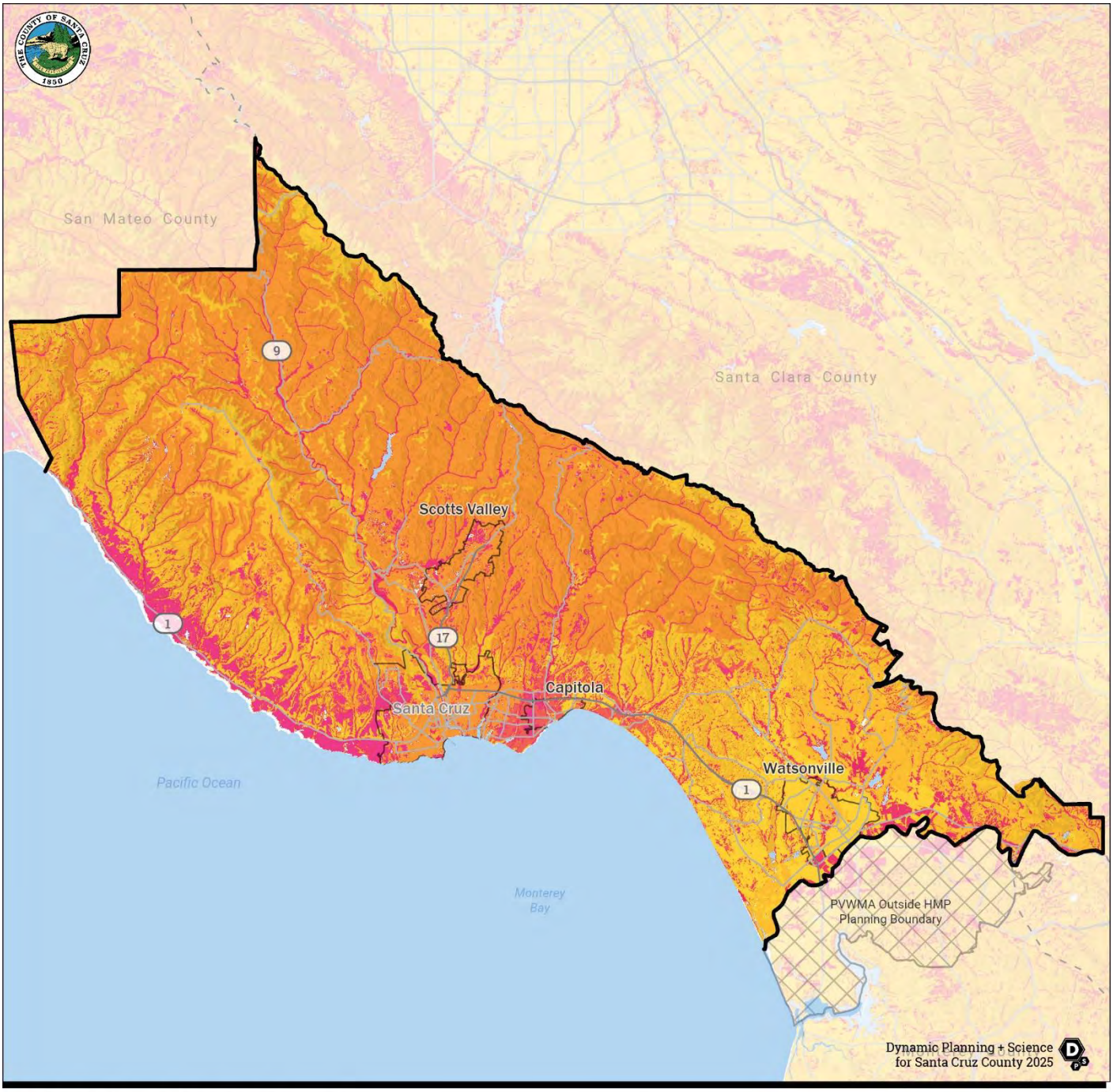


Figure 7-13: Exposure Summary – RCD Wildfire Risk



Mean Fire Return Interval

Resource Conservation District

*Data sources: USGS LANDFIRE.

average period between fires (Years)

0-5	6-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-60	61-70	71-80	81-90	91-100	101-125	126-150	151-200	201-300	301-500	501-1000	>1000

Figure 7-14: RCD Mean Fire Return Interval Map

7.5.2.2 Flood Hazard

Flooding is a significant hazard across the RCD service area. As shown in Figure 7-15, FEMA data indicate that close to 10,000 residents and more than 3,300 parcels lie within the 100- and 500-year flood hazard areas of Santa Cruz County. The estimated market value of exposed improvements is more than $2.0 billion, with an additional $1.2 billion in content value at risk.

It is important to note that flood risks are not evenly distributed. Rural communities and farms in various watersheds across the county experience recurring flood impacts. Factors include, but are not limited to, aging culverts, undersized crossings, and poor access for emergency vehicles and maintenance. Increased peak flows and sedimentation are also eroding streambanks and reducing floodplain function. These conditions threaten public safety, wildlife habitat, and the floodwater storage benefits of ongoing enhancement projects. In addition, rising storm intensity and sediment accumulation are overwhelming small channels, especially where public and private rural roads lack erosion control and drainage retrofits.

Additional analysis by the California Department of Water Resources and the U.S. Army Corps of Engineers highlights Flood Awareness Zones, shown in Figure 7-16; however, more comprehensive analysis is needed to fully capture historical and future flood risks. These areas are outside FEMA's mapped floodplains but may still flood during major storm events. Within the RCD service area, approximately 600 residents and 300 parcels are located in these zones. The estimated value of exposed improvements is more than $173 million, with an additional $95 million in content value. While no critical facilities fall within these areas, the presence of homes, rural roads, and agricultural operations illustrates how localized flooding can disrupt access and create serious challenges for residents.

The RCD does not own infrastructure but plays a central role in addressing flood risks through watershed-based mitigation. A cornerstone of this effort is the Integrated Watershed Restoration Program (IWRP), which coordinates multi-agency planning, funding, and permitting to advance priority projects. Through IWRP, the RCD has helped implement culvert replacements, bank stabilization, fish passage improvements, and floodplain reconnection projects. These actions reduce localized flooding, restore natural stream function, and provide long-term resilience to both human and ecological communities.

Flood exposure across the county demonstrates the need for both structural and nature-based solutions. The inclusion of FEMA floodplain mapping and DWR awareness zones underscores that vulnerability extends beyond federally designated areas. The RCD's focus on restoration and landowner support ensures that mitigation efforts reach the smaller watersheds and rural roads where localized flooding occurs most often. By combining technical assistance, project delivery, and partnerships, the RCD helps reduce risk for thousands of residents and supports resilience in vulnerable communities across Santa Cruz County.

As a special district and not a municipality, the RCD does not participate in the National Flood Insurance Program (NFIP); however, the RCD complies with all minimum floodplain development standards and environmental review requirements established by the county and municipalities where its projects are located.

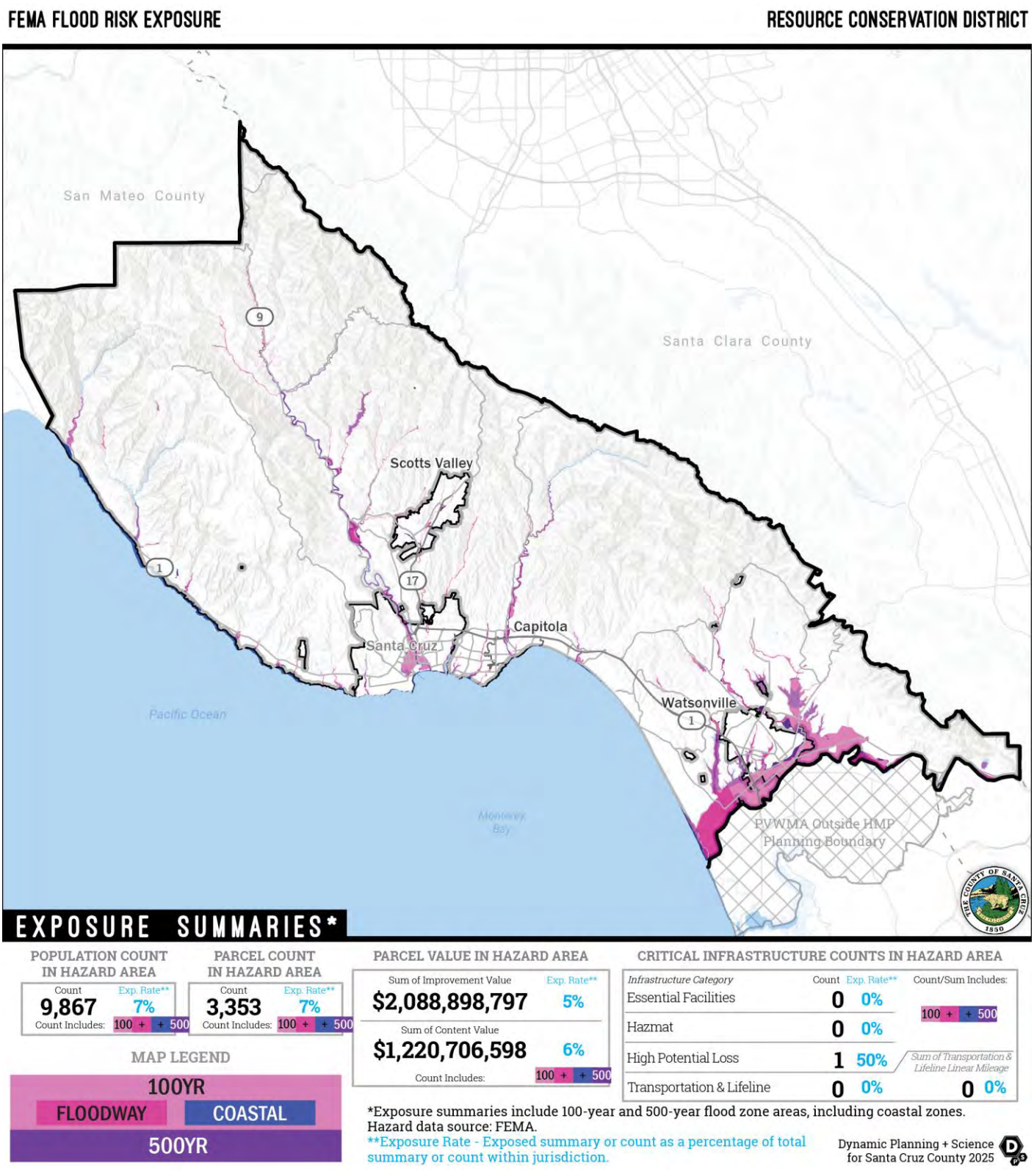


Figure 7-15: Exposure Summary - RCD Flood Risk (FEMA Zones)

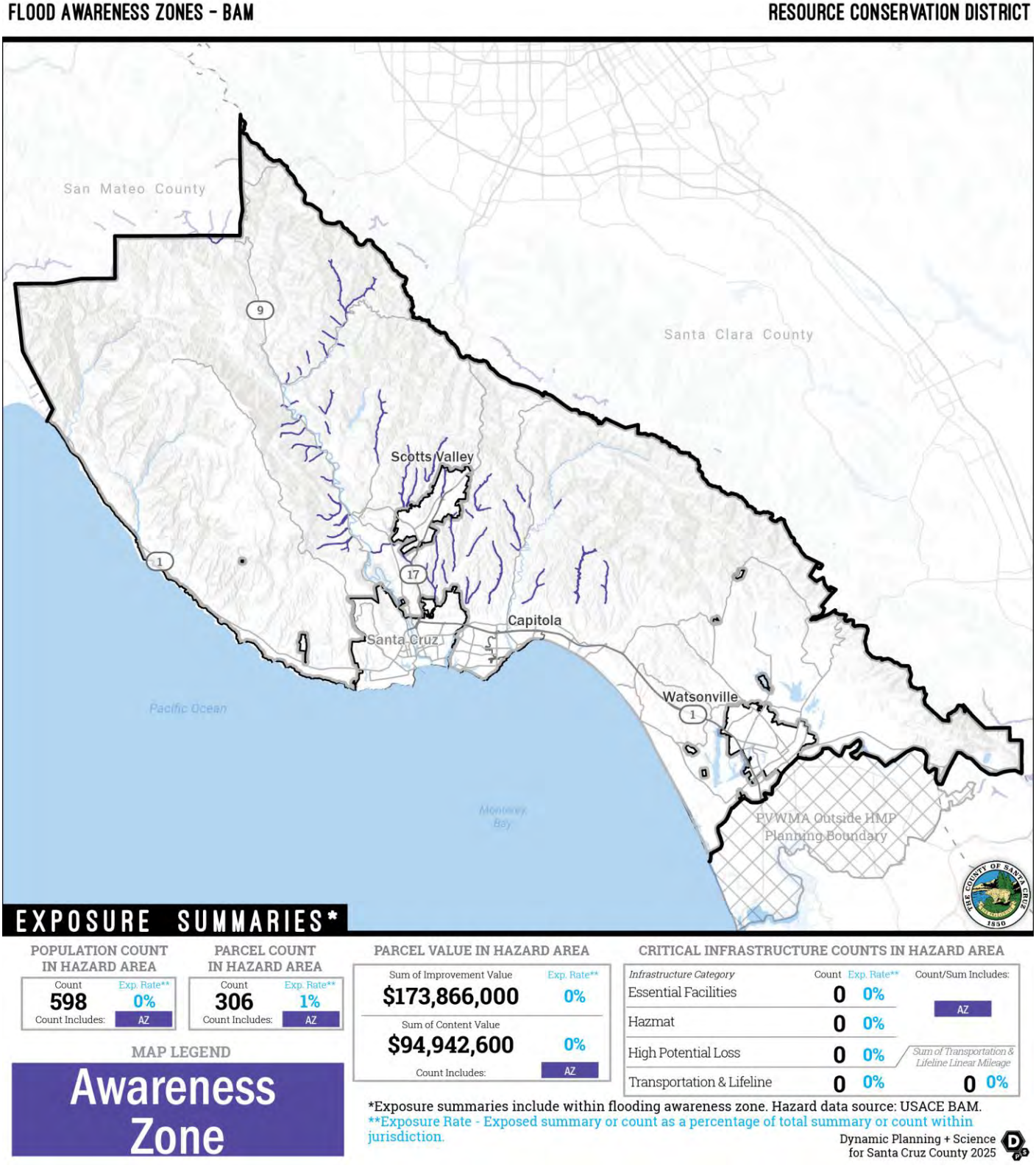


Figure 7-16: Exposure Summary - RCD Flood Risk (DWR Awareness Zones)

7.5.2.3 Slope Failure Hazard

The RCD service area includes the steep terrain of the Santa Cruz Mountains, where landslides and slope failures are a significant hazard. As shown in Figure 7-17, exposure data indicate that more than 47,000 residents and 13,700 parcels are located within high landslide susceptibility zones across the county. The total economic exposure is substantial, with over $10.5 billion in improvement value and $5.3 billion in content value at risk. These values represent more than one quarter of the county's total assessed improvements and contents.

Landslides have both direct and indirect consequences for communities served by the RCD. Landslides degrade stream quality through sedimentation and block access to ongoing erosion control and vegetation management projects. Chronic slope instability in watersheds is driven by geologic conditions, deforestation, soil factors (i.e., hard claypan), and increased runoff from development, insufficient drainage infrastructure, and high-intensity storms. Steep, privately maintained rural roads are also vulnerable to landslides and debris flows, which can cut off access for landowners, fire response, and RCD project implementation.

Heavy rainfall, such as atmospheric river events, is the most common trigger for slope failure. Earthquakes also present a serious risk in these areas, as do post-fire conditions where vegetation loss accelerates erosion and destabilizes slopes. Historical examples, including the 1982 El Niño storms and the 2017 winter storms, demonstrate the recurring and damaging nature of landslides in the Santa Cruz Mountains.

While the RCD does not operate infrastructure, it plays a central role in slope stabilization and watershed recovery through soil conservation, erosion control, drainage projects, and restoration projects. The district partners with landowners and agencies to install erosion control measures, stabilize streambanks, and improve rural road drainage. These projects reduce sediment delivery into waterways, maintain access for emergency services, and protect both public safety and natural resources. Programs delivered through the Integrated Watershed Restoration Program (IWRP) and RCD-led road improvement and home drainage projects have been especially effective in reducing long-term slope failure risk.

The extent of exposure shown in Figure 7-17 underscores the importance of continued investment in slope stabilization and watershed health. By combining technical assistance, landowner outreach, and multi-agency coordination, the RCD reduces the vulnerability of communities, watersheds, and natural resources to the widespread hazard of landslides and debris flows.

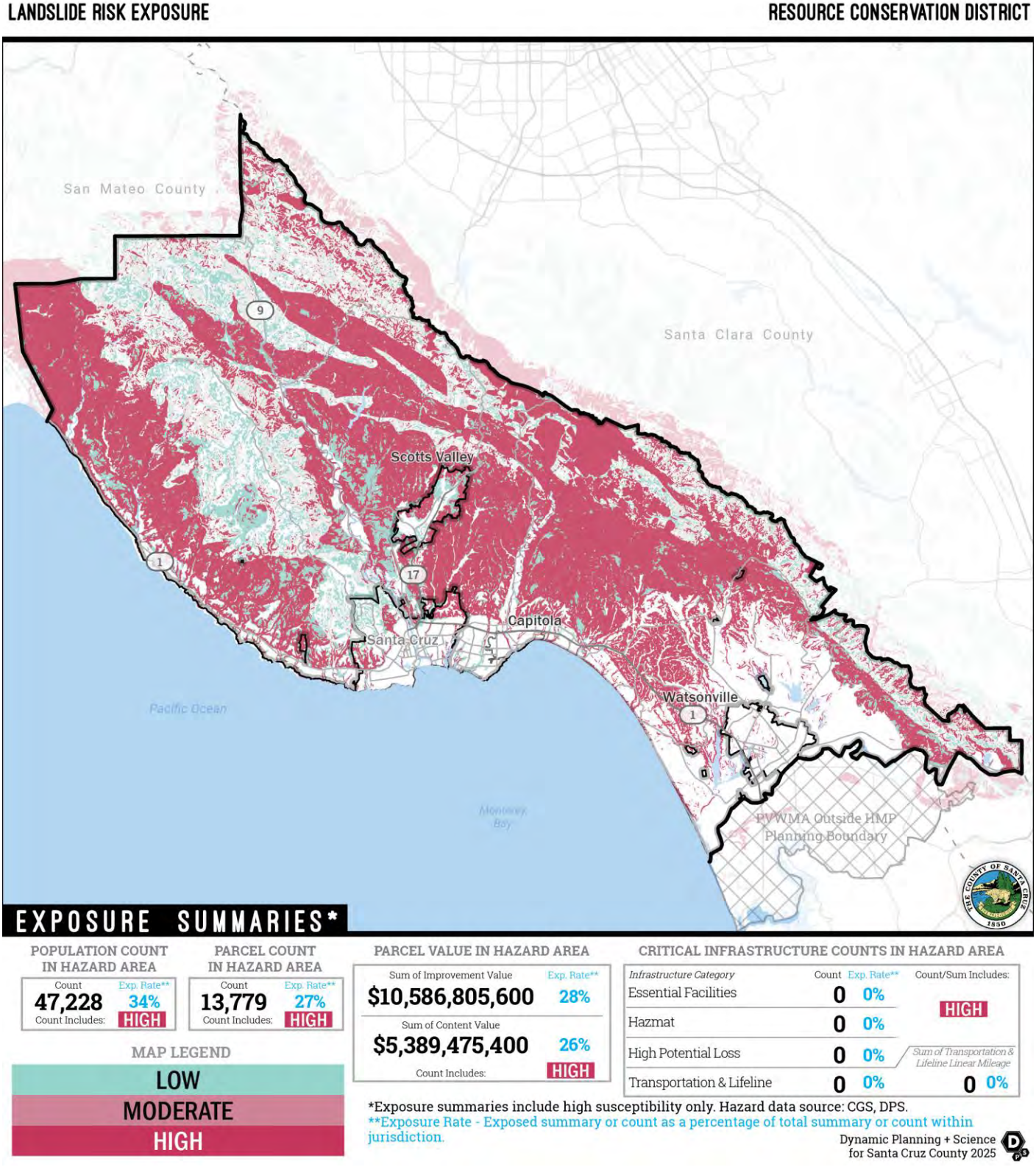


Figure 7-17: RCD Slope Failure Susceptibility Map

7.5.2.4 Coastal Hazards

The RCD's partners and program work face growing risks from coastal hazards and especially coastal erosion. These threats are intensified by the district's location adjacent to the Pacific Ocean and climate change and sea level rise, as discussed in Section 7.5.2.7.

Coastal erosion is an ongoing hazard that affects both natural systems and built communities in Santa Cruz County. Shoreline retreat, bluff failure, and dune loss threaten infrastructure, agricultural lands, and critical habitats. For the RCD, these hazards directly impact long-term restoration work and the sustainability of nature-based mitigation strategies.

The RCD's role in addressing coastal erosion centers on ecosystem-based resilience. Through its coastal restoration projects, the district works with partners to stabilize dunes, restore ecosystem dynamism, and restore estuarine habitats that absorb storm surge and reduce erosion pressures. Projects along the Monterey Bay shoreline also integrate habitat benefits with hazard mitigation by creating conditions that sustain biodiversity while reducing flood and erosion risks to nearby communities.

Coastal erosion is also closely linked to sea level rise, compounding upstream flooding and saltwater intrusion in coastal watersheds. The district uses a multi benefit approach that combines dune restoration, estuary management, and watershed planning to ensure mitigation strategies address both immediate erosion concerns and long term shoreline change. These efforts help maintain coastal ecosystem services, reduce vulnerability for landowners, and extend the protective value of restored natural features in the face of accelerating coastal hazards.

7.5.2.5 Drought Hazard

The National Drought Monitor provides drought data and maps nationally and on a localized, watershed scale. The National Drought Monitor is the product of 11 agencies, including the NDMC, NOAA and USDA, and is available at droughtmonitor.unl.edu. The National Drought Monitor categorizes the level of drought from D0 through D4, with D4 being the highest "exceptional drought." Table 7-6 depicts drought classifications and impacts from the level of drought occurrence in California, while Figure 7-18 shows a time series of the level of drought in Santa Cruz County from 2000 to 2023 according to the National Drought Monitor.

Drought is a chronic hazard for the San Lorenzo Valley, City of Santa Cruz, Pajaro Valley, and Watsonville with conditions recurring regularly over the past two decades. As shown in Figure 7-18, Santa Cruz County has experienced multiple prolonged drought cycles since 2000, including exceptional drought (D4) conditions between 2014 and 2016 and again during 2021 and 2022. These cycles have had profound impacts on local water supply, agriculture, ecology, and vulnerable populations.

The City of Santa Cruz and San Lorenzo Valley depend on surface water for their water supplies, which are more immediately impacted by drought. Further, the adverse impacts of surface water drought depletion on aquatic habitat and surrounding forest ecology can be severe, reducing both quantity and quality for people and sensitive species. Watsonville depends heavily on the Pajaro Valley Groundwater Basin, which is already overdrafted and subject to chronic depletion. In addition, the Mid-County and Santa Margarita Basins are impacted by overdraft and threatened by climate change.

Extended drought reduces recharge of aquifers and surface water flows, placing stress on municipal wells and water supplies for fire suppression. Declining groundwater levels also heighten the risk of saltwater intrusion from the Monterey Bay into the Pajaro Valley Basin, further threatening long-term water quality and reliability.

Drought impacts disproportionately affect low-income residents, farm workers, and disadvantaged households, who may face rising utility costs, stricter water use restrictions, and employment disruptions in the agriculture and food processing sectors. In rural and fringe neighborhoods where residents rely on shallow or aging wells, prolonged drought increases the risk of well failure or degraded water quality, further exacerbating inequities in water access.

Climate change is expected to intensify the frequency and duration of multi-year droughts, increasing Watsonville and the broader Pajaro Valley's dependence on the already overdrawn Pajaro Valley Basin. Pajaro Valley Water Management Agency's limited storage capacity compounds this vulnerability, leaving residents and agricultural operations more exposed to recurring water shortages. Drought conditions also interact with other hazards, such as increasing wildfire risk by drying vegetation and reducing water available for suppression.

Building resilience to drought in Watsonville and the broader Pajaro Valley will require expanding groundwater recharge projects, investing in water conservation and efficiency programs, and advancing equitable drought planning that prioritizes at-risk communities. Collaboration with the Pajaro Valley Water

Management Agency, local farmers, and regional partners remains critical to ensuring long-term water security for residents, agriculture, and the local economy.

Table 7-6: Drought Classifications and Impacts

Category	Description	Possible Impacts
D0	Abnormally Dry	▪ Soil is dry; irrigation delivery begins early ▪ Dryland crop germination is stunted ▪ Active fire season begins
D1	Moderate Drought	▪ Dryland pasture growth is stunted; producers give supplemental feed to cattle ▪ Landscaping and gardens need irrigation earlier; wildlife patterns begin to change ▪ Stock ponds and creeks are lower than usual
D2	Severe Drought	▪ Producers increase water efficiency methods and drought-resistant crops ▪ Grazing land inadequate ▪ Fire season is longer, with high burn intensity, dry fuels, and large fire spatial extent; more fire crews on staff ▪ Lake- and river-based tourism declines; boat ramps close ▪ Trees are stressed; plants increase reproductive mechanisms; wildlife diseases increase ▪ Water temperatures increase; programs to divert water to protect fish begin ▪ River flows decrease; reservoir levels are low and banks are exposed
D3	Extreme Drought	▪ Federal water not adequate to meet irrigation contracts; extracting supplemental groundwater is expensive ▪ Fire season lasts year-round; fires occur in typically wet parts of the state; burn bans are implemented ▪ Ski and rafting business is low; mountain communities suffer ▪ Low water levels impede fish migration and cause lower survival rates ▪ Wildlife encroach on developed areas; little native food and water is available for bears, which hibernate less ▪ Water sanitation is a concern; reservoir levels drop significantly; surface water is nearly dry, flows are very low; water theft occurs ▪ Livestock need supplemental feed, cattle and horses are sold; little pasture remains ▪ Well and aquifer levels decrease; homeowners drill new wells
D4	Exceptional Drought	▪ Fire season is very costly; number of fires and areas burned are extensive ▪ Many recreational activities are affected ▪ Fields are left fallow; orchards are removed; vegetable yields are low; honey harvest is small; agricultural unemployment is high, food aid is needed ▪ Fish rescue and relocation begins; pine beetle infestation occurs; forest mortality is high; wetlands dry up; wildlife death is widespread; algae blooms appear ▪ Poor air quality affects health; greenhouse gas emissions increase as hydropower production decreases; West Nile outbreaks rise ▪ Water shortages are widespread; surface water is depleted; federal irrigation water deliveries are curtailed; water prices are extremely high; wells are dry, more and deeper wells are drilled; water quality is poor

Source: Adapted from U.S. Drought Monitor Drought Classifications and Impacts

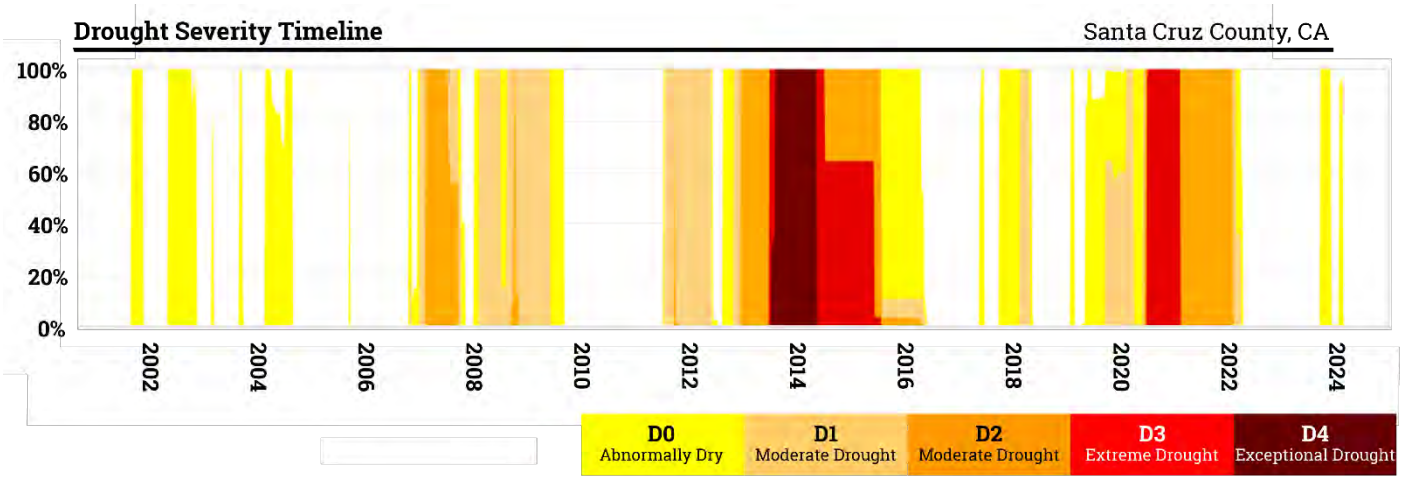


Figure 7-18: Drought Severity Timeline 2000-2024

7.5.2.6 Dam Failure Hazard

Dam failure is not a widespread hazard in Santa Cruz County but remains a concern in watersheds with small aging dams and impoundments. These structures were often built for historic agricultural, industrial, or water storage uses and many are now beyond their original design life. Failures in these small dams can release large volumes of sediment, cause localized flooding, and disrupt ecological conditions in priority watersheds.

For the RCD, the risk from dam failure is less about damage to built infrastructure and more about the cascading effects on watershed health. Sudden sediment release can degrade fish habitat, reduce water quality, and bury stream restoration investments. Local flooding from structural failure can damage roads, farms, and riparian corridors. These events also complicate the effectiveness of ongoing erosion control and habitat restoration projects.

The RCD plays a role in addressing this hazard through its Integrated Watershed Restoration Program (IWRP) and related efforts that support dam removal, culvert replacement, and fish passage improvements. By coordinating planning and funding across agencies, the RCD helps reduce reliance on aging dams while restoring natural stream function. Where full removal is not feasible, the RCD works with partners to implement erosion control, sediment management, and habitat restoration that reduce downstream risks.

While the overall exposure from dam failure is limited compared to other hazards, the localized impacts on watersheds and restoration projects are significant. The RCD's focus on watershed health, sediment reduction, and ecological resilience makes it a central partner in minimizing the risks associated with failing small dams.

7.5.2.7 Climate Change Hazard

Climate change is a long-term threat that influences every hazard faced within the RCD service area. Hotter summers, shifting precipitation patterns, and more frequent droughts threaten the viability of the RCD's forest health, vegetation management, stewardship in agriculture, and erosion control efforts. These changes complicate planning horizons and increase uncertainty for ecosystem-based mitigation strategies.

Unlike water utilities that track direct supply impacts, the RCD's vulnerability is expressed through the condition of natural systems. Reduced precipitation and longer dry seasons undermine streamflow and groundwater recharge, which directly affects restoration projects and watershed resilience. Hotter summers increase wildfire risk by drying fuels and stressing vegetation. More variable and intense rainfall drives slope instability, erosion, and sedimentation in streams. These combined effects make it more difficult to sustain long-term investments in floodplain restoration, reforestation, and soil conservation.

State and federal climate assessments anticipate further intensification of wet and dry extremes, along with rising temperatures that stress both ecosystems and working lands. In practical terms, droughts will reduce water availability for groundwater-dependent habitats and farming operations, while intense storms will overwhelm rural roads and stream channels. For the RCD, these conditions reinforce the importance of programs that combine hazard mitigation with climate adaptation, such as the Forest Health and Wildfire Resilience Program, Managed Aquifer Recharge projects, and the Integrated Watershed Restoration Program (IWRP).

As such, this MJHMP annex addresses climate change as a cross-cutting factor for every hazard of concern. The impacts of changing temperature, precipitation, and storm patterns are considered within the wildfire, flood, drought, slope failure, and coastal hazard sections. By integrating climate adaptation into each program area, the RCD ensures that its conservation and hazard mitigation strategies remain effective in the face of long-term change.

A more detailed discussion of climate projections and observed changes is provided in Volume 1, Section 3.2.10 of this plan.

Sea Level Rise

Sea level rise poses a growing threat to coastal areas within the RCD's service area, as further discussed in Section 7.5.2.4, Coastal Hazards. Higher sea levels are expected to compound upstream flooding, increase groundwater salinity, and reduce stormwater infiltration in coastal watersheds targeted for managed aquifer recharge. These changes undermine the effectiveness of groundwater recharge projects and increase the risk of water quality degradation in low-lying agricultural and residential areas.

Coastal estuaries and lagoons where the RCD is working in partnership with land managers,, such as those at Scott Creek and Waddell Creek, are particularly vulnerable. Rising seas and saltwater intrusion threaten habitat function, degrade ecosystem resilience, and place long-term stress on species that depend on brackish and freshwater conditions. Loss of wetland and lagoon habitat would also reduce natural flood storage capacity, further amplifying flood risk along the coast.

The RCD addresses these risks through a range of water-focused programs. Its Managed Aquifer Recharge projects increase infiltration in coastal watersheds, helping to offset rising salinity and maintain local water supplies. Estuary and lagoon restoration projects aim to enhance tidal exchange, restore habitat, and buffer coastal communities from sea level rise impacts. The district also coordinates with partners through the IWRP to identify and advance multi-benefit projects that combine flood protection, habitat restoration, and water quality improvement.

Sea level rise adds a long-term layer of vulnerability to existing coastal hazards. For the RCD, this means scaling up programs that protect estuaries, maintain recharge opportunities, and integrate ecosystem-based approaches to coastal resilience. These strategies provide multiple benefits by safeguarding natural resources, supporting groundwater reliability, and reducing community exposure to coastal flooding.

7.5.3 Planning for Hazards & Growth

The Resource Conservation District of Santa Cruz County incorporates hazard awareness into its long term planning and program decisions to support resilience and sustainability. The district's plans and collaborative frameworks provide a foundation for addressing future climate risks, watershed health, and resource management. These efforts focus on maintaining effective conservation services and hazard mitigation programs under changing environmental conditions.

Although the RCD does not manage water delivery systems or built infrastructure like utility districts, it takes a proactive approach to maintaining and expanding programs that are essential to public safety, ecosystem health, and community resilience. District initiatives focus on implementing projects that strengthen watershed function, improve wildfire resilience and natural infrastructure, and expand drought resilience. These projects improve performance during both normal conditions and emergencies such as wildfires, droughts, floods, and coastal storms.

Future development in Santa Cruz County will continue to occur in areas exposed to hazard risk, including floodplains, wildland urban interface zones, and the coastal margin; although, current regulations limit and strictly regulate development in these areas. As climate impacts increase, it will be important for the RCD to align conservation strategies, landowner assistance, and community education with known risks. The district's investments in forest health, floodplain restoration, water conservation, stormwater management, managed aquifer recharge, and community wildfire programs will help reduce exposure, protect natural and working lands, and support long term resilience for both people and ecosystems.

7.5.3.1 Development & Hazard Considerations

The RCD does not manage new residential or commercial development approvals. However, the district plays an important role in shaping how development interacts with natural hazards through its technical assistance, planning partnerships, and on-the-ground projects.

Much of the county's growth is occurring in areas with known hazard exposure. New housing allocations are concentrated in Watsonville, Live Oak, and other urbanized areas that are subject to flood, sea level rise, and coastal erosion. Rural development in the San Lorenzo Valley and the North Coast increases exposure to wildfire, slope failure, and road access limitations. These conditions create cumulative risks for residents, infrastructure, and natural resources.

The RCD supports hazard-informed development by working with landowners on a voluntary basis to advance conservation practices that reduce erosion, restore floodplains, and improve stormwater management. Programs such as the Integrated Watershed Restoration Program (IWRP) and the Partners in Restoration Permit Coordination Program enable landowners and agencies to implement projects that offset development-related impacts. Examples include bank stabilization, culvert upgrades, defensible space projects, and recharge basins that protect both new and existing communities from hazard risks.

As climate impacts intensify, development in hazard-prone areas will place additional pressure on watersheds and ecosystems. The RCD's role is to provide landowners and local governments with tools and

projects that ensure growth occurs in ways that protect water quality, reduce flood and fire risk, and maintain ecological resilience. This work aligns with countywide planning efforts and supports FEMA's directive to integrate hazard mitigation with future development planning.

7.5.4 Hazard Problem Statements

As part of the mitigation action identification process, the internal planning group for each jurisdiction identified areas of concern (aka problem statements) for their respective facilities based on the risk assessment and vulnerability analysis. Problem statements focused on the impact, victim, and the threat that the hazard could create in the jurisdiction, as described in Table 7-7. Identifying common issues and weaknesses through these problem statements assisted the planning group in understanding the realm of resources needed for mitigation.

The goal is to have at least one mitigation action for every problem statement. Projects or actions have been developed to mitigate each problem identified. See Table 7-9 for a full list of mitigation actions and corresponding problem statements that they address. Each problem statement is coded with a problem number for cross-referencing between Table 7-7 and Table 7-9.

Table 7-7: RCD Problem Statements

Hazard	Sub-Hazard	Area of Concern	Problem IS	Description	Related Mitigation Actions
Climate Change		Threat	ps-CC-RCD-01	Near- and long-term climate change effects?such as hotter summers, shifting precipitation patterns, and more frequent drought?threaten the viability of forest health, vegetation management, and erosion control efforts. These impacts complicate planning horizons and increase uncertainty for ecosystem-based mitigation strategies.	ma-CC-RCD-01
Coastal Hazards	Coastal Erosion	Impact	ps-CE-RCD-01	Ongoing coastal erosion affects the long-term ecological viability of dunes, bluffs, and estuaries.	ma-CE-RCD-01
Coastal Hazards	Coastal Erosion	Threat	ps-CE-RCD-02	Stronger coastal storms and rising seas are accelerating erosion rates necessitating the need for a more rapid, integrated approach to infrastructure and ecosystem resilience planning and implementation.	ma-CE-SCW-03
Dam Failure		Impact	ps-DF-RCD-01	Failures in small, non-functioning, aging dams can release sediment, cause flooding, threaten life and property, and disrupt ecological conditions in priority watersheds.	ma-DF-RCD-02

Hazard	Sub-Hazard	Area of Concern	Problem IS	Description	Related Mitigation Actions
Drought		Impact	ps-DR-RCD-01	Extended droughts reduce stream baseflows and aquifer recharge, undermining watershed restoration efforts and the effectiveness of managed aquifer recharge projects, and necessitating water conservation strategies. Droughts impact working lands, food resources, species, soil, and water availability.	ma-DR-SCC-03, ma-DR-SCW-01, ma-DR-SVW-01, ma-DR-RCD-02
Drought		Threat	ps-DR-RCD-02	Climate change is driving more frequent and prolonged drought cycles that threaten groundwater-dependent habitats and increase reliance on over drafted basins.	ma-DR-CBC-03
Drought		Threat	ps-DR-RCD-03	Shallow agricultural wells and water-dependent ecosystems in coastal and foothill areas face chronic vulnerability to water scarcity during multi-year droughts.	ma-DR-RCD-04, ma-DR-RCD-03
Drought		Victim	ps-DR-RCD-04	Droughts decrease crop flexibility and viability, with disproportionate impacts on small farmers, agricultural workers, food industry workers, and others reliant on the local food economy.	ma-DR-SCC-02
Drought		Threat	ps-DR-RCD-05	Extended droughts threaten forest health and long-term resilience, increasing risk of secondary hazards such as severe wildfire from infestations, disease, and water-stressed vegetation.	ma-DR-RCD-04
Drought		Threat	ps-DR-RCD-06	Extended droughts and changes in historical wet and dry season conditions due to climate change decrease crop flexibility, viability, and resilience.	ma-DR-RCD-04
Flood		Victim	ps-FL-RCD-01	At-risk communities, farmers, and ranchers experience recurring flood impacts due to aging culverts, undersized crossings, reduced function of natural floodplain systems, and poor maintenance.	ma-FL-RCD-02, ma-FL-SCC-08
Flood		Impact	ps-FL-RCD-02	Flooding frequently damages roads (including emergency access) and natural infrastructure, reducing long-term watershed function and habitat quality, and necessitating floodplain restoration projects led by RCD.	ma-FL-RCD-02, ma-FL-SCC-04, ma-FL-SCC-07, ma-FL-RCD-01, ma-FL-RCD-03

Hazard	Sub-Hazard	Area of Concern	Problem IS	Description	Related Mitigation Actions
Flood		Threat	ps-FL-RCD-03	Increasing storm intensity and sediment and debris accumulation from flooding, often exacerbated by land use changes and lack of best management practices, are overwhelming local stream channels, especially where erosion control and drainage retrofits on rural roads have not been implemented.	ma-AH-RCD-01, ma-FL-RCD-02
Slope Failure		Impact	ps-SF-RCD-01	Landslides degrade stream quality through sedimentation, can inhibit roads and neighborhood access, and can degrade long-term ecological function.	ma-AH-RCD-01
Slope Failure		Threat	ps-SF-RCD-02	Local geologic conditions (e.g., Santa Margarita Sandstone) paired with changes in land use and extreme precipitation events create chronic slope instability in local watersheds.	ma-AH-SCC-08
Slope Failure		Victim	ps-SF-RCD-03	At-risk communities with limited access are impacted by hillside erosion and landslides in the Santa Cruz Mountains, especially in oversteepened areas and other high risk areas where people and infrastructure are concentrated.	ma-SF-RCD-01
Sea Level Rise		Impact	ps-SLR-RCD-01	Sea level rise is expected to compound upstream flooding and reduce groundwater quality and supply in coastal watersheds.	ma-SLR-SCW-02
Sea Level Rise		Threat	ps-SLR-RCD-02	Coastal estuaries and lagoons, such as Scott and Waddell Creeks, are at risk of habitat loss that threatens ecosystem function.	ma-SLR-RCD-01
Wildfire		Victim	ps-WF-RCD-01	People, grey and green infrastructure (including ecological restoration outcomes), species, and habitats are vulnerable to catastrophic wildfires.	ma-AH-SCC-06
Wildfire		Impact	ps-WF-RCD-02	Uncontrolled high severity wildfires degrade forest health, water quality, and overall ecological resilience, necessitating strategic wildfire risk reduction actions.	ma-WF-SCC-05, ma-WF-SCC-08, ma-WF-RCD-01
Wildfire		Threat	ps-WF-RCD-03	Accumulated fuels, prolonged drought, and limited ingress/egress in vulnerable, high risk rural areas elevate wildfire risk in priority landscapes necessitating ongoing project work.	ma-WF-SCC-01

7.5.4.1 Climate Change Impacts & Vulnerable Populations

The RCD is a non-regulatory special district whose mission is to help people protect, conserve, and restore natural resources through technical assistance, outreach, and implementation of on-the-ground projects. While the RCD does not deliver water or emergency services, it plays a vital role in advancing natural infrastructure solutions and conservation practices that reduce community vulnerability to climate-driven hazards. Climate change poses compounding risks across the watersheds, coastal areas, and working landscapes where the RCD operates, and these risks disproportionately affect disadvantaged rural residents, small-scale farmers, agricultural workers, and communities with limited access to resources.

Drought and Water Supply: Extended droughts threaten stream baseflows, aquifer recharge, and agricultural viability. Small farmers and agricultural workers face disproportionate hardship due to reduced crop flexibility, declining groundwater availability, and rising production costs. Surface water-dependent habitats and groundwater-dependent shallow wells in foothill and coastal areas are particularly vulnerable. Drought also degrades forest health, increasing risk of secondary hazards such as severe wildfire driven by water-stressed vegetation and disease.

Flooding: Flood impacts are frequent in rural areas where aging culverts, undersized crossings, and reduced natural floodplain function contribute to road damage, erosion, and degraded watershed health. These impacts directly affect residents, farmers, and ranchers, who may experience loss of access, property damage, and crop disruption. Increasing storm intensity, combined with sediment and debris accumulation, is overwhelming local stream systems, particularly where erosion control and drainage retrofits on private rural roads have not been implemented.

Sea Level Rise and Coastal Hazards: Coastal erosion, stronger storms, and sea level rise are degrading dunes, bluffs, and estuarine systems across Santa Cruz County. Sea level rise compounds upstream flooding and threatens groundwater quality in coastal watersheds, while estuaries and lagoons such as Scott and Waddell Creeks face habitat loss that reduces ecosystem resilience.

Slope Failure: Landslides and chronic erosion degrade stream quality, block emergency and residential access, and threaten rural hillside communities with limited evacuation options. Local geology, including Santa Margarita Sandstone, combined with intense rainfall and land use changes, creates long-term slope instability across mountain watersheds.

Wildfire: Uncontrolled, high-severity wildfires degrade ecological restoration outcomes, forest health, and water quality. Vulnerable rural residents, including those in isolated areas with limited ingress and egress, face disproportionate evacuation challenges. Wildfire risk is exacerbated by accumulated fuels, prolonged drought, and vegetation stress.

Climate Change and Natural Infrastructure: Near- and long-term climate impacts, including hotter summers and shifting precipitation patterns, complicate the effectiveness of ecosystem-based mitigation strategies. Projects in forest management, streambank stabilization, aquifer recharge, and habitat restoration face increased uncertainty under changing conditions.

The RCD does not provide direct emergency response but reduces community vulnerability through proactive conservation and post-disaster technical assistance. Programs such as fuel reduction and chipping, floodplain restoration, drought resilience projects, and agricultural water conservation directly support hazard mitigation while improving ecosystem health. With new dedicated funding from Measure Q, the RCD can expand its role in implementing wildfire resilience, water resource protection, and climate adaptation projects countywide, serving as a critical partner in reducing long-term hazard risk and supporting vulnerable populations.

7.6 Mitigation Strategy

This section provides the framework for how the district will reduce hazard risk within its jurisdiction while supporting the broader goals of the Santa Cruz County MJHMP. It includes an overview of existing capabilities, opportunities to strengthen resilience, and the district's prioritized mitigation actions. Together, these elements demonstrate how the RCD integrates hazard awareness into its planning and development processes while contributing to a coordinated countywide approach.

Within the Santa Cruz County MJHMP, the mitigation strategy serves as the roadmap for future hazard mitigation efforts. For the RCD, the strategy outlined in this annex reflects the outcomes of the countywide planning process while also addressing the district's unique risks, priorities, and community needs. The strategy is designed to reduce vulnerabilities identified in the risk assessment, including the problem statements developed for flooding, earthquakes and liquefaction, slope failure, wildfire, drought, severe storms, extreme heat, and climate change.

Mitigation actions identified in this annex include both policy-based and project-based initiatives, with an emphasis on integrating resilience into land use planning, infrastructure investments, and community programs. Actions are structured to align with FEMA's requirements and to coordinate with existing city, county, and regional planning mechanisms. Each action identifies responsible parties, potential funding sources, and the resources needed for implementation.

For the RCD, this strategy provides a framework for strengthening resilience by combining county- and city-led initiatives—such as infrastructure improvements, building code enforcement, and community preparedness—with regional coordination through the MJHMP. By advancing these efforts in alignment with the general plans and other local planning documents, the RCD enhances its ability to reduce hazard risk with its partners while supporting long-term community safety, sustainability, and economic stability county-wide.

The subsections that follow describe these elements in detail:

- **Section 7.6.1 Aligning Action Planning** with capabilities provides a summary of the RCD's capacity to address natural hazards.
- **Section 7.6.2 Mitigation Action Plan** presents the RCD's prioritized actions to guide implementation in coordination with countywide strategies.

7.6.1 Aligning the Action Plan

This section connects the RCD's mitigation actions with its existing capabilities and areas for growth. Capability assessments are a required element of hazard mitigation planning under the Disaster Mitigation Act of 2000 and FEMA's 2023 guidance, ensuring that actions are realistic, achievable, and aligned with available resources.

The section begins with a summary of the RCD's capabilities across four areas: planning and regulatory, administrative and technical, fiscal, and education and outreach. This overview highlights the tools and

strengths that the district already uses to reduce hazard risk. The section then provides a detailed analysis of each capability area, identifying both current practices and opportunities to expand resilience.

7.6.1.1 Capabilities & Opportunities Assessment

To develop a realistic and actionable mitigation strategy, it must account for existing jurisdictional capabilities and what future opportunities there are to enhance those capabilities for purposes of hazard mitigation. This section provides an assessment of the RCD's existing capabilities and future opportunities, including planning and regulatory, administrative and technical, fiscal, and public outreach and education capabilities. This assessment also identifies opportunities to integrate this MJHMP into future planning, policies, or programs to weave mitigation efforts into daily operations and address hazard problems wholistically. Capabilities are categorized into four groups and include various mechanisms.

- **Planning and Regulatory Capabilities:** Existing long-range plans, emergency response plans, hazard-specific plans, land use policies, and building and development standards.
- **Administrative and Technical Capabilities:** Available expertise in emergency services, engineering, grant management, and community planning.
- **Fiscal Capabilities:** Budgetary capacity, taxing authority, grants, and other funding mechanisms that can support mitigation projects.
- **Outreach and Education Capabilities:** Existing programs for providing technical assistance, community education, public warnings, and stakeholder engagement.

A full description of the process used to develop the capabilities assessment is provided in Volume 1, Section 2.3.3. This capabilities and opportunities assessment for RCD lists the various types of capabilities along with how they have been, currently are, or will in the future be integrated into hazard mitigation planning efforts. The three "HMP Integration" columns that identify the capability's status and usage are color-coded with green, yellow, or orange shading to communicate the following:

- **Status:** If the capability is present at all and what level of use it has generally.
- **Current Mitigation Use:** If the capability is currently being used in mitigation efforts, specifically, and at what level.
- **Future Opportunity:** If there is a future opportunity to integrate the capability into mitigation efforts and at what level.

Planning & Regulatory Capabilities

As a special district with limited authority and not a municipality, the RCD does not maintain traditional planning or regulatory tools, such as a Capital Improvement Program or hazard-specific development standards. Instead, its approach is project-based, with grant funding used to deliver initiatives including culvert replacements, managed aquifer recharge basins, and floodplain restoration projects that reduce hazard risk. That said, the RCD complies with all development standards and environmental review requirements for the State of California, including the California Environmental Quality Act (CEQA), and within the county and municipalities where its projects are located. These local regulatory environments

are described in Volume 1 for Santa Cruz County and in the municipal annexes of Volume 2 for the Cities of Capitola, Watsonville, and Scotts Valley. The RCD also follows the City of Santa Cruz's development regulations for projects within that jurisdiction (see City of Santa Cruz Municipal Code).

The district does not operate a formal fire prevention plan but contributes to wildfire mitigation by implementing shaded fuel breaks, chipping, and defensible space programs in coordination with CALFIRE, local fire departments/districts, and Fire Safe Councils. Similarly, while it does not manage a stormwater inspection program, the RCD advances hazard reduction through education, technical assistance, recharge basins, green infrastructure, and stormwater projects.

The RCD also participates in the countywide Community Wildfire Protection Plan and supports local Firewise communities. The RCD has also co-led the development of the Santa Cruz Mountains Regional Priority Plan for forest health and wildfire resilience. Through these collaborative efforts, the district leverages its technical expertise and partnerships to integrate hazard reduction into watershed restoration and landowner assistance programs.

Future integration of the MJHMP will occur through various processes and mechanisms outlined across multiple mitigation actions. A key opportunity for future hazard mitigation integration with the RCD's existing planning mechanisms is to increase consideration of climate change projections and the coastal hazards vulnerability assessment from this plan in project planning and implementation. This includes coastal erosion mitigation through nature-based solutions at RCD project sites in support of estuary, slough, and dune health (e.g., ma-CC-RCD-01 in Table 7-9).

Administrative & Technical Capacity

The RCD has education in disaster risk reduction and emergency planning staff. However, it does not maintain in-house engineering or emergency management staff. Instead, it contracts for engineering services, often through USDA and technical consultants, and participates in regional emergency coordination through the county OR3.

Grant-writing, program management, and technical assistance regarding natural resources management, as well as leadership in regional planning and coordination are a core capacity for the district. Dedicated staff focus on securing external funding to support hazard mitigation and conservation projects. Outreach and education staff provide hazard information, lead workshops, and support community partnerships, though resources are limited relative to countywide needs.

While many RCD staff have GIS skills and capabilities, these skills are augmented through partnerships and consultants. This arrangement provides flexibility but limits the district's ability to independently manage mapping and hazard analysis.

Administrative strength lies in the district's ability to coordinate with other agencies. Strong partnerships with state and federal resource agencies, such as CAL FIRE and USDA NRCS, as well as with local agencies like the County OR3, PV Water, fire departments/districts, Fire Safe Councils, University of California Cooperative Extension, and NGOs, allow the RCD to extend its capacity beyond its small staff.

Warning Systems & Services

The RCD does not manage formal warning systems for hazards such as floods, wildfires, or earthquakes. Emergency notification and public alerting remain the responsibility of county and state agencies. The RCD's role is to support these systems by providing education, preparedness and resilience resources, and technical assistance to landowners.

Fiscal Capabilities

The RCD relies primarily on grants, contracts, and partnerships to fund hazard mitigation projects. Beginning in FY 2025-2026, the district will receive stable local funding through Measure Q, a voter-approved parcel tax that supports wildfire preparedness, water resource protection, habitat restoration, and landowner assistance. This revenue also serves as a critical local match for state and federal mitigation grants.

The district does not levy utility fees, system development fees, or special tax bonds, nor does it issue debt through general obligation bonds. Instead, fiscal strategy centers on leveraging Measure Q with competitive grant programs to expand community resilience projects.

Education & Outreach Capabilities

The RCD maintains strong education and outreach capacity for its size. Its website provides accessible information on wildfire, drought, flooding, and agricultural soil conservation programs. Active social media channels are used to share project updates, safety information, and conservation tips.

The district hosts workshops throughout the year on various environmental themes related to living on rural properties and also participates in wildfire safety events, Earth Day fairs, and community workshops, providing materials and technical guidance to residents (e.g., irrigator trainings about water use efficiency on farms). Outreach includes digital newsletters, printed flyers, and direct technical assistance via phone, email, and field visits.

The RCD also partners with the Fire Safe Councils of Santa Cruz County, Bonny Doon, and South Skyline to expand chipping services, defensible space programs, and outreach into rural and high-risk communities. These efforts ensure that hazard mitigation is linked directly to community engagement and resident action.

ASSESSMENT LEGEND

HMP Integration

Status	Current Mitigation Use	Future Opportunity
Currently in use or present.	Used widely for mitigation.	Opportunity to expand and integrate.
(Sort of) Seldomly used or limited presence.	Limited use in mitigation planning.	Limited opportunity to expand and integrate.
(No) Not present or available.	Not used in mitigation planning.	No opportunity to expand or integrate.

Table 7-8: RCD Capabilities and Opportunities Assessment

Resource	HMP Integration: Status	HMP Integration: Current Mitigation Use	HMP Integration: Future Opportunity	Notes / Additional Detail
Planning and Regulatory Capabilities				
Hazard Reduction Programs (Annually Conducted)				
Capital Improvements Program (CIP) or Plan				No formal plan, but project-based capital planning occurs through grants (e.g., culvert upgrades, aquifer recharge infrastructure)
Annual Fire Prevention Plan				No formal plan, but conducts fire protection programs and participates in vegetation management, shaded fuel breaks, and other fire prevention and mitigation activities with partners such as the Fire Safe Council
Seismic Safety Program (Non-structural)	N/A	N/A	N/A	Not within district's authority, scope, or purpose
Earthquake Modernization Plan (Building Safety)	N/A	N/A	N/A	Not within district's authority, scope, or purpose
Stormwater Management Program (Annual Inspections)				
Hazard Plans and Programs				
Floodplain Response Plan				No formal plan and does not lead emergency flood response, but supports pre-disaster flood planning through watershed restoration and infrastructure retrofits
Community Wildfire Protection Plan (CWPP)				Participates in the Santa Cruz County CWPP and supports implementation by conducting fuel break, chipping, and defensible space projects
Ground Water Management Planning / Plans				No formal plan, but leads and supports aquifer recharge, water conservation, and stormwater infiltration across local basins

Resource	HMP Integration: Status	HMP Integration: Current Mitigation Use	HMP Integration: Future Opportunity	Notes / Additional Detail
Climate Action Plan				No formal plan, but agency contributes to regional climate resilience through forest health, water conservation, and ecosystem services
Drought Mgmt/ Contingency Plan				No formal plan, but leads drought resilience work such as habitat flow improvements, greywater reuse, efficient agricultural irrigation, and other projects coordinated with local water agencies
FireWise Communities within District				Partners with and supports local Firewise communities
Hazard-Related Public Outreach Program				Provides educational materials, workshops, and resources related to drought, wildfire, geological, and flood hazards
Administrative and Technical				
Staff Capacity				
Emergency Manager				Not an emergency response agency, but participates in regional coordination efforts
Civil Engineer				Engineering support provided via contract (e.g., with USDA)
Dedicated Public Outreach Personnel				Outreach/education team supports workshops, public information distribution, and community partnerships; resource-limited but active
GIS Specialist and Capability				GIS functions are either shared or consultant-supported
Grant Manager, Writer, or Specialist				Dedicated staff focused on grant writing and program funding
Other				Leverages interagency coordination rather than internal staffing via strong partnerships with County OES, PV Water, Fire Safe Council, NGOs, and others
Warning Systems/Services				
General	N/A	N/A	N/A	Not within district's authority, scope, or purpose
Flood	N/A	N/A	N/A	Not within district's authority, scope, or purpose
Wildfire	N/A	N/A	N/A	Not within district's authority, scope, or purpose
Geological Hazards	N/A	N/A	N/A	Not within district's authority, scope, or purpose
Fiscal Capabilities				
Financial Resources for Hazard Mitigation				
Levy for Specific Purposes with Voter Approval				Measure Q is a voter-approved parcel tax that provides dedicated local funding to the Resource Conservation District of Santa Cruz County. It supports wildfire preparedness, habitat restoration, and technical assistance to landowners, while also serving as local match for state and federal grants. Revenue collection begins in FY 2025-26, enabling program implementation starting in late 2024 or early 2025.
Utilities Fees	N/A	N/A	N/A	Not within district's authority, scope, or purpose

Resource	HMP Integration: Status	HMP Integration: Current Mitigation Use	HMP Integration: Future Opportunity	Notes / Additional Detail
System Development Fee	N/A	N/A	N/A	Not within district's authority, scope, or purpose
General Obligation Bonds to Incur Debt	N/A	N/A	N/A	Not within district's authority, scope, or purpose
Special Tax Bonds to Incur Debt	N/A	N/A	N/A	Not within district's authority, scope, or purpose
Withheld Spending in Hazard-Prone Areas				Indirectly influences mitigation investments by prioritizing grant projects in hazard-prone rural areas
Stormwater Service Fees	N/A	N/A	N/A	Not within district's authority, scope, or purpose
Capital Improvement Project Funding				Capital project funding via grants
Education / Outreach Capabilities				
Education/Outreach Resources				
Website Dedicated to Hazard Topics				Maintains a comprehensive website with project dashboards; wildfire, drought, water, and soil resilience information; and other educational resources related to hazard topics
Dedicated Social Media				Actively posts project updates, hazard safety content, and resource conservation tips via Facebook and Instagram
Hazard Info. Avail. at Library/ Planning Desk				No physical desk, but provides technical assistance and hazard information via phone, email, website and community outreach activities
Annual Public Safety Events				Participates in wildfire safety and education events, Earth Day fairs, and conducts regular public workshops
Ability to Field Public Tech. Assistance Requests				Provides technical assistance on water and soil conservation and wildfire mitigation for landowners through web forms and field visits
Public Safety Newsletters or Printed Outreach				Distributes occasional digital newsletters and printed flyers on programs and resources
Fire Safe Councils				Partners with Fire Safe Councils of Santa Cruz County, Bonny Doon, and South Skylines to deliver chipping, outreach, and defensible space programs
Resource Conservation Districts				Primary district for Santa Cruz County; collaborates with other RCDs on regional efforts
Other				Leverages interagency coordination rather than internal staffing via strong partnerships with County OES, PV Water, Fire Safe Council, NGOs, and others

7.6.2 Resource Conservation District of Santa Cruz County Mitigation Action Plan

RCD mitigation actions were developed based upon the jurisdiction's priorities, risk assessment results, and mitigation alternatives. The mitigation action prioritization method used by all participating jurisdictions is described in Volume 1 Section 4.Table 7-9 lists each priority mitigation action, responsible party, time frame, potential funding source, implementation steps, and resources need to implement based upon consensus among the RCD's planning group members. All mitigation actions across jurisdictions are accessible through MAST (Mitigation Action Support Tool), providing comprehensive details including the mitigation goal, responsible party, timeline, potential funding sources, implementation steps, and required resources. As a dynamic document, hazard problem statements and mitigation activities will be regularly updated through MAST to reflect evolving needs and circumstances.

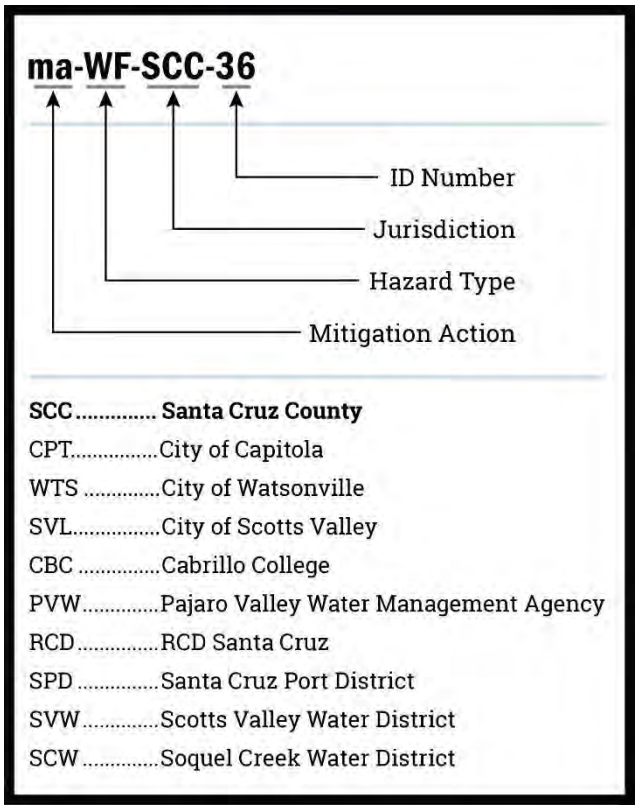


Figure 7-19: Mitigation Action Number Key

As a first-time participant in a hazard mitigation plan, RCD did not have any existing mitigation actions from a prior plan to evaluate. Therefore, all mitigation actions identified in this planning cycle are newly developed based on the district's updated risk assessment, local capabilities, and areas of concern identified during stakeholder engagement and interagency collaboration. These new actions were crafted to address the district's highest priority hazards, align with FEMA's hazard mitigation guidance, and reflect local infrastructure vulnerabilities and water resource challenges. The development of these mitigation strategies marks an important step in integrating resilience into the district's operations and long-term planning. All RCD mitigation actions are documented in Table 7-9.

RCD developed unique mitigation actions, tailored to their own unique priorities, vulnerabilities, and capabilities. Each action contains a level of detail that meets the regulatory requirements of FEMA and DMA 2000, including identifying the responsible party, time frame, potential funding source, implementation steps, and resources needed to implement. It is important to note that the RCD is a small agency with a mostly horizontal structure. Therefore, there are no specific departments or divisions responsible for overseeing these mitigation actions; instead, responsibilities for actions will be shared across all positions in the agency.

All actions are assigned a unique identification number, as illustrated in MAST and in Figure 7-19, using alphanumeric characters that denote specific attributes of the action, including the type of hazard being mitigated, facilitating easy reference and management. Table 7-9 lists each mitigation action for the district.

Table 7-9: RCD Mitigation Action Plan

Hazard	Action ID	Action Title	Description	FEMA Mitigation Alternative	Timeline	Responsibility	Cost	Benefit	Internal Funding Source	External Funding Source	Priority (Based on Criteria)	Problems Addressed
All Hazard	**ma-AH-RCD-01**	Living on Rural Properties Program	Facilitate outreach, education, technical and financial assistance for rural residents related to risk reduction "best management practices" for wildfire resilience, slope and stream bank stabilization, flood management, water conservation, on-site infrastructure protection, and healthy and adaptive ecosystems.	PE&A	Ongoing	RCD + County, NRCS, other stakeholders, and consultants	Medium	High	Staff Time	Potential funding: County, USDA, Measure Q, Prop 4, EPA, HMGP	Very High	ps-FL-RCD-03, ps-CE-SPD-03, ps-CS-SPD-01, ps-LV-SCC-01, ps-SF-RCD-01, ps-WF-SCW-02
All Hazard	**ma-AH-RCD-02**	Community Resilience Coordination & Collaboration	Collaborate and coordinate with planning partners on outreach and education programs for climate resilience and hazard mitigation to address risks from all hazards through a coordinated communications strategy and tools such as workshops, printed and social media, site tours, and facilitated neighbors-meeting-neighbors events. Lead, convene, and participate in regional collaborations to understand and address through collective action climate resilience and risk mitigation (e.g., Santa Cruz Mountains Stewardship Network, Pajaro Compass, Integrated Watershed Restoration Program, Monterey Bay Area Climate Justice Collaborative, Conservation Lands Network, Fire Safe Councils).	PRV, PE&A	Ongoing	RCD + County, NRCS, planning and land stewardship partners, CBOs, and other stakeholders	Low	High	Staff Time	Potential funding: County, USDA, Measure Q, Prop 4, EPA, Calfire, HMGP	Very High	ps-CC-SVL-04
Climate Change	**ma-CC-RCD-01**	Integrate Climate Projections into Land Stewardship Planning	Integrate risk assessment and hazard mitigation strategies from this plan and incorporate downscaled climate change projections into RCD's conservation planning activities (including vegetation management, forest health, erosion control, soil health, farm water and nutrient management, and ecological restoration projects) to improve long-term resilience and adaptive management under future climate scenarios. Develop new data where needed to better inform conservation planning based on climate projections.	PRV, NRP	Medium 3-5 Years	RCD + NRCS and climate science partners	Medium	Medium	Staff Time	Potential funding: CDFA, Coastal Conservancy, prop 4, USDA, HMGP	High	ps-CC-RCD-01, ps-CC-CBC-01, ps-CC-CPT-03, ps-CC-SCC-01, ps-CC-SPD-01, ps-CC-SVL-02, ps-CC-WTS-02, ps-CC-WTS-03
Coastal Hazards (Coastal Erosion)	**ma-CE-RCD-01**	Integrate Coastal Erosion Hazard Assessments with Estuary, Slough & Dune Projects	Assess and integrate coastal hazard mitigation through nature-based solutions at RCD project sites facing chronic erosion, especially in support of estuary, slough, and dune health. Develop a framework for site prioritization.	NRP, PPRO	Medium 3-5 Years	RCD + CCC, local partners, public and private landowners	High	High	Staff Time	Potential funding: Coastal Conservancy, Caltrans, USDA, Prop 4, HMGP	Medium	ps-CE-RCD-02, ps-CE-RCD-01, ps-CC-RCD-01
Dam Failure	**ma-DF-RCD-01**	Remnant Small Dam Safety Outreach & Retrofit	Collaborate with private dam owners to identify, assess, and provide education, technical assistance, and referrals to funding resources for retrofitting or removing aging water control structures that inhibit fish passage or pose upstream, downstream and on-site risks to people, farms, and ecosystems.	SP, PE&A	Medium 3-5 Years	RCD + private owners, County	Medium	High	Staff Time	Potential funding: EPA, NOAA, County, HMGP	Medium	ps-DF-SCC-02, ps-DF-RCD-01

Hazard	Action ID	Action Title	Description	FEMA Mitigation Alternative	Timeline	Responsibility	Cost	Benefit	Internal Funding Source	External Funding Source	Priority (Based on Criteria)	Problems Addressed
Dam Failure	**ma-DF-RCD-02**	Habitat Pond Safety & Resilience	Provide education, technical assistance, and referrals to financial resources to landowners to improve the safety, function, and ecological value of natural and constructed ponds. The program assists landowners with assessing pond stability and flood risks, and implementing improvements such as repairing embankments, upgrading spillways and outlets, restoring native vegetation, and enhancing wildlife habitat. These actions help prevent pond failures and downstream flooding, improve water quality, and support healthy aquatic and riparian ecosystems.	PE&A, NRP, SP	Medium 3-5 Years	RCD + private landowners	Medium	High	Staff Time	Potential funding: CDFW, UDSA, USFWS, DWR, HMGP	Medium	ps-DF-RCD-01
Drought	**ma-DR-RCD-01**	Agricultural Irrigation Efficiency & Water Conservation Program	Provide technical and financial assistance to farms for implementing efficient irrigation and other drought-adaptive practices.	PE&A, NRP	Ongoing	RCD + NRCS, UCCE, PVWMA	Medium	High	Staff Time	Potential funding: PVWater, CDFA, DWR, USDA, HMGP	High	ps-DR-SCC-02, ps-DR-RCD-01, ps-DR-RCD-02, ps-DR-RCD-03, ps-DR-RCD-04, ps-DR-RCD-05, ps-DR-RCD-06, ps-CC-RCD-01
Drought	**ma-DR-RCD-02**	Streamflow & Recharge Enhancement Projects	Implement managed aquifer recharge and habitat restoration at sites with high infiltration potential to offset baseflow and aquifer decline during droughts.	NRP, SP	Ongoing	RCD, PVWMA, UCSC, water agencies, private landowners	High	High	Staff Time	Potential funding: DWR, Prop 4, Measure Q, HMGP	High	ps-DR-RCD-01, ps-DR-SCC-03, ps-DR-RCD-02, ps-DR-RCD-03, ps-DR-RCD-05, ps-DR-RCD-06,ps-CC-RCD-01
Drought	**ma-DR-RCD-03**	Soil Health Planning & Conservation Projects	Conduct planning and implement conservation practices and projects to improve soil health factors including organic matter content and aggregate stability on agricultural, rural residential, and parks/open space properties.	PRV, NRP	Ongoing	RCD + NRCS, state and local partners	High	High	Staff Time	Potential funding: CDFA, USDA, Prop 4, Measure Q, HGMP	High	ps-DR-RCD-03, ps-DR-RCD-01, ps-DR-RCD-02, ps-DR-RCD-04, ps-DR-RCD-05, ps-DR-RCD-06
Drought	**ma-DR-RCD-04**	Multi-Benefit Water Resilience Projects	Plan, design, and implement multi-benefit land repurposing and water resilience projects.	SP, NRP	Medium 3-5 Years	RCD + County, PVWMA, PRFMA, and private landowner partners	High	High	Staff Time	Potential funding: DWR, Prop 4, Measure Q, HMGP, USDA	High	ps-DR-RCD-03, ps-DR-RCD-05, ps-DR-RCD-06, ps-DR-RCD-01, ps-DR-RCD-02, ps-DR-RCD-04, ps-CC-RCD-01
Flood + Slope Failure	**ma-FL-RCD-01**	Rural Roads & Home Drainage Program	Provide education, technical assistance, and guidance on financial support to public and private landowners for stabilizing high-risk slopes and streambanks to implement improvements that protect both people and natural resources. Projects may include upgrading road drainage and culverts, stabilizing slopes, restoring vegetation, rain gardens/swales, applying ecologically sensitive geotechnical techniques, and other best management practices to help maintain safe access to homes, prevent landslides, reduce flood and sediment hazards, and protect water quality and fisheries habitat.	SP, PPRO, NRP, PE&A	Medium 3-5 Years	RCD + County, NRCS, private and public landowners, roads CSAs and Road Associations	High	High	Staff Time	Potential funding: County, USDA, Measure Q, Prop 4, EPA, HMGP	Very High	ps-FL-RCD-02, ps-FL-CBC-02,ps-FL-RCD-01, ps-FL-RCD-03, ps-SF-RCD-01, ps-SF-RCD-02, ps-SF-RCD-03
Flood	**ma-FL-RCD-02**	Multi-Benefit Habitat Restoration	Expand multi-benefit floodplain, stream, and wetland restoration projects that reduce flood risk while restoring ecosystem function, particularly where prior land use changes have damaged natural infrastructure.	NRP, NSP	Medium 3-5 Years	RCD + County, NOAA, NRCS, USFWS, public and private landowners, other state and local partners	High	High	Staff Time	Potential funding: County, USDA, Measure Q, Prop 4, EPA, HMGP, NOAA, Coastal Conservancy	High	ps-FL-RCD-01, ps-FL-RCD-02, ps-FL-RCD-03, ps-CC-RCD-01
Flood	**ma-FL-RCD-03**	Streamwood Program	Facilitate outreach, education, technical and financial resources for the proper placement, modification, or removal of streamwood to protect infrastructure and support healthy and resilient ecosystems.	NRP, PE&A	Medium 3-5 Years	RCD + County and landowners	Medium	High	Staff Time	Potential funding: County, NOAA, Prop 4, HMGP	High	ps-FL-RCD-02, ps-FL-RCD-01, ps-FL-RCD-03, ps-CC-RCD-01

Hazard	Action ID	Action Title	Description	FEMA Mitigation Alternative	Timeline	Responsibility	Cost	Benefit	Internal Funding Source	External Funding Source	Priority (Based on Criteria)	Problems Addressed
Sea Level Rise	**ma-SLR-RCD-01**	Coastal Habitat Resilience Planning	Conduct planning and modeling for estuarine and coastal watersheds (e.g., Scott / Waddell / San Vicente) to identify habitat restoration opportunities.	PRV, NRP	Medium 3-5 Years	RCD + Regional Transportation Commission, Caltrans, academic/consultant partners	Medium	Medium	Staff Time	Potential funding: Prop 4, Coastal Conservancy, NOAA	High	ps-SLR-RCD-02, ps-SLR-RCD-01, ps-CC-RCD-01
Wildfire	**ma-WF-RCD-01**	Forest Health & Wildfire Resiliency Program Implementation	Use the Regional Priority Plan (RPP) and Community Wildfire Prevention Plan (CWPP) to scale up strategic forest health and wildfire resilience activities including timber stand improvement, vegetation treatment, fuel reduction and shaded fuel breaks, invasive species management, and post-fire recovery projects in high-priority landscapes.	NRP, PPRO	Medium 3-5 Years	RCD + County, CAL FIRE, fire districts, public and private landowners	High	High	Staff Time	Potential funding: Calfire, Coastal Conservancy, Prop 4, Measure Q, Dept of Conservation, HMGP	High	ps-WF-RCD-02, ps-WF-RCD-01, ps-WF-RCD-03,ps-CC-RCD-01
Wildfire	**ma-WF-RCD-02**	Community Wildfire Resilience Program	Provides education, technical assistance, and financial support to landowners for creating defensible space and reducing fuels to support ecologically considerate wildfire readiness. Includes chipping, support HIZ inspections, site and neighborhood defensible space and wildfire resiliency assessments, and landscape planning.	PRV, PE&A	Ongoing	RCD + FSC, County	High	High	Staff Time	Potential funding: Calfire, CAFSC, County, Measure Q, Prop 4, USFS, HMGP	High	ps-WF-SVL-05, ps-WF-RCD-01, ps-WF-RCD-02, ps-WF-RCD-03

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Section 8. Santa Cruz Port District

Special District Annex

SANTA CRUZ COUNTY
MULTI-JURISDICTIONAL
HAZARD MITIGATION PLAN

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Santa Cruz County

2025 Multi-Jurisdiction Hazard Mitigation Plan Update

Volume 2, Section 8: Santa Cruz Port District (SPD)

Special District Annex

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Adoption Resolution

To comply with the Federal Disaster Mitigation Act of 2000 (DMA 2000), the Santa Cruz Port District has officially adopted this 2025 Santa Cruz County Multi-Jurisdictional Hazard Mitigation Plan, including Volume 1 in its entirety as well as this Volume 2 Special District annex. The adoption of the MJHMP recognizes the district's commitment to reducing the impacts of natural hazards within its jurisdiction and across Santa Cruz County.

A copy of the district's adoption record is provided on the following pages. Adoption records for all jurisdictions are summarized in Volume 1, Table ES-1.

ADOPTION RECORD TO BE INSERTED UPON COMPLETION.

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Section 8. Santa Cruz Port District

8.1 Scope & Purpose

This Jurisdictional Annex for the Santa Cruz Port District (SCPD) of the 2025 Santa Cruz County Multi-Jurisdictional Hazard Mitigation Plan (MJHMP) details the hazard mitigation planning elements specific to the district's planning area. This annex is not intended to be a standalone document but appends to and supplements the information contained in the umbrella plan document (Volume 1). As such, all sections of the umbrella plan, including the planning process and other procedural requirements, apply to and were met by the SCPD. This annex provides additional information specific to the district, with a focus on hazard identification and risk assessment, vulnerability assessment, problem statements, mitigation strategy, and capabilities assessments.

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8.2 Jurisdictional Setting

The Santa Cruz Port District (SCPD) was formed in 1950 under the California Harbors and Navigation Code to develop and manage the Santa Cruz Small Craft Harbor. The district's jurisdiction covers approximately 27.9 square miles, including most of the City of Santa Cruz and adjacent unincorporated areas. The harbor is a regional facility serving recreational, commercial, and emergency response needs across the Central Coast.

SCPD operates a full-service harbor comprising 38 acres of land and 52 acres of water. Facilities include over 800 wet berths, dry storage, launch ramps, commercial and marine service leases, public parking, and visitor-serving amenities. The harbor also maintains coastal access points, public restrooms, and coastal trails. The South Harbor opened in 1964, followed by the North Harbor in 1973.

The district is governed by a five-member Board of Commissioners and managed by a Port Director. SCPD coordinates closely with local and regional agencies on marine safety, dredging, and coastal resilience, and holds public trust lands for navigation, recreation, and visitor-serving uses.

8.2.1 Geography & Climate

The Santa Cruz Port District is located on the northern edge of Monterey Bay, within a natural coastal embayment formed from the former Woods Lagoon. The harbor is flanked by the San Lorenzo River to the west and coastal bluffs and residential neighborhoods to the east. It lies at sea level, making it highly exposed to coastal hazards.

The climate is Mediterranean, characterized by dry summers and wet, mild winters. From November through March, the region experiences intense winter storm activity driven by Pacific atmospheric river systems. These storms bring high surf, coastal storm surges, and prolonged rainfall, which can result in localized flooding, infrastructure damage, and sediment deposition within the harbor entrance channel.

Due to its open exposure to the south and southeast, the Santa Cruz Harbor is particularly vulnerable to wave overtopping and shoaling during winter events. These conditions frequently require emergency dredging and coastal structure repairs to maintain safe navigation and access. Climate change is expected to increase the intensity and frequency of these winter storms, increasing risks to harbor operations and adjacent facilities. Figure 8-1 identifies the district boundary and fire station locations within Santa Cruz County.

8.2.2 Historic Overview

The Santa Cruz Port District was established by local voters in 1950 under the California Harbors and Navigation Code to plan, finance, and manage the construction of a small craft harbor. The selected site was Woods Lagoon, a natural coastal wetland historically used for small boat mooring. Construction of the South Harbor began in 1962 and was completed in 1964, followed by expansion into the North Harbor in 1973.

Initially funded by property tax assessments, the district used these revenues—along with federal and state grants—to build core harbor infrastructure, including breakwaters, dredge pipelines, berths, and public access facilities. In 1968, the State Lands Commission granted the Port District a series of tidelands held in trust for public navigation and recreation purposes.

Over the decades, the district transitioned from a tax-supported agency to a fully self-sustaining enterprise operation. It has since developed into a regional maritime hub, supporting commercial fishing, marine services, public safety operations, and recreational boating. The harbor has also played a key role in coastal resilience, emergency response, and regional tourism.

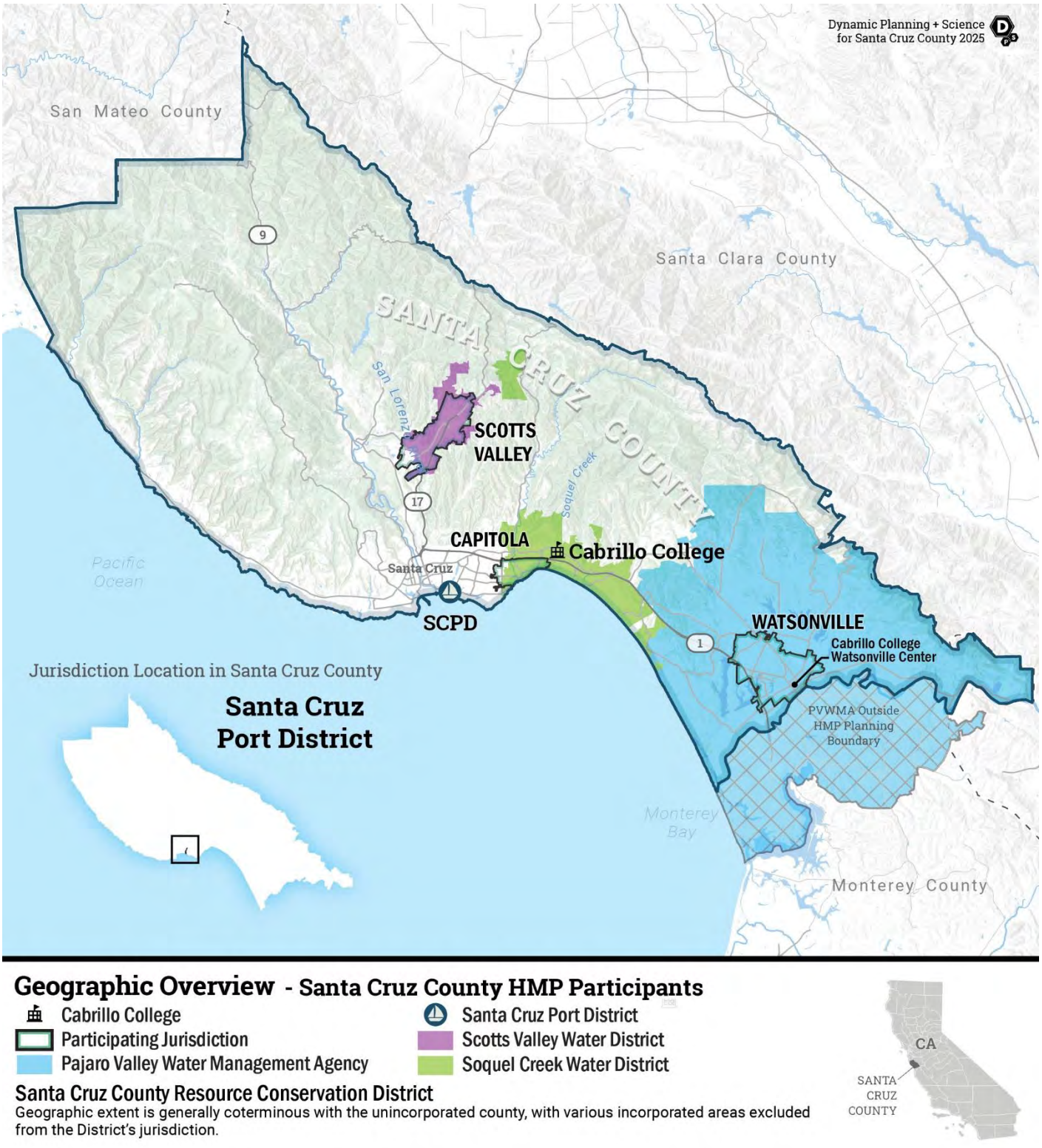


Figure 8-1: SCPD Sphere of Influence and Station Locations

8.2.3 Demographics & Vulnerable Populations

This section describes the demographic characteristics of the Santa Cruz Port District to guide hazard mitigation planning efforts. While the Port serves a broad range of harbor users, a central concern for vulnerability assessment is the liveaboard population. These are residents who reside full time on vessels within the marina and are uniquely exposed to coastal hazards due to their location and dependence on marine infrastructure.

Liveaboards represent approximately eight percent of the total slip occupants in the harbor. Of this group, an estimated fifty-five to sixty percent are older adults, with about twenty percent experiencing functional or mobility limitations. A portion of the remaining residents may face challenges related to mental health, substance use, or housing insecurity. Many liveaboards have limited income, lack reliable transportation, and are not always connected through standard emergency alert systems.

These populations face increased risk during hazard events such as storm surge, wave overtopping, and tsunami. Issues such as dock access restrictions, power outages, vessel displacement, and failure of gangways can delay response and evacuation. During winter storms or seismic activity, the threat of isolation or infrastructure failure is a significant concern for those with health or mobility constraints.

Mitigation planning for this population must consider accessible evacuation routes, improved dock stability, surge event signage, and backup utility systems. Dedicated outreach and emergency communication strategies are also needed to support preparedness and response for liveaboard residents who may not receive conventional public safety messaging.

8.2.3.1 Dependent & Disabled Populations

The Santa Cruz Port District includes a small but important population of dependent and disabled individuals, primarily among the harbor's liveaboard residents. Port staff estimate that more than half of the liveaboard population is over the age of sixty-five, and approximately twenty percent of those individuals have mobility or functional limitations. These conditions may present challenges during emergency evacuations or service disruptions, especially during coastal storm events or tsunami warnings.

The confined geography of the harbor, limited vertical evacuation options, and variable dock conditions increase the vulnerability of these residents. Individuals with disabilities may require additional support to evacuate safely or to access communications during emergencies. Planning for these needs will require improved signage, accessible notification systems, and coordination with emergency services to ensure evacuation assistance is available when needed.

Although the overall district footprint is limited, targeted measures are essential to protect those with access and functional needs who may be most at-risk during hazard events.

8.2.3.2 Race, Ethnicity & Language

The Santa Cruz Port District supports a diverse harbor community that includes liveaboard residents, vessel maintenance workers, and harbor yard employees. Many of these workers support marine operations, including repair services, equipment handling, and commercial fishing activities. Some may be employed seasonally or informally, with limited access to employment benefits or stable housing, which can increase their vulnerability during hazard events.

Systemic disparities related to race, ethnicity, and income may influence both liveaboard and workforce exposure to risks. These populations may face greater challenges in preparing for and recovering from disasters due to economic instability, housing insecurity, or lack of access to hazard information. Language or cultural barriers, while not directly documented at the port, may also exist and can further complicate outreach and recovery efforts.

To ensure equity in hazard mitigation planning, outreach efforts should account for the full harbor population, including those who live and work in the marina. Engaging service workers and small business employees in preparedness activities and ensuring their inclusion in communication strategies can help strengthen overall community resilience.

8.2.3.3 Social Vulnerability Index (SVI)

As described in Volume 1, Section 1.4.3.6, the U.S. Centers for Disease Control and Prevention (CDC) developed the Social Vulnerability Index (SVI) to assess how various social factors may affect a community's ability to prevent, respond to, and recover from hazard events. The SVI incorporates sixteen variables across four categories: socioeconomic status, household composition and disability, minority status and language, and housing type and transportation access.

Within the boundaries of the Santa Cruz Port District, SVI values range from low to moderate. According to 2022 data, most of the Port District falls within the lowest two SVI quartiles, with scores between 0.0 and 0.5. However, the eastern portion of the district—east of the harbor and closer to Schwan Lagoon and 7th Avenue—shows elevated vulnerability with SVI values between 0.5 and 0.75. This area may reflect greater challenges related to income, housing cost burden, or access to transportation.

While the Port District is geographically compact, this variation in SVI highlights the need for focused outreach and preparedness strategies, particularly for residents and workers in higher-vulnerability zones. Special attention should be given to liveaboard residents and those working in the harbor yard who may face greater risk during coastal hazard events.

8.2.4 Economy

The economy of the Santa Cruz Port District is shaped by its coastal location and maritime infrastructure, with economic activity centered around commercial fishing, harbor-dependent businesses, and tourism. The Santa Cruz Small Craft Harbor serves as a working waterfront, supporting both recreational and commercial uses. It is home to a long-standing commercial fishing fleet, including vessels targeting salmon,

halibut, sablefish, Dungeness crab, and market squid, among other species. These operations contribute to the regional seafood supply chain and local food economy, with many catches sold directly to local distributors, fish markets, and restaurants.

In addition to the commercial fleet, the harbor supports a network of marine service businesses including vessel repair, fueling, hoist operations, charter services, and retail concessions. Many of these businesses are small and locally owned, forming a unique maritime economic cluster within the district. The harbor yard, which supports maintenance and dry storage operations, provides essential services to both recreational boaters and commercial users. These activities generate lease revenue for the Port District and help sustain local employment in skilled trades and support services.

The Port also benefits from tourism and visitor-serving amenities, including restaurants, cafes, sailing schools, kayak rentals, and public events. While smaller in scale compared to Capitola's tourism and retail economy, the Santa Cruz Harbor plays a critical role in regional economic resilience by maintaining a functional, self-supporting coastal infrastructure that supports both livelihoods and public recreation.

Hazard events that disrupt harbor access or damage waterfront facilities can have direct impacts on commercial fishing income, service employment, and the small businesses that depend on harbor activity. As such, mitigation planning for the Port District must account for the economic importance of maintaining operational continuity for maritime-dependent sectors.

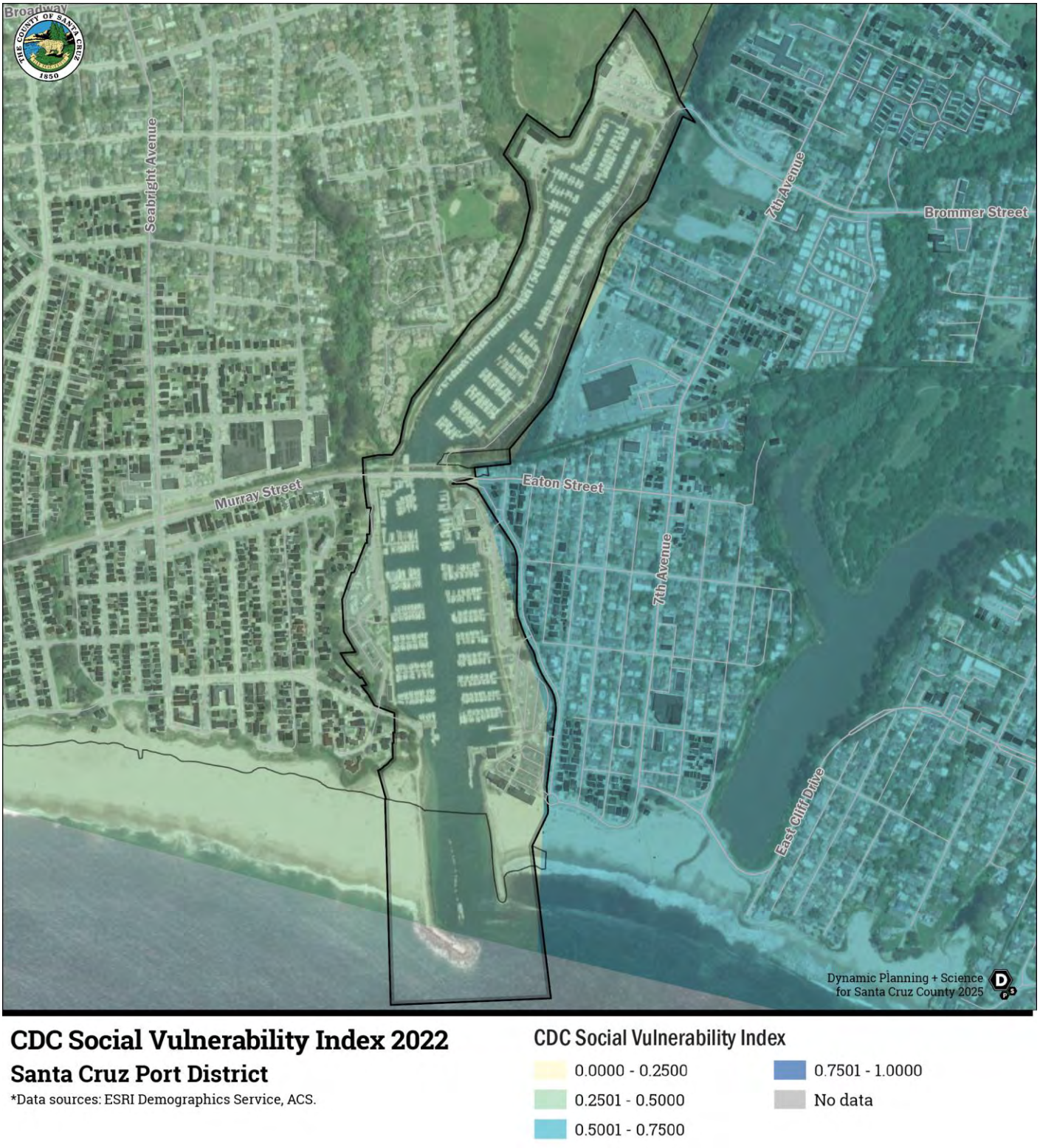


Figure 8-2 SCPD Social Vulnerability Index Map

8.2.5 Growth Trends & Future Development

The Santa Cruz Port District is largely built out, with limited opportunity for significant expansion due to geographic constraints, land use zoning, and its location within the coastal zone. Future development within the Port District is expected to remain modest and focused on maintaining or enhancing existing facilities rather than expanding footprints. Unlike other special districts, the Port does not serve a growing residential population; instead, its growth outlook is tied to infrastructure reinvestment, harbor capacity upgrades, and the long-term viability of maritime and visitor-serving uses.

Future improvements identified in recent planning documents include phased maintenance of docks, electrical and utility system upgrades, seawall stabilization, dredging improvements, and adaptation to sea-level rise impacts. The district also anticipates continuing investments in harbor resiliency, shoreline protection, and modernization of public access infrastructure. These projects aim to support operational continuity and protect critical assets from coastal hazards, while also enhancing economic activity and visitor experience.

Commercial growth within the Port's jurisdiction is expected to remain stable, with most new development consisting of renovations, tenant improvements, or replacements of aging infrastructure. Leasing policies emphasize maritime-related uses, and any proposed land use change would be subject to review under the California Coastal Act and the Port District's Trust Land Use Plan.

Population growth or increased water and wastewater demand is not anticipated within the Port's boundaries, aside from minor fluctuations in liveaboard residency. As such, planning efforts focus on sustaining harbor functions, supporting climate adaptation, and ensuring that existing infrastructure can accommodate current and future operational needs without requiring expansion beyond the existing footprint.

8.3 Planning Process

SCPD followed the planning process detailed in Volume 1, Section 2, including participating in the county-wide Hazard Mitigation Planning Team (HMPT) and formulating their own internal planning group to support the broader planning process.

The district's representatives in the Steering Group led stakeholder and public engagement efforts alongside the Consultant Team, with assistance from the HMPT and their internal planning team. This engagement process is described in Volume 1. Specifically, for the Port District, this included postings to the district website and social media and outreach events, as documented in Appendix B. Examples of Key Stakeholders engaged by Santa Cruz County on behalf of the district with relevance to the development of SCPD's mitigation strategy include the USDA and other federal agencies; Cal OES and other state agencies; City of Santa Cruz and other neighboring jurisdictions; community-based organizations such as Community Bridges; utility providers like AT&T and Soquel Creek Water District; UC Santa Cruz and other academia; and local businesses.

All Key Stakeholders that were invited to participate in the planning process are listed in Volume 1, Section 2, and the input received from stakeholders was integrated into the district's annex, as described in Volume 1 Table 2-9. The district's internal planning participants, their positions, and how they participated in the planning process are shown in Table 8-1.

Table 8-1: SCPD Participants

Planning Group Members	Title	Description of Involvement
Holland MacLaurie	Port Director	Lead Point of Contact; attended Kickoff Meeting, HMPT Meetings #1, #2, and #3 and Breakouts #1 and #2
Blake Anderson	Harbor Master	Alternate Point of Contact; attended Breakouts #1 and #2
Carl Wulf	Facilities Maintenance & Engineering Manager	attended Breakout 1

SCPD staff participated in a comprehensive hazard mitigation planning process as part of the 2025 Santa Cruz County MJHMP update. This included a series of breakout meetings, listed in Table 8-1 that engaged the district's planning team, which included key district personnel and stakeholders in evaluating hazards, identifying local vulnerabilities, and prioritizing mitigation strategies

The kickoff meeting held on January 27, 2025, launched the planning process by introducing the project scope and clarifying the roles of the Steering Group and participating jurisdictional teams. In the months that followed, a series of structured meetings addressed foundational elements of the plan, including a review of key changes since the 2021 Local Hazard Mitigation Plan, an overview of hazard mitigation principles, and exercises to prioritize local hazards. On July 30, 2025, participants engaged in a hexagon mapping activity designed to visually identify mitigation actions that could benefit from or require inter-jurisdictional coordination. These collaborative efforts helped shape a refined set of mitigation alternatives, establish shared planning goals, and align local strategies with FEMA's Hazard Mitigation Assistance (HMA) funding framework.

Throughout the series of breakout meetings, SCPD engaged in a structured and collaborative planning process focused on assessing hazard risks, identifying vulnerabilities, and developing targeted mitigation strategies. The meetings began with recaps of the county-wide HMPT meetings to ensure alignment of goals and progress.

During the April 9, 2025, breakout out meeting, discussions concentrated on community engagement outcomes, initial risk assessments, and the integration of demographic data to better understand vulnerable populations. Jurisdictional teams reviewed their specific hazard exposures using the Risk Assessment Mapping Platform (RAMP) and participated in prioritization exercises to identify their top hazards.

The July 15, 2025, breakout meeting shifted toward reviewing local capabilities and defining specific areas of concern, which informed the drafting of problem statements. Teams worked collaboratively to refine

mitigation alternatives, align actions with FEMA guidelines, and develop a shortlist of priority mitigation actions and inter-jurisdictional collaboration opportunities.

The meetings also included consensus-building activities around hazard rankings, capabilities, and planned actions, while providing regular updates on the overall project schedule.

8.3.1 Public Input & Draft Review

As detailed in Volume 1, Section 2, the draft plan was available for public review and comment from September 29 to October 20, 2025. Public comments received during that time were similar to those gathered throughout the public engagement process, including the need for more equity in the distribution of mitigation activities and funding and the need for enhanced cooperation among jurisdictions, utility providers, and state agencies. These comments were incorporated into the city's mitigation strategy, as appropriate; although, most were already addressed by the Mitigation Action Plan which was based on previous public input.

Public and stakeholder input was gathered and incorporated throughout the plan development process, before the public review period, such as from the online public survey (see Volume 1, Section 2.1.2 and Appendix B, for details). During the review period, jurisdictional staff and stakeholders that participated in the plan development also reviewed the public draft and provided comments on minor corrections and revisions, which were addressed in the final plan.

8.4 What's New

This section offers an overview of the hazard mitigation planning efforts for the planning area and highlights the updates made in this 2025 MJHMP. This is the first time SCPD has participated in the MJHMP process. While not included in the 2021 plan, the district has since strengthened its focus on resilience through key efforts. Through this MJHMP process, SCPD has identified its highest-priority hazards, developed hazard-specific problem statements, and proposed actionable mitigation strategies.

8.4.1 Mitigation Activities

Although the Santa Cruz Port District has not previously adopted formal mitigation actions within a Hazard Mitigation Plan, the District has implemented numerous projects, programs, and operational protocols that function as hazard mitigation. These efforts reflect the Port's ongoing commitment to protecting critical harbor infrastructure, ensuring safe access to coastal facilities, and enhancing operational resilience to coastal storms, tsunamis, and sea-level rise.

Over the past decade, the district has made significant investments in infrastructure maintenance and resilience. These include upgrades to electrical and water systems on docks, pile and dock replacements, slope and shoreline stabilization efforts, and annual dredging operations that maintain safe navigation and reduce flooding risk. Many of these capital improvements have been designed to withstand coastal hazard impacts, such as wave run-up, sedimentation, and saltwater intrusion.

The Port District has also taken proactive steps to address sea-level rise and storm surge. Coastal adaptation planning is integrated into harbor maintenance cycles, and the district participates in regional initiatives focused on climate resilience. Projects such as the revetment repair at the harbor mouth, assessment of seawall conditions, and monitoring of tidal impacts support long-term mitigation of chronic inundation and infrastructure degradation.

From an operational standpoint, the district has enhanced emergency preparedness and response coordination. Staff regularly conduct safety and response training, and the Port maintains communication and mutual aid protocols with local fire, police, and coastal emergency response agencies. Equipment such as emergency pumps, vessel hoists, and backup generators provide redundancy in the event of power loss or storm damage.

Additionally, the district plays a role in protecting economic resilience through the maintenance of commercial fishing infrastructure and marina services. By ensuring continuity of harbor operations, the Port supports the livelihoods of working waterfront users during and after hazard events.

While not yet codified in a stand-alone mitigation policy, the Santa Cruz Port District's integrated approach to maintenance, capital planning, and hazard awareness provides a strong foundation for future mitigation strategies and climate adaptation actions.

As a first-time participant in a hazard mitigation plan, the SCPD had no formally adopted mitigation actions from a previous plan. However, the district continues to advance a range of ongoing and planned efforts that support hazard mitigation and climate resilience. These are highlighted in this section, reflecting the district's continued dedication to long-term risk reduction. From infrastructure improvements to public safety coordination and community outreach, these actions demonstrate the Port District's proactive approach to managing coastal hazards as funding and resources allow.

8.4.2 Mitigation Successes

Although SCPD is participating in a formal hazard mitigation plan for the first time, multiple important mitigation actions and other efforts to increase the district's resilience to hazards have been completed. Some of these endeavors in which the district collaborated with Santa Cruz County are described in Volume 1, Section 2. This section describes additional district-specific success stories, which highlight SCPD's commitment to reducing risks and building a more resilient community in the face of natural hazards.

Murray Street Bridge Seismic Retrofit & Barrier Replacement Project

The Murray Street Bridge Seismic Retrofit and Barrier Replacement Project represents a significant resilience investment for the Santa Cruz Small Craft Harbor. This project addresses a critical piece of infrastructure that connects the community while spanning the harbor. By upgrading the bridge to modern seismic standards and replacing aging barriers, the project will reduce risks from earthquakes, enhance public safety, and safeguard harbor operations.

The Port District will also play a key role, particularly with the reconstruction of FF-Dock, which lies directly adjacent to the project area. Close collaboration between the City of Santa Cruz and the Port District will help minimize disruption to harbor activities and ensure continuity of access during construction.

When complete, the Murray Street Bridge retrofit will stand as a major hazard mitigation success—protecting both transportation lifelines and harbor facilities from seismic hazards, while strengthening long-term resilience for the Santa Cruz waterfront.



Figure 8-3: Murray Street Bridge

Westside Seawall Replacement Project

The Santa Cruz Port District recently completed a conceptual design and cost study for the full replacement of the aging 1963 seawall. The proposed design calls for the installation of steel sheet piles in front of the existing wall, a method chosen to avoid destabilizing the current structure while ensuring long-term durability. The design incorporates a finished elevation of +11.0 feet, consistent with sea level rise projections through approximately 2070, providing a 35 to 45–year buffer against anticipated conditions. Importantly, the system is adaptable, allowing for additional height increases in the future if needed to address higher sea levels. With an estimated cost of $14.5 to $19 million, the project represents a major hazard mitigation investment aimed at reducing flooding and structural risks to critical harbor facilities.

Aldo's Seawall

A recent precedent project that was successfully constructed, demonstrating the district's ability to implement coastal defense upgrades and use them as a template for larger infrastructure resilience. Phase

2 of the Pile Removal & Replacement Project, which will replace approximately 80 worn & damaged piles throughout the harbor has commenced



Figure 8-4: Aldo's Seawall Project

North Harbor Transformer Replacement

The project involves relocating six North Harbor dockside transformers to landside locations, reducing their vulnerability to flooding and tsunami inundation. Electrical service to the existing docks will be maintained by routing conductors through a combination of new and existing conduits. This improvement enhances system reliability and protects critical harbor utilities against future power disruptions.



Figure 8-5: North Harbor Transformer Replacement

Flood, Sediment & Coastal Hazard Management

Since 1964, the SCPD has carried out annual dredging operations between November and April to prevent shoaling at the harbor entrance. Without this effort, the harbor would quickly become unusable due to sand deposition from littoral drift, effectively closing the facility. Notably, the District is the only small craft harbor in the United States that has assumed shared responsibility for dredging a federal navigation channel. This commitment is supported through a cooperative cost-sharing agreement with the U.S. Army Corps of Engineers, which reimburses approximately 35% of dredging expenses. By sustaining this long-

term program, the Port ensures continued harbor functionality, maintains natural coastal sediment transport, and strengthens resilience against storm impacts.



Figure 8-6: SCPD Dredging Operations.

8.5 Risk Assessment

This section focuses on profiling flooding, drought, coastal hazards, earthquake and other hazards specific to SCPD and assessing their vulnerability independent of the broader county-wide planning area, which has been evaluated in Section 3 of Volume 1. The hazard profiles in Volume 1 discuss overall impacts to the planning area and describe relevant plans, policies, and regulations; past events; location; frequency and probability of future occurrences; severity and extent; warning time; secondary hazards; and climate change impacts. For more information on risk assessment methodologies, see Volume 1, Appendix A.

This section includes a tailored vulnerability assessment, analyzing assets at risk such as population, property, and critical facilities and infrastructure unique to the district, and information on district-specific differences in hazard vulnerability across the planning area. It also identifies total district assets at risk, including people, property, and critical facilities and infrastructure within the district. In addition, this section presents growth and development trends for the communities served, offering insights into vulnerabilities and risks that represent the broader context of assets at risk.

8.5.1 Hazard Screening & Prioritization

Members of the planning team from each participating jurisdiction came together to collaboratively decide which county-wide hazards would be included in the MJHMP and which would be excluded. The hazard screening and prioritization took place early in the process and integrated historic data, local knowledge, and consensus opinions to create a risk assessment matrix for the county as well as for each participating jurisdiction. These matrices indicate the priority of hazards prior to further refinement. Details about this process, the results of the discussion, and in-depth profiles for county-wide hazards can be found in Volume 1, Sections 2 and 3.

The final results of the hazard screening and prioritization exercises are summarized in Table 8-3, including which specific subhazards were selected by SCPD's planning team.

The SCPD's internal planning group used the same hazard identification and prioritization process as the county-wide Planning Team. They reviewed previously prepared relevant documents and past events to determine the realm of natural hazards that have the potential to affect the district. Table 8-2 provides a crosswalk of hazards identified in select planning documents, including the 2025-2023 City of Santa Cruz LHMP/Climate Adaptation Plan (CAP), the 2021 Santa Cruz County LHMP, and the 2023 State of California HMP. The crosswalk was used to develop a preliminary hazards list, providing a framework for the group to evaluate which hazards were truly relevant to the district and which ones were not.

The internal planning group then ranked hazards based on their probability of affecting SCPD and potential impacts on the communities it serves. Figure 8-7 displays the results of the hazard risk ranking exercise that was performed before further refinement. All hazards have been profiled in Volume 1 of this document. The purpose of this annex is to specifically address SCPD's vulnerability to specifically identified hazards.

Table 8-2: SCPD Document Review Crosswalk

Hazard	2025-2030 City of Santa Cruz LHMP/CAP	Santa Cruz County LHMP 2021	2023 California SHMP
Agricultural Pests			■
Avalanche			■
Climate Change	■	■	■
Coastal	■	■	■
Dam Failure	■	■	■
Drought	■	■	■
Earthquake / Liquefaction	■	■	■
Extreme Cold		■	■
Extreme Heat	■	■	■
Extreme Weather / Storms		■	■
Flood	■	■	■
Geologic / Mass Movement	■	■	■
Human-Caused			■
Insects			■
Levee Failure			■
Pandemic Disease			■
Sea Level Rise	■		■
Soil			■
Subsidence			■
Tornado			■
Tsunami / Seiche Wave	■		■
Volcano			■
Wildfire	■	■	■

Risk Assessment Matrix Definitions

PROBABILITY RATING

The likelihood of a hazard event occurring within a time period?

PROBABILITY

Highly Likely	**Highly likely** - 100% annual probability. Or Likely to occur every year in your lifetime.
Likely	**Likely** - between 10 & 100% annual probability. Or will occur several times in your lifetime.
Possible	**Possible** - between 1 & 10% annual probability. Or Likely to occur some time in your lifetime.
Unlikely	**Unlikely** - less than 1% annual probability. Or unlikely but possible to occur in your lifetime.

IMPACT RATING

In terms of injuries, damage, or death, would you anticipate impacts to be minor, limited, critical, or catastrophic when a significant hazard event occurs? The impact could be in terms of one hazard event (flooding from a culvert failure) or a large-scale event (multiple rivers flooding) in the same jurisdictional boundary.

IMPACT

Minor	Limited	Critical	Catastrophic

Minor - very few injuries, if any. Only minor property damage & minimal disruption on quality of life. Temporary shutdown of critical facilities.

Limited - minor injuries only. Approx. 10% or less of property in disaster footprint damaged or destroyed. Complete shutdown of critical facilities for more than one day.

Critical - multiple deaths/injuries possible. Between 25% and 50% of property in disaster footprint is damaged or destroyed. Complete shutdown of critical facilities for more than one week.

Catastrophic - high number of deaths/injuries possible. More than 50% of property in affected area damaged or destroyed. Complete shutdown of critical facilities for 30 days or more.

To concentrate resources, the jurisdictional planning team will focus on "High" and "Extreme" risk hazards. These hazards have the higher probability and greater impact as it relates to the jurisdictions planning area.

Hazard definitions are included in **Vol. 1** of this plan. Some hazards are discussed as subset hazards– e.g., "Dam Failure" within the "Flood" hazard profile. If a hazard is not present on the risk matrix or are grey in color, the jurisdictional planning team felt the hazard had a minimal footprint within their planning area and was not ranked.

Hazard Information / Legend:



Climate Change impacts will be addressed at the end of each hazard section and as a stand alone section for each jurisdiction.
For County and Municipal governments you will be required to address climate change impacts in the Safety Element of your General Plan. Climate change may change the frequency, duration and intensity of hazards listed above.

Santa Cruz Port District Risk Matrix

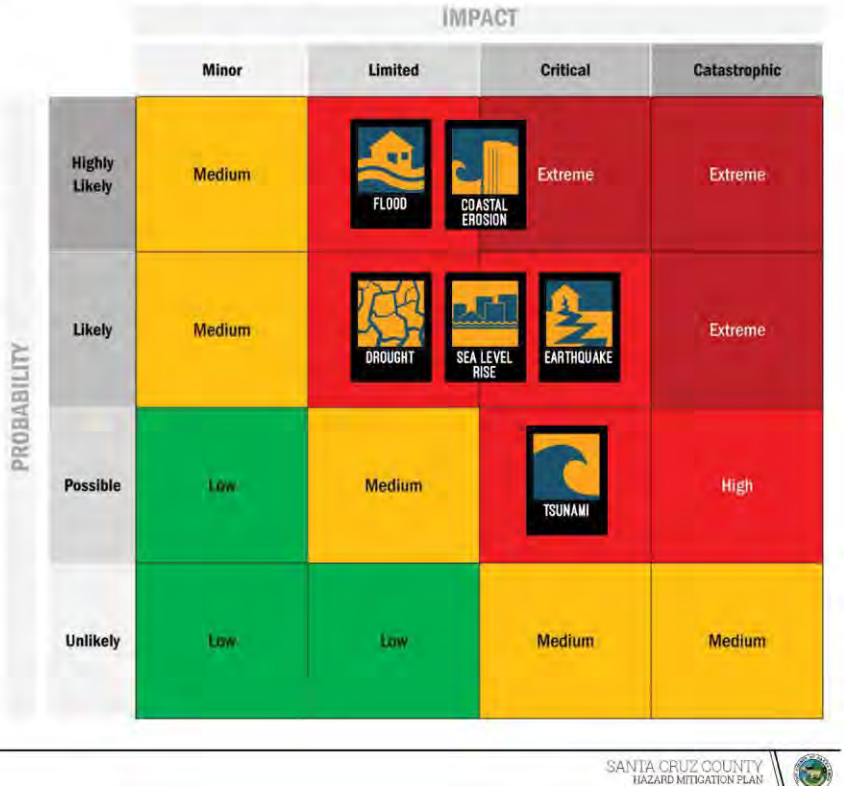


Figure 8-7: SCPD Risk Assessment Matrix

Table 8-3: SCPD Hazards Prioritization Summary

Hazard	Priority	Explanation
Wildfire	-	Not a priority due to no exposure
Flood	**High**	Profiled in Volume 1, Section 3.2.2, and Section 8.5.2.1 in this annex (not including Levee Failure due to no exposure)
Earthquake	**High**	Profiled in Volume 1, Section 3.2.3, and Section 8.5.2.2 in this annex, including Liquefaction
Severe Weather	-	Not a priority due to low probability and impact, but discussed in the context of Coastal Storms in Section 8.5.2.3
Coastal Hazards	**Extreme**	Profiled in Volume 1, Section 3.2.5, and Section 8.5.2.3 in this annex, including Coastal Erosion, Coastal Storms, Wave Run-Up and Surge, and Tsunami
Slope Failure	-	Not a priority due to low probability and impact, but discussed in the context of Coastal Erosion in Section 8.5.2.3
Dam Failure	-	Not a priority due to no exposure
Drought	**High**	Profiled in Volume 1, Section 3.2.8, and Section 8.5.2.4 in this annex
Extreme Heat	-	Not a priority due to low probability and impact
Climate Change	**High**	Profiled in Volume 1, Section 3.2.10, and Section 8.5.2.5 in this annex, including Sea-Level Rise

8.5.2 Vulnerability to Specific Hazards

Assessing vulnerabilities exposes the unique characteristics of individual hazards and begins the process of narrowing down which areas within SCPD are vulnerable to specific hazard events. The vulnerability assessment considered unique local knowledge of hazards and impacts and a GIS overlaying method for examining such vulnerabilities in more depth. Using these methods, the district's planning group estimated vulnerable populations, properties, and assets, and potential losses, primarily to earthquake and wildfire. In addition, the exposure of district assets to drought, geological, and flood hazards were also considered.

Many of the hazard profiles include a snapshot map and damage estimation tables that illustrate the district's vulnerabilities to those specific hazards. These maps assisted the planning group in understanding the hazard exposure of populations, parcels, and critical facilities and infrastructure. Each snapshot map contains an exposure summary that displays the percentage of the population, the improvement and content value of parcels, and the amount of critical infrastructure that is exposed. For hazards without geospatial extents, such as drought and extreme weather, narratives are provided instead of exposure maps and tables.

Based on the hazard prioritization exercise, vulnerability assessment for the Port District focuses on five hazards, some of which encompass subhazards such as Liquefaction, Coastal Erosion, and Sea Level Rise.

Flood
SECTION 8.5.2.1



Earthquake
SECTION 8.5.2.2



Coastal Hazards
SECTION 8.5.2.3



Drought
SECTION 8.5.2.4



Climate Change
SECTION 8.5.2.5



8.5.2.1 Flood Hazard

SCPD is vulnerable to tributary flooding driven by upstream stormwater runoff, flash flood events, and inflow from local drainage systems that discharge into the harbor or nearby beach areas. While much of the harbor's flood planning has focused on tidal and coastal hazards, several inland sources contribute to localized flooding risks, particularly during intense rain events or back-to-back winter storms.

Arana Gulch and other small tributaries draining the surrounding urban and hillside areas converge near the southern end of the harbor. These watercourses can quickly become overwhelmed during high-intensity rainfall, leading to overbank flows and increased runoff into harbor-adjacent low-lying areas. District staff noted that sediment deposits and limited drainage capacity around the 7th Avenue corridor can exacerbate flooding near parking lots, maintenance areas, and pedestrian pathways. Blocked storm drains and undersized culverts increase the risk of ponding, erosion, and damage to hardscape infrastructure.

Inundation from tributary sources poses both operational and safety challenges for SCPD. Access roads and staging areas may become impassable, delaying emergency response and disrupting harbor operations. Liveaboard residents and dockside workers are especially impacted by sudden flooding, which may arrive with little warning depending on watershed conditions upstream.

While tributary flooding does not typically affect deepwater berthing areas, it threatens electrical systems, dry storage zones, and landside utilities. These areas require periodic maintenance and targeted drainage improvements to maintain safe and functional operations. Stormwater system upgrades, sediment control measures, and coordination with upstream land use authorities will be key to reducing these localized but impactful flood risks.

As a special district and not a municipality, SCPD does not participate in the National Flood Insurance Program (NFIP); however, the SCPD complies with all minimum floodplain development standards and environmental review requirements established by the county and the City of Santa Cruz where its facilities are located.

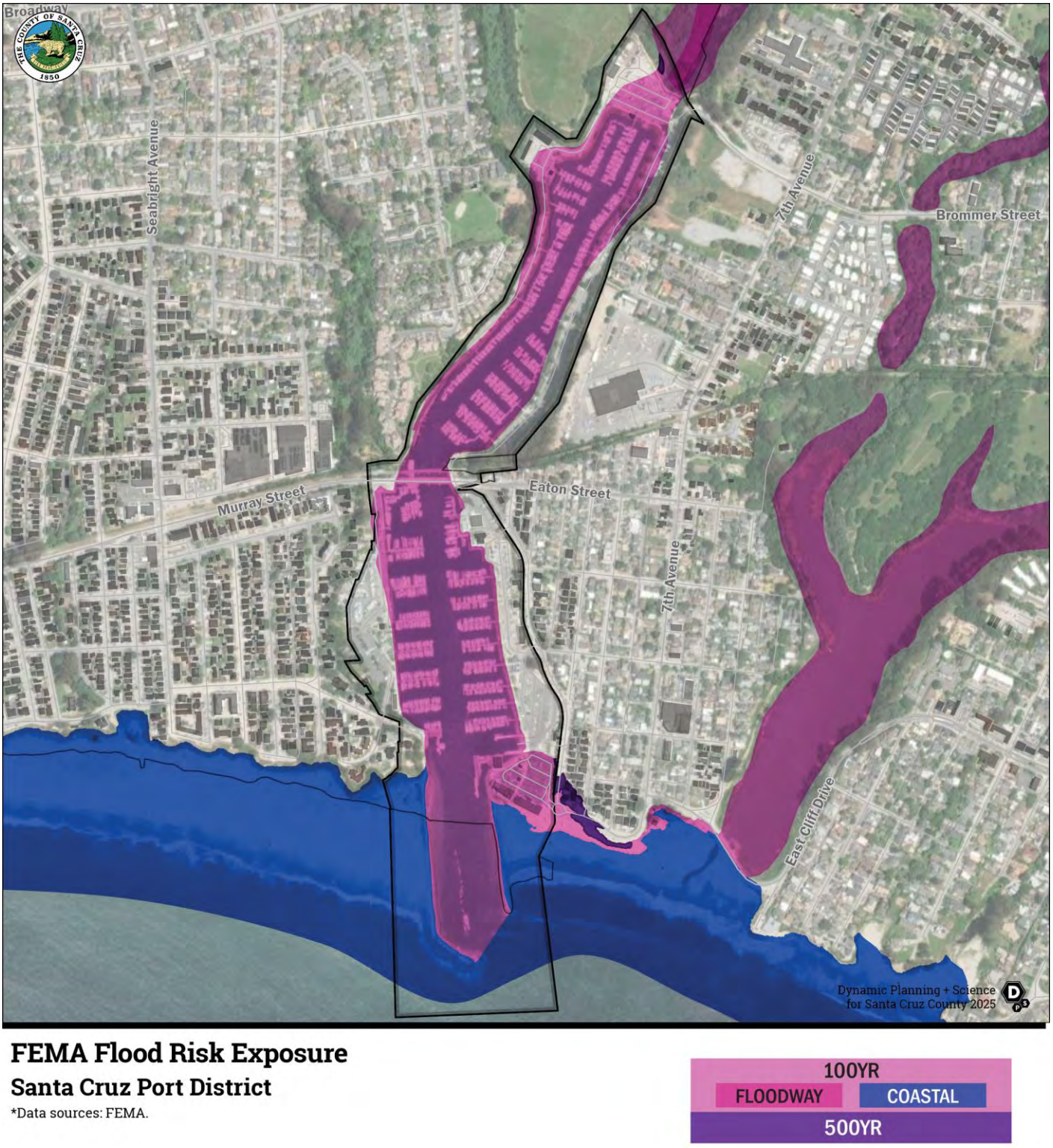


Figure 8-8 SCPD FEMA Flood Hazard Zones Map

8.5.2.2 Earthquake Hazard

SCPD is situated in a seismically active region influenced by proximity to the San Andreas Fault system and other associated fault structures in the Santa Cruz Mountains. This location presents notable earthquake risks, especially to vulnerable waterfront infrastructure and the harbor's liveaboard and working populations.

According to the scenario developed by the U.S. Geological Survey for a magnitude 7.1 earthquake on the northern San Andreas Fault, the entire SCPD is expected to experience "very strong" to "severe" ground shaking, corresponding to Modified Mercalli Intensity (MMI) VII–VIII (Figure 8-9). While the number of permanent residents within the mapped district boundary is limited, the concentration of maritime operations, liveaboard residents, and visiting populations creates significant exposure to structural and lifeline impacts. Most of the district's assets serve tourists as well as the harbor residents; thus, a significant earthquake would likely cause severe economic damages in addition to actual physical impacts. The loss of functionality of harbor services, like parking, boat launches, restrooms, and commercial facilities, would be detrimental to harbor businesses that rely on tourism, including restaurants, kayak rentals, boat charters, and the district's RV park.

In addition to shaking, the area is also subject to very high liquefaction susceptibility, as shown in Figure 8-10. The harbor was dredged from the Wood's Lagoon, where Arana Creek empties into the Monterey Bay, and is constructed on fill and soft alluvial soils, which are prone to settlement or loss of bearing capacity during seismic events. This geologic condition amplifies the risk of structural damage to all of the Port District's facilities and infrastructure during a significant earthquake event, including docks, pilings, utilities, the maintenance shop, and multiple commercial facilities including tourist-serving uses like the district's RV park.

Without appropriate retrofitting or relocation, SCPD's assets are highly vulnerable to both ground shaking and severe liquefaction, and the district's entire operation and many local businesses that depend upon it are at risk.

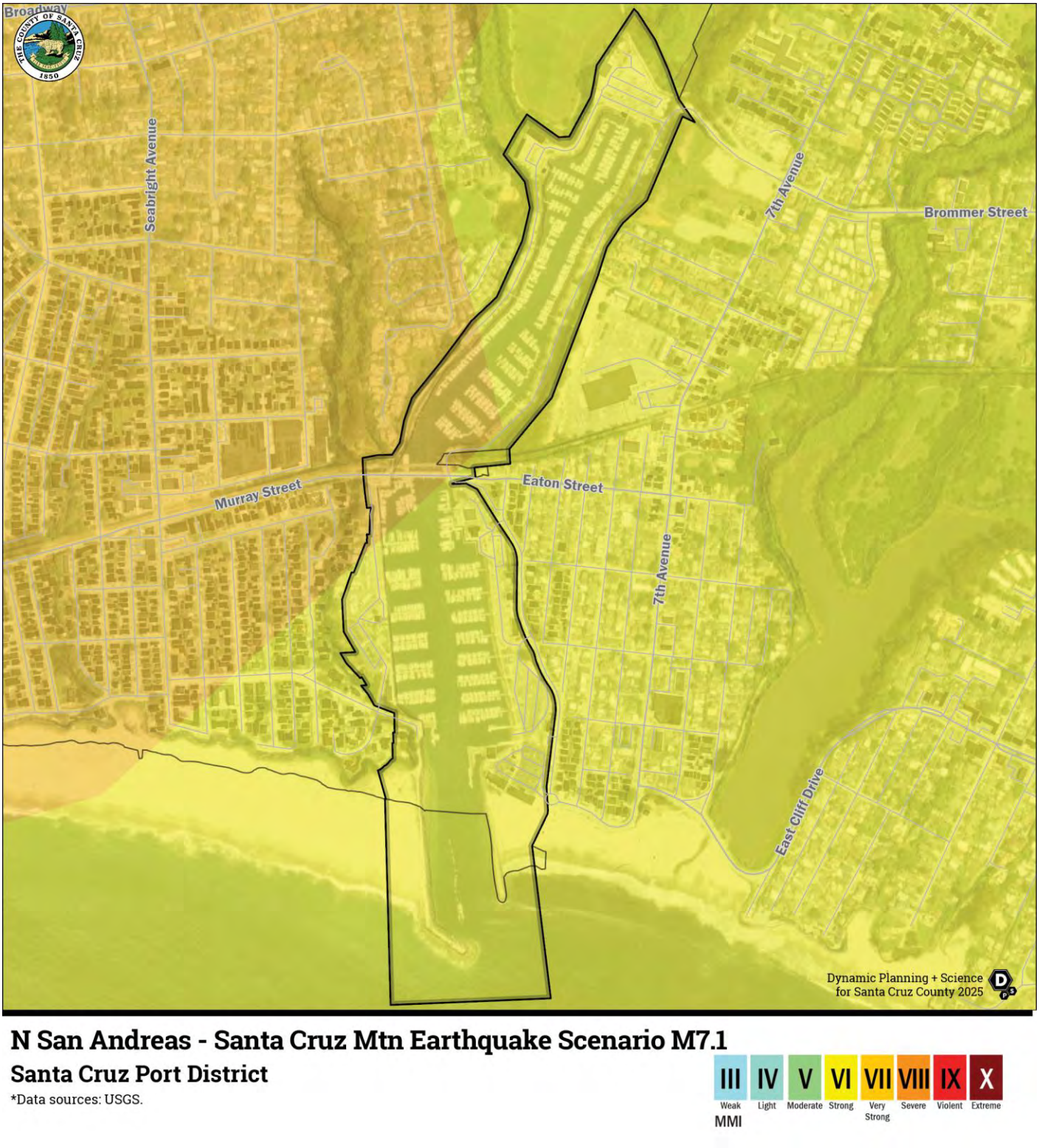
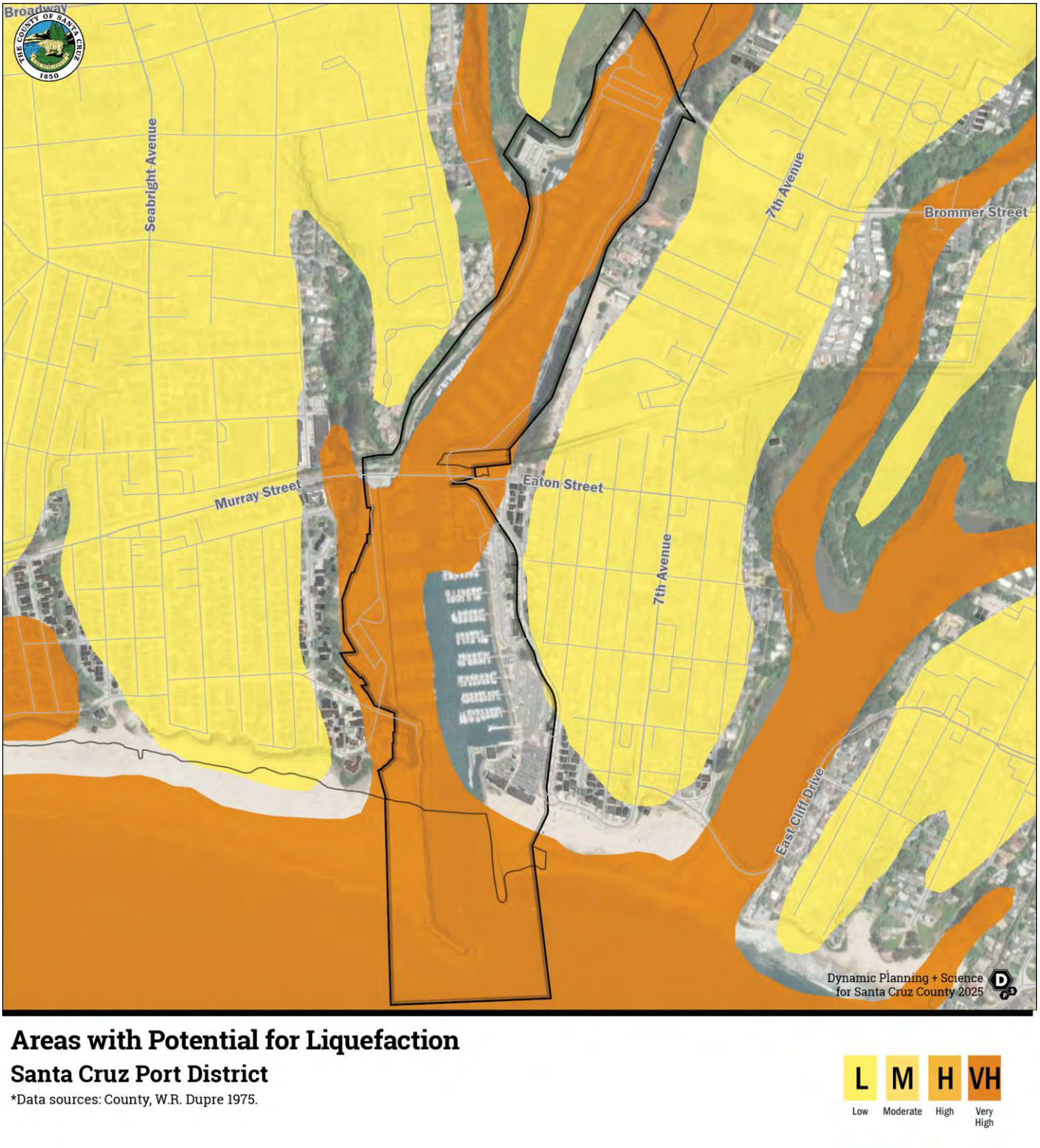


Figure 8-9: SCPD M7.1 San Andreas Earthquake Scenario Shaking Intensity Map



Areas with Potential for Liquefaction

Santa Cruz Port District

*Data sources: County, W.R. Dupre 1975.

L Low
M Moderate
H High
VH Very High

Figure 8-10: SCPD Areas with Potential for Liquefaction Map

8.5.2.3 Coastal Hazards

SCPD faces a high degree of exposure to coastal hazards, including shoreline erosion, tsunami inundation, and wave run-up and surge during coastal storm events. These hazards are interrelated and intensified by the harbor's location at the mouth of Arana Gulch where it opens into Monterey Bay and by climate change and sea level rise, as discussed in Section 8.5.2.5.

Coastal Erosion

Coastal Erosion is actively degrading the structural integrity and long-term resilience of SCPD infrastructure. Shoreline retreat, scouring, and sediment instability are increasing exposure for harbor staff, liveaboard residents, and users throughout the marina. Seawalls, dock foundations, and adjacent access roads—particularly those located along steep or unconsolidated slopes—are increasingly at risk due to ongoing erosion and the cumulative effects of wave action and sea level rise.

Maintenance costs associated with erosion are also rising. SCPD continues to manage sediment accumulation, perform revetment repairs, and stabilize shoreline access routes where erosion and land loss have already begun to affect day-to-day operations. Locations such as the West Jetty remain particularly vulnerable due to their exposure to open wave energy and dynamic sediment transport processes. These forces reduce the effectiveness of existing coastal protections, especially during major storm events, requiring continual adaptation and infrastructure investment.

The Landslide Risk Exposure Map (Figure 8-11) provides an important proxy for identifying areas with elevated erosion potential. Slopes categorized as moderate or high risk for failure—particularly those flanking the inner harbor and beachside access areas—may be subject to future coastal erosion as wave action, storm runoff, and sea level rise intensify. These geologic conditions represent a combined hazard environment in which coastal erosion and slope failure intersect, compounding infrastructure vulnerability along the bluff-backed segments of the harbor.

Tsunami Hazards

Tsunami Hazards present a serious and well-documented threat to the Santa Cruz Port District. The entire harbor lies within the mapped tsunami runup zone as depicted in the Tsunami Runup Area Exposure Map (Figure 8-12). This area is susceptible to both near-field tsunami events, which may be generated by local offshore fault activity and arrive with little warning, and far-field events, such as those originating from across the Pacific Ocean.

Vulnerabilities include the potential for direct impacts to liveaboard residents and harbor visitors, who may face mobility limitations or lack sufficient awareness of evacuation protocols. These risks are heightened during night hours or inclement weather, when egress from the marina may be slower or more difficult. Communication challenges may also hinder effective evacuation, especially for transient harbor users unfamiliar with local emergency signage or alert systems.

Infrastructure throughout the harbor is at risk of catastrophic damage during a significant tsunami event. Floating docks, gangways, utility connections, and vessels may be dislodged, destroyed, or swept inland. A major event could leave the port inoperable for an extended period, disrupting commercial and recreational access, damaging critical facilities, and interfering with recovery operations.

The topographic configuration and limited vertical evacuation options within the port compound this risk. Proximity to open ocean waters and the lack of high ground within the district increase long-term vulnerability. The mapped tsunami runup zone highlights this concern, showing that much of the harbor's core facilities, access roads, and upland parking areas lie within the projected inundation footprint.

Given SCPD's exposure to both natural and operational impacts from a tsunami, continued investment in public awareness, signage, drills, and structural adaptation measures is essential. The tsunami hazard poses an acute risk to life safety, economic continuity, and environmental security within the harbor environment.

Coastal Storms, Wave Run-Up & Surge

Wave run-up and storm surge during winter storms are becoming more frequent and intense, driven by atmospheric river events and shifting coastal storm patterns. Sudden overtopping or dock failure during these events places liveaboard residents and harbor personnel at elevated risk. High-energy wave action can damage gangways, vessels, and shoreline infrastructure, resulting in hazardous conditions and service disruptions across the harbor.

Together, these coastal hazards underscore the importance of SCPD's ongoing investments in shoreline protection, emergency response planning, harbor maintenance, and community outreach. These risks will continue to increase as climate change accelerates sea level rise and amplifies extreme weather events. Targeted mitigation actions and adaptation strategies will be critical to preserving safe, functional, and resilient harbor operations.



Figure 8-11: SCPD Slope Failure Susceptibility Map

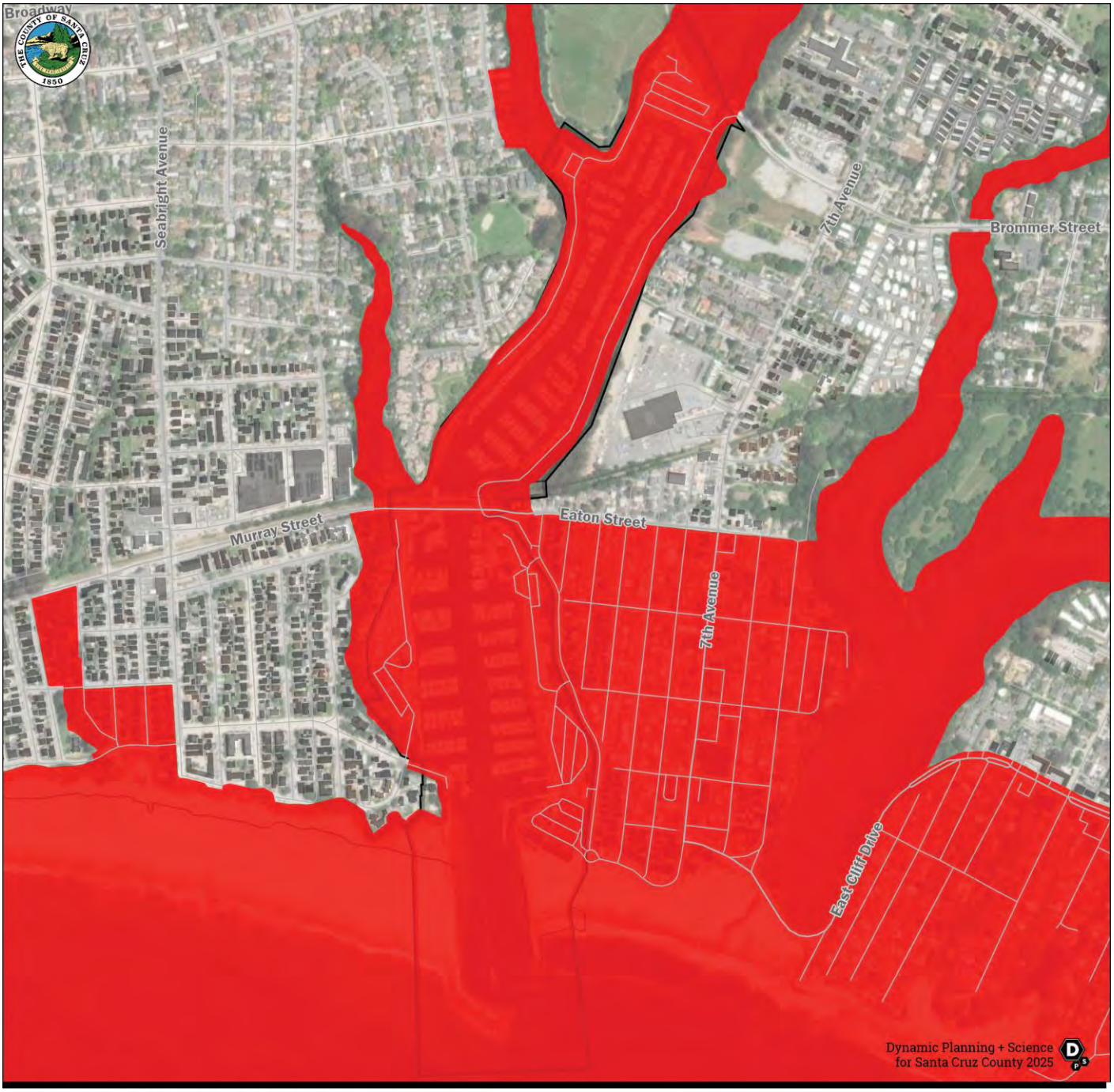


Figure 8-12: SCPD Tsunami Run-Up Areas Map

8.5.2.4 Drought Hazard

The National Drought Monitor provides drought data and maps nationally and on a localized, watershed scale. The National Drought Monitor is the product of 11 agencies, including the NDMC, NOAA and USDA, and is available at http://droughtmonitor.unl.edu/. The National Drought Monitor categorizes the level of drought from D0 through D4, with D4 being the highest "exceptional drought." Table 8-4 depicts drought classifications and impacts from the level of drought occurrence in California, while Figure 8-13 shows a time series of the level of drought in Santa Cruz County from 2000 to 2025 according to the National Drought Monitor.

Drought is an increasing concern for SCPD due to its impacts on harbor operations, marine ecosystems, and the economic stability of fishing-dependent businesses. As regional droughts become more frequent and severe, they present both environmental and economic challenges to the harbor community.

Fishing workers and small commercial operators are among the most directly affected. Drought-driven ecosystem stress can reduce fish populations and limit commercial catch, resulting in income loss or economic displacement for those who rely on marine resources. These disruptions ripple through the harbor economy, especially in a port that supports commercial and recreational fishing activity.

Reduced freshwater outflows during prolonged drought degrade water quality within the harbor and alter the balance of salinity and nutrients needed to sustain healthy ecosystems. This can affect key species and habitats, further reducing the viability of fisheries. In some cases, fishery closures or the decline of specific species may force the suspension of commercial and recreational fishing activities.

Looking ahead, the risk to marine-dependent operations is expected to increase. Ongoing climate projections suggest that drought conditions along the central coast will intensify over time. These shifts may alter marine habitat structure, ecosystem function, and long-term access to viable fish stocks. With drought now considered a recurring hazard rather than a rare event, the port and its users will need to prepare for long-term hydrologic stress and its economic consequences.

Addressing drought in the SCPD context will require both ecological monitoring and coordination with state agencies on fisheries management. It will also be important to support affected harbor workers through resilience planning and economic recovery initiatives.

Table 8-4: Drought Classifications and Impacts

Category	Description	Possible Impacts
D0	Abnormally Dry	▪ Soil is dry; irrigation delivery begins early ▪ Dryland crop germination is stunted ▪ Active fire season begins ▪ Winter resort visitation is low; snowpack is minimal
D1	Moderate Drought	▪ Dryland pasture growth is stunted; producers give supplemental feed to cattle ▪ Landscaping and gardens need irrigation earlier; wildlife patterns begin to change ▪ Stock ponds and creeks are lower than usual
D2	Severe Drought	▪ Producers increase water efficiency methods and drought-resistant crops ▪ Grazing land inadequate ▪ Fire season is longer, with high burn intensity, dry fuels, and large fire spatial extent; more fire crews on staff ▪ Lake- and river-based tourism declines; boat ramps close ▪ Trees are stressed; plants increase reproductive mechanisms; wildlife diseases increase ▪ Water temperatures increase; programs to divert water to protect fish begin ▪ River flows decrease; reservoir levels are low and banks are exposed
D3	Extreme Drought	▪ Federal water not adequate to meet irrigation contracts; extracting supplemental groundwater is expensive ▪ Fire season lasts year-round; fires occur in typically wet parts of the state; burn bans are implemented ▪ Ski and rafting business is low; mountain communities suffer ▪ Low water levels impede fish migration and cause lower survival rates ▪ Wildlife encroach on developed areas; little native food and water is available for bears, which hibernate less ▪ Water sanitation is a concern; reservoir levels drop significantly; surface water is nearly dry, flows are very low; water theft occurs ▪ Livestock need supplemental feed, cattle and horses are sold; little pasture remains ▪ Well and aquifer levels decrease; homeowners drill new wells

Category	Description	Possible Impacts
D4	Exceptional Drought	▪ Fire season is very costly; number of fires and areas burned are extensive ▪ Many recreational activities are affected ▪ Fields are left fallow; orchards are removed; vegetable yields are low; honey harvest is small; agricultural unemployment is high, food aid is needed ▪ Fish rescue and relocation begins; pine beetle infestation occurs; forest mortality is high; wetlands dry up; wildlife death is widespread; algae blooms appear ▪ Poor air quality affects health; greenhouse gas emissions increase as hydropower production decreases; West Nile outbreaks rise ▪ Water shortages are widespread; surface water is depleted; federal irrigation water deliveries are curtailed; water prices are extremely high; wells are dry, more and deeper wells are drilled; water quality is poor

Source: Adapted from U.S. Drought Monitor Drought Classifications and Impacts

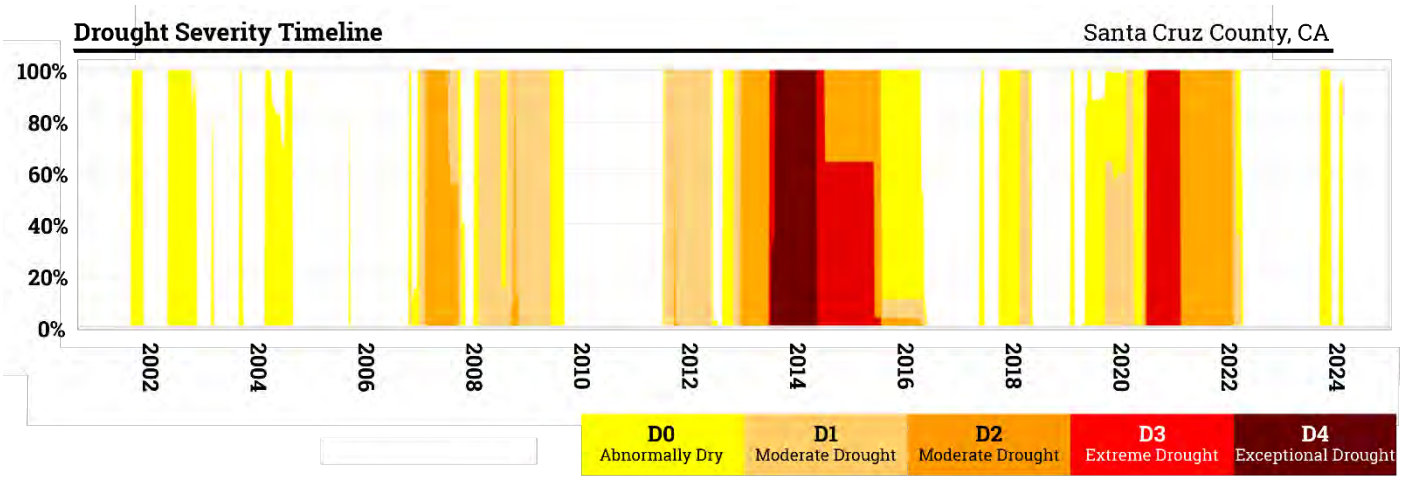


Figure 8-13: Drought Severity Timeline 2000-2024

8.5.2.5 Climate Change Hazard

Average annual temperatures across most of California have already increased by more than 1°F, with some areas experiencing rises of over 2°F when comparing the 1901–1960 average to that of 1986–2016. Daily maximum temperatures—a key indicator of extreme heat—are projected to increase by 4.4°F to 5.8°F by 2050 and by 5.6°F to 8.8°F by 2100. Heat waves that impact public health, known as heat-health events, are also expected to intensify across the state. By 2050, these events are projected to last up to two weeks longer in the Central Valley and occur four to ten times more often in the Northern Sierra region (California Natural Resources Agency, 2022).

California is already experiencing significant impacts from climate change, including prolonged drought, a lengthened wildfire season, increased coastal flooding and erosion, and widespread tree mortality. The state has observed rising average temperatures, more extreme heat days, fewer cold nights, a longer growing season, and shifts in the water cycle, with less winter precipitation falling as snow. In addition, summertime fog has declined by approximately 33%, and both snowmelt and rainwater runoff are occurring earlier in the year (Cal OES, 2018).

Long-term trends indicate a 12% to 20% decline in fog across California from 1900 through projections to 2070. Climate experts suggest that warming temperatures reduce the ability of air masses to cool enough to produce fog, which plays a critical role in supporting California's ecosystems (Grantham, Teodore; University of California, Berkeley, 2018).

Climate change is already influencing operations and hazard exposure within the Santa Cruz Port District. The Port is directly affected by changes in coastal conditions, including rising sea levels, stronger storm surge, accelerated erosion, and increased frequency of high tide flooding. These trends pose risks to dock infrastructure, access roads, shoreline revetments, and public safety operations within the harbor.

The Port is particularly vulnerable to compounding climate impacts such as back-to-back atmospheric river events and higher storm-driven wave action, which can increase sedimentation at the harbor entrance, limit safe navigation, and threaten the structural integrity of coastal defenses. Additionally, changing fog patterns, warmer ocean temperatures, and ecological shifts may affect marine operations, fisheries, and harbor-dependent businesses over time.

To address these challenges, this MJHMP integrates climate change as a cross-cutting consideration for each identified hazard. Each hazard chapter includes a discussion of projected climate influences, highlighting how increased variability, intensity, and exposure may alter the severity or frequency of future impacts on Port infrastructure, harbor operations, and coastal users.

Sea Level Rise

Sea level rise presents a growing hazard to SCPD, with chronic and long-term effects on harbor infrastructure, operations, and coastal resilience. As shown in the Sea Level Rise Exposure Map (Figure 8-14), large portions of the harbor are vulnerable to inundation. This includes low-lying areas around the entrance

channel, docks, and nearby floodplains. These areas now experience more frequent flooding during high tides and minor storm surges.

Ongoing exposure to elevated water levels is already damaging port infrastructure. Dock structures and electrical systems are affected the most. These systems were not designed to withstand regular saltwater contact. As a result, infrastructure is degrading more quickly, which lowers reliability and increases maintenance demands.

Sea level rise also increases the impact of other hazards. By raising the baseline water level, even modest storms and high tides can trigger wave run-up and surge that reaches farther inland. This makes storm impacts stronger and causes more erosion along the edges of the harbor. Areas shown on the Landslide Risk Exposure Map with moderate to high slope risk may become less stable as water levels rise.

As protective barriers and revetments face more stress, damage to port infrastructure is likely to increase. The West Jetty and nearby slopes are especially exposed. Sea level rise is not only a direct hazard but also a factor that makes other coastal threats worse. Planning and reinforcing infrastructure will be necessary to protect harbor operations and nearby communities.

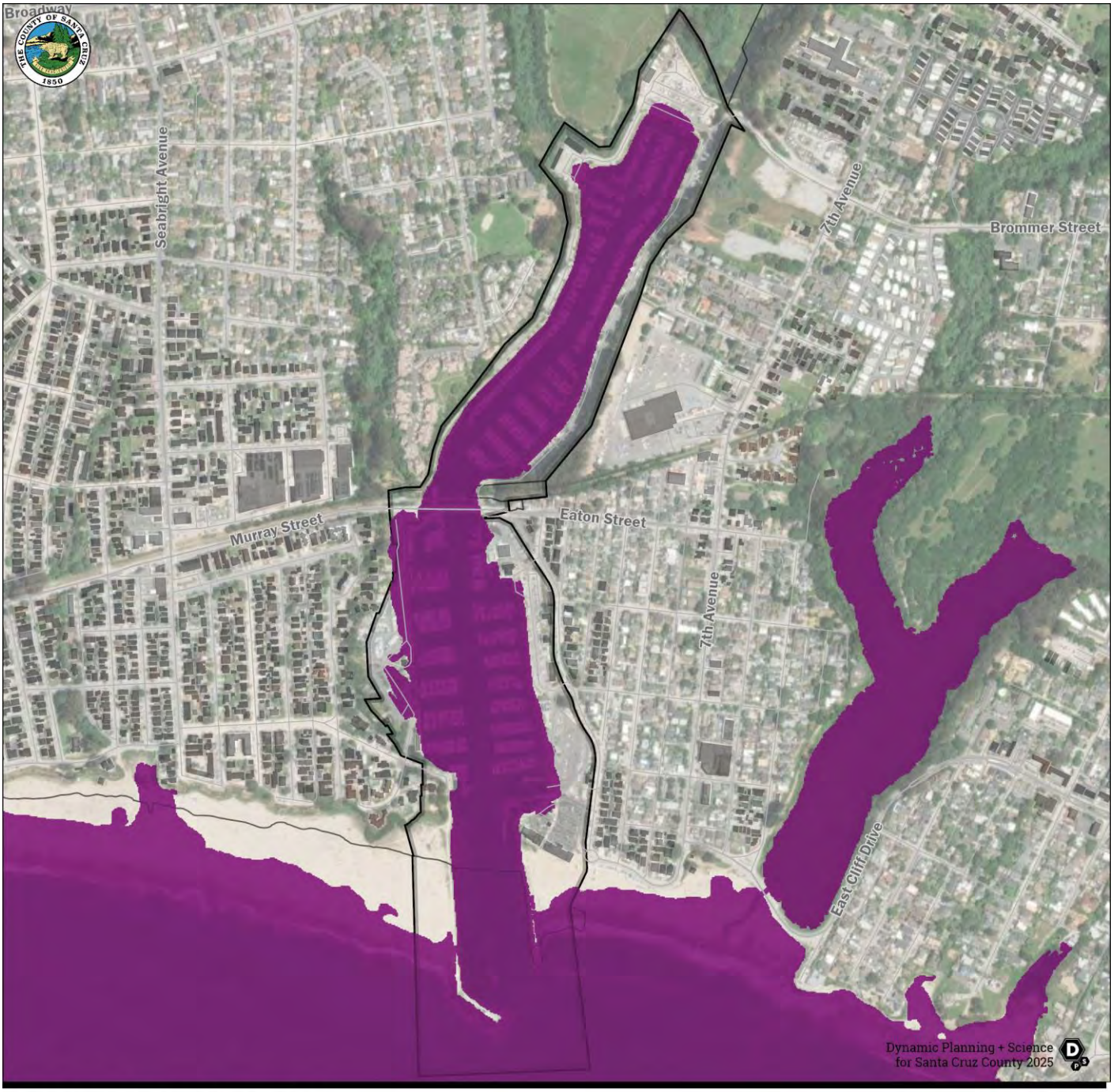


Figure 8-14 SCPD Sea Level Rise Inundation Areas Map

8.5.3 Planning for Hazards & Growth

SCPD incorporates hazard awareness into long-term planning and infrastructure decisions to support resilience and sustainability. The district's planning documents provide a foundation for addressing future climate risks, emergency response, and resource management. These efforts focus on maintaining reliable operations under changing conditions.

Although SCPD does not manage water systems like utility districts, it takes a proactive approach to maintaining infrastructure that is essential to public safety and harbor operations. Capital improvement projects focus on upgrading aging facilities, strengthening critical systems, and reducing vulnerabilities. These upgrades improve performance during both daily operations and emergencies such as earthquakes, storms, and coastal flooding.

Future development in and around the port will continue to rely on hazard-informed strategies. As climate impacts increase, it will be important to align growth, infrastructure, and public safety planning with known risks. SCPD's investments in asset maintenance, coastal protection, and emergency readiness will help protect the harbor community and ensure long-term service continuity.

8.5.3.1 Development-Related Hazard Considerations

Development and redevelopment within the Santa Cruz Port District must address the full range of hazards present in this coastal setting. This includes risks from flooding, coastal erosion, tsunami run-up, and seismic activity. The harbor's location in the coastal zone also means that all development must comply with the California Coastal Act and obtain approval from the California Coastal Commission (CCC), which plays a central role in evaluating hazard exposure and resilience.

The CCC requires that projects in the coastal zone avoid or minimize exposure to known hazards, especially in areas with high risk from sea level rise or erosion. Proposals must consider long-term site safety, public access, and environmental protection. This means that any new construction or upgrades near the shoreline must be supported by hazard assessments and engineered solutions that reduce risk. The CCC also emphasizes the use of nature-based strategies where feasible, such as dune restoration or managed retreat.

Most port infrastructure, including docks, roadways, parking, and utilities, is located within mapped hazard areas. These include tsunami inundation zones, flood-prone lands, and steep slopes with moderate to high landslide risk. As shown in district hazard maps, many of these areas are already under stress from changing sea conditions. Development in these zones could intensify exposure unless proper site design and mitigation measures are used.

Changes in land use upstream also affect port conditions. Increased runoff from impervious surfaces can worsen tributary flooding, alter sediment loads, and reduce water quality. These effects place added stress on port facilities and increase maintenance costs. Sea level rise compounds the issue by pushing high tides further inland and increasing the extent of both flooding and erosion.

SCPD must continue integrating hazard data into site planning, design reviews, and permitting. Development proposals in sensitive areas should include flood protection, emergency access, and infrastructure resilience features. Coordination with the CCC, County of Santa Cruz, and other regulatory agencies is essential to ensure that projects align with both state coastal policy and local hazard mitigation goals.

8.5.4 Hazard Problem Statements

As part of the mitigation action identification process, the internal planning group for each jurisdiction identified areas of concern (aka problem statements) for their respective facilities based on the risk assessment and vulnerability analysis. Problem statements focused on the impact, victim, and the threat that the hazard could create in the jurisdiction, as described in Table 8-5. Identifying common issues and weaknesses through these problem statements assisted the planning group in understanding the realm of resources needed for mitigation.

The goal is to have at least one mitigation action for every problem statement. Projects or actions have been developed to mitigate each problem identified. See Table 8-7 for a full list of mitigation actions and corresponding problem statements that they address. Each problem statement is coded with a problem number for cross-referencing between Table 8-5 and Table 8-7.

Table 8-5: SCPD Problem Statements

Hazard	Sub-Hazard	Area of Concern	Problem IS	Description	Related Mitigation Actions
Climate Change		Threat	ps-CC-SPD-01	Swell and surge conditions are increasing in frequency and magnitude due to climate change and sea level rise, which is accelerating erosion of harbor embankments and contributing to the formation of sinkholes along the shoreline.	ma-CC-RCD-01
Coastal Hazards	Coastal Erosion	Victim	ps-CE-SPD-01	Long-term erosion may increase risks for harbor users and staff by exposing degraded shorelines and aging infrastructure.	ma-CE-SPD-01
Coastal Hazards	Coastal Erosion	Impact	ps-CE-SPD-02	Shoreline retreat and scouring threaten the structural integrity of seawalls, roadways, gangways and other marine infrastructure.	ma-CE-SPD-01
Coastal Hazards	Coastal Erosion	Impact	ps-CE-SPD-03	Maintenance costs for sediment management, revetment repair, and access stabilization are increasing due to erosion effects.	ma-AH-RCD-01
Coastal Hazards	Coastal Erosion	Threat	ps-CE-SPD-04	Wave energy and sediment dynamics are accelerating erosion along harbor embankments.	ma-CE-SPD-01
Coastal Hazards		Threat	ps-CH-SPD-01	Sea level rise and storm-driven wave activity are reducing the effectiveness of existing protective structures.	ma-CH-SCC-01
Coastal Hazards	Coastal Storm	Victim	ps-CS-SPD-01	Liveaboard residents, commercial operators, tenants, and Port District staff face heightened risk during sudden wave overtopping events or dock failures associated with major winter storms.	ma-AH-RCD-01
Coastal Hazards	Coastal Storm	Threat	ps-CS-SPD-02	Atmospheric river events and coastal storms are increasing in frequency and magnitude, intensifying wave energy impacts on harbor infrastructure and operations.	ma-AH-CPT-01
Drought		Victim	ps-DR-SPD-01	Fishing-dependent workers and small commercial operators may face reduced income or economic displacement due to reduced catch linked to drought-driven ecosystem stress and fishery closures.	ma-DR-SPD-01
Drought		Impact	ps-DR-SPD-02	Drought-related fishery closures or species decline may disrupt commercial and recreational harbor-based activities.	ma-DR-SPD-01

Hazard	Sub-Hazard	Area of Concern	Problem IS	Description	Related Mitigation Actions
Drought		Threat	ps-DR-SPD-03	Increasing frequency and duration of regional droughts are affecting aquatic systems and the economic viability of marine-dependent operations.	ma-DR-WTS-01
Drought		Threat	ps-DR-SPD-04	Climate projections show worsening hydrologic stress, altering marine habitat conditions along the central coast.	ma-DR-SPD-01
Earthquake		Victim	ps-EQ-SPD-01	Port District staff, tenants, and users may face injury risks from structural failures, falling debris, or dock collapse during seismic events.	ma-EQ-SPD-01
Earthquake		Victim	ps-EQ-SPD-02	Liveaboard residents and commercial operators may become stranded or injured due to dock separation or utility failure following an earthquake.	ma-EQ-SCW-03
Earthquake		Impact	ps-EQ-SPD-03	Critical port infrastructure?such as docks, pilings, and seawalls?is vulnerable to damage or collapse from strong ground shaking and liquefaction.	ma-EQ-SPD-01
Earthquake		Impact	ps-EQ-SPD-04	Electrical and communication systems may fail during seismic events, impairing response coordination and emergency operations.	ma-EQ-SPD-01
Earthquake		Threat	ps-EQ-SPD-05	The Port District is located in a region with known seismic faults and moderate to high liquefaction susceptibility.	ma-EQ-SPD-01
Earthquake		Threat	ps-EQ-SPD-06	Much of the harbor?s infrastructure is built on fill or sediment-prone areas that could amplify seismic shaking or settle unevenly.	ma-EQ-SPD-02
Flood		Impact	ps-FL-SPD-01	Sediment and debris from upstream flooding and the San Lorenzo River may shoal the harbor entrance, reducing navigability and requiring more extensive dredging efforts.	ma-FL-SPD-01
Flood		Threat	ps-FL-SPD-02	Major watershed events may overwhelm drainage systems and backwater into harbor infrastructure, particularly during concurrent coastal storms.	ma-FL-SPD-01
Flood		Victim	ps-FL-SPD-03	Crab fishing, sailing charter, and other commercial operators in the harbor can be economically impacted during the winter months due to shoaled conditions at the harbor entrance resulting from upstream flooding.	ma-FL-SPD-01

Hazard	Sub-Hazard	Area of Concern	Problem IS	Description	Related Mitigation Actions
Sea Level Rise		Impact	ps-SLR-SPD-01	Overtopping of seawalls and recurring inundation of docks and adjacent electrical systems from sea level rise may impact Port District assets and operations.	ma-SLR-SPD-01, ma-SLR-SPD-02
Sea Level Rise		Threat	ps-SLR-SPD-02	Long-term sea level rise is elevating baseline water levels, increasing exposure to even modest high tide and storm events.	ma-SLR-SCW-01, ma-SLR-SCW-02, ma-SLR-SPD-02
Coastal Hazards	Tsunami	Victim	ps-TS-SPD-01	Liveaboard residents, commercial operators, tenants, Port District staff, and users may be unable to evacuate the area in a timely manner due to limited awareness of evacuation routes, mobility constraints, and/or vehicular congestion of one-way access routes.	ma-TS-SPD-01, ma-TS-SPD-02
Coastal Hazards	Tsunami	Victim	ps-TS-SPD-02	Harbor users may not receive timely alerts or understand evacuation procedures due to limited awareness and desensitization to existing tsunami signage.	ma-TS-SPD-01
Coastal Hazards	Tsunami	Impact	ps-TS-SPD-03	A tsunami may cause severe damage to docks, gangways, and marine infrastructure, disrupting harbor operations and access.	ma-TS-SPD-02
Coastal Hazards	Tsunami	Impact	ps-TS-SPD-04	Harbor businesses and utility systems could be rendered inoperable for extended periods following tsunami inundation and debris damage.	ma-TS-SCC-01
Coastal Hazards	Tsunami	Threat	ps-TS-SPD-05	The Port District lies within the tsunami inundation zone and is exposed to both near-field and far-field tsunami events.	ma-TS-SPD-02
Coastal Hazards	Tsunami	Threat	ps-TS-SPD-06	Limited vertical evacuation options and the proximity to open ocean create elevated long-term exposure to tsunami risk.	ma-TS-SPD-01
Coastal Hazards	Wave Run-Up & Surge	Impact	ps-WV-SPD-01	High-energy wave run-up can damage docks, vessels, and gangways, causing hazardous conditions and service disruption.	ma-WV-SPD-02, ma-WV-SPD-01

8.5.4.1 Climate Change Impacts & Vulnerable Populations

The impacts of climate change in Santa Cruz County disproportionately burdens vulnerable populations, exacerbating challenges in water access, housing resilience, and emergency preparedness. Rising temperatures and extended droughts strain water supplies, with limited recharge mechanisms and insufficient mapping compounding the risks. These issues are particularly acute for low-income households, which often lack the resources to address water well failures, waterline repairs, or contingency planning. Many of these residents face financial barriers to implementing proactive mitigation measures or recovering from water shortages.

Disproportionately impacted communities within the Santa Cruz Port District are primarily concentrated among the harbor's liveaboard residents and the local maritime workforce. Unlike other jurisdictions with larger residential populations, the Port District serves a small but highly vulnerable group of individuals who live and work near coastal hazards. These include older adults, individuals with disabilities, and workers in harbor-dependent jobs who may face barriers during emergency events.

Port staff report that more than half of the liveaboard population is over the age of sixty-five, with approximately twenty percent experiencing mobility or functional limitations. Some liveaboards also face economic hardship, mental health challenges, or housing insecurity. Many rely on fixed incomes, do not own vehicles, and may not be easily reached through traditional emergency communications. Living on vessels within the marina increases their exposure to coastal storms, high surf, and potential tsunami impacts, especially when evacuation time is limited or access routes are compromised.

The Port's workforce includes individuals who perform critical operations such as vessel maintenance, yard services, fuel delivery, and support for commercial fishing and boating. These workers may not have secure employment protections or consistent income. Hazard events that damage docks, disrupt harbor access, or affect navigation can cause immediate income loss and job insecurity. Many workers rely on daily wages and may not have resources to withstand extended closures.

Although there is no formal data indicating the prevalence of language barriers among harbor users, equitable communication remains an important priority. All emergency information, including storm advisories and evacuation procedures, should be delivered clearly, understandable, and accessible to every member of the harbor community.

By acknowledging the unique risks faced by the Port District's liveaboard and working populations, the district can prioritize hazard mitigation strategies that address these vulnerabilities. These strategies support safety, resilience, and equitable recovery for all individuals who rely on the harbor for shelter, employment, and access to essential services.

The SCPD manages the Santa Cruz Harbor, which serves as a hub for commercial fishing, recreation, tourism, and marine operations. While the District's mission is focused on safe and efficient harbor operations rather than direct emergency response, its infrastructure and users are increasingly vulnerable to climate change–driven hazards. Harbor-based populations—including liveaboard residents, small commercial operators, and fishing-dependent workers—face heightened risk due to their reliance on

marine-dependent infrastructure, limited evacuation options, and economic sensitivity to disruption of harbor operations.

Coastal Erosion and Coastal Hazards: Shoreline retreat and erosion are accelerating due to stronger wave energy, storm activity, and sea level rise. These processes threaten seawalls, gangways, revetments, and harbor roadways, increasing maintenance costs for sediment management and structural repair. Harbor staff and users are at greater risk as degraded shorelines and aging infrastructure are exposed.

Sea Level Rise: Rising baseline water levels and more frequent high tide flooding are creating recurring inundation risks for docks, gangways, and adjacent electrical systems. Long-term sea level rise will reduce the effectiveness of existing seawalls and protective structures, compounding exposure to storm events and contributing to sinkhole formation along embankments.

Flooding and Watershed Events: Major storm events and upstream flooding from the San Lorenzo River contribute to shoaling at the harbor entrance, restricting navigability for commercial and recreational vessels. Sediment and debris accumulation require costly dredging and create economic impacts for fishing fleets, sailing charters, and harbor businesses. Drainage backwater during concurrent storm and tidal events further threatens harbor infrastructure.

Tsunamis: The Port District lies entirely within the tsunami inundation zone and faces exposure to both near-field and far-field tsunami events. Vulnerable populations include liveaboard residents, harbor staff, and tenants who may have limited awareness of evacuation routes, face mobility barriers, or encounter congestion along constrained access corridors. Tsunami inundation could severely damage docks, gangways, and utilities, rendering harbor operations and local businesses inoperable for extended periods.

Earthquakes and Liquefaction: Much of the harbor's infrastructure is built on fill and sediment-prone areas that could amplify seismic shaking or settle unevenly. Although not impacted by climate change, critical assets—including docks, seawalls, and utilities—are highly vulnerable to earthquake damage, with risks of dock collapse, utility disruption, and loss of access for liveaboard residents and harbor users.

Coastal Storms and Wave Run-Up: Atmospheric river events and winter storms increasingly subject the harbor to wave overtopping and high-energy run-up, damaging vessels, docks, and gangways. Liveaboard residents, commercial operators, and staff face direct safety risks during these events, particularly when storms cause dock failures or sudden flooding.

Drought and Marine Ecosystem Stress: Drought conditions indirectly affect the Port District by altering marine habitat conditions and triggering fishery closures. Fishing-dependent workers and small commercial operators may face reduced income or economic displacement when species decline or catch limits are imposed, compounding economic vulnerability in the working waterfront.

The Santa Cruz Port District's exposure to climate-driven hazards highlights the intersection of infrastructure resilience, marine-dependent livelihoods, and public safety. Addressing long-term risks from erosion, sea level rise, flooding, and seismic activity will require coordinated adaptation planning, infrastructure investments, and education and outreach to harbor users—particularly liveaboard residents and small operators—who are most vulnerable to disruptions.

8.6 Mitigation Strategy

The mitigation strategy is the guidebook to future hazard mitigation administration, capturing the key outcomes of the hazard mitigation planning process. The mitigation strategy is intended to reduce vulnerabilities outlined in the risk assessment (i.e., the problem statements) with a prescription of policies and physical projects. These mitigation actions should be compatible with existing planning mechanisms and should outline specific roles and resources for implementation success.

8.6.1 Aligning the Action Plan

This section connects the SCPD's mitigation actions with its existing capabilities and areas for growth. Capability assessments are a required element of hazard mitigation planning under the Disaster Mitigation Act of 2000 and FEMA's 2023 guidance, ensuring that actions are realistic, achievable, and aligned with available resources.

The section begins with a summary of the SCPD's capabilities across four areas: planning and regulatory, administrative and technical, fiscal, and education and outreach. This overview highlights the tools and strengths that the district already uses to reduce hazard risk. The section then provides a detailed analysis of each capability area, identifying both current practices and opportunities to expand resilience.

8.6.1.1 Capabilities & Opportunities Assessment

To develop a realistic and actionable mitigation strategy, it must account for existing jurisdictional capabilities and what future opportunities there are to enhance those capabilities for purposes of hazard mitigation. This section provides an assessment of SCPD's existing capabilities and future opportunities, including planning and regulatory, administrative and technical, fiscal, and public outreach and education capabilities. This assessment also identifies opportunities to integrate this MJHMP into future planning, policies, or programs to weave mitigation efforts into daily operations and address hazard problems wholistically. Capabilities are categorized into four groups and include various mechanisms.

- **Planning and Regulatory Capabilities:** Existing long-range plans, emergency response plans, hazard-specific plans, land use policies, and building and development standards.
- **Administrative and Technical Capabilities:** Available expertise in emergency services, engineering, grant management, and community planning.
- **Fiscal Capabilities:** Budgetary capacity, taxing authority, grants, and other funding mechanisms that can support mitigation projects.
- **Outreach and Education Capabilities:** Existing programs for providing technical assistance, community education, public warnings, and stakeholder engagement.

The SCPD possesses foundational capabilities to support hazard mitigation, emergency preparedness, and infrastructure resilience. While some systems are mature and actively supporting operations, others remain

under development or would benefit from strategic investment and coordination. A full description of the process used to develop the capabilities assessment is provided in Volume 1, Section 2.3.3.

This capabilities and opportunities assessment for SCDP lists the various types of capabilities along with how they have been, currently are, or will in the future be integrated into hazard mitigation planning efforts. The three "HMP Integration" columns that identify the capability's status and usage are color-coded with green, yellow, or orange shading to communicate the following:

- **Status:** If the capability is present at all and what level of use it has generally.
- **Current Mitigation Use:** If the capability is currently being used in mitigation efforts, specifically, and at what level.
- **Future Opportunity:** If there is a future opportunity to integrate the capability into mitigation efforts and at what level.

Planning & Regulatory Capabilities

As a special district with limited authority and not a municipality, SCPD does not maintain traditional planning or regulatory tools, such as hazard-specific ordinances or development standards. That said, the SCPD complies with all development standards and environmental review requirements for the State of California, including the California Environmental Quality Act (CEQA), and within the county and City of Santa Cruz where its facilities are located. These local regulatory environments are described in Volume 1 for Santa Cruz County and in the City of Santa Cruz Municipal Code.

SCPD's Capital Improvement Program (CIP) remains the district's most robust tool for hazard mitigation and infrastructure resilience. The CIP funds essential upgrades such as dock replacements, seawall reinforcement, and maintenance of critical access areas. These projects directly reduce exposure to coastal hazards and improve safety for harbor users.

However, SCPD lacks other key hazard planning tools. Seismic safety programs, floodplain response plans, and stormwater management strategies are not formally established, leaving gaps in preparedness. While some emergency and resilience functions are supported through partnerships with City and County agencies, the Port remains vulnerable in areas outside its direct authority.

Regional planning efforts, such as the Arana Gulch Master Plan, provide a framework for sustainable land use and environmental management adjacent to the Port. Although this plan primarily guides habitat conservation and public access in the Arana Gulch corridor, its implementation reinforces broader goals of watershed health, coastal resilience, and multi-jurisdictional coordination. SCPD can benefit from aligning its own planning priorities with these regional strategies, especially where development or runoff influences tributary flooding, erosion, or sediment transport into the harbor.

Although SCPD does not manage water supply, climate-related issues like sea level rise, flooding, and drought all affect harbor infrastructure and operations. A formal Floodplain Response Plan is needed to address chronic transformer damage and dock inundation. Similarly, drought impacts on fisheries and marine businesses suggest a need for adaptation planning. Climate action planning remains in its early stages but is increasingly critical to sustaining long-term harbor operations.

Finally, SCPD has growing potential to expand hazard-related outreach. Current communication channels, including social media, newsletters, and signage, can be leveraged to share preparedness information and emergency updates with both residents and transient harbor users. These efforts support both public safety and community resilience.

Future integration of the MJHMP will occur through various processes and mechanisms outlined across multiple mitigation actions (Table 8-7). Key opportunities for future hazard mitigation integration with SCPD's existing planning mechanisms are to incorporate NOAA tidal benchmarks, Sea Level Rise Explorer, and Santa Cruz County coastal assessments into the district's monitoring program to inform adaptive triggers (ma-SLR-SPD-02) and to incorporate wave run-up, surge, and SLR scenario thresholds from the CAAP and SLRVA into SCPD's CIP design standards (ma-WV-SPD-02).

Administrative & Technical Capacity

The Port District maintains essential technical capabilities through in-house operational experience. While the District does not have in-house engineering staff, it relies on external engineering consultants to oversee capital projects and infrastructure maintenance. Daily operational needs are managed by Port staff with extensive experience in harbor systems and facility upkeep.

Emergency coordination is handled in partnership with the Santa Cruz County Office of Emergency Services (OR3), ensuring the Port remains connected to regional planning and response systems. The district has successfully pursued grant funding—particularly for infrastructure projects such as seawall replacement—and may benefit from expanding grant-writing capacity to support future resilience initiatives.

Geographic Information System (GIS) services are currently managed through outside partnerships, though building internal capacity may improve project planning and hazard analysis. Outreach and communications responsibilities are integrated into existing roles without dedicated personnel, presenting an opportunity for enhancement as the Port expands its public engagement and emergency preparedness efforts.

Warning Systems & Services

Emergency communications systems at the Port are basic but functional. There is a critical need to enhance coordination with the OR3 to improve alert and warning capabilities for both flood, tsunami and wave run up hazards. These threats pose direct risks to harbor infrastructure and the safety of liveaboard residents, visitors, and staff. Currently, no dedicated alerting systems exist for threats from tsunami despite known presence. Closer integration with OR3 would improve emergency notification protocols and help protect vulnerable populations and infrastructure.

Fiscal Capabilities

SCPD has a stable fiscal foundation with several revenue streams that support capital improvements and routine operations. Utilities fees collected from slip holders are a core funding mechanism. The CIP remains the primary tool for funding resilience projects. Other financial instruments—such as general obligation bonds, development fees, or voter-approved levies—are not fully implemented but could provide future support for mitigation if pursued.

Special tax bonds and withheld spending in hazard-prone areas are additional tools that remain untapped. Their development would require policy support and public engagement.

Education & Outreach Capabilities

Public education and communication channels are in place, though hazard-specific outreach is still evolving. The Port's social media presence is active and well-used, offering a strong foundation for future emergency communications.

There is also room to strengthen coordination with the City and County on hazard information, public safety events, and resource partnerships. Existing platforms such as newsletters and stakeholder meetings offer an opportunity to integrate preparedness messages. Additionally, collaboration with the Resource Conservation District could help SCPD explore nature-based solutions for erosion control and shoreline resilience.

The capabilities assessment is easily digestible and based on color coding to indicate which policies and plans are adequate, need improvement, or in which the hazard mitigation plan could be integrated. Included in the table is a legend that explains how the three questions are answered according to the color indicated: green, yellow, or orange. See Table 8-6 on the following pages.

CAPABILITY ASSESSMENT LEGEND
HMP Integration

Status	Current Mitigation Use	Future Opportunity
Currently in use or present.	Used widely for mitigation.	Opportunity to expand and integrate.
(Sort of) Seldomly used or limited presence.	Limited use in mitigation planning.	Limited opportunity to expand and integrate.
(No) Not present or available.	Not used in mitigation planning.	No opportunity to expand or integrate.

Table 8-6: SCPD Capabilities Assessment

Resource	HMP Integration: Status	HMP Integration: Current Mitigation Use	HMP Integration: Future Opportunity	Notes / Additional Detail
Planning and Regulatory Capabilities				
Hazard Reduction Programs (Annually Conducted)				
Capital Improvements Program (CIP) or Plan				CIP includes infrastructure repair and maintenance, including seawall replacement, dock upgrades, etc.
Annual Fire Prevention Plan				No formal plan. Potential to coordinate with City fire services.
Seismic Safety Program (Non-structural)				No formal program.
Earthquake Modernization Plan (Building Safety)				No form plan. Structural safety guided by City/County codes.
Stormwater Management Program (Annual Inspections)				No current Stormwater Management Program (not under Port District's jurisdiction). A Stormwater Pollution Prevention Plan (SWPPP) is in place, with designated discharge points throughout the harbor, subject to applicable regulatory permits.
Hazard Plans and Programs				
Floodplain Response Plan				No formal plan. Assessment needed due to recurring flooding / overtopping associated with sea level rise, king tides, and similar events.
Community Wildfire Protection Plan (CWPP)	N/A	N/A	N/A	Not applicable to Port District.
Ground Water Management Planning / Plans	N/A	N/A	N/A	Not applicable to Port District.
Climate Action Plan				No formal plan (acknowledges climate impacts in strategy discussions).
Drought Mgmt/ Contingency Plan				No formal plan (acknowledges that drought impacts seasonal fisheries).
FireWise Communities within District	N/A	N/A	N/A	Not applicable to Port District.
Hazard-Related Public Outreach Program				Existing communications in place, with opportunity to expand to include hazard-related content.
Administrative and Technical				
Staff Capacity				
Emergency Manager				No dedicated full-time equivalent is assigned to serve in this role. Port Director and Harbormaster act as EM, in coordination with County OR3.
Civil Engineer				No dedicated full-time equivalent is assigned to serve in this role.

Resource	HMP Integration: Status	HMP Integration: Current Mitigation Use	HMP Integration: Future Opportunity	Notes / Additional Detail
Dedicated Public Outreach Personnel				No dedicated full-time equivalent is assigned to serve in this role. Port Director coordinates public outreach.
GIS Specialist and Capability				No dedicated full-time equivalent is assigned to serve in this role. Consultants and County GIS are utilized.
Grant Manager, Writer, or Specialist				No dedicated full-time equivalent is assigned to serve in this role. Port District staff have applied for and obtained smaller grants. Consultants are needed for larger opportunities.
Other				Port District staff manage daily operations and emergency maintenance.
Warning Systems/Services				
General				Basic communication systems exist. Potential to coordinate and improve emergency alerting.
Flood				Basic communication systems exist. Potential to coordinate and improve emergency alerting.
Wildfire	N/A	N/A	N/A	Not applicable to Port District.
Geological Hazards				Basic communication systems exist. Potential to coordinate and improve emergency alerting.
Fiscal Capabilities				
Financial Resources for Hazard Mitigation				
Levy for Specific Purposes with Voter Approval				Port District has authority to levy taxes with voter approval, though utilization of this option is unlikely.
Utilities Fees				Port Commission approves fee schedule for all service fees, including utility fees (currently being collected).
System Development Fee	N/A	N/A	N/A	Not under Port District purview.
General Obligation Bonds to Incur Debt				Potential to utilize for hazard funding.
Special Tax Bonds to Incur Debt				Port District has authority to levy taxes with voter approval, though utilization of this option is unlikely.
Withheld Spending in Hazard-Prone Areas				Not formalized; potential policy development.
Stormwater Service Fees	N/A	N/A	N/A	Not under Port District purview.
Capital Improvement Project Funding				Primary funding mechanism for resilience projects.
Education / Outreach Capabilities				
Education/Outreach Resources				
Website Dedicated to Hazard Topics				Website exists. Potential to improve mitigation and hazard-specific content.
Dedicated Social Media				Social media exists. Effective platform for public safety communications.

Resource	HMP Integration: Status	HMP Integration: Current Mitigation Use	HMP Integration: Future Opportunity	Notes / Additional Detail
Hazard Info. Avail. at Library/ Planning Desk				Opportunity to collaborate with City/County.
Annual Public Safety Events				No planned events. Potential to coordinate with stakeholder support.
Ability to Field Public Tech. Assistance Requests				Port District responds to and manages infrastructure concerns effectively.
Public Safety Newsletters or Printed Outreach				Newsletter exists. Potential to integrate hazard preparedness content.
Fire Safe Councils	N/A	N/A	N/A	Not applicable to Port District.
Resource Conservation Districts				Possible collaboration for erosion control and nature-based solutions.
Other				Port District staff manage daily operations and emergency maintenance.

8.6.2 Santa Cruz Port District Mitigation Action Plan

Mitigation actions were developed based upon the jurisdiction's priorities, risk assessment results, and mitigation alternatives. The mitigation action prioritization method used by all participating jurisdictions is described in Section 4 of Volume 1. Table 8-7 lists each priority mitigation action, responsible party, time frame, potential funding source, implementation steps, and resources need to implement based upon consensus among the SCPD's assessment team. All mitigation actions across jurisdictions are accessible through MAST (Mitigation Action Support Tool), providing comprehensive details including the mitigation goal, responsible party, timeline, potential funding sources, implementation steps, and required resources. As a dynamic document, hazard problem statements and mitigation activities will be regularly updated through MAST to reflect evolving needs and circumstances.

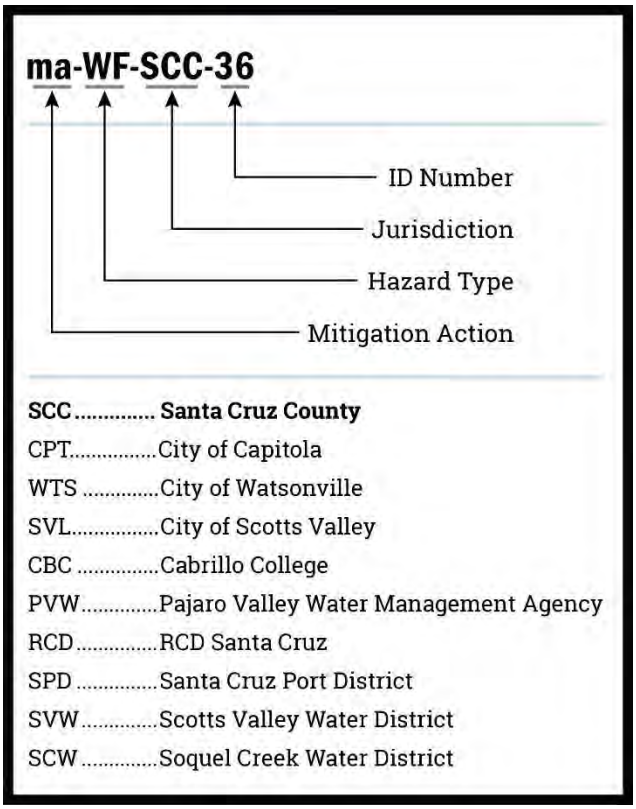


Figure 8-15: Mitigation Action Number Key

As a first-time participant in a hazard mitigation plan, SCPD did not have any existing mitigation actions from a prior plan to evaluate. Therefore, all mitigation actions identified in this planning cycle are newly developed based on the district's updated risk assessment, local capabilities, and areas of concern identified during stakeholder engagement and interagency collaboration. These new actions were crafted to address the district's highest priority hazards, align with FEMA's hazard mitigation guidance, and reflect local infrastructure vulnerabilities and water resource challenges. The development of these mitigation strategies marks an important step in integrating resilience into the district's operations and long-term planning. All mitigation actions are documented in Volume 2, Table 8-7.

SCPD developed unique mitigation actions, tailored to their own unique priorities, vulnerabilities, and capabilities. Each action contains a level of detail that meets the regulatory requirements of FEMA and DMA 2000, including identifying the responsible party, time frame, potential funding source, implementation steps, and resources needed to implement. It is important to note that the SCPD is a small agency with a mostly horizontal structure. Therefore, there are no specific departments or divisions responsible for overseeing these mitigation actions; instead, responsibilities for actions will be shared across all positions in the district.

All actions are assigned a unique identification number, as illustrated in MAST and in Figure 8-15, using alphanumeric characters that denote specific attributes of the action, including the type of hazard being mitigated, facilitating easy reference and management. Table 8-7 lists each mitigation action for the district.

Table 8-7: SCPD Mitigation Action Plan

Hazard	Action ID	Action Title	Description	FEMA Mitigation Alternative	Timeline	Responsibility	Cost	Benefit	Internal Funding Source	External Funding Source	Priority (Based on Criteria)	Problems Addressed
Coastal Hazards (Coastal Erosion)	**ma-CE-SPD-01**	Shoreline Hardening Plan	Identify and strengthen at-risk segments of seawalls and other shoreline infrastructure within the Harbor using materials and methods resilient to long-term erosion and wave run-up.	SP, PRV	Long 5-10 Years	Port District	High	High	Agency Budget	HMGP, Prop 4, Measure Q	High	ps-CE-SPD-01, ps-CE-SPD-02, ps-CE-SPD-03, ps-CE-SPD-04, ps-CC-SPD-01, ps-CH-SPD-01, ps-CS-SPD-02
Coastal Hazards (All)	**ma-CH-SPD-01**	Coastal Hazard Event Response Protocols	For storm surge, erosion, and other coastal hazards, expand safety protocols, signage, and coordination to include liveaboards, tourists, and event visitors—integrating NWS Coastal Flood and TsunamiReady alerts.	ES, PE&A	Medium 3-5 Years	Port District + County, CalOES	Low	High	Agency Budget	HMGP, Prop 4, Measure Q	High	ps-CH-SCC-01, ps-CH-SPD-01, ps-CS-SPD-01
Drought	**ma-DR-SPD-01**	Internal Water Use & Infrastructure Audit	Evaluate Port facilities (e.g., wash stations, irrigation, utilities) for water use efficiency and identify infrastructure vulnerabilities under long-term drought and water rate increases.	SP, PRV	Long 5-10 Years	Port District	Low	Medium	Agency Budget	DWR, Measure Q	Medium	ps-DR-SCW-04, ps-DR-CBC-04, ps-DR-SPD-01, ps-DR-SPD-02, ps-DR-SPD-04, ps-DR-SPD-03
Earthquake	**ma-EQ-SPD-02**	Emergency Power Backup for Port Facilities	Install backup power generators and secure fuel supplies for essential operations including harbor patrol and communications.	SP, PPRO, ES	Medium 3-5 Years	Port District + consultants	High	High	Agency Budget	HMGP BRIC	Medium	ps-EQ-SPD-06, ps-EQ-SPD-03, ps-EQ-SPD-04, ps-EQ-SPD-05
Earthquake	**ma-EQ-SPD-01**	Phased Seismic Assessment & Retrofit of Critical Port Infrastructure	Implement a phased program beginning with a seismic and liquefaction vulnerability assessment of Port assets, followed by design and construction of retrofits for priority structures based on assessed risk.	SP, PPRO	Long 5-10 Years	Port District + engineering consultants	High	High	Agency Budget	HMGP BRIC	Medium	ps-EQ-SPD-03, ps-EQ-SPD-05, ps-EQ-SPD-01, ps-EQ-SPD-04, ps-EQ-SPD-02, ps-EQ-SPD-06
Flood	**ma-FL-SPD-01**	Watershed Coordination & Debris Management Planning	Collaborate with upstream watershed agencies and local jurisdictions to develop a debris management strategy that reduces sedimentation at the harbor entrance and north harbor culvert during major storm events.	PRV, NRP	Long 5-10 Years	Port District + interagency working groups, RCD	Low	High	Agency Budget	Measure Q DWR USACE	High	ps-FL-SPD-01, ps-FL-SPD-02, ps-FL-SPD-03, ps-CE-SPD-03
Sea Level Rise	**ma-SLR-SPD-01**	Adaptation Plan & Infrastructure Floodproofing	Develop and implement a phased adaptation plan to elevate or floodproof docks, electrical systems, and access pathways based on Port asset inventories and SLR projections (e.g., J Dock, FF Area).	SP, PRV	Medium 3-5 Years	Port District + consultants	High	High	Agency Budget	HMGP, Prop 4, Measure Q	Medium	ps-SLR-SPD-01, ps-SLR-SPD-02, ps-CC-SPD-01, ps-CE-SPD-02, ps-CE-SPD-04
Sea Level Rise	**ma-SLR-SPD-02**	Coastal Data & Vulnerability Monitoring Integration	Integrate NOAA tidal benchmarks, Sea Level Rise Explorer, and County coastal assessments into a Port monitoring program to inform adaptive triggers.	PRV, PE&A	Medium 3-5 Years	Port District	Low	Medium	Agency Budget	HMGP, Prop 4, Measure Q	High	ps-SLR-SPD-01, ps-SLR-SPD-02, ps-CC-SPD-01, ps-CE-SPD-01, ps-CE-SPD-02, ps-CE-SPD-04, ps-CH-SPD-01
Coastal Hazards (Tsunami)	**ma-TS-SPD-01**	Harbor-Wide Tsunami Evacuation & Signage Enhancement	Design and install standardized, multi-lingual tsunami evacuation signage across all public and operational areas of the Port. Include wayfinding to upland zones and dock-specific evacuation routes.	ES, PE&A	Medium 3-5 Years	Port District + County OR3/OES	Medium	High	Agency Budget	City / County Collaboration	Medium	ps-TS-SPD-01, ps-TS-SPD-02, ps-TS-SPD-03, ps-TS-SCC-02, ps-TS-SPD-06, ps-TS-SPD-04, ps-TS-SPD-05
Coastal Hazards (Tsunami)	**ma-TS-SPD-02**	Tsunami Notification & Harbor Training Program	Establish a local tsunami alert system (non-siren audible and digital) and conduct annual harbor-wide training drills for tenants, liveaboards, and Port staff.	ES, PE&A	Medium 3-5 Years	Port District + County OR3/OES	Low	High	Agency Budget	N/A	Medium	ps-TS-SPD-01, ps-TS-SPD-02, ps-TS-SPD-05, ps-TS-SPD-03, ps-TS-SPD-04, ps-TS-SPD-06
Coastal Hazards (Wave Run-Up & Surge)	**ma-WV-SPD-01**	Surge Resilient Dock & Gangway Retrofit	Retrofit docks and gangways with surge-resistant pilings and materials, timed to align with the FY26–FY30 CIP and designed using forthcoming SLRVA elevation data.	SP	Medium 3-5 Years	Port District	High	High	Agency Budget	HMGP, Prop 4, Measure Q	High	ps-WV-SPD-01, ps-CE-SPD-01, ps-CE-SPD-02, ps-CE-SPD-04, ps-CH-SPD-01, ps-CS-SPD-01, ps-CS-SPD-02

Hazard	Action ID	Action Title	Description	FEMA Mitigation Alternative	Timeline	Responsibility	Cost	Benefit	Internal Funding Source	External Funding Source	Priority (Based on Criteria)	Problems Addressed
Coastal Hazards (Wave Run-Up & Surge)	**ma-WV-SPD-02**	Surge & SLR Design Guidelines for CIP	Incorporate wave run-up, surge, and SLR scenario thresholds from the CAAP and SLRVA into Port's CIP design standards.	PRV	Medium 3-5 Years	Port District + consultants	Low	High	Agency Budget	HMGP, Prop 4, Measure Q	High	ps-WV-SPD-01, ps-WV-CPT-01, ps-CC-SPD-01, ps-CE-SPD-01, ps-CE-SPD-02, ps-CE-SPD-04, ps-CH-SPD-01, ps-CS-SPD-01, ps-CS-SPD-02

Section 9. Cabrillo College

Special Agency Annex

SANTA CRUZ COUNTY
MULTI-JURISDICTIONAL
HAZARD MITIGATION PLAN

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Santa Cruz County

2025 Multi-Jurisdiction Hazard Mitigation Plan Update

Volume 2, Section 9: Cabrillo College (CBC)

Academic Agency Annex

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Adoption Resolution

To comply with the Federal Disaster Mitigation Act of 2000 (DMA 2000), Cabrillo College has officially adopted this 2025 Santa Cruz County Multi-Jurisdictional Hazard Mitigation Plan, including Volume 1 in its entirety as well as this Volume 2 Special District annex. The adoption of the MJHMP recognizes the college's commitment to reducing the impacts of natural hazards within its jurisdiction and across Santa Cruz County.

A copy of the colleges's adoption record is provided on the following pages. Adoption records for all jurisdictions are summarized in Volume 1, Table ES-1.

ADOPTION RECORD TO BE INSERTED UPON COMPLETION.

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Section 9. Cabrillo College

9.1 Scope & Purpose

This Academic Agency Annex for the Cabrillo College of the 2025 Santa Cruz County Multi-Jurisdictional Hazard Mitigation Plan (MJHMP) details the hazard mitigation planning elements specific to the college's planning area. This annex is not intended to be a standalone document but appends to and supplements the information contained in the umbrella plan document (Volume 1). As such, all sections of the umbrella plan, including the planning process and other procedural requirements, apply to and were met by the college. This annex provides additional information specific to the college, with a focus on hazard identification and risk assessment, vulnerability assessment, problem statements, mitigation strategy, and capabilities assessments.

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9.2 Jurisdictional Setting

Cabrillo College is a community college established in 1959 under California law. It provides post-secondary education to more than 17,000 students residing in Santa Cruz County and a small portion of northern Monterey County, a more than 400-square-mile service area. The College's service area includes the four incorporated cities—Capitola, Santa Cruz, Scott Valley, and Watsonville—as well as the unincorporated communities including Aptos, Ben Lomond, Bonny Doon, Corralitos, Freedom, La Selva Beach, Lomita, Pajaro Dunes, Rio Del Mar, Seascape, Soquel, and Opal Cliff. Cabrillo College's main campus is located at 6500 Soquel Drive in Aptos, adjacent to State Route 1. Cabrillo College's Watsonville Center is located at 318 Union Street in downtown Watsonville.

Cabrillo College also prepared its own Hazard Mitigation Plan in 2020. Drought, earthquake, and fire were identified as the hazards of highest concern.

- **Year of Founding:** 1959
- **Approximate Annual Population Served:** 18,000 (including students, faculty and staff)

- **Coverage Area:** Most of Santa Cruz County and a small portion of northern Monterey County (approximately 450 square miles)

9.2.1 Geography & Climate

Cabrillo College is located along California's central coast in Santa Cruz County. The College's service area spans more than 400 square miles encompassing most of Santa Cruz County and a small portion of northern Monterey County. Figure 9-1 identifies Cabrillo College's location within Santa Cruz County. This area includes the Santa Cruz coast, the Santa Cruz Mountains, and the Pajaro Valley. Cabrillo College's main campus in Aptos sits on a gentle slope that abuts State Route 1. Cabrillo College's Watsonville Center is located in downtown Watsonville, an urbanized area.

The climate of the college's service area is classified as Mediterranean coastal, with cool, wet winters and dry, warm summers. Precipitation is highly seasonal, with the majority falling between November and April. Average annual rainfall varies between 25 to 35 inches, depending on elevation and proximity to the coast. Coastal fog and marine layer effects are common in summer, moderating temperatures along the shoreline. Average high temperatures in the summer range from the mid-60s to low 70s °F, while winter highs are generally in the mid-50s °F. Inland areas experience slightly warmer summer temperatures and cooler winter nights compared to the coast.

Climate variability has increased in recent years, with extreme weather events such as atmospheric river storms, heatwaves, and prolonged drought that pose growing risks to water supply reliability, infrastructure, and public safety. The Santa Cruz Mid-County Groundwater Basin, the sole source of supply for Cabrillo College, is especially sensitive to precipitation deficits and overdraft, with ongoing seawater intrusion near the coast due to historic over pumping.

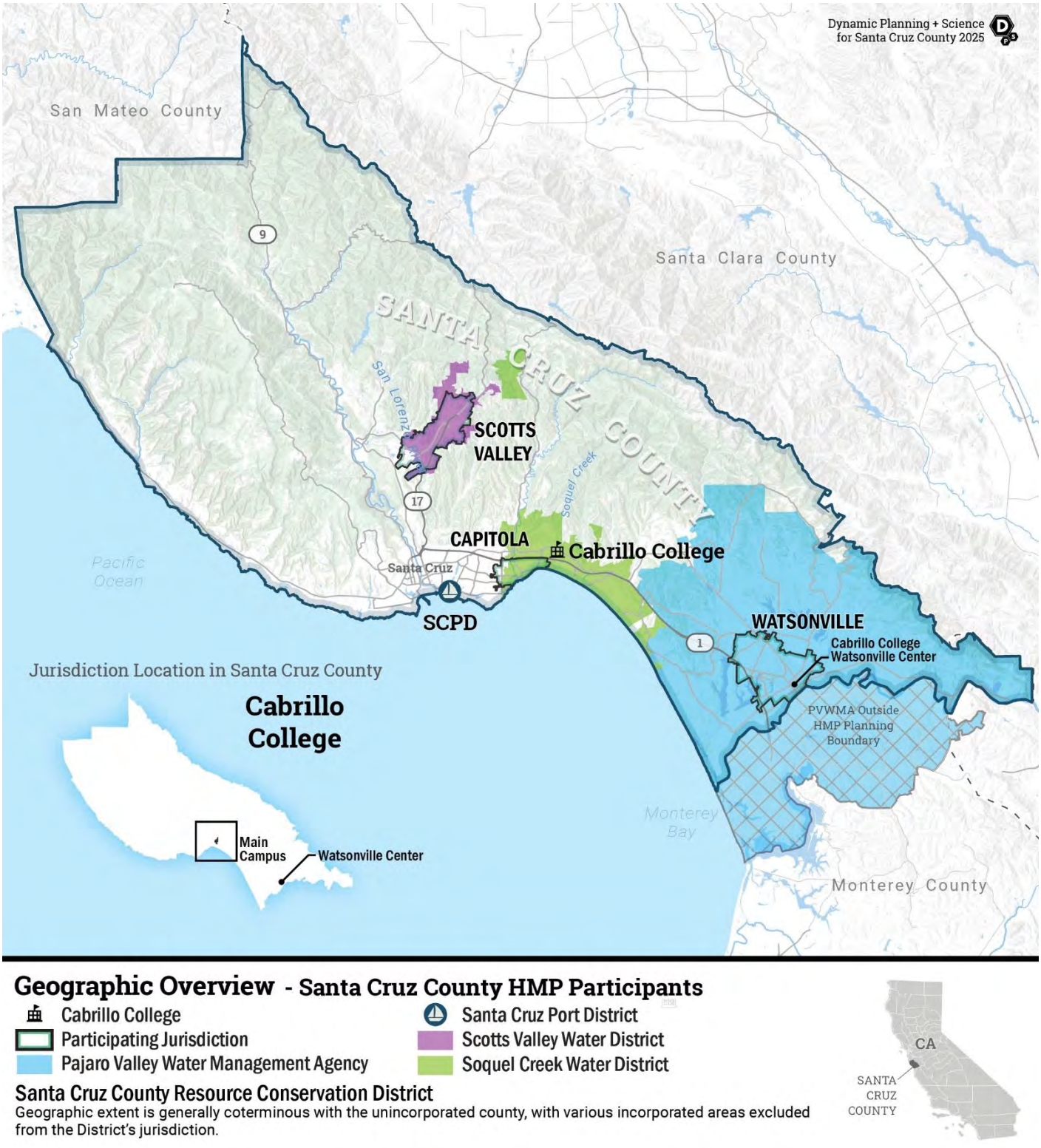


Figure 9-1 Cabrillo College Sphere of Influence

9.2.2 Historic Overview

Cabrillo College was founded in 1959. The initial student enrollment was 400 students when instruction began at the main campus in Aptos in 1962. The opening of the College attracted an influx of young adults and families to surrounding communities and changed the demographics of communities such as Capitola.

Today, Cabrillo College provides post-secondary education to nearly all of Santa Cruz County plus a small portion of northern Monterey County. Cabrillo College confers associate degrees, certificates, apprenticeships, job skills updates, and license/permit renewals. The College offers 70 fields of study and 26 career education programs. Cabrillo College's annual enrollment has fluctuated from a high of approximately 25,000 in the 2000s to around 17,000 in the 2020s. The College has approximately 1,000 faculty and staff members. Cabrillo College ranks first in community colleges that send transfers to the nearby University of California Santa Cruz.

9.2.3 Campus Building Inventory & Lifelines

Cabrillo College operates two campuses: the 162-acre Aptos Campus, which contains approximately approx.. 68 buildings, and the 2-acre Watsonville Center, which includes four buildings. Together, the campuses comprise nearly 775,000 square feet of building space. Both sites are considered built-out, meaning that future development will focus primarily on renovation, modernization, or replacement of existing facilities rather than new construction.

The college has provided detailed information for each structure, including construction type, roof and foundation systems, square footage, year built, and fire protection features. Additional data was collected by the planning team to support hazard vulnerability assessments. See Figure 9-2 for maps of the parcels and building footprints on Cabrillo's Aptos and Watsonville Campuses.

Safety & Security

Law enforcement services at Cabrillo College are provided under contract with the Santa Cruz County Sheriff's Department, which maintains an office on the Aptos Campus to support campus safety and response. The Watsonville Center is served by the City of Watsonville Police Department, located only 0.1 miles away, ensuring rapid response capability.

Fire protection for both campuses is provided through County resources. The Aptos Campus is served by the Aptos-La Selva Fire Station, located less than half a mile from the center of campus, while the Watsonville Fire Department is less than a quarter mile from the Watsonville Center. Both campuses also maintain an extensive network of fire hydrants, allowing full coverage and access for emergency response. These facilities provide short response times and strong fire protection capacity for both locations.

Water

The College has three on-campus wells that provide approximately 87% of its water supply, with the remaining 13% provided by the Soquel Creek Water District (SCWD). Detailed water valve maps include fire

protection, irrigation, drinking water, and building service lines, ensuring rapid isolation in case of leaks or contamination. In the event of a supply disruption, the Aptos Campus has full emergency access to SCWD water, providing redundancy. While reliance on groundwater reduces short-term drought vulnerability, overdraft conditions in regional aquifers pose long-term sustainability challenges.

Health & Medical

The campus maintains first aid and health services but relies on countywide emergency medical services and nearby hospitals for advanced care. Utility outages or access disruptions could delay emergency medical response.

Energy (Power & Fuel)

Power is provided by PG&E, with underground power lines serving both the Aptos and Watsonville campuses, reducing exposure to wind and wildfire ignition risk. Backup generation capacity is limited, making the college dependent on regional grid stability.

Communications

The college relies on PG&E, major telecom providers, and countywide emergency notification systems (CruzAware). While primary communication infrastructure is robust, there is limited independent redundancy on-site if regional systems fail.

Transportation

The college depends on regional roadway access, primarily Soquel Drive and Cabrillo College Drive, for ingress and egress. These routes are critical for campus evacuation and emergency response but are vulnerable to congestion or closure during wildfire smoke events, landslides, or flooding. The campus also has transit connections through Santa Cruz METRO, though service interruptions could isolate students and staff.

Hazardous Materials

Laboratory facilities and campus operations involve the use of limited quantities of hazardous materials, which require safe handling, storage, and emergency planning. These risks are managed under established campus and county hazardous materials programs.



Figure 9-2: Parcels and Buildings for Cabrillo College, Aptos Campus

9.2.4 Demographics & Vulnerable Populations

This section describes the demographic characteristics of Cabrillo College to guide hazard mitigation planning efforts. Natural disasters affect communities both physically and socially, with demographic composition playing a central role in determining how impacts are distributed, particularly among vulnerable groups facing greater challenges in preparedness, response, and recovery. Understanding the area's social and economic landscape also helps assess potential social costs from infrastructure damage, including housing, industry, public facilities, essential services, and transportation.

Exploring local demographic data may help to identify groups and geographic areas with specific vulnerability to hazard events. In the context of all-hazards preparedness and response planning, at-risk individuals (often used interchangeably with "vulnerable populations") are defined federally as "children, pregnant women, senior citizens, and other individuals who have access or functional needs in the event of a public health emergency." (42 U.S.C. § 2802(b)(4)(B) (2019)) These populations may include, but are not limited to, individuals who are economically disadvantaged, living with disabilities, dependent on caregivers, from historically marginalized communities, have limited English proficiency or are non-English speaking, lack access to transportation, are experiencing homelessness, or have chronic medical conditions.

At Cabrillo College, certain students, faculty, and staff may face heightened risk during and after hazard events due to factors such as age, disability, economic status, housing insecurity, or commuting distance. Vulnerability is not fixed: an individual may be at risk for some hazards, such as flooding that disrupts regional transportation, but less affected by others. The multi-jurisdictional hazard mitigation plan addresses many of these vulnerabilities in the home and community setting, while this Cabrillo College Annex focuses on risks specific to the campus environment. Together, these planning efforts help ensure that limited resources are directed where they are most effective, supporting continuity of education, protecting health and safety, and reducing inequities in disaster impacts.

Additional discussion of at-risk groups, access and functional needs, and age-related vulnerabilities and considerations can be found in Volume 1, Section 1.4.

9.2.4.1 Student Body

According to the U.S. Department of Education's Integrated Postsecondary Education Data System (IPEDS), Cabrillo College served 14,079 students in 2025, with 32% enrolled full-time, a student-to-faculty ratio of 24:1, and faculty and staff totaling approximately 585. Attendance varies each year, with the highest annual headcount being 24,499 students. During the 2000s, attendance remained above 20,000, but since then enrollments have reduced to 15,000 to 20,000. Many students attend during the fall and spring, with some additional students in the summer and winter terms.

9.2.4.2 Regional Income & Housing Demographics

Low-income students and households connected to Cabrillo College face disproportionate financial burdens from the costs of disaster preparedness, response, and recovery. Unexpected expenses created by a hazard event can serve as "tipping points" for students already struggling with tuition, housing, food insecurity, or the threat of homelessness. Many students and their families are renters, making them less likely to carry insurance and less able to influence major structural improvements that would reduce hazard risk. This means that those with the most to lose during an event are often the least equipped to recover.

For Cabrillo, this vulnerability extends beyond the classroom. Students who lose housing, transportation access, or digital connectivity during a disaster may be forced to delay or withdraw from their studies. Major hazard events in recent history, such as the CZU Lightning Complex Fire and the 2022 tsunami, highlight the importance of inclusive planning that addresses systemic vulnerabilities, improves access to recovery resources, and ensures continuity of education. Integrating equity into mitigation strategies will help Cabrillo College foster resilience for both its campus operations and the diverse communities it serves.

Student Economic Profile

Cabrillo College serves a student population with significant financial vulnerability. In 2023, approximately 73% of students received financial aid, the vast majority in the form of grants rather than loans. (datausa.io). This represents a growth of 37.7% with respect to 2022, when 53% of undergraduate students received financial aid. Figure 9-3 compares the average award discount at Cabrillo College (in red) with that of other similar universities by income. The average award discount is the ratio between the average grant or scholarship value, and the cost, which is the sum of out-of-state tuition, room, board, book, supplies, and other expenses.

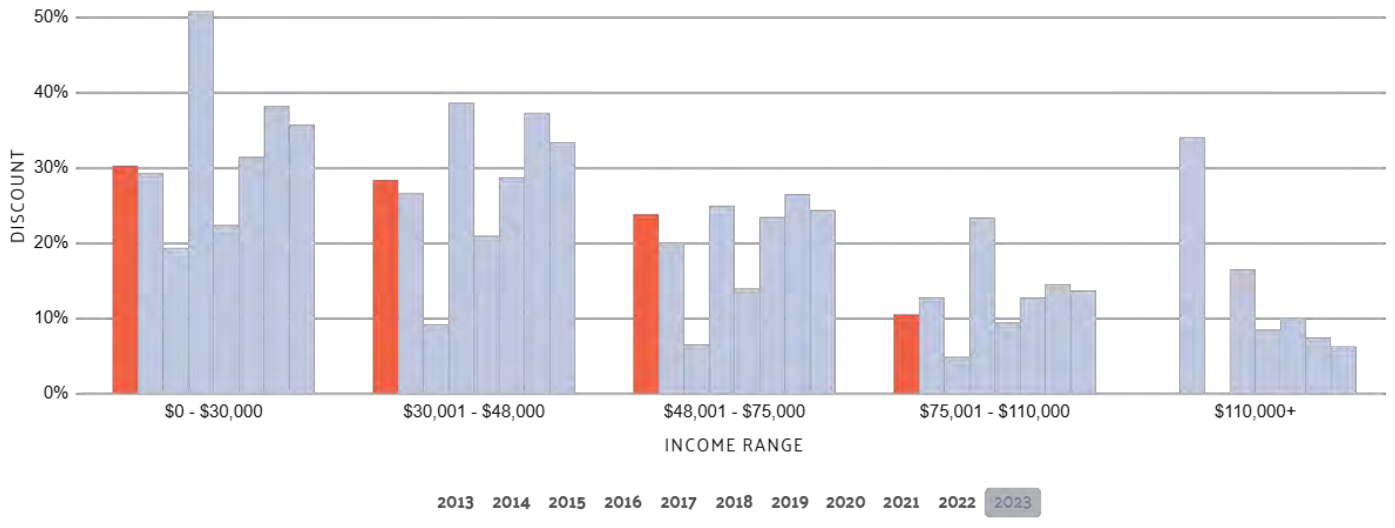


Figure 9-3: Average Award Discount by Income (Cabrillo College)

This reliance on grant-based assistance suggests that many students meet federal and state definitions of low-income. While exact household income data is not publicly available, the high participation in aid programs indicates that a substantial portion of Cabrillo students face ongoing economic challenges.

Pell Grant eligibility, a common indicator of low-income status, is prevalent among Cabrillo students. Nationally, Pell Grant recipients typically come from households earning less than $40,000 annually, and in California the average Pell award is approximately $5,400 (ticas.org). The large number of Cabrillo students receiving grant aid aligns with this pattern, reflecting that many students and their families live close to or below regional poverty thresholds.

Financial instability has direct consequences for hazard preparedness and recovery. Students already managing tuition, transportation, childcare, and housing costs may lack the financial reserves to prepare for or recover from a natural disaster. Hazard events can quickly escalate into crises for students living paycheck-to-paycheck, particularly those who are renters, housing insecure, or supporting dependents. At Cabrillo, this economic reality means that a disaster not only disrupts classroom instruction but also threatens students' ability to continue their education (datausa.io).

9.2.4.3 Housing

As of now, Cabrillo College does not offer any student housing, neither on the Aptos Campus nor at the Watsonville Center. While the college provides housing referrals and grants through programs like Nourishment & Essential Supports Team (NEST), students currently live off-campus.

9.2.4.4 Race, Ethnicity & Language

Natural disasters compound racial disparities; non-white individuals and communities receive less recovery aid from FEMA than their white counterparts, even where the amount of damage is the same. (Howell & Elliott, 2019) (National Advisory Council, 2020) These disparities are evidence of the complicated relationship between disaster recovery and overlapping social vulnerabilities including race, income, language, and health. Black and Latinx residents are more likely to be low income and renters, conditions which create barriers to navigating FEMA's Individual Assistance programs. Communities with more non-white residents may have lower tax revenue and property values, which means less investment in mitigation and rebuilding efforts before and after an emergency.

Cabrillo College serves a diverse student population that reflects the broader demographic composition of Santa Cruz County and the Pajaro Valley. In 2023, Hispanic or Latino students represented the largest share of enrollment at 50.4%, followed by White, non-Hispanic students at 38.2%. Smaller proportions of students identified as Two or More Races (5.7%), Asian (2.8%), Black or African American (0.94%), American Indian or Alaska Native (0.24%), and Native Hawaiian or Other Pacific Islander (0.18%) (datausa.io) (collegefactual.com). Collectively, 57% of the student body identifies as students of color, highlighting Cabrillo's role as an educational institution serving a majority-minority student population (communitycollegereview.com).

The College also maintains a relatively balanced gender distribution, with 57% of students identifying as female and 43% as male (datausa.io) (collegefactual.com). Enrollment patterns further demonstrate Cabrillo's role as an access point for non-traditional students: 78.2% of students attend part-time, compared to only 21.8% enrolled full-time (datausa.io). This high proportion of part-time students reflects the financial, work, and family obligations that shape student participation, and it underscores the importance of flexible hazard mitigation strategies that consider the unique needs of commuter and working students.

9.2.5 Growth Trends & Future Development

The Watsonville Campus of Cabrillo College is located in downtown Watsonville and is fully built out. As a result, future development at this location will be limited exclusively to renovations and modernization of existing buildings.

On the **Aptos (Main) Campus**, recent development has similarly focused on improvements to existing facilities and the replacement of aging infrastructure. Renovations and new construction that do occur typically result in more resilient structures, benefiting from compliance with updated building codes and hazard mitigation standards. (Cabrillo College 2020 Hazard Mitigation Plan).

The Cabrillo College Five Year Construction Plan outlines four improvement projects that the College plans to complete during this timeframe:

- Modernization of Buildings 500, 600 & 1600: This project proposes to modernize the spaces vacated and impacted by the allied health programs as they were relocated to the new facility. Specifically, the areas to be modernized are a series of classrooms, laboratories, offices and support spaces in buildings 500, 600, and 1600 as identified in the individual building plans.
- Modernize B1000 Library/Hub-Sec. Effects VAPA Partial: Re-configure and modernize all floors. Move out digital media and some classrooms to free up required growth space. Enclose the existing space between the rear of the building and the main floor of the library for required growth space.
- New Construction: STEM Center: Demolish buildings as the first step in constructing a new STEM Center. Further construction of the STEM Center will occur in a later planning timeframe.

In addition to the above projects, a major new student housing development is scheduled to break ground in October 2025. This complex will consist of four new residential buildings located on the south end of the Aptos campus, adjacent to the baseball and softball fields. Once completed, the development will provide housing for approximately 650 students, with 60% of occupancy reserved for Cabrillo College students and the remaining 40% for students from the University of California, Santa Cruz (UCSC).

(Source: Cabrillo College 2020 Hazard Mitigation Plan)

9.3 Planning Process

Cabrillo College followed the planning process detailed in Volume 1, Section 2, including participating in the county-wide Hazard Mitigation Planning Team (HMPT) and formulating their own internal planning group to support the broader planning process.

The college's representatives in the Steering Group led stakeholder and public engagement efforts alongside the Consultant Team, with assistance from the HMPT and their internal planning team. This engagement process is described in Volume 1. Specifically, for Cabrillo College, this included postings to the college website and social media, postings to partner organizations' social media, and outreach events, as documented in Appendix B. Examples of Key Stakeholders engaged by Santa Cruz County on behalf of the city with relevance to the development of Capitola's mitigation strategy include the USDA and other federal agencies; Cal OES and other state agencies; the City of Capitola and other neighboring jurisdictions; community-based organizations such as Community Bridges; utility providers like AT&T and Soquel Creek Water District; UC Santa Cruz and other academia; and local businesses.

All Key Stakeholders that were invited to participate in the planning process are listed in Volume 1, Section 2, and the input received from stakeholders was integrated into the college's annex, as described in Volume 1 Table 2-9. The college's internal planning participants, their positions, and how they participated in the planning- process are shown in Table 9-1.

Table 9-1: Cabrillo College Participants

Planning Group Members	Title	Description of Involvement
Julia Charles	Federal/State Emergency Grants Director	Lead Point-of-Contact
Luis Toledo	Assistant Director, Facilities Planning & Plant Operations	Alternate Point-of-Contact
Brian Gallagher*	Environmental Health & Safety Manager	Participating Stakeholder, HMPT #2, #3, and BO#1

*Note: * Participants are no longer with the college but participated in the process*

Cabrillo College participated in a series of meetings, listed in Table 9-2, to address natural hazards that pose risks to the college. These efforts included breakout sessions to evaluate and prioritize hazards affecting the college, built on the groundwork laid in previous Planning Team meetings. For example, the January 27, 2025, HMPT #1 meeting introduced the scope of work and outlined expectations for the Steering Group and jurisdictional planning teams. Subsequent meetings covered critical topics, such as defining mitigation planning, reviewing changes since the 2021 MJHMP, and engaging in a hazard prioritization exercise on March 27, 2025. These collaborative efforts culminated in refining mitigation alternatives, setting plan goals, and aligning strategies with FEMA Hazard Mitigation Assistance (HMA) funding during the June 2, 2025 meeting.

During the May 13 and July 16, 2025, breakout meetings, Cabrillo College finalized its risk matrix and reviewed hazards specific to the college. HMPT members examined past hazard histories and determined which hazards would remain on the risk matrix. The Consultant Team facilitated discussions on the impact, victim, and threat associated with each hazard to help the HMPT rank them effectively. Additionally, the

team created problem statements tailored to Cabrillo College needs. Success stories and changes in development over the last five years were reviewed to reflect updated circumstances. The breakout session for Cabrillo College ensured these discussions were localized and actionable for the college's unique context.

Table 9-2: Jurisdictional Breakout Meeting Records

Meeting & Date	Agenda / Topics	Goals / Key Inputs
County-Wide Steering Group and HMPT Meetings #1 & #2 January 27, 2025 – March 27, 2025		
CBC Planning Team Breakout Meeting #1 May 13, 2025	▪ Overview of mitigation planning process ▪ Review of historical hazards and current risk ▪ Interactive risk matrix exercise	▪ Consensus on jurisdiction-specific priority hazards ▪ Identify capabilities and potential mitigation actions ▪ Community engagement volunteers
County-Wide HMPT Meeting #3 June 2, 2025		
CBC Planning Team Breakout Meeting #2 July 16, 2025	▪ Designing the mitigation strategy ▪ Defining the problem ▪ Evaluating mitigation alternatives ▪ Mitigation strategy refine & align exercise	▪ Consensus on jurisdiction-specific capabilities ▪ Consensus on jurisdiction-specific areas of concern ▪ Consensus on priority mitigation actions and collaboration opportunities ▪ Community engagement volunteers
County-Wide HMPT Meeting #4 August 4, 2025		

9.3.1 Public Input & Draft Review

As detailed in Volume 1, Section 2, the draft plan was available for public review and comment from September 29 to October 20, 2025. Public comments received during that time were similar to those gathered throughout the public engagement process, including the need for more equity in the distribution of mitigation activities and funding and the need for enhanced cooperation among jurisdictions, utility providers, and state agencies. These comments were incorporated into the city's mitigation strategy, as appropriate; although, most were already addressed by the Mitigation Action Plan which was based on previous public input.

Public and stakeholder input was gathered and incorporated throughout the plan development process, before the public review period, such as from the online public survey (see Volume 1, Section 2.1.2 and Appendix B, for details). During the review period, jurisdictional staff and stakeholders that participated in the plan development also reviewed the public draft and provided comments on minor corrections and revisions, which were addressed in the final plan.

9.4 What's New

This section offers an overview of the hazard mitigation planning efforts for the planning area and highlights the updates made in this 2025 MJHMP. This is the first time Cabrillo College is participating in the Santa Cruz County plan. While not included in the 2021 plan, the college did prepare a standalone HMP in 2020. Through this MJHMP process, Cabrillo College has identified its highest-priority hazards, developed hazard-specific problem statements, and proposed actionable mitigation strategies.

9.4.1 Mitigation Activities

The college has successfully implemented several initiatives aimed at addressing identified vulnerabilities. Some of these accomplishments are highlighted in this section and have directly contributed to reducing risks from hazards such as flooding and severe weather. These completed projects showcase the college's ability to effectively plan, fund, and execute measures that protect its faculty, students, and infrastructure.

In addition, Cabrillo has systematically reviewed and adjusted its mitigation actions, exemplifying adherence to FEMA's Planning Policy Guide principles and emphasizing the importance of dynamic and adaptive mitigation planning. By fostering partnerships, leveraging funding opportunities, and prioritizing equity in implementation, the college aligns with best practices to build resilience against natural disasters. This ongoing effort is a testament to the college's commitment to the principles of risk-informed decision-making, equitable resource allocation, and integration with broader regional and state hazard mitigation objectives.

Adjustments to Previous Mitigation Actions

A significant portion of Cabrillo's mitigation efforts remain ongoing or in the pipeline. These actions, ranging from infrastructure upgrades to community outreach initiatives, represent the college's proactive approach to addressing hazards as resources become available.

Recognizing constraints such as limited funding and shifting priorities, the college has reevaluated certain initiatives, leading to their reprioritization or canceling of mitigation actions. Factors such as feasibility, cost-effectiveness, and emerging risks informed these decisions, ensuring alignment with Cabrillo's updated hazard mitigation goals. Adjustments to previous mitigation actions are documented as part of Cabrillo College's Mitigation Action Plan in Table 9-9, and more specific status updates are provided in Table 9-10.

This first MJHMP annex reflects a more strategic and coordinated approach to risk reduction and provides a clear roadmap for Cabrillo College's future mitigation investments. The college intends to regularly update and refine these priorities as conditions evolve, projects are implemented, and community needs shift.

9.4.2 Mitigation Successes

Although Cabrillo College is participating in the MJHMP for the first time, multiple important mitigation actions and other efforts to increase the College's resilience to hazards have been completed. This section describes additional College-specific success stories, which highlight Cabrillo College's commitment to reducing risks and building a more resilient community in the face of natural hazards.

Energy Audit & Solar Project

To push Cabrillo's sustainability efforts forward, Facilities Planning & Plant Operations launched an energy audit during the 2023-2024 academic year that helped the College find new ways to cut energy use. This will save us money in the long run, lower Cabrillo's environmental impact, and make our operations more sustainable. In addition, Facilities Planning & Plant Operations wrapped up Cabrillo's solar project, which now features a 3-megawatt system and a 775-kilowatt Tesla battery. This step toward energy independence will help the College rely less on traditional power.

Capital Improvement Projects

Facilities Planning & Plant Operations also tackled some major infrastructure projects during the 2023-2024 academic year, replacing three roofs: one at the Gym and two at the Watsonville Center, ensuring these buildings are more resilient to weather events. Another upgrade was the full remodel of the Science Lab at the Watsonville campus. The newly upgraded space now offers modern features and better functionality.

9.5 Risk Assessment

This section focuses on profiling wildfire and other hazards specific to Cabrillo College and assessing their vulnerability independent of the broader county-wide planning area, which has been evaluated in Section 3 of Volume 1. The hazard profiles in Volume 1 discuss overall impacts to the planning area and describe relevant plans, policies, and regulations; past events; location; frequency and probability of future occurrences; severity and extent; warning time; secondary hazards; and climate change impacts. For more information on risk assessment methodologies, see Volume 1, Appendix A.

This section includes a tailored vulnerability assessment, analyzing assets at risk such as population, property, and critical facilities and infrastructure unique to the college, and information on college-specific differences in hazard vulnerability across the planning area. It also identifies total college assets at risk, including people, property, and critical facilities and infrastructure within the college. In addition, this section presents growth and development trends for the communities served, offering insights into vulnerabilities and risks that represent the broader context of assets at risk.

Please note that the Watsonville Center's risk assessment is covered by the City of Watsonville's Annex.

9.5.1 Hazard Screening & Prioritization

Members of the planning team from each participating jurisdiction came together to collaboratively decide which county-wide hazards would be included in the MJHMP and which would be excluded. The hazard screening and prioritization took place early in the process and integrated historic data, local knowledge, and consensus opinions to create a risk assessment matrix for the county as well as for each participating jurisdiction. These matrices indicate the priority of hazards prior to further refinement. Details about this process, the results of the discussion, and in-depth profiles for county-wide hazards can be found in Volume 1, Sections 2 and 3.

The final results of the hazard screening and prioritization exercises are summarized in Table 9-4, including which specific subhazards were selected by Cabrillo College's planning team.

Cabrillo College's internal planning group used the same hazard identification and prioritization process as the county-wide Planning Team. They reviewed previously prepared hazard mitigation plans and other relevant documents to determine the realm of natural hazards that have the potential to affect the college. Table 9-3 provides a crosswalk of hazards identified in select planning documents, including the college's 2020 HMP, the 2021 Santa Cruz County LHMP, and the 2023 State of California HMP. The crosswalk was used to develop a preliminary hazards list, providing a framework for the group to evaluate which hazards were truly relevant to the college and which ones were not.

The internal planning group then ranked hazards based on their probability of affecting Cabrillo College and potential impacts on the communities it serves. Figure 9-4 displays the results of the hazard risk ranking exercise that was performed before further refinement. All hazards have been profiled in Volume 1 of this document. The purpose of this annex is to specifically address Cabrillo College's vulnerability to this specifically identified hazard.

Table 9-3: Cabrillo College Document Review Crosswalk

Hazard	2020 Cabrillo College HMP	2021 Santa Cruz County HMP	2023 California SHMP
Agricultural Pests			■
Avalanche			■
Climate Change	■	■	■
Coastal		■	■
Dam Failure		■	■
Drought	■	■	■
Earthquake / Liquefaction	■	■	■
Extreme Cold		■	■
Extreme Heat		■	■
Extreme Weather / Storms		■	■
Flood	■	■	■
Geologic / Mass Movement	■	■	■
Human-Caused			■
Insects			■
Levee Failure			■
Pandemic Disease			■
Sea Level Rise			■
Soil	■		■
Subsidence			■
Tornado			■
Tsunami / Seiche Wave			■
Volcano			■
Wildfire	■	■	■

Risk Assessment Matrix Definitions

PROBABILITY RATING

The likelihood of a hazard event occurring within a time period?

PROBABILITY

Highly Likely	**Highly likely** - 100% annual probability. Or Likely to occur every year in your lifetime.
Likely	**Likely** - between 10 & 100% annual probability. Or will occur several times in your lifetime.
Possible	**Possible** - between 1 & 10% annual probability. Or Likely to occur some time in your lifetime.
Unlikely	**Unlikely** - less than 1% annual probability. Or unlikely but possible to occur in your lifetime.

IMPACT RATING

In terms of injuries, damage, or death, would you anticipate impacts to be minor, limited, critical, or catastrophic when a significant hazard event occurs? The impact could be in terms of one hazard event (flooding from a culvert failure) or a large-scale event (multiple rivers flooding) in the same jurisdictional boundary.

IMPACT

Minor	Limited	Critical	Catastrophic

Minor - very few injuries, if any. Only minor property damage & minimal disruption on quality of life. Temporary shutdown of critical facilities.

Limited - minor injuries only. Approx. 10% or less of property in disaster footprint damaged or destroyed. Complete shutdown of critical facilities for more than one day.

Critical - multiple deaths/injuries possible. Between 25% and 50% of property in disaster footprint is damaged or destroyed. Complete shutdown of critical facilities for more than one week.

Catastrophic - high number of deaths/injuries possible. More than 50% of property in affected area damaged or destroyed. Complete shutdown of critical facilities for 30 days or more.

To concentrate resources, the jurisdictional planning team will focus on "High" and "Extreme" risk hazards. These hazards have the higher probability and greater impact as it relates to the jurisdictions planning area.

Hazard definitions are included in **Vol. 1** of this plan. Some hazards are discussed as subset hazards– e.g., "Dam Failure" within the "Flood" hazard profile. If a hazard is not present on the risk matrix or are grey in color, the jurisdictional planning team felt the hazard had a minimal footprint within their planning area and was not ranked.

Hazard Information / Legend:

CLIMATE CHANGE

Climate Change impacts will be addressed at the end of each hazard section and as a stand alone section for each jurisdiction.
For County and Municipal governments you will be required to address climate change impacts in the Safety Element of your General Plan. Climate change may change the frequency, duration and intensity of hazards listed above.

Cabrillo College Risk Matrix

IMPACT

PROBABILITY

	Minor	Limited	Critical	Catastrophic
Highly Likely	Medium	DROUGHT	Extreme	WILDFIRE Extreme
Likely	Medium	High	EXTREME WEATHER FLOOD	Extreme
Possible	Low	SLOPE FAILURE	EARTHQUAKE	High
Unlikely	Low	Low	Medium	Medium

Figure 9-4: Cabrillo College Risk Assessment Matrix

Table 9-4: Cabrillo College Hazards Prioritization Summary

Hazard	Priority	Explanation
Wildfire	**Extreme**	Profiled in Volume 1, Section 3.2.1, and Section 9.5.2.1 in this annex
Flood	**Extreme**	Profiled in Volume 1, Section 3.2.2, and Section 9.5.2.2 in this annex, including Levee Failure
Earthquake	**High**	Profiled in Volume 1, Section 3.2.3, and Section 9.5.2.3 in this annex, including Liquefaction
Severe Weather	**High**	Profiled in Volume 1, Section 3.2.4, and Section 9.5.2.4 in this annex, including High Wind and Heavy Rain (not including Winter Storm due to low probability and impact potential)
Coastal Hazards	-	Not a priority due to no exposure
Slope Failure	**Medium**	Profiled in Volume 1, Section 3.2.6, and Section 9.5.2.5 in this annex
Dam Failure	-	Not a priority due to no exposure
Drought	**High**	Profiled in Volume 1, Section 3.2.8, and Section 9.5.2.6 in this annex
Extreme Heat	-	Not a priority due to low probability and impact
Climate Change	**High**	Profiled in Volume 1, Section 3.2.10, and Section 9.5.2.7 in this annex (not including Sea-Level Rise due to no exposure)

9.5.2 Vulnerability Assessment

Assessing vulnerabilities exposes the unique characteristics of individual hazards and begins the process of narrowing down which buildings and campuses are vulnerable to specific hazard events. The vulnerability assessment considered unique local knowledge of hazards and impacts and a GIS overlaying method for examining such vulnerabilities in more depth. Using these methods, the college's planning group estimated vulnerable populations, properties, and assets, and potential losses, primarily to earthquake and wildfire. In addition, the exposure of college assets to drought, geological, and flood hazards were also considered.

Many of the hazard profiles include a snapshot map and damage estimation tables that illustrate the college's vulnerabilities to those specific hazards. These maps assisted the planning group in understanding the hazard exposure of populations, parcels, and critical facilities and infrastructure. Each snapshot map contains an exposure summary that displays the percentage of the population, the improvement and content value of parcels, and the amount of critical infrastructure that is exposed. For hazards without geospatial extents, such as drought and extreme weather, narratives are provided instead of exposure maps and tables.

Based on the hazard prioritization exercise, this vulnerability assessment for Cabrillo College focuses on seven hazards, some of which encompass subhazards such as Liquefaction and Heavy Rain.

Wildfire
SECTION 9.5.2.1



Flood
SECTION 9.5.2.2



Earthquake
SECTION 9.5.2.3



Slope Failure
SECTION 9.5.2.4



Severe Weather
SECTION 9.5.2.4



Drought
SECTION 9.5.2.6



Climate Change
SECTION 9.5.2.7



9.5.2.1 Wildfire

Cabrillo College's Aptos Campus is situated at the edge of the wildland–urban interface (WUI), where campus buildings and infrastructure directly border vegetated areas such as Porter Gulch and surrounding hillsides. As shown in Figure 9-5 (Wildfire Risk Exposure Map), portions of the northern and eastern campus fall within moderate wildfire hazard zones, while the central core of the campus is classified as lower risk. No parcels or critical facilities are mapped within Cal Fire's "Very High Fire Hazard Severity Zones," yet localized hazards persist, particularly in areas adjacent to eucalyptus groves and unmanaged vegetation.

The Mean Fire Return Interval (MFRI) Map (Figure 4-12) illustrates that the hillsides surrounding the campus are expected to experience wildfire activity on relatively short return cycles—between 6 and 35 years in many areas. This highlights the persistent risk of recurring fire activity in the region, even if the campus itself is not mapped in the highest hazard designations.

Key Vulnerabilities

- Vegetation Hazards: Dense wildland vegetation near Porter Gulch and Perimeter Road increases ignition potential and threatens adjacent infrastructure.
- Defensible Space Gaps: Limited fuel load reduction around critical assets—including water wellheads, pump stations, and emergency access corridors—creates elevated vulnerability.
- Operational Impacts: Wildfire events could force campus closures, disrupt in-person and online classes and recreational activities, and cause interruptions to utilities, particularly electricity and communications.
- Commuter Exposure: Students, faculty, and staff commuting from high wildfire-risk areas across Santa Cruz County may face evacuation orders or unsafe travel conditions, reducing campus accessibility.
- Energy Reliability: The campus lacks a microgrid or mobile generator capability, leaving wells and emergency communication systems dependent on PG&E's grid, which is subject to Public Safety Power Shutoff (PSPS) events during wildfire conditions.

Infrastructure at Risk

Campus infrastructure—including roads, parking facilities, and the pedestrian bridge linking Upper and Lower Campus—could be damaged or rendered unusable in a severe fire. In addition, Soquel Drive, the primary access and evacuation corridor, is vulnerable to closure, which could hinder emergency response and evacuation.

Risks to Students, Faculty & Staff

As a commuter college, Cabrillo is particularly sensitive to transportation disruptions caused by road closures from a wildfire event. Students, faculty, and staff traveling from across Santa Cruz County may face hazardous road conditions, transit delays, or service interruptions during a wildfire, especially if Soquel

Drive is impacted. Further, although a significant wildfire event that directly impacts the Aptos or Watsonville campus is unlikely, the difficulty of evacuating all the students and faculty during a fast-moving fire that occurs while in session would present significant challenges and potentially leave commuters stranded and unable to travel home.

Both campuses are more likely to experience the secondary impacts from a nearby wildfire, including smoke and power outages, which could disrupt educational and recreational activities. Students and faculty that are older or medically-sensitive would be disproportionately impacted by smoke while walking between buildings and in any structures without adequate filtration systems, and sports or other outdoor activities would likely be cancelled due to health risks. In addition, staff working outdoors, such as landscaping or facilities maintenance crews, would be vulnerable to smoke impacts.

Summary

Although Cabrillo College does not fall within state-mapped Very High Fire Hazard Severity Zones, its location within the WUI, adjacency to flammable vegetation, and reliance on regional infrastructure place it at risk from both direct and indirect wildfire impacts. Continued vegetation management, defensible space creation, backup energy systems, and coordination with County OES on evacuation planning will be critical to maintaining campus resilience.

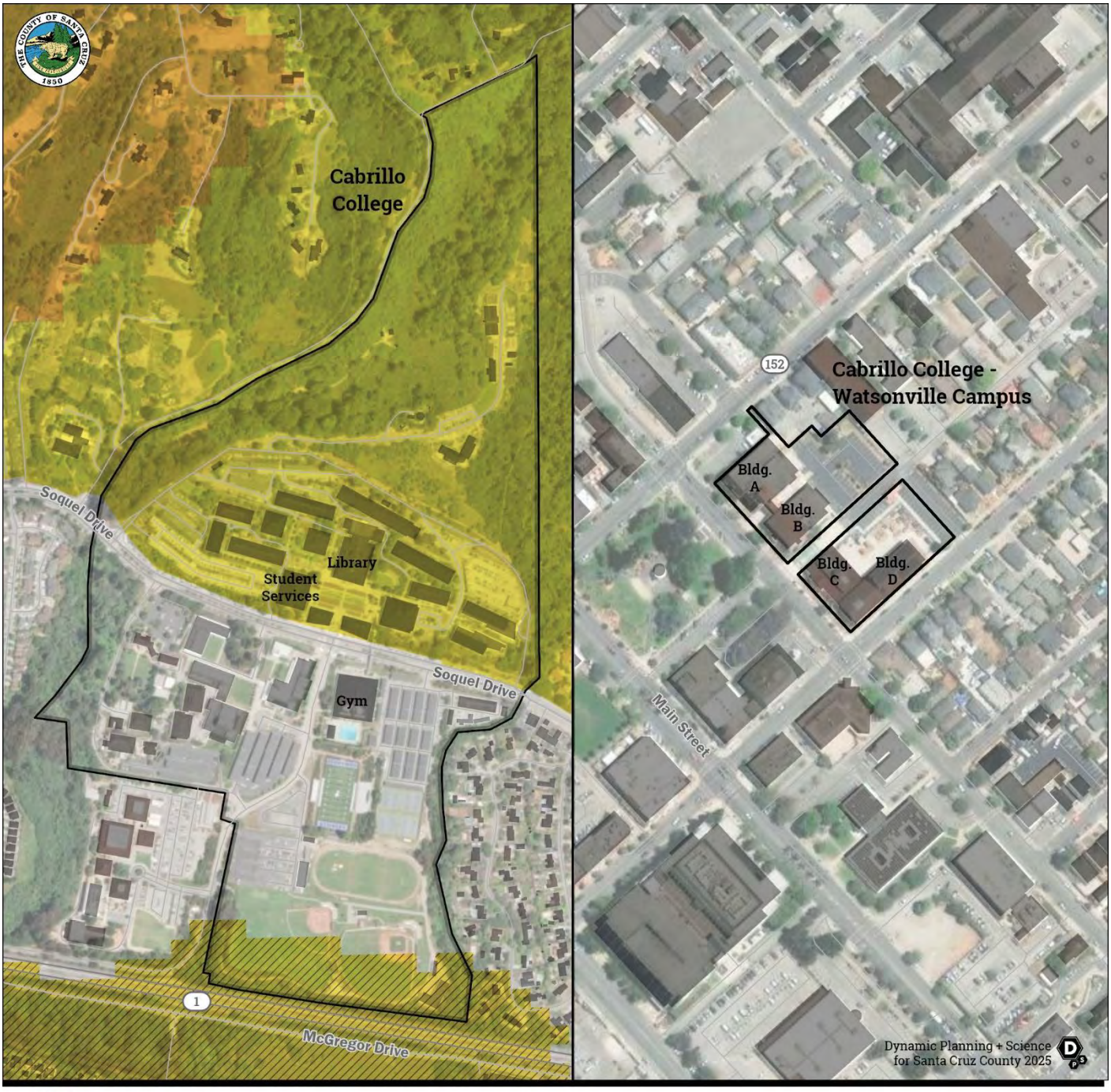


Figure 9-5 Exposure Summary – Cabrillo College Wildfire Risk

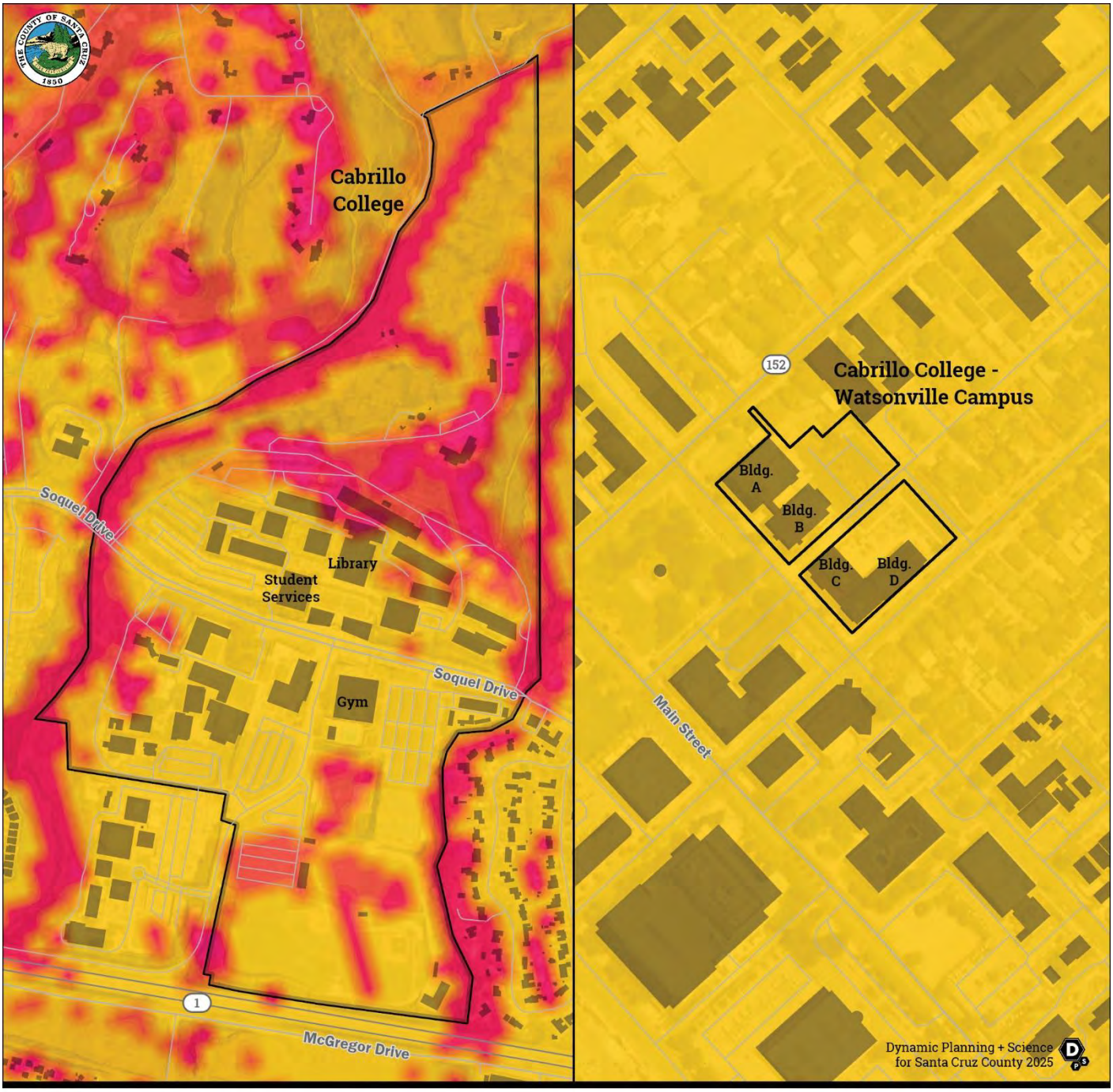


Figure 9-6 Cabrillo College Mean Fire Return Interval Map

9.5.2.2 Flood

The Cabrillo College Watsonville Campus is located within FEMA-mapped Special Flood Hazard Areas (SFHAs) of the lower Pajaro Valley, an area with a documented history of significant flood events. The Pajaro River levee system, which provides partial flood protection, remains vulnerable to overtopping and failure during major storm events, as demonstrated in past flood disasters. As a result, the campus faces direct risk of inundation during 100-year and larger flood events.

During an average semester, approximately 1,858 students attend classes at the Watsonville Center, with an additional 40 faculty and staff members on site. All these individuals could be directly affected by a flood event at the campus. The Watsonville Center also hosts community-serving organizations such as DigitalNEST, which brings additional daily users into the facility and broadens the potential impact of a flood on regional workforce development and community services.

Property at Risk: All four campus buildings are exposed to flooding, with a combined total value exceeding $50.7 million (Table 9-5).

- Building A: Replacement value $16,778,072; contents $8,389,036; elevated 4 feet above grade, reducing direct entry risk.
- Building B: Replacement value $6,489,823; contents $3,244,912; elevated first floor but with a basement 8 feet below grade, creating high vulnerability to flooding.
- Building C: Replacement value $2,629,789; contents $1,972,342; entry points at grade, increasing risk of flood damage.
- Building D: Replacement value $6,404,830; contents $4,803,623; also, at grade and vulnerable to direct flood entry.

Table 9-5: Value of Buildings at Risk from Flooding

Building	Replacement Value	Contents Value	Total Value
A	$16,778,072	$8,389,036	$25,167,108
B	$6,489,823	$3,244,912	$9,734,735
C	$2,629,789	$1,972,342	$4,602,131
D	$6,404,830	$4,803,623	$11,208,453
Total	**$32,302,514**	**$18,409,912**	**$50,712,426**

As an educational institution and not a municipality, Cabrillo College does not participate in the National Flood Insurance Program (NFIP); however, the college complies with all minimum floodplain development standards and environmental review requirements established by the county and City of Watsonville where its campuses are located.

Infrastructure at Risk

Campus infrastructure is also vulnerable to flooding, including parking lots, paved walkways, and underground utilities. While localized flooding would likely result in minor to moderate damage to these assets, severe flooding across the City of Watsonville could cause system-wide service disruptions, including potable water supply, wastewater service, and electricity. Damage to Rodriguez Street, the primary access route, could isolate the campus during high-water events.

Potential Impacts

- Damage to academic facilities and community-serving spaces could displace classes and disrupt workforce training programs.
- Inundation of Building B's basement could result in significant structural and content losses.
- Campus closure and displacement of students and staff would ripple across the Pajaro Valley, where many residents already face socioeconomic vulnerability to flood events.

Summary

Cabrillo College's Watsonville Campus is directly exposed to flood risk due to its location in the Pajaro Valley floodplain. With over $50 million in building and contents value at risk, nearly 1,900 students and staff exposed each semester, and critical community services housed on site, flooding poses a significant hazard. Continued coordination with the Pajaro Regional Flood Management Agency (PRFMA), proactive floodproofing of vulnerable structures, and emergency planning for campus users are essential to reducing risk and maintaining continuity of operations.

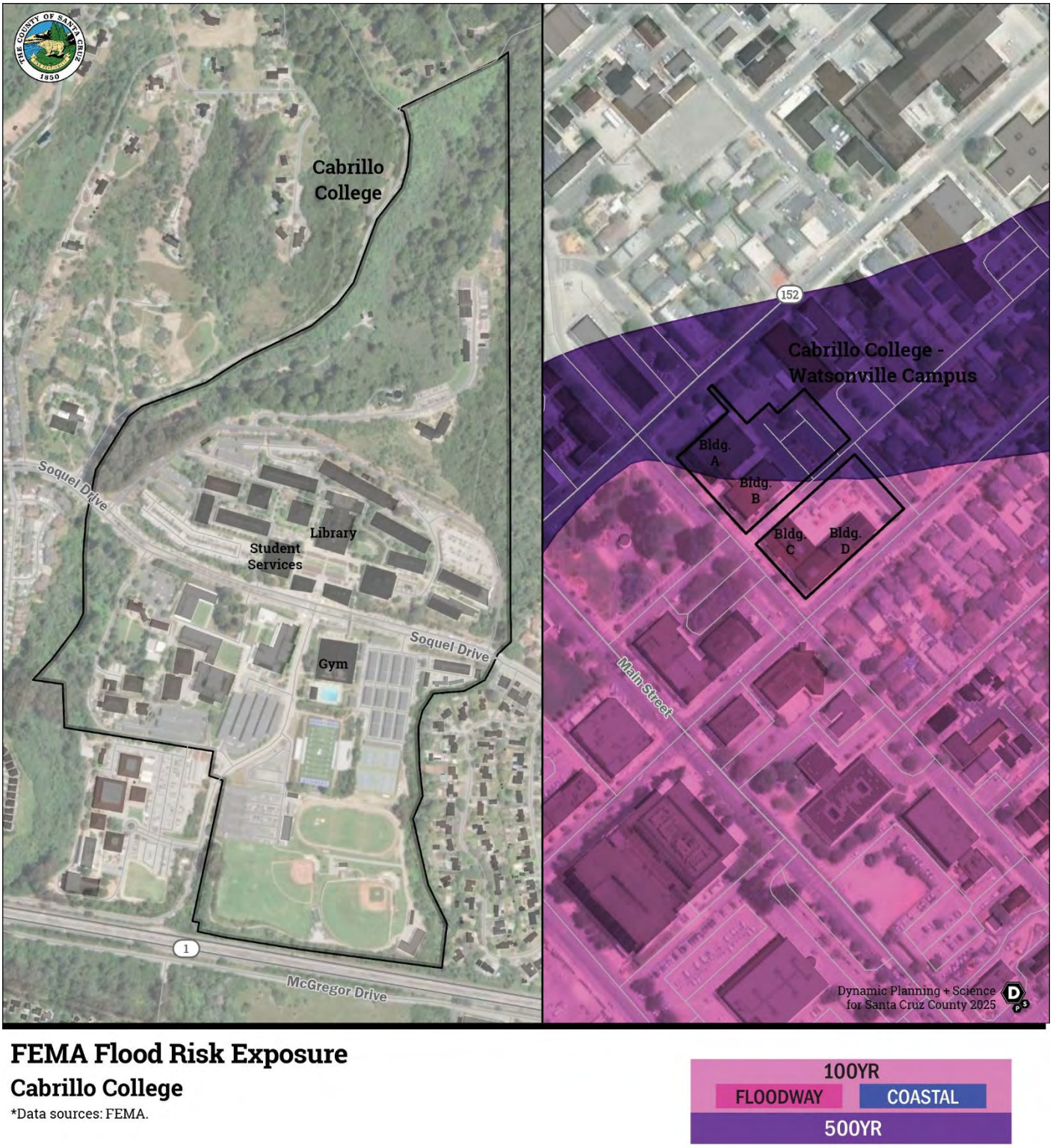


Figure 9-7 Cabrillo College FEMA Flood Hazard Zones Map

9.5.2.3 Earthquake

Cabrillo College is located in a seismically active region of coastal California influenced by the San Andreas Fault system and associated subsidiary faults. Historic earthquakes, including the 1989 Loma Prieta event, demonstrated the vulnerability of Santa Cruz County to strong ground shaking, landslides, and infrastructure disruption. Both the Aptos Campus and the Watsonville Center are exposed to earthquake hazards, with the Aptos site in particular subject to very strong shaking intensities (MMI VIII–IX) in a magnitude 7.1 scenario earthquake on the northern San Andreas Fault (Figure 9-8).

Building & Infrastructure Vulnerability

Many of Cabrillo's buildings were constructed before the adoption of modern seismic design standards. As a result, there has been no comprehensive seismic vulnerability assessment to identify or prioritize retrofits for academic buildings, utilities, or other critical facilities. This creates heightened risk of structural damage or collapse, particularly in older classroom buildings, lab facilities, and critical utility systems that support daily campus operations.

A major earthquake could cause widespread damage to campus infrastructure, disrupting instruction and operations for an extended period. Damage to water lines, electrical distribution, or telecommunications could further delay recovery. While Cabrillo does not provide student housing, the Watsonville Center hosts community-serving organizations such as DigitalNEST, which would also face operational disruption.

Life Safety Risks & Operational Disruptions

With many campus buildings constructed before modern seismic codes, inadequately braced interior spaces pose injury and entrapment risks during seismic events, particularly in older student housing, classrooms, labs, and administrative areas. Falling furniture or equipment is also a concern. While all furniture has been anchored to prevent tip-overs, continued attention to non-structural hazard mitigation, such as securing shelving, equipment, and mechanical systems, remains a priority for life safety.

Beyond immediate life safety risks, a significant earthquake could disrupt education and other campus operations for an extended period, depending on the extent of facility and infrastructure damage. As a commuter college, any damage to the surrounding transportation system could limit the ability for students and staff to get to school or back home, and there is little sheltering capacity on either campus, increasing reliance on also limited regional capacity. In addition, loss of power could limit online instruction in the interim while repairs are ongoing.

Emergency Response Capacity

Cabrillo's current emergency response planning and equipment may be insufficient for a campus-wide earthquake scenario, particularly given limited regional shelter capacity. In the aftermath of a significant seismic event, students and employees could be stranded on campus due to damaged roadways or regional

transportation disruptions. Coordinated planning with County OR3, Central Fire District, and nearby hospitals is critical to ensure continuity of emergency services and evacuation capabilities.

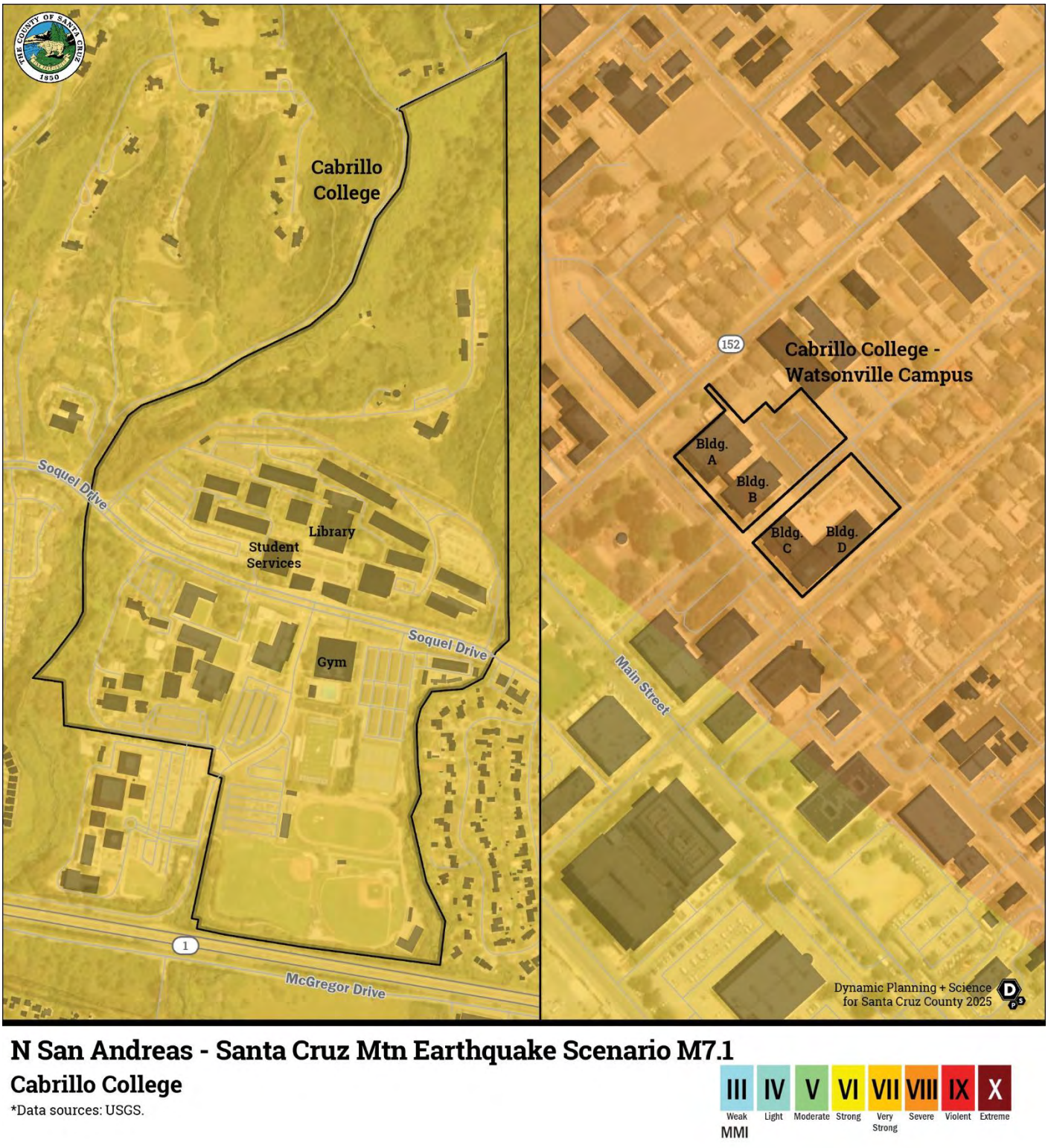


Figure 9-8 Cabrillo College M7.1 San Andreas Earthquake Scenario Shaking Intensity Map

9.5.2.4 Severe Weather

Cabrillo College is vulnerable to a range of severe weather events, including high wind events and heavy rain. While the campus does not experience the same wildfire or extreme heat risks that characterize other regions of California, storm-related hazards remain a persistent concern. Severe weather can disrupt campus operations, damage infrastructure, and create dangerous conditions for students, faculty, and staff traveling to and from class.

Potential Impacts

High winds present a recurring hazard, posing risks to overhead utilities, leaning trees, and temporary structures, which may be damaged or collapse during strong storm events. Additionally, aging or undersized stormwater infrastructure—such as the French drain between Trafton and Union Street—at the Watsonville Campus remains vulnerable to failure under heavy rainfall, increasing the likelihood of localized flooding and associated property damage.

Severe storms that bring heavy rain have the potential to cause widespread flooding across campus, limiting access to buildings, creating unsafe walking and driving conditions, and disrupting instructional operations. Flooding around pedestrian routes and parking lots can pose life-safety risks to the campus community, while damage to facilities may result in costly repairs and downtime.

Risks to Students, Faculty & Staff

As a commuter college, Cabrillo is particularly sensitive to transportation disruptions caused by severe weather. Students, faculty, and staff traveling from across Santa Cruz County may face hazardous road conditions, transit delays, or service interruptions during severe weather events, which can prevent safe access to campus from localized flooding or downed trees. Extended disruptions also exacerbate equity concerns, disproportionately affecting low-income students who may have fewer transportation alternatives.

Emergency Power & Continuity of Operations

Cabrillo College currently operates seven backup generators that support emergency lighting, IT servers, fire pumps, the Horticulture and Sheriff's Office facilities, the main water tank, and Parking Lots A/B and P. While these generators provide limited coverage, critical systems including IT infrastructure, communications, and water wells remain vulnerable during prolonged outages. To address this, the College is currently in the process of acquiring a mobile generator to expand backup capacity and improve resilience for additional infrastructure such as campus wells. Given the reliance on digital platforms for instruction and emergency communication, enhancing campus energy resilience is essential to maintaining operational continuity.

While severe weather events do not typically pose catastrophic risks to Cabrillo College, they remain a significant and recurrent hazard capable of disrupting instruction, damaging infrastructure, and placing

commuter populations at risk. Targeted improvements to stormwater infrastructure, enhanced backup power capacity, and coordinated transportation planning with local jurisdictions will be key strategies to reducing severe weather vulnerabilities.

9.5.2.5 Slope Failure

Cabrillo College's Aptos Campus is situated in a hilly area with steep slopes along Porter Gulch and surrounding terrain, creating susceptibility to slope failure, erosion, and landslides during periods of intense rainfall. The Landslide Risk Exposure Map (Figure 9-9) shows large portions of the campus immediately adjacent to or overlapping areas of high susceptibility, particularly along the northern and eastern boundaries.

Threats to Campus Facilities & Infrastructure

The steep slopes bordering Porter Gulch are vulnerable to erosion and slope instability, which could threaten adjacent campus infrastructure such as classrooms, parking areas, and utility corridors. In addition, leaning trees and saturated soils near sewer laterals and other underground utilities increase the risk of pipe ruptures and infrastructure damage due to slope movement.

One of the most significant new developments in the college's recent history is located in an area of landslide susceptibility on the south end of the Aptos campus, adjacent to the baseball and softball fields. A new housing complex consisting of four buildings to house around 650 students, including those attending Cabrillo and the University of California Santa Cruz (UCSC), was under construction during the drafting of this plan, marking a transformative shift in Cabrillo's emergency planning needs from its primarily commuter school past. The land area available for development is very limited and the Aptos campus is almost entirely built out. The Aptos campus is also highly exposed to slope failure hazards, especially in the northern part of campus north of Soquel Drive and along Porter Gulch.

Although the location of the new housing complex is susceptible to landslide, as shown in Figure 9-9, this area is much less vulnerable than any other available for new development (as opposed to redevelopment). In addition, strict building codes and grading requirements will mitigate potential slope failure impacts to the new structures and the students who will occupy them.

Potential Impacts to Transportation & Campus Access

Slope failure events could significantly disrupt campus operations. Landslides or soil instability could block emergency access routes, including Soquel Drive and perimeter roads, or damage buried utility lines. Disruption of water, sewer, or energy services would compromise instructional continuity and place added strain on emergency response resources.

Commuting students, faculty, and staff are the most vulnerable to slope failure impacts, particularly those traveling via low-lying or hillside routes. Landslide-induced road closures or hazards may prevent access to the campus or the ability to return home, delay emergency response, and prolong recovery operations.

Given that Cabrillo is a commuter college, transportation access remains a critical vulnerability in the context of slope failure hazards.

While no critical campus parcels or high-value facilities fall directly within the mapped high-susceptibility zones, the close proximity of slopes and drainage corridors to the Aptos Campus creates indirect risks through blocked roadways, utility damage, and access challenges. Proactive slope stabilization, vegetation management, and utility corridor protection will be key to reducing Cabrillo's exposure to slope failure hazards.



Figure 9-9: Exposure Summary – Cabrillo College Slope Failure Risk

9.5.2.6 Drought

The National Drought Monitor provides drought data and maps nationally and on a localized, watershed scale. The National Drought Monitor is the product of 11 agencies, including the NDMC, NOAA and USDA, and is available at http://droughtmonitor.unl.edu/. The National Drought Monitor categorizes the level of drought from D0 through D4, with D4 being the highest "exceptional drought." Table 9-6 depicts drought classifications and impacts from the level of drought occurrence in California, while Figure 9-10 shows a time series of the level of drought in Santa Cruz County from 2000 to 2023 according to the National Drought Monitor.

Campus Water Supply & Vulnerability

Cabrillo College relies heavily on three on-campus wells in Porter Gulch as its primary water source, supplemented by a smaller backup supply from the Soquel Creek Water District. However, the Aptos campus operates exclusively on well water under normal conditions but can be fully switched to the Soquel Creek Water District supply if the wells or storage tank are offline or maintenance is required. Prolonged drought conditions threaten the reliability of these sources, particularly given that groundwater basins in Santa Cruz County can be over drafted during drought conditions. Extended multi-year droughts could limit available supply or pressure, creating cascading impacts for both educational operations and emergency response needs.

Drought conditions across Santa Cruz County pose broader risks to water reliability, energy demand, and public health. While Cabrillo benefits from a degree of redundancy between its wells and the Soquel Creek Water District, both sources are groundwater-dependent, making them less resilient to sustained drought. Water conservation and efficiency measures remain critical strategies for reducing demand and ensuring reliable campus operations during extended dry periods.

Potential Impacts to Operations

Lack of water availability during drought periods could disrupt classroom instruction, custodial services, landscape maintenance, and emergency water needs. Reductions in irrigation may affect campus vegetation, while water shortages could compromise fire suppression capacity in sprinkler systems or hydrants. Drought also increases vegetation stress, elevating the risk of wildfire ignition and spread near campus facilities.

Drought represents a chronic and recurring hazard for Cabrillo College, with implications for both campus infrastructure and student well-being. Threats to the Porter Gulch wells, limited backup supply from SCWD, and the potential for cascading wildfire risk underscore the importance of proactive planning. Strategies such as continued conservation, redundancy planning, and investment in drought-resilient infrastructure will be essential to maintaining continuity of education and operations during future drought events.

Table 9-6: Drought Classifications and Impacts

Category	Description	Possible Impacts
D0	Abnormally Dry	▪ Soil is dry; irrigation delivery begins early ▪ Dryland crop germination is stunted ▪ Active fire season begins
D1	Moderate Drought	▪ Dryland pasture growth is stunted; producers give supplemental feed to cattle ▪ Landscaping and gardens need irrigation earlier; wildlife patterns begin to change ▪ Stock ponds and creeks are lower than usual
D2	Severe Drought	▪ Producers increase water efficiency methods and drought-resistant crops ▪ Grazing land inadequate ▪ Fire season is longer, with high burn intensity, dry fuels, and large fire spatial extent; more fire crews on staff ▪ Lake- and river-based tourism declines; boat ramps close ▪ Trees are stressed; plants increase reproductive mechanisms; wildlife diseases increase ▪ Water temperatures increase; programs to divert water to protect fish begin ▪ River flows decrease; reservoir levels are low and banks are exposed
D3	Extreme Drought	▪ Federal water not adequate to meet irrigation contracts; extracting supplemental groundwater is expensive ▪ Fire season lasts year-round; fires occur in typically wet parts of the state; burn bans are implemented ▪ Ski and rafting business is low; mountain communities suffer ▪ Low water levels impede fish migration and cause lower survival rates ▪ Wildlife encroach on developed areas; little native food and water is available for bears, which hibernate less ▪ Water sanitation is a concern; reservoir levels drop significantly; surface water is nearly dry, flows are very low; water theft occurs ▪ Livestock need supplemental feed, cattle and horses are sold; little pasture remains ▪ Well and aquifer levels decrease; homeowners drill new wells
D4	Exceptional Drought	▪ Fire season is very costly; number of fires and areas burned are extensive ▪ Many recreational activities are affected ▪ Fields are left fallow; orchards are removed; vegetable yields are low; honey harvest is small; agricultural unemployment is high, food aid is needed ▪ Fish rescue and relocation begins; pine beetle infestation occurs; forest mortality is high; wetlands dry up; wildlife death is widespread; algae blooms appear ▪ Poor air quality affects health; greenhouse gas emissions increase as hydropower production decreases; West Nile outbreaks rise ▪ Water shortages are widespread; surface water is depleted; federal irrigation water deliveries are curtailed; water prices are extremely high; wells are dry, more and deeper wells are drilled; water quality is poor

Source: Adapted from U.S. Drought Monitor Drought Classifications and Impacts

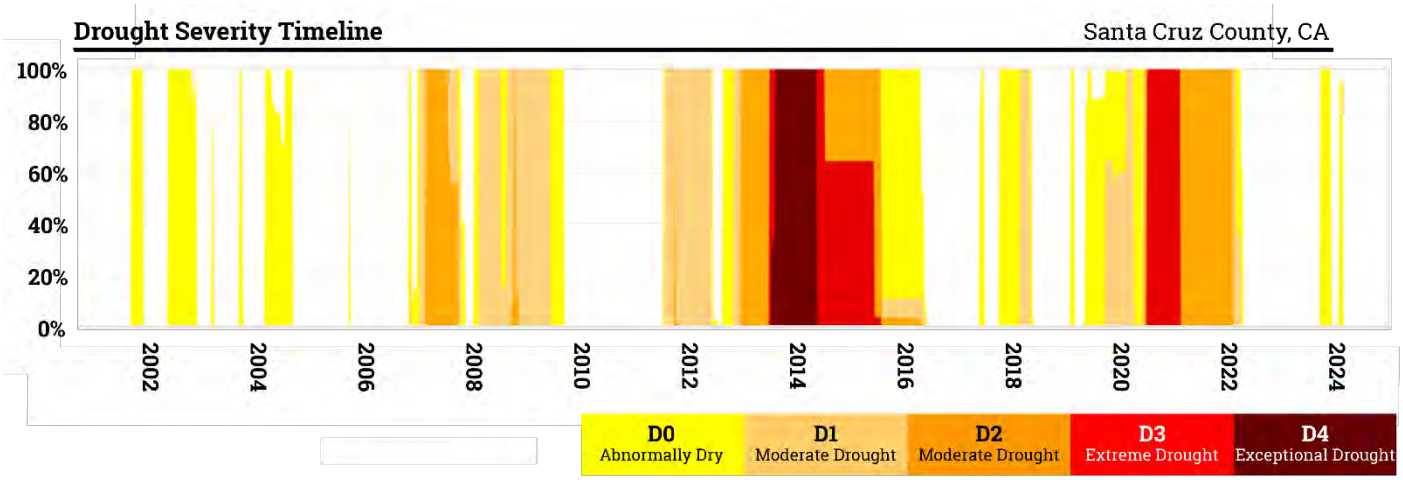


Figure 9-10: Drought Severity Timeline 2000-2024

9.5.2.7 Climate Change

Climate change is expected to act as a threat multiplier, intensifying the frequency, severity, and cascading impacts of natural hazards that affect Cabrillo College. While the College does not face catastrophic risks on the scale of larger jurisdictions, its role as a commuter-based institution, with critical facilities concentrated in Aptos and Watsonville, makes it particularly sensitive to climate-driven hazards.

Wildfire Risk

Rising temperatures, prolonged drought periods, and vegetation stress increase the likelihood of wildfire ignition and spread in the Santa Cruz Mountains and within vegetated areas surrounding the Aptos Campus. Dense stands of eucalyptus and mixed hardwoods in Porter Gulch are especially flammable under drier conditions. Climate change projections indicate longer and more intense fire seasons, elevating risks to both campus infrastructure and commuter access during wildfire events.

Severe Weather

Climate change is projected to increase the intensity of winter storms in coastal California, producing heavier rainfall within shorter timeframes. For Cabrillo, this means greater exposure to flash flooding, slope instability, and utility outages. High winds are also expected to become more severe, threatening overhead lines, trees, and temporary structures. These impacts have direct consequences for instructional continuity and safe campus access.

Drought

Multi-year droughts are becoming more common as climate change alters precipitation patterns. This directly threatens Cabrillo's on-campus wells in Porter Gulch and its backup supply from the Soquel Creek Water District, both of which depend on groundwater aquifers already in overdraft. Extended drought

conditions could reduce water availability for campus operations, compromise sanitation and fire suppression capacity, and stress vegetation, further heightening wildfire risk.

Flooding

Climate change is also linked to sea level rise and more frequent extreme rainfall events, both of which amplify flood risks. At the Watsonville Center, flood-prone conditions are likely to worsen as storm events intensify, placing buildings, infrastructure, and students at greater risk. More intense storm surges and saturated soils will also compound slope failure risks at the Aptos Campus.

Climate change magnifies Cabrillo College's exposure to wildfire, severe weather, drought, and flooding, creating compound hazards that threaten instructional continuity, student safety, and infrastructure resilience. Addressing these challenges requires forward-looking mitigation strategies, including climate-informed facility planning, renewable and backup energy systems, expanded water conservation, and integration of climate science into emergency response protocols. By aligning with state and county climate adaptation initiatives, Cabrillo can strengthen resilience for its students, faculty, staff, and the broader communities it serves.

9.5.3 Planning for Hazards & Future Development

Cabrillo College continues to evolve its facilities and campus footprint while navigating the increasing complexity of hazard risks, including wildfire, flooding, drought, and seismic activity. Located primarily in the wildland-urban interface of Aptos and within flood-prone areas of Watsonville, the College is actively working to modernize its infrastructure and improve hazard resilience.

As part of its planning framework, Cabrillo College has incorporated—and will continue to incorporate—hazard data and other hazard information from its hazard mitigation plan directly into its 5-Year Capital Outlay Plan and Facilities Master Plan. The 2025 MJHMP update expands on this integration by introducing new mapping and analytical tools, including the Risk Assessment and Mitigation Planning (RAMP) platform (see Volume 1, Section 2.2.1), which supports data-driven decisions about where and how development should occur. By applying these updated tools and policies, Cabrillo ensures that future growth is resilient, sustainable, and responsive to the evolving challenges of climate change and natural hazards.

Cabrillo College is preparing for a significant new development: a student housing complex that broke ground in late 2025. This project marks a transformative shift in campus occupancy patterns and emergency planning needs. The complex will consist of four residential buildings located on the south end of the Aptos campus, adjacent to the baseball and softball fields. Once complete, the facility will house approximately 650 students, with 60% of units reserved for Cabrillo students and 40% for students from the University of California, Santa Cruz (UCSC).

This residential expansion introduces new considerations for emergency access, fire protection, utility redundancy, and shelter-in-place capabilities. The location of the housing site near sloped terrain and adjacent to wildland vegetation underscores the importance of enhanced wildfire mitigation, backup power planning, and evacuation protocols.

As previously discussed, because Cabrillo College is an educational institution, it does not have a permanent population. The College experiences peaks and valleys in on-campus population owing to the academic calendar. Furthermore, despite being built-out, Cabrillo College has experienced significant fluctuations in student enrollment. The College had close to 25,000 students enrolled in the 2000s; today, it is closer to 17,000. Hence, the on-campus population can vary widely for a variety of reasons.

Past Development Trends

Cabrillo College has been built-out for years. Hence, past development trends of the building out of both the Aptos main campus and Watsonville Center. Both campuses are located within urban areas.

Future Development

As previously discussed, both Cabrillo College's main campus in Aptos and the Watsonville Center are considered built-out. Future development activities will include renovation or replacement of existing facilities. Cabrillo College is served by Santa Cruz County Sheriff's Office, the Central Fire District of Santa Cruz County, and Soquel Creek Water District. All three agencies can adequately serve Cabrillo College under existing conditions and all three are expected to adequately serve the College in the future.

Despite being built-out, Cabrillo College has seen enrollments fluctuate substantially from a high of approximately 25,000 students to around 17,000 today. Thus, new development or expansion isn't necessary for the College to serve a larger student population.

9.5.4 Hazard Problem Statements

As part of the mitigation action identification process, the internal planning group for each jurisdiction identified areas of concern (aka problem statements) for their respective facilities based on the risk assessment and vulnerability analysis. Problem statements focused on the impact, victim, and the threat that the hazard could create in the jurisdiction, as described in Table 9-7. Identifying common issues and weaknesses through these problem statements assisted the planning group in understanding the realm of resources needed for mitigation.

The goal is to have at least one mitigation action for every problem statement. Projects or actions have been developed to mitigate each problem identified. See Table 9-9 for a full list of mitigation actions and corresponding problem statements that they address. Each problem statement is coded with a problem number for cross-referencing between Table 9-7 and Table 9-9.

Table 9-7: Cabrillo College Problem Statements

Hazard	Sub-Hazard	Area of Concern	Problem IS	Description	Related Mitigation Actions
Climate Change		Threat	ps-CC-CBC-01	Climate change will continue to exacerbate hazards such as drought, wildfire, severe weather, and flood that threaten the College?s campuses.	ma-CC-RCD-01

Hazard	Sub-Hazard	Area of Concern	Problem IS	Description	Related Mitigation Actions
Drought		Threat	ps-DR-CBC-01	Prolonged drought conditions threaten the reliability of the College?s primary water source, including wells in Porter Gulch.	ma-DR-CBC-03
Drought		Impact	ps-DR-CBC-02	Lack of water availability during extended drought periods can disrupt educational operations, recreational programs, landscape maintenance, and emergency water needs.	ma-DR-CBC-01, ma-DR-CBC-03
Drought		Victim	ps-DR-CBC-03	Students and staff may face limited restroom, hydration, and sanitation access if drought conditions significantly reduce water supply or pressure.	ma-DR-CBC-03
Drought		Threat	ps-DR-CBC-04	Drought stress on vegetation increases the risk of wildfire ignition and spread near campus facilities.	ma-DR-SPD-01
Drought		Threat	ps-DR-CBC-05	Backup water supply from the Soquel Creek Water District may not be sufficient or dependable during multi-year droughts.	ma-DR-CBC-03, ma-DR-CBC-02
Earthquake		Threat	ps-EQ-CBC-01	Several campus buildings were constructed before the implementation of modern seismic codes, and no comprehensive structural assessment has been conducted.	ma-EQ-CBC-01, ma-EQ-CBC-02
Earthquake		Threat	ps-EQ-CBC-02	The college lacks an up-to-date seismic vulnerability assessment to prioritize retrofits for critical facilities and infrastructure.	ma-EQ-CPT-03, ma-EQ-CBC-01
Earthquake		Impact	ps-EQ-CBC-03	A major earthquake could severely damage academic buildings, utilities, access routes, and student housing, disrupting instructional continuity and recovery operations.	ma-EQ-CBC-02
Earthquake		Victim	ps-EQ-CBC-04	Students, staff, and faculty may face injury or entrapment risks in inadequately braced or unsecured interior spaces during a seismic event.	ma-EQ-CBC-03
Earthquake		Threat	ps-EQ-CBC-05	Emergency response plans and equipment may be insufficient for a campus-wide earthquake scenario, especially with limited regional shelter capacity.	ma-AH-SVL-01
Flood		Threat	ps-FL-CBC-01	Parts of the Watsonville campus, including parking areas and backup generators, are located in the 100-year floodplain and are vulnerable to flood damage.	ma-FL-CBC-01

Hazard	Sub-Hazard	Area of Concern	Problem IS	Description	Related Mitigation Actions
Flood		Impact	ps-FL-CBC-02	Flooding during severe storms can damage campus infrastructure, disrupt class schedules, and limit access to buildings and resources.	ma-FL-RCD-01
Flood		Threat	ps-FL-CBC-03	The storage warehouse at Aptos campus sustained damage during the 2023 storms, highlighting the vulnerability of facilities to repeat flood events.	ma-FL-CBC-01, ma-FL-CBC-02
Flood		Threat	ps-FL-CBC-04	Inadequate flood control systems and aging drainage infrastructure increase the campus?s exposure to stormwater intrusion and property damage.	ma-FL-CBC-03
Flood		Victim	ps-FL-CBC-05	Students and staff commuting from low-lying or flood-prone areas may face access issues or displacement during flood emergencies.	ma-FL-SVL-01
Severe Weather	Heavy Rain	Threat	ps-HR-CBC-01	Aging or undersized stormwater infrastructure, such as the French drain between Trafton and Union Street, is vulnerable to failure during heavy rainfall events.	ma-HR-CBC-01
Severe Weather	High Wind	Threat	ps-HW-CBC-01	High wind events pose a threat to overhead utilities, leaning trees, and temporary structures, increasing the risk of property damage and service disruption.	ma-HW-WTS-01
Slope Failure		Threat	ps-SF-CBC-01	Steep slopes in the Porter Gulch and other areas around the Aptos campus are vulnerable to erosion and slope failure during intense rainfall events, posing risks to adjacent campus infrastructure.	ma-SF-CBC-01, ma-SF-CBC-03
Slope Failure		Threat	ps-SF-CBC-02	Leaning trees and saturated soils near sewer laterals and utilities increase the risk of infrastructure damage due to slope movement.	ma-SF-SCW-02, ma-SF-CBC-02
Slope Failure		Impact	ps-SF-CBC-03	Landslides or soil instability may block emergency access routes or damage critical utility lines, disrupting campus operations.	ma-SF-SCW-03
Slope Failure		Victim	ps-SF-CBC-04	Students and staff commuting via low-lying or hillside routes may be affected by landslide-induced road closures or hazards.	ma-SF-CBC-03
Severe Weather	All	Impact	ps-SW-CBC-01	Severe storms can result in widespread campus flooding, unsafe walking/driving conditions, and building access limitations, disrupting instructional operations.	ma-SW-CBC-02

Hazard	Sub-Hazard	Area of Concern	Problem IS	Description	Related Mitigation Actions
Severe Weather	All	Victim	ps-SW-CBC-02	Students and staff traveling to campus from across the region may face hazardous road conditions or transportation service interruptions during severe winter storms.	ma-SW-CBC-01
Severe Weather	All	Threat	ps-SW-CBC-03	Backup power capacity is limited, leaving some critical systems vulnerable to extended outages during extreme weather.	ma-SW-CBC-01, ma-SW-SCC-02
Wildfire		Threat	ps-WF-CBC-01	Wildland vegetation in and around Porter Gulch presents a persistent ignition threat to campus infrastructure, particularly near Perimeter Road.	ma-WF-CBC-01
Wildfire		Threat	ps-WF-CBC-02	Insufficient defensible space and fuel load reduction near critical infrastructure?such as wellheads and emergency access routes?puts the campus at risk during wildfire events.	ma-WF-CBC-01, ma-WF-SCC-02, ma-WF-WTS-01
Wildfire		Impact	ps-WF-CBC-03	A wildfire event could lead to campus closure, displacement of classes, and interruptions to on-campus and online operations due to power or connectivity loss.	ma-WF-CBC-03
Wildfire		Victim	ps-WF-CBC-04	Students, faculty, and staff commuting from high fire-risk zones across Santa Cruz County may face evacuation orders or unsafe travel conditions during wildfire emergencies.	ma-WF-CBC-03
Wildfire	Coastal Erosion	Threat	ps-WF-CBC-05	The college lacks a microgrid or mobile generator capacity to maintain energy reliability for fire-critical infrastructure, including water wells and emergency communication systems.	ma-WF-CBC-02

9.5.4.1 Climate Change Impacts & Vulnerable Populations

Cabrillo College operates campuses in Aptos and Watsonville, both of which are increasingly exposed to climate-driven hazards. Students, staff, and faculty represent diverse socioeconomic and linguistic backgrounds, with many commuting from throughout Santa Cruz County and beyond. Vulnerable populations include low-income and first-generation students, renters, agricultural workers who attend classes part-time, and seniors enrolled in lifelong learning programs. These groups may have limited financial resources, access to reliable transportation, or English proficiency, which can heighten risks during hazard events and recovery.

Drought: Prolonged drought reduces water availability from Porter Gulch wells and backup supplies, directly affecting campus sanitation, drinking water, and recreational facilities. Climate change is projected to increase the frequency of droughts, straining the District's water supply and vegetation health. Students

and staff with limited resources may face restricted restroom or hydration access on campus, while broader drought surcharges or restrictions could disproportionately affect low-income students and their households. Drought-stressed vegetation around campus also increases wildfire ignition risk, compounding threats to operations.

Flooding and Severe Weather: The Watsonville campus is partially located within the 100-year floodplain, and both campuses have experienced storm-related flooding, including the 2023 storms that damaged storage facilities. Climate change is increasing the frequency and intensity of atmospheric river events, which can overwhelm aging drainage infrastructure and disrupt instructional continuity. Students and staff commuting from low-lying or flood-prone neighborhoods face displacement, transportation barriers, and reduced campus access during storms. Severe weather also causes power outages, unsafe walking conditions, and service interruptions, particularly for students dependent on public transportation or those without backup power for online learning.

Earthquake and Liquefaction: Cabrillo College's campuses contain older buildings constructed prior to modern seismic codes, and no comprehensive vulnerability assessment has been completed. Although not related to climate change, an earthquake could severely damage instructional facilities, utilities, and student housing, disrupting academic operations and displacing vulnerable student populations who lack alternative housing or financial support. Students, faculty, and staff with mobility challenges are at heightened risk of injury or entrapment during seismic events.

Slope Failure: Steep slopes in Porter Gulch and surrounding hillside terrain are increasingly unstable due to intense rainfall and vegetation loss linked to climate change. Landslides could damage campus utilities, block emergency access, and disrupt operations. Students and staff commuting on hillside or rural routes face increased travel hazards and delays following storm events, with those lacking reliable vehicles or safe alternate routes most at risk.

Wildfire: Vegetation in and around Porter Gulch poses persistent wildfire risks, exacerbated by hotter, drier conditions. Limited defensible space near wellheads, tanks, and emergency routes increases vulnerability of critical facilities. Students, staff, and faculty commuting from Wildland Urban Interface neighborhoods may face evacuation challenges, road closures, or class disruptions during wildfire emergencies. Smoke exposure further affects those with respiratory conditions or limited healthcare access. Lack of backup energy resources, such as a microgrid, increases the risk of service interruption for water wells and communications during wildfire-related outages.

Overall, climate change compounds Cabrillo College's vulnerability by intensifying drought, flooding, wildfire, and storm risks while magnifying inequities among student populations. Strengthening water resilience, improving seismic and slope failure planning, and prioritizing equitable emergency communication will be essential to maintaining safe and reliable operations for the College community.

9.6 Mitigation Strategy

This section provides the framework for how Cabrillo College will reduce hazard risk within its jurisdiction while supporting the broader goals of the Santa Cruz County MJHMP. It includes an overview of existing capabilities, opportunities to strengthen resilience, and the City's prioritized mitigation actions. Together, these elements demonstrate how Watsonville integrates hazard awareness into its planning and development processes while contributing to a coordinated countywide approach.

Within the Santa Cruz County MJHMP, the mitigation strategy serves as the roadmap for future hazard mitigation efforts. For the college, the strategy outlined in this annex reflects the outcomes of the countywide planning process while also addressing the college's unique risks, priorities, and community needs. The strategy is designed to reduce vulnerabilities identified in the risk assessment, including the problem statements developed for flooding, earthquakes and liquefaction, slope failure, wildfire, drought, severe storms, extreme heat, and climate change.

Mitigation actions identified in this annex include both policy-based and project-based initiatives, with an emphasis on integrating resilience into land use planning, infrastructure investments, and community programs. Actions are structured to align with FEMA's requirements and to coordinate with existing city, county, and regional planning mechanisms. Each action identifies responsible parties, potential funding sources, and the resources needed for implementation.

For the college, this strategy provides a framework for strengthening resilience by combining city-led initiatives, such as infrastructure improvements, building code enforcement, and community preparedness, with regional coordination with the participants of MJHMP. By advancing these efforts in alignment with the Master Plan and other campus planning documents, the College will enhance its ability to reduce hazard risk while supporting long-term community safety, sustainability, and economic stability.

The subsections that follow describe these elements in detail:

- **Section 4.6.1 Aligning Action Planning** with Capabilities provides a summary of the College's capacity to address natural hazards.
- **Section 4.6.3 Mitigation Action Plan** presents Cabrillo College's prioritized actions to guide implementation in coordination with countywide strategies.

9.6.1 Aligning the Action Plan

This section connects the College's mitigation actions with its existing capabilities and areas for growth. Capability assessments are a required element of hazard mitigation planning under the Disaster Mitigation Act of 2000 and FEMA's 2023 guidance, ensuring that actions are realistic, achievable, and aligned with available resources.

The section begins with a summary of the College's capabilities across four areas: planning and regulatory, administrative and technical, fiscal, and education and outreach. This overview highlights the tools and

strengths that the college already uses to reduce hazard risk. The section then provides a detailed analysis of each capability area, identifying both current practices and opportunities to expand resilience.

9.6.1.1 Capabilities & Opportunities Assessment

To develop a realistic and actionable mitigation strategy, it must account for existing jurisdictional capabilities and what future opportunities there are to enhance those capabilities for purposes of hazard mitigation. This section provides an assessment of the City of Capitola's existing capabilities and future opportunities, including planning and regulatory, administrative and technical, fiscal, and public outreach and education capabilities. This assessment also identifies opportunities to integrate this MJHMP into future planning, policies, or programs to weave mitigation efforts into daily operations and address hazard problems wholistically. Capabilities are categorized into four groups and include various mechanisms.

- **Planning and Regulatory Capabilities:** Existing long-range plans, emergency response plans, hazard-specific plans, land use policies, and building and development standards.
- **Administrative and Technical Capabilities:** Available expertise in emergency services, engineering, grant management, and community planning.
- **Fiscal Capabilities:** Budgetary capacity, taxing authority, grants, and other funding mechanisms that can support mitigation projects.
- **Outreach and Education Capabilities:** Existing programs for providing technical assistance, community education, public warnings, and stakeholder engagement.

A full description of the process used to develop the capabilities assessment is provided in Volume 1, Section 2.3.3.

This capabilities and opportunities assessment for Capitola lists the various types of capabilities along with how they have been, currently are, or will in the future be integrated into hazard mitigation planning efforts. The three "HMP Integration" columns that identify the capability's status and usage are color-coded with green, yellow, or orange shading to communicate the following:

- **Status:** If the capability is present at all and what level of use it has generally.
- **Current Mitigation Use:** If the capability is currently being used in mitigation efforts, specifically, and at what level.
- **Future Opportunity:** If there is a future opportunity to integrate the capability into mitigation efforts and at what level.

Planning & Regulatory Capabilities

As an educational institution with limited authority and not a municipality, Cabrillo College does not maintain traditional planning or regulatory tools, such as hazard-specific ordinances or development standards. That said, Cabrillo College demonstrates a strong foundation of hazard mitigation capabilities, particularly in the areas of planning, facilities management, and fiscal resources. The College maintains a robust 5-Year Capital Outlay Plan and Facilities Master Plan, which integrates hazard mitigation priorities into building upgrades and campus development projects. While there is no standalone fire prevention plan,

fire response is incorporated into the College's Emergency Operations Plan (EOP), and seismic safety is addressed through both non-structural measures and major structural renovations, such as the ongoing modernization of Buildings 300 and 700.

Other areas, such as stormwater management, floodplain response, wildfire planning, and drought contingency, are only partially developed. Flood risks are acknowledged in the EOP without a dedicated plan, wildfire mitigation is referenced in the HMP without a Community Wildfire Protection Plan, and water conservation policies exist without a formal drought management framework. Similarly, while Cabrillo has environmental sustainability policies, it does not maintain a formal Climate Action Plan.

Further, Cabrillo College complies with all development standards and environmental review requirements for the State of California, including the California Environmental Quality Act (CEQA), and within the county and City of Watsonville where its campuses are located. These local regulatory environments are described in Volume 1 for Santa Cruz County and in the City of Watsonville's municipal annex of Volume 2.

Future integration of the MJHMP will occur through various processes and mechanisms outlined across multiple mitigation actions (Table 9-9). A key opportunity for future hazard mitigation integration with SVWD's existing planning mechanisms is to update the Facilities Master Plan and future construction siting policies to avoid known slope failure hazard areas and incorporate risk data into its capital improvement planning (ma-SF-CBC-03).

Administrative & Technical Capacity

From an administrative standpoint, the College has designated an Emergency Manager through its EOP, and engineering support is evident in facilities planning, though civil engineering and grant management capacity are not explicitly documented. Outreach personnel are active through equity and emergency planning initiatives, but there is no dedicated GIS specialist. In terms of warning systems, Cabrillo maintains an emergency notification system that is outlined in the EOP, but lacks hazard-specific alert programs for flooding, wildfire, or geological hazards beyond general procedures.

Warning Systems & Services

The college does not manage formal warning systems for hazards such as floods, wildfires, or earthquakes. Emergency notification and public alerting remain the responsibility of county and state agencies. The college's role is to support these systems by providing education, preparedness resources, and technical assistance to landowners.

Fiscal Capabilities

Fiscal capabilities are a notable strength. Cabrillo College regularly employs voter-approved levies, general obligation bonds, and capital improvement funding to support hazard mitigation and infrastructure resilience projects. Utility fees and system development fees help support ongoing operations, though stormwater service fees and special tax bonds are not currently in use.

Education & Outreach Capabilities

Finally, the College's education and outreach capacity is developing but not fully institutionalized. Hazard preparedness information is shared online through the College website and emergency preparedness page, and social media is used for general outreach rather than hazard-specific messaging. Occasional public safety events occur, but there is no consistent program of annualized events, newsletters, or formal hazard information access points for the community. Equity and safety messaging promoted at the Board level, however, provides a framework for future outreach expansion.

CAPABILITY ASSESSMENT LEGEND

HMP Integration

Status	Current Mitigation Use	Future Opportunity
Currently in use or present.	Used widely for mitigation.	Opportunity to expand and integrate.
(Sort of) Seldomly used or limited presence.	Limited use in mitigation planning.	Limited opportunity to expand and integrate.
(No) Not present or available.	Not used in mitigation planning.	No opportunity to expand or integrate.

Table 9-8: Cabrillo College Capabilities Assessment

	HMP Integration			
Resource	Status	Current Mitigation Use	Future Opportunity	**Notes / Additional Detail**
Planning and Regulatory Capabilities				
Hazard Reduction Programs (Annually Conducted)				
Capital Improvements Program (CIP) or Plan				Identified in 5-Year Capital Outlay Plan and Facilities Master Plan
Annual Fire Prevention Plan				Fire response considered in EOP; no standalone annual fire prevention plan found
Seismic Safety Program (Non-structural)				Earthquake mitigation is highlighted in HMP and facilities assessments
Earthquake Modernization Plan (Building Safety)				Buildings 300 and 700 undergoing structural renovations per CIP
Stormwater Management Program (Annual Inspections)				Not mentioned directly in planning docs, but likely under facilities maintenance
Hazard Plans and Programs				
Floodplain Response Plan				EOP references flooding risks but lacks a specific floodplain plan

Resource	HMP Integration: Status	HMP Integration: Current Mitigation Use	HMP Integration: Future Opportunity	Notes / Additional Detail
Community Wildfire Protection Plan (CWPP)				Wildfire mitigation referenced in HMP but no CWPP exists
Ground Water Management Planning / Plans	N/A	N/A	N/A	Campus does not manage groundwater supply
Climate Action Plan				Environmental sustainability policy exists, but no formal CAP
Drought Mgmt/ Contingency Plan				Water conservation is discussed generally, but no detailed drought contingency plan
FireWise Communities within District				No FireWise designation
Hazard-Related Public Outreach Program				Public meetings and outreach done during HMP development
Administrative and Technical				
Staff Capacity				
Emergency Manager				Emergency Operations Plan designates roles and responsibilities
Civil Engineer				Engineering support evident in facilities planning
Dedicated Public Outreach Personnel				Engagement teams are active under Equity and Emergency planning efforts
GIS Specialist and Capability				Not referenced in EOP or HMP materials
Grant Manager, Writer, or Specialist				Exists for facilities grant work
Other	N/A	N/A	N/A	
Warning Systems/Services				
General				Emergency notification system exists, EOP includes protocols
Flood				No flood-specific alert program found
Wildfire				General emergency alerts would cover this, but not wildfire-specific
Geological Hazards				Earthquake procedures in place, but no standalone warning system
Fiscal Capabilities				
Financial Resources for Hazard Mitigation				
Levy for Specific Purposes with Voter Approval				Used for capital improvement funding
Utilities Fees				Utility fees support operations and possibly facilities
System Development Fee				Likely part of new project funding

Resource	HMP Integration: Status	HMP Integration: Current Mitigation Use	HMP Integration: Future Opportunity	Notes / Additional Detail
General Obligation Bonds to Incur Debt				Used for CIP funding
Special Tax Bonds to Incur Debt				No mention of this mechanism
Withheld Spending in Hazard-Prone Areas				Not practiced
Stormwater Service Fees				No fee-based stormwater program
Capital Improvement Project Funding				Robust CIP and 5-year planning
Education / Outreach Capabilities				
Education/Outreach Resources				
Website Dedicated to Hazard Topics				HMP public materials shared during planning; Emergency Preparedness Page
Dedicated Social Media				Used generally for outreach, not hazard-specific
Hazard Info. Avail. at Library/ Planning Desk				No formalized public access to hazard info
Annual Public Safety Events				Not annualized, but some events occur
Ability to Field Public Tech. Assistance Requests				Facilities team handles public-facing work
Public Safety Newsletters or Printed Outreach				Yes
Fire Safe Councils	N/A	N/A	N/A	Not applicable
Resource Conservation Districts	N/A	N/A	N/A	Not relevant to a college district
Other	N/A	N/A	N/A	

9.6.2 Cabrillo College Mitigation Action Plan

Cabrillo College mitigation actions were developed based upon the jurisdiction's priorities, risk assessment results, and mitigation alternatives. The mitigation action prioritization method used by all participating jurisdictions is described in Volume 1 Section 4.Table 9-9 lists each priority mitigation action, responsible party, time frame, potential funding source, implementation steps, and resources need to implement based upon consensus among the college's planning group members. All mitigation actions across jurisdictions are accessible through MAST (Mitigation Action Support Tool), providing comprehensive details including the mitigation goal, responsible party, timeline, potential funding sources, implementation steps, and required resources. As a dynamic document, hazard problem statements and mitigation activities will be regularly updated through MAST to reflect evolving needs and circumstances.

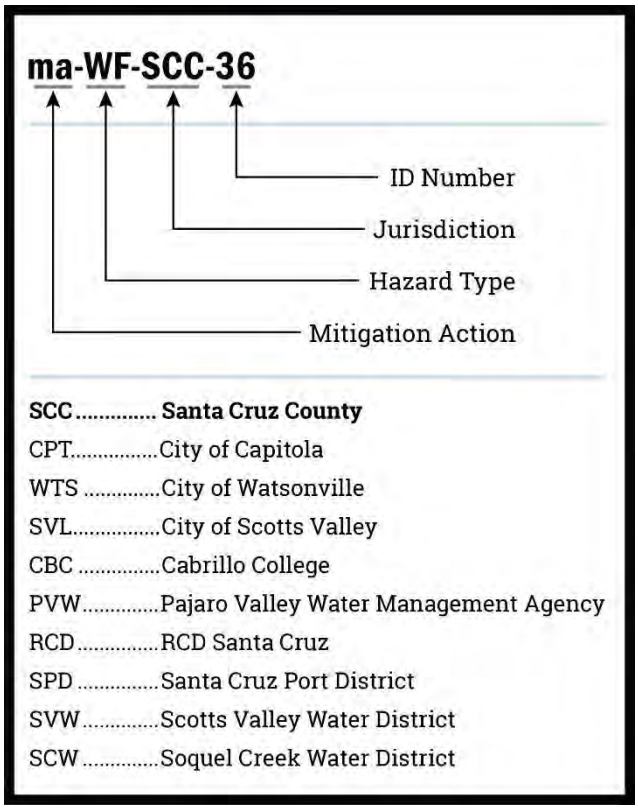


Figure 9-11: Mitigation Action Number Key

As part of this 2025 MJHMP update, the college reviewed mitigation actions from its prior plan to determine which actions to carry forward, which to consolidate, and where entirely new strategies were required. This careful evaluation ensured that the updated action plan builds upon past commitments while also responding to current risks and future challenges. The plan addresses Cabrillo's most significant hazards, including flooding, earthquakes, severe storms, drought, wildfire, and climate change. Each mitigation action is designed to align with FEMA's hazard mitigation guidance and the requirements of the Disaster Mitigation Act of 2000. Where appropriate, overlapping or redundant actions were consolidated into broader, more comprehensive strategies that improve clarity, increase feasibility, and strengthen regional coordination.

Cabrillo College developed unique mitigation actions, tailored to their own unique priorities, vulnerabilities, and capabilities. Each action contains a level of detail that meets the regulatory requirements of FEMA and DMA 2000. All actions are assigned a unique identification number, as illustrated in MAST and in Figure 9-11, using alphanumeric characters that denote specific attributes of the action, including the type of hazard being mitigated, facilitating easy reference and management. Table 9-9 lists each mitigation action for the college.

Table 9-9: Cabrillo College Mitigation Action Plan

Hazard	Action ID	Action Title	Description	FEMA Mitigation Alternative	Timeline	Responsibility	Cost	Benefit	Internal Funding Source	External Funding Source	Priority (Based on Criteria)	Problems Addressed
Drought	**ma-DR-CBC-01**	Develop Water Resilience & Conservation Plan	Conduct a comprehensive assessment of current and future water needs and develop a Water Resilience and Conservation Plan that includes drought triggers, conservation targets, and emergency supply protocols.	PRV	Short 1-3 Years	College Facilities, Emergency Preparedness, and Grants	Medium	High	General Fund / Staff Time	DWR DOC HMGP BRIC Prop 4 Measure Q	Medium	ps-DR-CBC-01, ps-DR-CBC-02, ps-DR-CBC-03, ps-DR-SCW-05, ps-DR-SVL-03, ps-CC-CBC-01
Drought	**ma-DR-CBC-02**	Protect & Retrofit Campus Water Infrastructure	Install drought-resilient backup power systems and enclosures for campus water wellheads to ensure continued water access during drought-related outages. Perform annual maintenance and well depth inspections to ensure that they are not drying out and consider procuring a mobile backup well pump in case of failure.	SP	Medium 3-5 Years	College Facilities + engineering consultants	High	High	General Fund / Staff Time	HMGP, DWR	Medium	ps-DR-CBC-01, ps-DR-CBC-02, ps-DR-CBC-03, ps-DR-CBC-05, ps-CC-CBC-01
Drought	**ma-DR-CBC-03**	Conduct Interagency Coordination for Emergency Water Supply	Coordinate with Soquel Creek Water District and Santa Cruz County agencies to identify shared emergency water supply options for prolonged drought events.	PRV, ES	Medium 3-5 Years	College Emergency Preparedness	Medium	High	General Fund / Staff Time	DWR DOC HMGP BRIC Prop 4 Measure Q	High	ps-DR-CBC-01, ps-DR-CBC-02, ps-DR-CBC-04, ps-DR-CBC-05, ps-DR-RCD-02, ps-DR-SCW-01, ps-DR-SVW-01, ps-DR-CBC-03, ps-DR-SCC-01, ps-DR-SCW-03, ps-DR-SVL-02, ps-DR-WTS-02
Earthquake	**ma-EQ-CBC-01**	Conduct Campus-Wide Seismic Risk Assessment	Hire a licensed structural/seismic engineer to evaluate all campus buildings—especially those built before seismic code benchmark years—and prioritize retrofit needs.	PRV	Short 1-3 Years	College Facilities + engineering consultants	Medium	Medium	General Fund / Staff Time	HMGP BRIC	Medium	ps-EQ-CBC-01, ps-EQ-CBC-02, ps-EQ-CBC-03, ps-EQ-CBC-05
Earthquake	**ma-EQ-CBC-02**	Retrofit Seismically Vulnerable Buildings & Critical Systems	Retrofit priority buildings and bracing for key utilities (e.g., water lines, power, IT) based on findings of seismic assessment to reduce life safety and operational risks.	SP, PPRO	Medium 3-5 Years	College Facilities + engineering consultants	High	High	General Fund / Staff Time	HMGP BRIC	Medium	ps-EQ-CBC-01, ps-EQ-CBC-03, ps-EQ-WTS-01
Earthquake	**ma-EQ-CBC-03**	Expand Non-Structural Mitigation & Earthquake Preparedness Training	Increase earthquake preparedness by bracing lab equipment, securing furniture, and conducting training and annual drills for students and staff.	PE&A, ES, PRV	Short 1-3 Years	College Emergency Preparedness and Facilities	Low	High	General Fund / Staff Time	CalOES Listos, CARESTAR	Medium	ps-EQ-CBC-04, ps-EQ-CBC-05
Flood	**ma-FL-CBC-01**	Elevate & Flood-Proof Critical Infrastructure	Elevate, flood-proof, or relocate key facilities in the 100-year floodplain at the Watsonville campus, including backup generators and the vulnerable storage warehouse. Elevate critical items (e.g., computers) up to 3 feet. Additionally, regularly inspect Building B basement sump pump before the rainy season.	SP	Short 1-3 Years	College Facilities + engineering consultants	High	High	General Fund / Staff Time	BRIC HMGP Measure Q DWR	Medium	ps-FL-CBC-01, ps-FL-CBC-02, ps-FL-CBC-03, ps-CC-CBC-01, ps-SW-CBC-01
Flood	**ma-FL-CBC-02**	Develop & Implement Flood Emergency Response Plan	Create a flood-specific emergency operations plan (EOP) for Watsonville and Aptos campuses, including roles, site maps, alert protocols, and shelter-in-place/evacuation procedures.	ES, PRV	Medium 3-5 Years	College Emergency Preparedness and Administration	Low	High	General Fund / Staff Time	Measure Q DWR MOUs UCSC partnerships	Medium	ps-FL-CBC-02, ps-FL-CBC-03, ps-FL-CBC-05, ps-CC-CBC-01, ps-SW-CBC-01
Flood	**ma-FL-CBC-03**	Coordinate with County & Water Agencies for Long-Term Flood Mitigation	Partner with Santa Cruz County and Pajaro Regional Flood Management Agency to explore upstream mitigation, watershed management, and infrastructure funding for long-term flood risk reduction.	PRV, ES	Medium 3-5 Years	College Administration and Planning	Low	High	General Fund / Staff Time	Measure Q DWR USACE	High	ps-FL-CBC-02, ps-FL-PVW-04, ps-FL-CBC-04, ps-CC-CBC-01, ps-SW-CBC-01

Hazard	Action ID	Action Title	Description	FEMA Mitigation Alternative	Timeline	Responsibility	Cost	Benefit	Internal Funding Source	External Funding Source	Priority (Based on Criteria)	Problems Addressed
Severe Weather (Heavy Rain)	**ma-HR-CBC-01**	Upgrade Storm Drainage & System	Replace or retrofit the undersized French drain between Trafton and Union Street and assess broader campus drainage infrastructure for capacity and performance under heavy rainfall.	SP	Short 1-3 Years	College Facilities + engineering consultants	High	High	General Fund / Staff Time	DWR, Prop 4, Measure Q	Medium	ps-HR-CBC-01, ps-CC-CBC-01, ps-FL-CBC-02, ps-FL-CBC-04
Severe Weather (All)	**ma-SW-CBC-01**	Expand Emergency Power Backup for Critical Facilities	Install battery storage and/or generator backup systems for IT infrastructure, emergency lighting, and essential student support services affected by power outages during extreme storms.	ES, SP	Short 1-3 Years	College Facilities + energy consultants	High	High	General Fund / Staff Time	HMGP EPA FEMA (BRIC)	High	ps-SW-CBC-03, ps-SW-CBC-02, ps-SW-WTS-03, ps-CC-CBC-01, ps-HW-CBC-01
Severe Weather (All)	**ma-SW-CBC-02**	Implement Severe Weather Communication & Response Protocol	Develop clear communication protocols and response checklists for wind, rain, and winter storm events—ensuring real-time alerts, remote learning contingencies, and safe building access.	ES	Medium 3-5 Years	College Emergency Preparedness	Medium	Medium	General Fund / Staff Time	BAUASI EMPG SHSGP HMGP	High	ps-SW-WTS-02, ps-SW-CBC-01, ps-SW-CPT-01, ps-SW-SVL-02, ps-SW-WTS-01, ps-CC-CBC-01, ps-HW-CBC-01
Slope Failure	**ma-SF-CBC-01**	Stabilize Slopes & Address Drainage Vulnerabilities	Conduct geotechnical assessments and implement slope stabilization measures—including retaining walls, erosion control, and drainage upgrades—in areas at risk of failure, such as Porter Gulch and sewer lateral corridors.	SP, NRP	Medium 3-5 Years	College Facilities + geotechnical consultants	High	High	General Fund / Staff Time	HMGP, Measure Q	Medium	ps-SF-CBC-01, ps-SF-CBC-02, ps-SF-CBC-03, ps-SF-CBC-04, ps-SF-SCC-06
Slope Failure	**ma-SF-CBC-02**	Implement Tree Management Plan for Slope Hazard Areas	Develop and carry out a tree inventory and risk reduction plan focused on leaning trees near slope-prone areas and utility infrastructure.	NRP	Medium 3-5 Years	College Facilities and Landscaping	Medium	Medium	General Fund / Staff Time	HMGP, Measure Q, CAL FIRE	Medium	ps-SF-CBC-01, ps-SF-CBC-02, ps-SF-CBC-03, ps-SF-SCC-05
Slope Failure	**ma-SF-CBC-03**	Integrate Slope Hazard Planning into Campus Master Plan	Update the campus master plan and future construction siting policies to avoid known landslide hazard zones and incorporate slope failure risk data into capital improvement planning.	PRV	Medium 3-5 Years	College Administration and Planning	Low	High	General Fund / Staff Time	N/A	Low	ps-SF-CBC-01, ps-SF-CBC-02, ps-SF-CBC-04
Wildfire	**ma-WF-CBC-03**	Create Wildfire Evacuation & Communication Plan	Develop a wildfire-specific evacuation and notification plan, including redundant communication channels and training for faculty, staff, and students across campuses.	PRV, PE&A	Medium 3-5 Years	College Emergency Preparedness and Administration	Low	Medium	General Fund / Staff Time	HMGP BRIC CAL FIRE CalOES Prop 4 Measure Q	Medium	ps-WF-CBC-04, ps-WF-CBC-03, ps-CC-CBC-01
Wildfire	**ma-WF-CBC-01**	Enhance Defensible Space & Vegetation Management	Expand and institutionalize annual defensible space maintenance within the Porter Gulch area and along Perimeter Road to reduce wildfire risk to critical infrastructure and evacuation routes.	NRP, SP	Short 1-3 Years	College Facilities and Campus Maintenance + CAL FIRE	Medium	High	General Fund / Staff Time	HMGP BRIC CAL FIRE CalOES Prop 4 Measure Q	High	ps-WF-CBC-01, ps-WF-CBC-02, ps-WF-CBC-03, ps-CC-CBC-01, ps-DR-CBC-04
Wildfire	**ma-WF-CBC-02**	Implement Campus Microgrid for Fire Resilience	Design and construct a solar battery microgrid at key electrical demarcation points to maintain water pumping, communication systems, and critical facilities during wildfire-related outages.	SP, ES	Medium 3-5 Years	College Facilities + energy consultants	High	High	General Fund / Staff Time	HMGP BRIC CAL FIRE CalOES Prop 4 Measure Q	High	ps-WF-CBC-03, ps-WF-CBC-05, ps-CC-CBC-01

9.6.3 Status of Previous Mitigation Actions

In 2020, Cabrillo College adopted its previous FEMA-approved HMP. This 2025 MJHMP represents a comprehensive update from that previous plan, as discussed in Volume 1, Section 1.5. Table 9-10 provides status updates for all of the previous mitigation actions in the 2020 Cabrillo College Mitigation Strategy, from which many of the mitigation actions in Table 9-9 were sourced and revised.

Table 9-10: Status of 2020 Cabrillo College Mitigation Strategies

Action ID	Description	Status
AH-1	Acquire and install portable generators at all critical locations	Combined and revised into ma-SW-CBC-01, ma-WF-CBC-02
FR-1	Building Sprinkler Installation – Cabrillo College will install sprinkler systems in all buildings currently without them as renovations or replacements are completed.	Cancelled, ongoing baseline mitigation activity
EQ-1	Complete seismic retrofits of older buildings as renovations are completed, when cost effective and as funds are available	Combined and revised into ma-EQ-CBC-01, ma-EQ-CBC-02
EQ-2	a) Obtain an analysis of the bridge for structural integrity and earthquake resilience by a qualified structural engineer b) Undertake retrofit options to improve the safety and resilience of the bridge.	Combined and revised into ma-EQ-CBC-01, ma-EQ-CBC-02
AH-2	Create and deliver a presentation to the students and faculty on warning and evacuation. Make presentation classroom ready and deliver to instructors as "train-the-trainer" Post presentation to social media and the Cabrillo College website	Revised into ma-EQ-CBC-03
FR-2	Develop a vegetation management plan, in coordination with the local fire departments for vegetation on campus and in surrounding areas. Focus on highly flammable vegetation, such as eucalyptus trees.	Combined and revised into ma-WF-CBC-01
AH-3	Identify, scope and price alternative power supplies on both campuses, including the potential for micro-grids. Install alternative energy solutions	Combined and revised into ma-SW-CBC-01, ma-WF-CBC-02
LS-1	Study campus to develop a map of local landslide hazard areas. Mitigate these areas.	Combined and revised into ma-SF-CBC-01, ma-SF-CBC-02, ma-SF-CBC-03
FL-1	Install moisture/water sensors in basements	Combined and revised into ma-FL-CBC-01
FL-2	Flood proof Watsonville campus buildings to two feet above the 100-year flood elevation	Combined and revised into ma-FL-CBC-01
FR-3	Install drought resistant landscaping around campus buildings and create defensible space	Combined and revised into ma-WF-CBC-01
AH-4	Reinforce utility lines and equipment	Combined and revised into ma-EQ-CBC-02, ma-WF-CBC-01

Action ID	Description	Status
LS/LF-2	Complete soil and slope stabilization needs assessment and construct slope stabilization measures where needed	Combined and revised into ma-SF-CBC-01, ma-SF-CBC-02, ma-SF-CBC-03
FL-3	Obtain a FEMA Elevation Certificate for each building and apply for a Letter of Map Amendment to remove the campus from the designated flood zone	Combined and revised into ma-FL-CBC-01
DR-1	Install low water use appliances campus wide, as renovations are completed	Combined and revised into ma-DR-CBC-02
AH-5	Work with local police, sheriff and fire departments to manage hazardous materials, including sharing Material Safety Data Sheets for each applicable building, and creating Geographical Information System (GIS) point locations and attributes.	Cancelled, reprioritized toward natural hazards and implemented by other plans
AH-6	Ensure all chemical storage meets OSHA codes	Cancelled, reprioritized toward natural hazards and implemented by other plans
DR-2	Investigate drought resilience and water use reduction techniques at Drought resilience at Watsonville and report out to committee	Combined and revised into ma-DR-CBC-01
AH-7	Have faculty and staff of the Watsonville Center participate in the City of Watsonville EOC or whole college in County EOC	Combined and revised into ma-DR-CBC-03, ma-FL-CBC-03
DR-3	Create filtering system to reuse wastewater on campus	Combined and revised into ma-DR-CBC-01, ma-DR-CBC-02
AH-8	Redundant server and communications room for continuous operation during a disaster.	Combined and revised into ma-EQ-CBC-02, ma-SW-CBC-01, ma-WF-CBC-02
AH-9	Create a public / student education program on climate change and increasing impacts of disasters. Make available to instructors for inclusion in classroom training and post to the college website and social media platforms	Cancelled, ongoing baseline mitigation activity
AH-10	Well road stabilization, grading and vegetation clearing	Combined and revised into ma-SF-CBC-01, ma-WF-CBC-01
AH-11	Establish a central location for all Geographic Information System (GIS) files to be stored. Prioritize GIS data to be acquired, and a system for keeping that data up to date. Digitize and organize all maps of campus and historic building plans and specifications	Cancelled, ongoing baseline mitigation activity