



# The Corte Madera Climate Adaptation Assessment **executive summary**

May 2021









The Town of Corte Madera is surrounded by scenic and idyllic natural beauty and nestled between the baylands of the Corte Madera Marsh – which include one of the oldest and least disturbed marshes in the Bay – and Mount Tamalpais – a forested reserve that provides unique biodiversity and supplies water for the region. Hillside and shoreline neighborhoods are connected by a thriving economic core anchored by the historic old town area and two shopping malls that service the region. Home to many long-term residents, Corte Maderans care deeply about their community and its future. The Town of Corte Madera offers its residents both scenic beauty and a high quality of life; however, like many California communities, the Town is already (and will continue to be) affected by climate change.

**This Climate Adaptation Assessment is an essential step in building resilience. It serves as a roadmap for the Town and community by highlighting the real and present challenges facing the Town and identifying potential actions that can be taken to address these challenges and adapt to a changing climate.**

Yet, despite these risks, Corte Madera is also presented with opportunity to enhance the resilience of the Town and support broader regional efforts to enhance resilience for Marin county and the broader North Bay region. To serve its residents, the Town must look forward and proactively explore options to build resilience for the whole community and diminish threats to Town residents' lives, property, and quality of life. Over the course of 27 months, funded by a Caltrans Adaptation Planning Grant, the Town completed its first climate adaptation assessment. Building on the extensive foundation of climate change science and risk studies, the Town is taking action based on best practices from across the region, US, and the world.

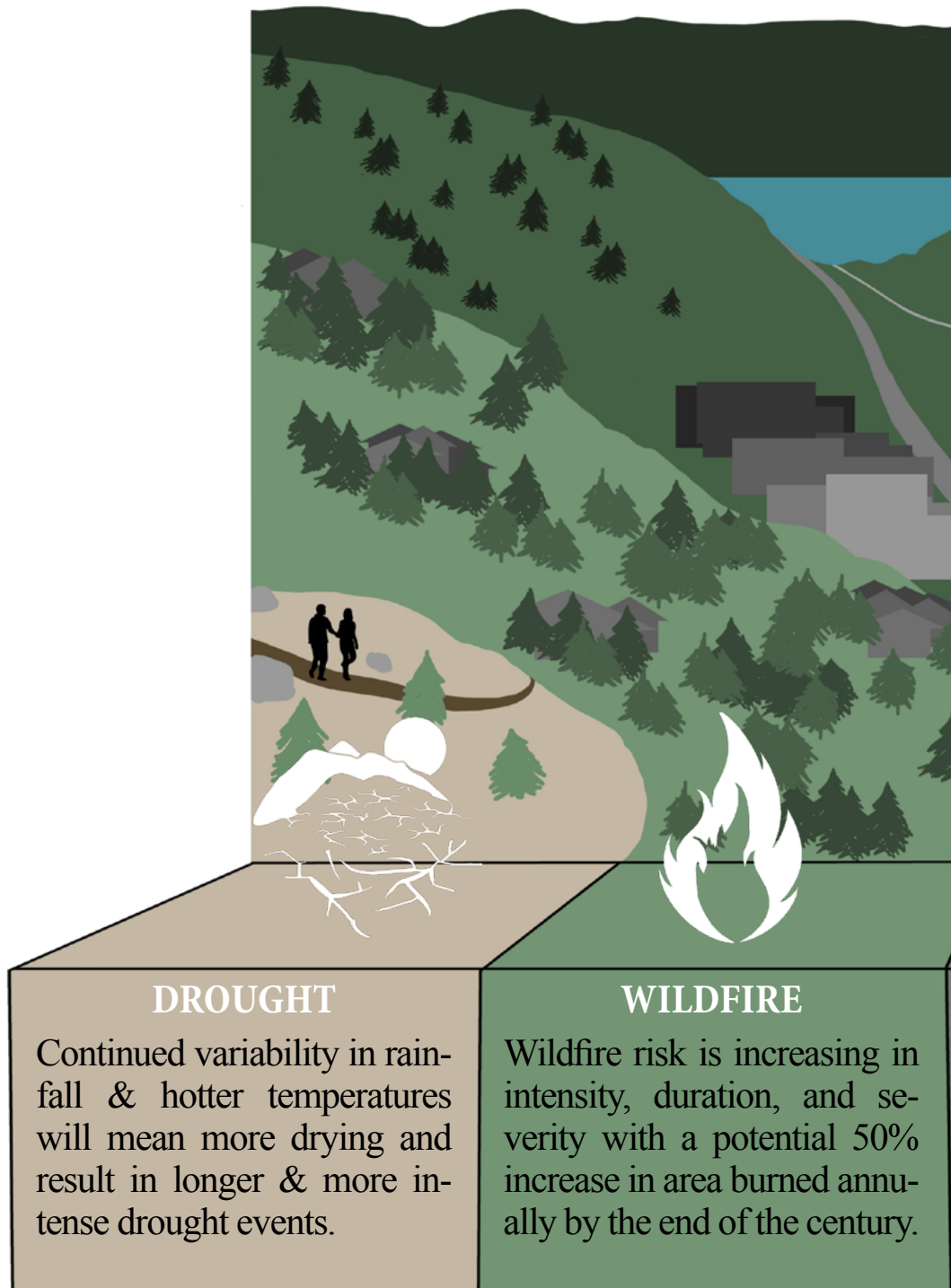
This Assessment serves as a roadmap for the Town and community by highlighting the real and present challenges facing the Town and identifying potential actions that can be taken to address these challenges and adapt to a changing climate. However, the completion of this assessment does not mean the Town has accomplished its resilience goals. ***Building climate resilience is a process and not the outcome of a single project. It will require ongoing collaborations, partnerships, and investment.*** By bringing people together, breaking down silos between sectors and departments, thinking creatively and boldly about solutions, and prioritizing near-term collaboration and early investments, the Town can continue to be a regional leader in developing and implementing flexible, robust, and equitable climate adaptation strategies.

# CORTE MADERA'S CHANGING CLIMATE

Like many California communities, the Town is already experiencing the effects of climate change, and projections indicate that these impacts will continue to worsen throughout the century. Much of the hillside region of the town is located in the Wildland Urban Interface (WUI), and recent wildfire seasons have illustrated the serious impact of wildfires and smoke on our communities. Catastrophic wildfires can occur in the region at any time, putting the health, safety, homes, and infrastructure of the community at risk.

The shoreline neighborhoods, built post-WWII on bay fill, are subsiding, facing rising sea levels, and experiencing king-tide and storm-driven flooding. Extreme rainfall from atmospheric rivers dump water faster than storm-

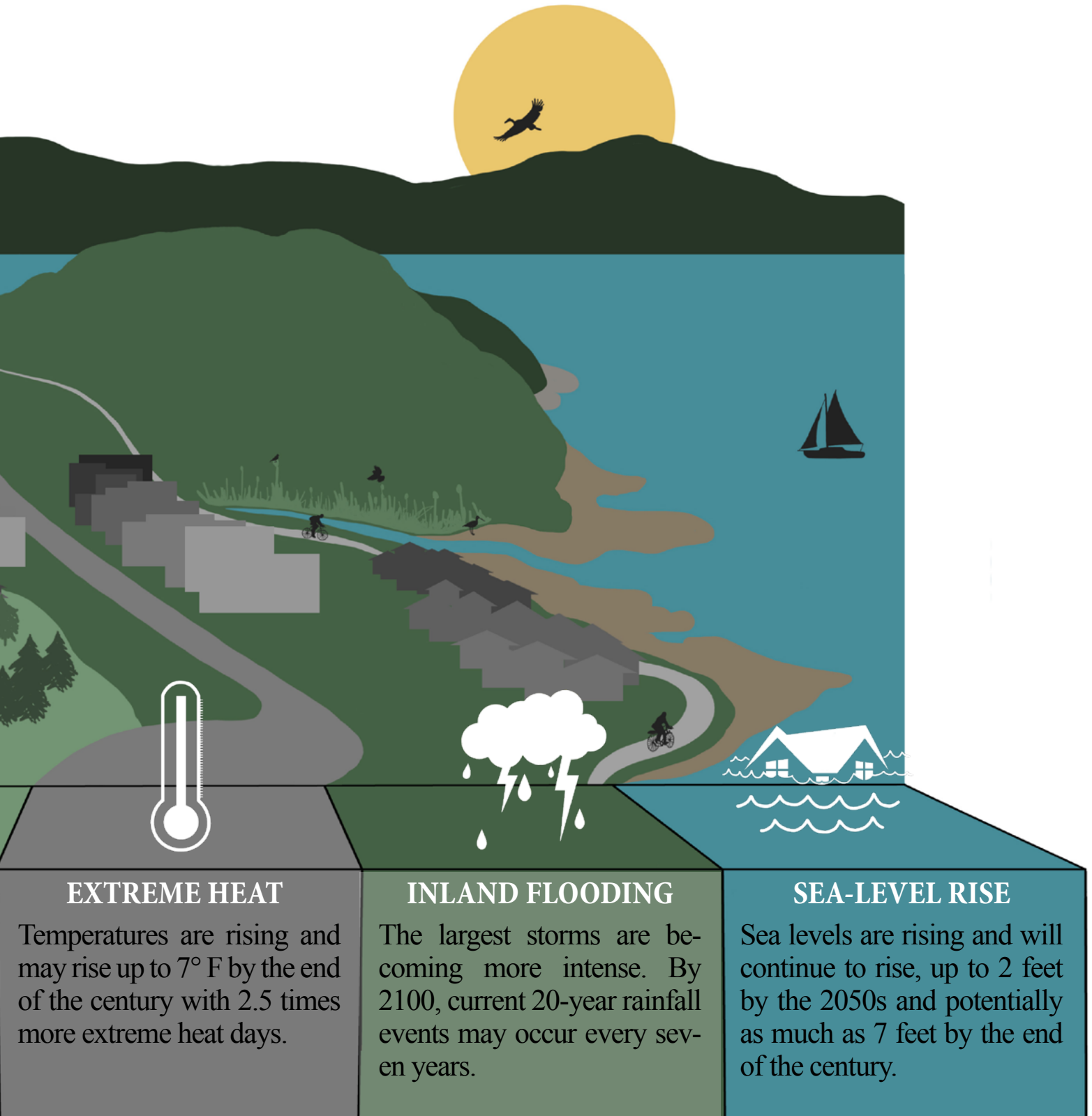
Figure ES - 1. Climate exposures summary for Corte Madera. Climate projections are based on the higher climate change scenario (RCP 8.5) and medium-high risk aversion sea level rise scenarios.





water systems can direct it to the Bay. Town-wide, extreme heat – especially when combined with public safety power shut-offs – poses risks to older residents and those with chronic health conditions.

As the climate changes, the Town faces real and serious challenges in ensuring the near- and long-term health and safety of all its community members. These changes also pose significant immediate, medium-term, and long-term risks to the community’s economy, ecosystems, and infrastructure.



### EXTREME HEAT

Temperatures are rising and may rise up to 7° F by the end of the century with 2.5 times more extreme heat days.

### INLAND FLOODING

The largest storms are becoming more intense. By 2100, current 20-year rainfall events may occur every seven years.

### SEA-LEVEL RISE

Sea levels are rising and will continue to rise, up to 2 feet by the 2050s and potentially as much as 7 feet by the end of the century.

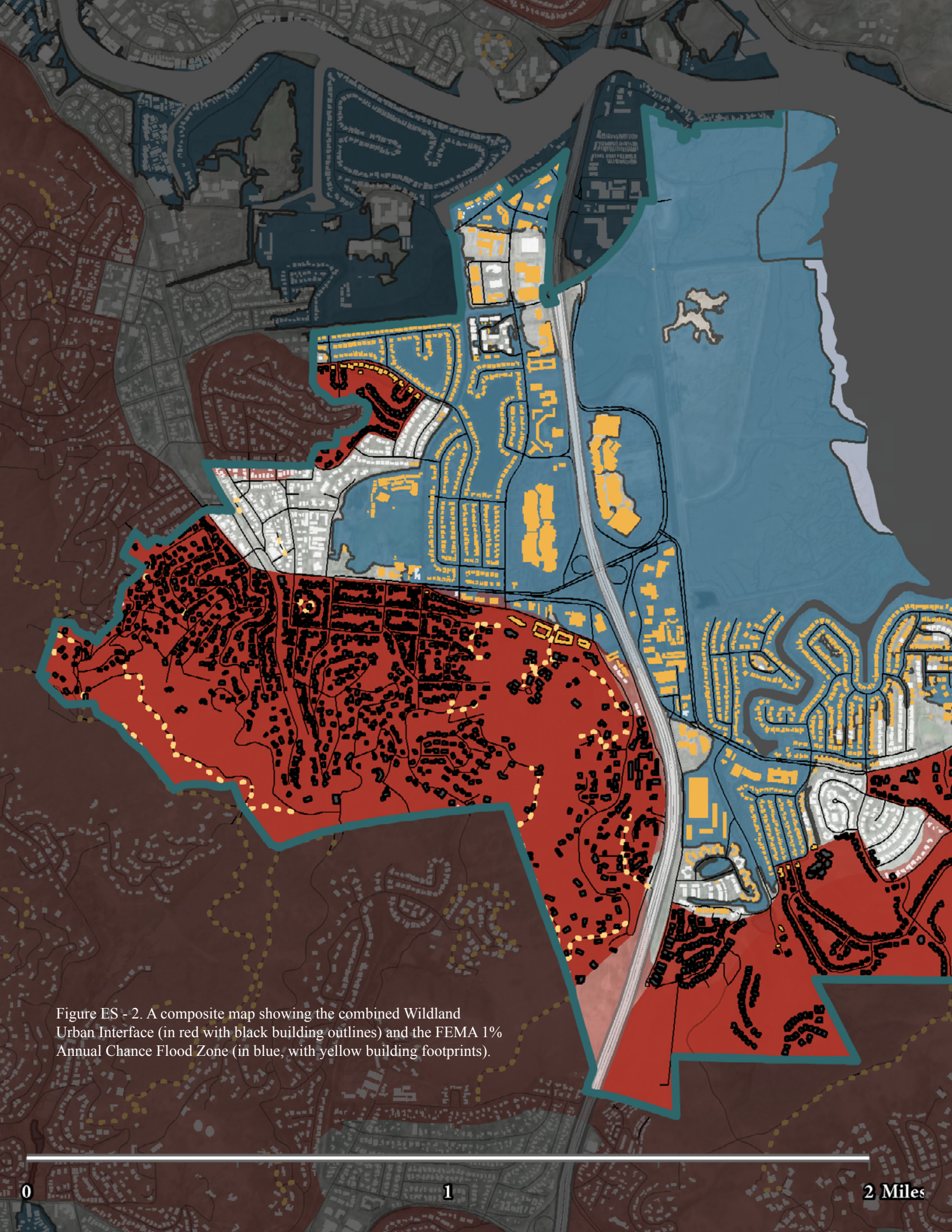


Figure ES - 2. A composite map showing the combined Wildland Urban Interface (in red with black building outlines) and the FEMA 1% Annual Chance Flood Zone (in blue, with yellow building footprints).

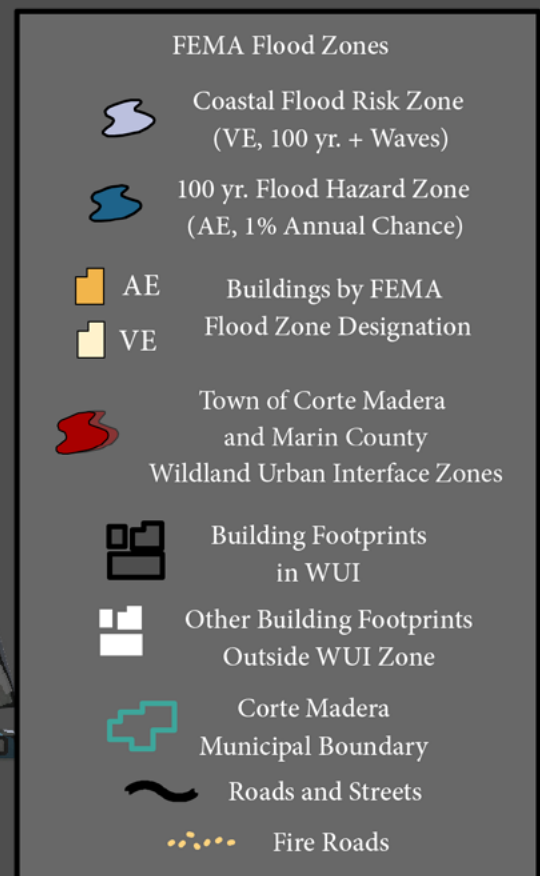
0

1

2 Miles



Climate change will affect all Corte Maderans. Extreme weather events, such as heat waves, flooding, and wildfires can affect the direct health and safety of residents and visitors. Disruptions to the transportation network from flooding or wildfire events limit the ability of people to evacuate and move away from danger, decrease access to hospitals and medical care facilities, and reduce the ability of emergency first responders to protect residents. A wildfire in the Corte Madera community would put lives at risk and likely destroy homes and other infrastructure. Over time, sea level rise will make coastal flooding more likely, alter the shoreline, and affect the lives of Corte Maderans. Most of the town is either in the 1% annual chance of occurrence (100-year) FEMA floodplain or the Wildland Urban Interface.



# WHAT IS THE ASSESSMENT?





The Assessment is the culmination of 27 months of work, guided by the Town staff, the Resilience Advisory Committee (RAC), and community members. The 22 members of the RAC included representatives from the Town Council, Town staff, the county, neighboring towns, non-profit organizations, state and regional entities, the shopping center, and the school district. They brought a diverse range of technical and policy expertise to help inform the development of the Assessment.

Community engagement was a central component of the planning process. Participants included staff from various Town departments, local and regional organizations, environmental stakeholder groups, businesses, and homeowners. The Town developed a website ([cortemaderaadapts.org](http://cortemaderaadapts.org)) and an outreach and engagement plan to solicit broad participation in the planning process. The Outreach Plan outlined a range of activities and timeframes for stakeholder engagement activities. To help increase engagement, the Town offered multiple methods of feedback and learning opportunities for community members. For more information, see pages 19 - 20. It should be noted that the COVID-19 pandemic significantly impacted these planned activities, and all engagement activities after March of 2020 were held virtually via video conference, or by small one-on-one meetings or phone calls.

This Climate Adaptation Assessment is a roadmap for action, not an ordinance or policy. It is a toolbox of potential actions, not a commitment to implement individual actions. It is an initial screening of actions, not a detailed final analysis of alternatives. And, it is a commitment to the health, safety, and well-being of all Corte Maderan residents, not a selective investment in individual sectors or neighborhoods. For more information, on what the Assessment is and isn't, see Figure ES - 3.

## ASSESSMENT GOALS

The implementation of the Adaptation Assessment will ensure that Corte Madera realizes its goals and vision for a more resilient future. The Assessment goals include:

-  **Goal 1:** Protect the health, safety, and wellbeing of all Town residents, visitors, and workers by focusing on preparedness and prevention.
-  **Goal 2:** Incorporate resilience and equity into all of the Town's plans, policies, and projects.
-  **Goal 3:** Increase community awareness about the urgent need to take action and prepare for climate change.
-  **Goal 4:** Bring the community, neighboring towns, and the region together to plan and fund actions to build resilience.

## ASSESSMENT VISION

The project envisions *“One Town. One Region. Resilient Together.”* The Town, surrounding communities, Marin County, and the entire region must work together to enhance resilience and successfully adapt to climate change. Climate change exposures and risks do not respect jurisdictional boundaries. Further, people move between home, work, and leisure, many traversing Highway 101, which connects the Town to the North Bay and San Francisco. Building resilience requires incorporating the interconnectedness of the region in local planning and action.



## What is the Corte Madera Climate Adaptation Assessment?

This Assessment is...	This Assessment isn't...	Details
A Roadmap for Action	An Ordinance or Policy	<p>This assessment is the next step on the journey to plan for climate change and enhance the resilience of our community. It lays out options the community can further consider and invest in overtime to help protect and prepare the community and the Town’s infrastructure for the future.</p>
A Toolbox of Potential Actions	A Commitment to Implement Individual Actions	<p>This assessment contains a broad suite of potential actions from outreach and education to infrastructure projects and policies. No individual action, or set of actions, has been selected for implementation and the approval of this assessment does NOT constitute a commitment to implement any of the actions identified in the Assessment. Each action can be considered over time and will follow the Town’s usual and customary approach to designing, developing, refining, and implementing actions as appropriate to the type of action.</p>
An Initial Screening of Actions	Detailed Final Analysis of Alternatives	<p>All evaluation of actions described in the Assessment, including any initial costs provided, were completed at a planning level only. The associated analysis of potential actions was designed to explore the effectiveness, efficiency, and feasibility in addressing the climate change challenges facing the community. Additional community engagement, technical, and policy analysis will be required before implementing any of the actions.</p>
A Commitment to the Health, Safety, and Wellbeing of All Residents	Selective Investment in Individual Sectors or Neighborhoods	<p>The Assessment reaffirms the Town’s commitment to being stewards of public funds and working to support and enhance the wellbeing and quality of life of all residents. It provides information on the relative urgency of addressing different climate change challenges. Future actions by the community and Town leadership will help determine how best to invest funds, staff time, and resources to achieve the goals of the Town and help the community thrive for decades to come.</p>

Figure ES - 3. A visual chart highlighting what the Assessment is and is not.

# ADAPTATION ACTIONS

Guided by extensive input from residents and a Resilience Advisory Committee, the town staff and project planning team developed a library of potentially effective, efficient, and feasible adaptation actions that the community and the Town can choose from and decide to implement to address climate change. The list of adaptation actions is organized by geographic location and then grouped into more specific categories (see Figure ES - 3).

Town-wide Actions	Shoreline Actions	Hillside Actions	Central Corte Madera
Health and Wellness	Accommodation	Evacuation	Collaboration
Emergency Preparedness	Protection (Engineered)	Wildfire Risk Mitigation	Prevention
Resilient Infrastructure	Protection (Nature-based)	Protection	
Collaboration		Education and Collaboration	

Figure ES - 4. A summary of the focus areas and grouping of potential adaptation actions for the Town.

The actions highlighted in this report represent a subset of a broader suite of adaptation actions that scored highly based on their potential effectiveness, efficiency, and feasibility for the Town. These actions (and the full suite of actions in Appendix B) provides the Town with a list of many of the most appropriate options to consider at this point in time. The actions highlighted in the assessment are not an exhaustive list of all potential options, nor are they a prescriptive list of final actions the Town has decided to implement. Additionally, over time, new actions are likely to be added and some are likely to be removed. This Assessment provides a suite of actions that the Town can use to address the climate crisis and move forward in its goal to adapt and become more resilient to future climate changes. ***It is ultimately up to the Town to discuss these actions with the community and take into consideration many factors in order to determine which actions get implemented.***

**The adaptation actions identified in the assessment are not final and require further analysis and additional community discussion.**



## FEATURED ACTIONS: PROTECTION

The actions highlighted in this report represent a subset of a broader suite of adaptation actions that scored highly based on their potential effectiveness, efficiency, and feasibility for the Town. These actions (and the full suite of actions in Appendix B) provides the Town with a list of many of the most appropriate options to consider. ***It is ultimately up to the Town to discuss these actions with the community and take into consideration many factors in order to determine which actions get implemented.***

**Remain up-to-date on scientific studies, local and state policies and regulations, and relevant reports that increase and refine the body of knowledge regarding sea level rise affecting Corte Madera and the innovative responses that are available to address it.** Our combined scientific knowledge of changing climate conditions, including rates of sea level rise, is constantly evolving. Staying abreast of those changes and the local, regional, and state level responses, guidance, and best practices can inform how Corte Madera chooses to respond and the actions it decides to take.

Figure ES - 5. A screenshot of a sample focus area and example actions in the Shoreline section of the Assessment.



# THE FUTURE

**The time for taking action is now!** Thinking holistically about the risks of climate change and the opportunities for action is critical if the Town and the region are going to develop solutions that meet the scale of the challenge. Corte Maderans, Town Staff, and the Town Council all know this and have begun discussing, understanding, planning for, and taking action to adapt to climate change. By being proactive and investing now, the Town can help build community resilience and support the physical, mental, and social health of its residents. This goes beyond being prepared for future events and includes making investments in the everyday quality of life for residents, non-resident workers, and visitors. If done well, this effort can also provide extensive environmental and economic benefits to the community.

**Adapting to climate change is a process - not the outcome of a single project. With the completion of this Adaptation Assessment, the Town of Corte Madera and the community have taken the next step in the journey to build resilience. Climate adaptation is, and must continue to be, a conscious process where actions are developed, refined, implemented, monitored over time, and adjusted as necessary.**

Corte Madera is on the forefront of enhancing its resilience. The Town is dedicated to working with other communities, the county, and local, regional, and state organizations to develop efficient, effective, and feasible solutions that reduce risk and enhance resilience. Leading is not always easy, and it requires weighing trade-offs and making difficult decisions about the best use of funding and investments to support the community's goals. In some cases, this will mean trying new innovative solutions, learning from trial and error, and exploring different alternatives.

In 30-50 years, under the pressures of a changing climate, Corte Madera will look different than it does today. Actions taken now will determine if the Town is able to meet the goals detailed in this assessment. The Town is committed to preserving its identity and values embedded in its small closely-knit community by protecting and investing in the resilience of the people, infrastructure, and ecosystems that make the community what it is today and ensuring that Corte Madera has a thriving, vibrant, and resilient future.



THE TOWN OF  
CORTE MADERA  

---

MARIN COUNTY CALIFORNIA

[www.cortemaderaadapts.com](http://www.cortemaderaadapts.com)