Multi-Jurisdictional Hazard Mitigation Plan: City of Chula Vista Annex

San Diego County, California

2023

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1. SECTION ONE: Determine the Planning Area and Resources

1.1. Planning Area: City of Chula Vista

The city of Chula Vista is the second-largest city in San Diego County, with a population of 275,487, and the 21st largest of 450 California cities. Geographically, Chula Vista is comprised of more than 50 square miles of coastal landscape, canyons, rolling hills, and mountains. Chula Vista extends from the San Diego Bay on the west to the Otay Lake and Otay Mountain the in east. Chula Vista is located just over seven miles from U.S. international border of Mexico. Chula Vista is considered to have a semi-arid climate with Mediterranean characteristics. As with the rest of California, Southern California in particular, the City of Chula Vista is affected by increasingly warmer temperatures.

Chula Vista is home to an estimated 44% of all businesses in the South Bay and continues to be one of the fastest growing cities in San Diego County. Chula Vista ranks among the nation's top ten governments in terms of employee productivity and local debt levels. Two of the larger developments in the City of Chula Vista will include the new Chula Vista Bayfront and the University Innovation District. Chula Vista is also home of the Elite Athlete Training Center, a 155-acre training center for Olympic & Paralympic athletes. The Sweetwater Union High School District (largest secondary school district in California), the Chula Vista Elementary School District (49 schools), and Southwestern Community College also reside within the city of Chula Vista.

1.2. Community Rating System Requirements

The Community Rating System (CRS) is a FEMA program and rewards communities that go beyond the minimum standards for floodplain management under the National Flood Insurance Program (NFIP). Communities can potentially improve their Community Rating System and lower NFIP premiums by developing a CRS Plan.

Community Rating System (CRS) Planning Steps	Local Mitigation Planning Handbook Tasks (44 CFR Part 201)
Step 1. Organize	**Task 1:** Determine the Planning Area and Resources **Task 2:** Build the Planning Team 44 CFR 201.6(c)(1)
Step 2. Involve the public	**Task 3:** Create an Outreach Strategy 44 CFR 201.6(b)(1)
Step 3. Coordinate	**Task 4:** Review Community Capabilities 44 CFR 201.6(b)(2) & (3)
Step 4. Assess the hazard	

Step 5. Assess the problem	**Task 5:** Conduct a Risk Assessment 44 CFR 201.6(c)(2)(i) 44 CFR 201.6(c)(2)(ii) & (iii)
Step 6. Set goals	**Task 6:** Develop a Mitigation Strategy 44 CFR 201.6(c)(3)(i) 44 CFR 201.6(c)(3)(ii) 44 CFR 201.6(c)(3)(iii)
Step 7. Review possible activities	
Step 8. Draft an action plan	
Step 9. Adopt the plan	**Task 8:** Review and Adopt the Plan 44 CFR 201.6(c)(5)
Step 10. Implement, evaluate, revise	**Task 7:** Keep the Plan Current **Task 9:** Create a Safe and Resilient Community 44 CFR 201.6(c)(4)

TABLE 1: FEMA LOCAL MITIGATION PLANNING HANDBOOK WORKSHEET 1.1 DESCRIBES THE CRS REQUIREMENTS MET BY THE SAN DIEGO COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN.

Any jurisdiction or special district may participate in the hazard mitigation planning process. However, to request FEMA approval, each of the local jurisdictions must meet all requirements of 44 CFR §201.6. In addition to the requirement for participation in the process, the Federal regulation specifies the following requirements for multi-jurisdictional plans:

- The risk assessment must assess each jurisdiction's risk where they may vary from the risks facing the entire planning area. (44 CFR §201.6(c)(2)(iii))
- There must be identifiable action items specific to the jurisdiction requesting FEMA approval or credit of the plan. (44 CFR §201.6(c)(3)(iv))
- Each jurisdiction requesting approval of the plan must document that is has been formally adopted. (44 CFR §201.6(c)(5))

The hazard mitigation plan must clearly list the jurisdictions that participated in the plan and are seeking plan approval. The Chula Vista Annex to the San Diego County Multi-Jurisdictional Hazard Mitigation Plan and meets all requirements.

2. SECTION TWO: Build the Planning Team

2.1. Planning Participants

Name	Title	Department
Marlon King	Emergency Services Coordinator	Fire
Justin Gipson	Fire Marshal	Fire
Lou El-Khazen	Building Official	Development Services
Cheryl Goddard	Senior Planner	Development Services
Laura Black	Assistant Director	Development Services
Patrick Moneda	Senior Civil Engineer	Engineering
Bill Valle	Director of Engineering	Engineering
Frank Rivera	Principal Civil Engineer	Engineering
Boushra Salem	Principal Civil Engineer	Engineering
Sam Oludunfe	Open Space Manager	Public Works
Matt Little	Director	Public Works
Angelica Aguilar	Assistant Director	Public Works
Cory Downs	Conservation Specialist II	Economic Development
Coleen Wisniewski	Environmental Sustainability Manager	Economic Development
Rommel Reyes	GIS Specialist	Information Technology Services
Robert O'Donnell	GIS Manager	Information Technology Services

2.2. Planning Process

The City of Chula Vista Planning Team held an initial meeting in January 2020 to discuss the new hazard mitigation planning process and brainstorm any new hazards and challenges the city faces. In addition to whole team meetings, the Emergency Management Division held one-on-one meetings with key staff in lead City departments to discuss previous accomplishments and new goals/objectives in hazard mitigation.

Additionally, each key department held internal meetings to discuss new priority mitigation actions as associated tasks that will help to accomplish the objectives. Each department discussed key elements of the priority actions to determine if they are feasible, set reasonable expectations, brainstorm implementation costs and timelines.

See the *San Diego County Multi-Jurisdictional Hazard Mitigation Plan's* Section Two for details about the county-wide Planning Process.

3. SECTION THREE: Create an Outreach Strategy

See the *San Diego County Multi-Jurisdictional Hazard Mitigation Plan's* Section Three for details about the county-wide outreach strategy.

4. SECTION FOUR: Review Community Capabilities

Local mitigation capabilities are existing authorities, policies, programs, and resources that reduce hazard impacts or that could be used to implement hazard mitigation activities and must be included in a hazard mitigation plan. The planning team also may identify additional types of capabilities relevant to mitigation planning.

4.1. Capability Assessment

The primary types of capabilities for reducing long-term vulnerability through mitigation planning are:

- Planning and regulatory
- Administrative and technical
- Financial
- Education and outreach

4.1.1. Planning and Regulatory

Planning and regulatory capabilities are the plans, policies, codes, and ordinances that prevent and reduce the impacts of hazards. The jurisdiction currently has the following planning and regulatory capabilities:

Plans	Yes/No Year	Does the plan address hazards? Does the plan identify projects to include in the mitigation strategy? Can the plan be used to implement mitigation actions?
Comprehensive/Master Plan	Yes 2005	The Chula Vista City Council approved an updated General Plan on December 13, 2005. The General Plan looks out to the year 2030 and guides the City's future growth and development for the next 25 years. It is the first comprehensive update of the City's General Plan since 1989. The General Plan identifies how land will be used, how needs for transportation, parks and other public facilities and services will be met, and how natural resources and the community's heritage will be protected. Chapter of the General Plan addresses the Public Facilities and Services Element, which describes the public safety planning necessary to ensure the safety of the communities and minimize/mitigate risk to the public. The goals outlined in the plan can be used to establish hazard mitigation goals and actions.

Plans	Yes/No Year	Does the plan address hazards? Does the plan identify projects to include in the mitigation strategy? Can the plan be used to implement mitigation actions?
Capital Improvements Plan	Yes 2022	Yes. Establishing the annual CIP includes ranking proposals and projects by reviewing the scopes, preliminary cost estimates, locations, and feasibility of each proposal. Projects are placed in order with the highest ranked receiving top priority, based on the following categories: • City Needs - Does the proposal address an existing need, problem and/or safety concern? • City Benefit - Does the proposal provide a benefit citywide or for a specific area? • Does the proposal link to one of the City's Strategic Goals? • Regulatory Concerns, Implementation Pathways - Is the proposal feasible based on time and cost necessary to meet federal, state and city regulations? • Methodology - Is the proposed scope and location consistent with a "guiding document"? • Funding Limitations/Availability – Does the proposal require funding from the General Fund? Is the proposal fully or partially funded by grant funds? The CIP plan addresses projects committed to improving the safety of the community in a number of areas including traffic safety and pedestrian safety. Although these are not the top hazards within the City, these areas can be used to implement mitigation actions outside of the Hazard Mitigation Plan.
Economic Development Plan	Yes 2019	Yes, the mission of the Economic Development Plan is to create a sustainable economy by providing the essential resources to businesses and the development community to promote, attract, retain and expand; employment opportunities, stimulate the local economy, expand the local sales and property tax bases; all while maintaining a positive balance between the economy, the environment and the community. The Economic Development Plan addresses climate change, and also stresses the need for the City to partner with the business community to move the City forward. Both climate change and public private partnerships are addressed in hazard mitigation actions.
Local Emergency Operations Plan	Yes 2021	Yes, the Emergency Operations Plan helps to prepare the City's response to all-hazards faced within Chula Vista. The Emergency Operations Plan does not address hazard mitigation projects, but it doesn't identify hazards that need to be mitigated. In reviewing the Emergency Operations

Plans	Yes/No Year	Does the plan address hazards? Does the plan identify projects to include in the mitigation strategy? Can the plan be used to implement mitigation actions?
		Plan, the City's Emergency Management Program can identify focus areas for hazard mitigation.
Continuity of Operations Plan	No	The City does not yet have a formal COOP.
Transportation Plan	Yes	Yes. The Chula Vista Active Transportation Plan (ATP) focuses on enhancing the safety and comfort for existing pedestrian and bicycle facilities as well as increasing connectivity to key attracting land uses such as schools, employment centers, retail districts, and recreational areas. This plan was developed by taking a comprehensive look at the current transportation environment and users as well as previous planning efforts. This information combined with input from residents and project stakeholders shaped the development of recommendations for bicycle and pedestrian improvements and the overall ATP.
Stormwater Management Plan	Yes 2004	Yes. The mission of the Storm Water Management Program is to maintain and promote the quality of water and environmental resources for the Citizens of Chula Vista and ensure compliance with water quality regulations. The Storm Water Management section of the City of Chula Vista Public Works Department is responsible for overall management of all storm water quality issues in the City of Chula Vista. Through public education and outreach, the Storm Water Management section ensures that all residents, businesses, and municipal departments are familiar with federal, state and local laws and regulations pertaining to storm water quality issues and comply with those laws and regulations. The Stormwater Management Plan does not currently have projects to be listed in the City's hazard mitigation plan.
Community Wildfire Protection Plan	Yes	Yes, the CWPP addresses the City's largest threat of wildfire. The CWPP includes bot regional and community specific projects that can be implemented to mitigate the wildfire hazard. From these projects, the planning team can determine mitigation actions.

Plans	Yes/No Year	Does the plan address hazards? Does the plan identify projects to include in the mitigation strategy? Can the plan be used to implement mitigation actions?
Other special plans (e.g., brownfields redevelopment, disaster recovery, coastal zone management, climate change adaptation)	Yes	Climate Action Plan Multiple Species Conservation Program Wastewater Master Plan Traffic Signal Communications Master Plan Sewer System Management Plan Chula Vista Fire Department Strategic Plan
How can these capabilities be expanded and improved to reduce risk?		
Future opportunities for regulatory enhancement should focus on amending the City of Chula Vista's General Plan Safety Element to incorporate the 2022-2027 San Diego County MJHMP and City of Chula Vista Annex by reference. Additionally, the City should develop a formal Continuity of Operations Plan (COOP) incorporating best practices from recent disasters.		

TABLE 2: FEMA LOCAL MITIGATION PLANNING HANDBOOK WORKSHEET 4.1 DATA.

4.1.2. Administrative and Technical

Administrative and technical capabilities include staff and their skills and tools that can be used for mitigation planning and to implement specific mitigation actions. Some smaller jurisdictions without local staff resources, may rely on public resources at the next higher-level government that can provide technical assistance.

Administration	Yes/No	Describe capability Is coordination effective?
Planner(s) or engineer(s) with knowledge of land development and land management practices	Y	• Development Services • Public Works Departments The City employs engineers and land use planners that can help determine the safety of new construction as it relates to various hazards within the City. The planners coordinate with the Emergency Management Program as necessary.
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	Y	• Engineering • Development Services The City employs structural engineers familiar with best practices for development areas. Coordination with these personnel is effective.
Planners or Engineer(s) with an understanding of natural and/or manmade hazards	Y	• Engineering • Development Services

		• Fire Department The City employs personnel with knowledge of natural and man-made hazards and utilizes these personnel in development of plans, policies, and procedures for emergency planning and response.
Mitigation Planning Committee	Y	• All City Departments represented as necessary to provide subject matter expertise. The City departments coordinate well with the Emergency Management Program to provide necessary personnel resources.
Maintenance programs to reduce risk (e.g., tree trimming, clearing drainage systems)	Y	• Public Works The Public Works Department implements all maintenance programs on a continual basis.
Mutual aid agreements	Y	• Public Works • Fire • Police Many City departments, most notably those listed above, maintain mutual aid agreements for response operations.
Staff	**Yes/No FT/PT1**	**Is staffing adequate to enforce regulations?** **Is staff trained on hazards and mitigation?** **Is coordination between agencies and staff effective?**
Chief Building Official	Yes FT	Yes, staffing is adequate to enforce regulations. Staff who are assigned to participate on the hazard mitigation planning team are educated/trained about hazard mitigation and they coordinate well with other planning team members.
Floodplain Administrator	Yes FT	Yes, staffing is adequate to enforce regulations. Staff who are assigned to participate on the hazard mitigation planning team are educated/trained about hazard mitigation and they coordinate well with other planning team members.
Emergency Manager	Yes FT	Yes, staffing is adequate to enforce regulations, however additional emergency management staff would enhance the City's capabilities. The City's Emergency Manager is experienced in hazard mitigation and coordinates the hazard mitigation planning team and development of the hazard mitigation plan.
Surveyors	Yes FT	Yes, staffing is adequate to enforce regulations. Staff who are assigned to participate on the hazard mitigation planning team are educated/trained about hazard mitigation and they coordinate well with other planning team members.

Staff with education or expertise to assess the community's vulnerability to hazards	Yes FT	Yes, staffing is adequate to enforce regulations. Staff who are assigned to participate on the hazard mitigation planning team are educated/trained about hazard mitigation and they coordinate well with other planning team members.
Community Planner	Yes	Yes, staffing is adequate to enforce regulations. Staff who are assigned to participate on the hazard mitigation planning team are educated/trained about hazard mitigation and they coordinate well with other planning team members.
Scientists familiar with the hazards of the community	No	N/A
Civil Engineer	Yes	Yes, staffing is adequate to enforce regulations. Staff who are assigned to participate on the hazard mitigation planning team are educated/trained about hazard mitigation and they coordinate well with other planning team members.
Personnel skilled in GIS and/or HAZUS	Yes	Yes, staffing is adequate to enforce regulations. Staff who are assigned to participate on the hazard mitigation planning team are educated/trained about hazard mitigation and they coordinate well with other planning team members.
Grant writers	Yes	No. Although there are several staff with grant writing experience, there are not enough staff dedicated to locating and applying for grants. Few staff have experience in hazard mitigation grants.
Other		
How can these capabilities be expanded and improved to reduce risk?		
Future enhancements may include securing additional hazard mitigation funding for City projects and coordinating with grant writers and the scientific community to further understand the hazards in our city. We may also consider providing hazard training for staff.		

TABLE 3:FEMA LOCAL MITIGATION PLANNING HANDBOOK WORKSHEET 4.1 DATA CONTINUED.

4.1.3. Financial

The City of Chula Vista has access to or is eligible to use the following funding resources for hazard mitigation:

Funding Resource	Access/ Eligibility (Yes/No)	Has the funding resource been used in past and for what type of activities? Could the resource be used to fund future mitigation actions?
Community Development Block Grants (CDBG)	Yes	No Yes, as resources are available and to the extent the funds are used to benefit eligible census tracts
Capital improvements project funding	Yes	No Yes, as resources are available
Authority to levy taxes for specific purposes	Yes	Yes, taxes have been approved by voters for funding of public safety personnel and funding for facilities repair and maintenance. Yes, but requires Proposition 218 Voter Approval (2/3 of all voters, simple majority of property owners for assessments). Voter approval highly unlikely in most cases.
Fees for water, sewer, gas, or electric service	Yes	Yes, the revenue from these fees are reinvested into the utility infrastructure Yes, Sewer Fees only. City does not own or operate water, gas or electric utilities
Impact fees for homebuyers or developers for new developments/homes	Yes	No No
Incur debt through general obligation bonds	Yes	No No
Incur debt through special tax and revenue bonds	Yes	No No
Incur debt through private activity bonds	Yes	No No
Community Development Block Grants (CDBG)	Yes	No No
How can these capabilities be expanded and improved to reduce risk?		
The City can update other plans, such as the CIP to incorporate hazard information and include hazard mitigation actions and climate adaptation strategies that relate to infrastructure systems resiliency associated with the water and wastewater systems. Capital investments and improvements related to seismic retrofits, cooling center upgrades, drainage systems, and water supply systems, should all be prioritized in the City's financial plan as they are related to hazard mitigation. Additionally, given the prioritization of flooding mitigation projects, the City should apply for HMGP grants to fund implementation costs associated with key CIP projects, and related projects in the City's mitigation strategy. These fiscal capabilities may be supported by City staff or augmented with consultant staff.		

TABLE 4: FEMA LOCAL MITIGATION PLANNING HANDBOOK WORKSHEET 4.1 DATA CONTINUED.

4.1.4. Education and Outreach

The following education and outreach programs and methods exist to implement mitigation activities and communicate hazard-related information:

Program/Organization	Yes/No	Describe program/organization and how relates to disaster resilience and mitigation. Could the program/organization help implement future mitigation activities?
Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.	Yes	Chula Vista partners with several citizen groups and non-government organizations related to South Bay resources, sensitive habitat management protection, community emergency response, and access and functional needs coordination, all of which help implement mitigation activities
Ongoing public education or information program (e.g., responsible water use, fire safety, household preparedness, environmental education)	Yes	Chula Vista has several community engagement and educational programs in several City departments, including fire, police, and sustainability. The Fire Department PIO coordinates presentations and events with local community organizations, schools, etc. educating on the importance of fire safety and preparedness. The Chula Vista CERT members host courses for the community on disaster preparedness, basic safety skills, CPR, active shooter training, and more. The sustainability division provides community education on recycling, composting, energy efficiency, etc. All of these educational activities can be embedded into hazard mitigation projects.
Natural disaster or safety related school programs	Yes	Both the fire and police departments offer disaster and safety programs to local schools
StormReady certification	No	N/A
Firewise Communities certification	No	N/A
Public-private partnership initiatives addressing disaster-related issues	No	None
Other		
How can these capabilities be expanded and improved to reduce risk?		
The City can expand their education and outreach capabilities by seeking more certification from disaster preparedness organizations such as StormReady and Firewise, as well as the establishment of public-private partnerships with the business community. Specific enhancements may include continued public involvement through social media posts and advertisements focused on hazard mitigation project successes. Focused outreach to under-represented and special-interest groups in the City is another great strategy to expand education.		

TABLE 5: FEMA LOCAL MITIGATION PLANNING HANDBOOK WORKSHEET 4.1 DATA CONTINUED.

4.2. Safe Growth Audit

Identify gaps in the city's growth guidance instruments and improvements that could be made to reduce vulnerability to future development:

Comprehensive Plan	Yes	No
Land Use		
1. Does the future land-use map clearly identify natural hazard areas?	X	
2. Do the land-use policies discourage development or redevelopment within natural hazard areas?	X	
3. Does the plan provide adequate space for expected future growth in areas located outside natural hazard areas?	X	
Transportation		
1. Does the transportation plan limit access to hazard areas?	X	
2. Is transportation policy used to guide growth to safe locations?	X	
3. Are movement systems designed to function under disaster conditions (e.g., evacuation)?	X	

TABLE 6: FEMA LOCAL MITIGATION PLANNING HANDBOOK WORKSHEET 4.2 DATA.

Comprehensive Plan (continued)	Yes	No
Environmental Management		
1. Are environmental systems that protect development from hazards identified and mapped?	X	
2. Do environmental policies maintain and restore protective ecosystems?	X	
3. Do environmental policies provide incentives to development that is located outside protective ecosystems?	X	
Public Safety		
1. Are the goals and policies of the comprehensive plan related to those of the FEMA Local Hazard Mitigation Plan?	X	
2. Is safety explicitly included in the plan's growth and development policies?	X	
3. Does the monitoring and implementation section of the plan cover safe growth objectives?	X	

TABLE 7: FEMA LOCAL MITIGATION PLANNING HANDBOOK WORKSHEET 4.2 DATA CONTINUED.

Zoning Ordinance	Yes	No
1. Does the zoning ordinance conform to the comprehensive plan in terms of discouraging development or redevelopment within natural hazard areas?	X	
2. Does the ordinance contain natural hazard overlay zones that set conditions for land use within such zones?	X	
3. Do rezoning procedures recognize natural hazard areas as limits on zoning changes that allow greater intensity or density of use?	X	
4. Does the ordinance prohibit development within, or filling of, wetlands, floodways, and floodplains?	X	

Subdivision Regulations	Yes	No
1. Do the subdivision regulations restrict the subdivision of land within or adjacent to natural hazard areas?	X	
2. Do the regulations provide for conservation subdivisions or cluster subdivisions in order to conserve environmental resources?	X	
3. Do the regulations allow density transfers where hazard areas exist?		X

TABLE 8: FEMA LOCAL MITIGATION PLANNING HANDBOOK WORKSHEET 4.2 DATA CONTINUED.

Capital Improvement Program and Infrastructure Policies	Yes	No
1. Does the capital improvement program limit expenditures on projects that would encourage development in areas vulnerable to natural hazards?	X	
2. Do infrastructure policies limit extension of existing facilities and services that would encourage development in areas vulnerable to natural hazards?	X	
3. Does the capital improvement program provide funding for hazard mitigation projects identified in the FEMA Mitigation Plan?		X
Other	**Yes**	**No**
1. Do small area or corridor plans recognize the need to avoid or mitigation natural hazards?		X
2. Does the building code contain provisions to strengthen or elevate construction to withstand hazard forces?	X	
3. Do economic development or redevelopment strategies include provisions for mitigation natural hazards?	X	
4. Is there an adopted evacuation and shelter plan to deal with emergencies from natural hazards?		X

TABLE 9: FEMA LOCAL MITIGATION PLANNING HANDBOOK WORKSHEET 4.2 DATA CONTINUED.

Questions were adapted from Godschalk, David R. Practice Safe Growth Audits, Zoning Practice, Issue Number 10, October 2009, American Planning Association.

4.2.1 Growth and Development Trends

The table below depicts the city of Chula Vista growth trends since the 1990s:

Year	Population	Change	% Change
1990	135,243	-	-
2000	175,608	40,365	30%
2010	243,916	68,308	39%
2020	276,466	32,550	13%
2022	277,220	754	> 1%

Chula Vista has seen significant population growth because of its thriving economy and the support that is offered for small businesses. The population has continued to post growth in the double-digit percentages every ten years, indicating that growth is thriving, and the city is likely to continue growing larger. The City's Growth Management Element of the General Plan describes the City's planning factors, objectives, and policies for managing the growth and expansion of Chula Vista.

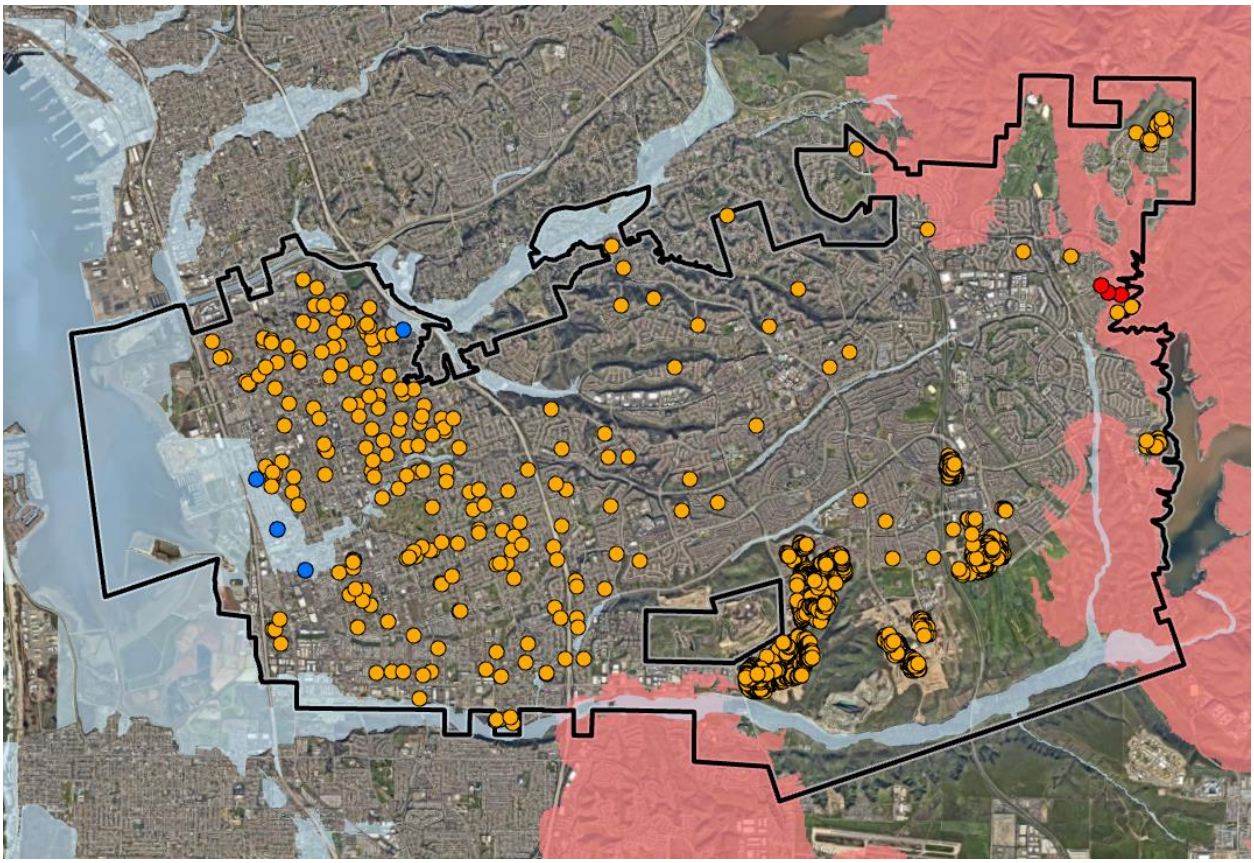
The following table details the city's infrastructure related growth since the 2018 Hazard Mitigation Plan:

Residential and Commercial Growth				
Property Use	**2019**	**2020**	**2021**	**2022**
Residential	840	2,707	1,699	1,175
Commercial	25	20	20	40
Total	**865**	**2,727**	**1,899**	**1,215**

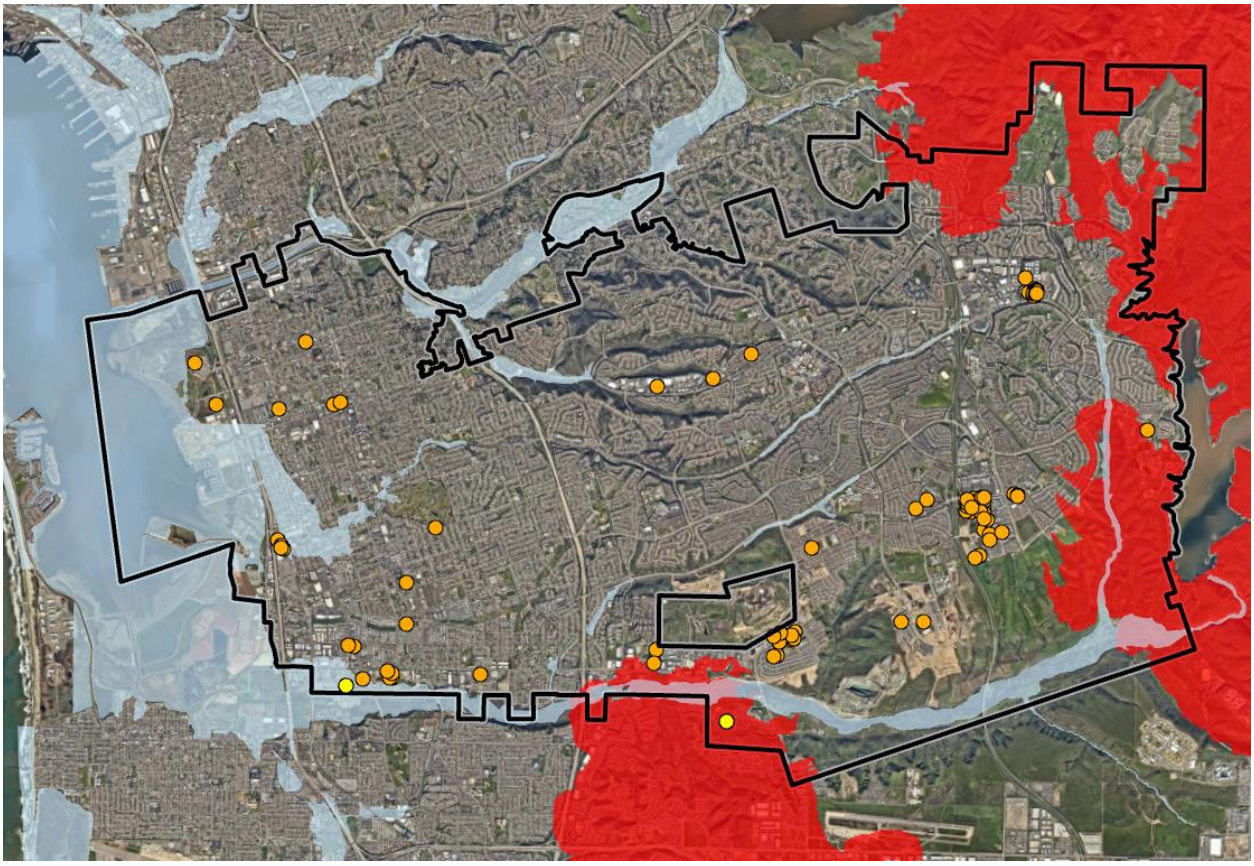
All developments were completed in accordance with all current and applicable development codes and standards. Each new development should be adequately protected from structural damage as a result of the City's priority hazards. Thus, except for more people living in areas potentially exposed to natural hazards, this growth should not cause a significant change in vulnerability of the city to identified hazards.

A summary of new development in hazard zones, between 2019-2022, is shown in the tables and maps below:

Property Use	Very High Fire Hazard Severity Zone (VHFHSZ)	Flood Zone
Residential	3	4



Property Use	Very High Fire Hazard Severity Zone (VHFHSZ)	Flood Zone
Commercial	13	1



4.3. National Flood Insurance Program (NFIP)

As a participant in the National Flood Insurance Program (NFIP), a community develops capabilities for conducting flood mitigation activities.

The City of Chula Vista is a participant in FEMA's National Flood Insurance Program (NFIP). Chula Vista officially began participating in the NFIP on April 8. 1977, established by City ordinance 1842. This program provides flood insurance for structures located within the floodplain areas in the city and as designated by FEMA. Chula Vista started utilizing the FEMA Flood Insurance Rate Map (FIRM) to determine floodplain/floodway boundaries on August 15, 1983.

As a part of NFIP, the City must meet certain annual requirements. The City must abide by the Floodplain Ordinance to meet the NFIP requirements. FEMA reviews the City's ordinance and determines whether the ordinance is adequate or provides recommendations when the ordinance needs to be updated. The City last updated its ordinance on 12/3/2019 (Ord 3477). FEMA and/or

the State Department of Water Resources typically performs audits on the City's Floodplain Management Program every 3 to 5 years to ensure compliance.

The City has Floodplain Administrator that administers, implements, and enforces standards of the City's floodplain regulations, identified in Chapter 14.18 of the City's Municipal Code. The City's Floodplain Administrator is responsible for the implementation of flood policies that reduce exposure to flood hazard and minimize/eliminate flood damage. The City of Chula Vista manages the permitting of any proposed developments and improvements within the floodplain areas per the FEMA guidelines and requirements.

Whenever development or capital improvement projects are near FEMA designated floodplains/floodways, projects are routed to the Engineering Advanced Planning section to determine FEMA related requirements for the proposed project. The City's Floodplain Administrator (City Engineer) has the right to stop a project that does not meet the Floodplain Regulations Ordinance.

The City continues to be an active participant in the NFIP and the following table details the City's participation:

NFIP Topic	Source of Information	Comments
Insurance Summary		
How many NFIP policies are in the community? What is the total premium and coverage?	State NFIP Coordinator or FEMA NFIP Specialist	N/A
How many claims have been paid in the community? What is the total amount of paid claims? How many of the claims were for substantial damage?	FEMA NFIP or Insurance Specialist	N/A
How many structures are exposed to flood risk within the community?	Community Floodplain Administrator (FPA)	Exact number of structures currently within SFHA is unknown.
Describe any areas of flood risk with limited NFIP policy coverage	Community FPA and FEMA Insurance Specialist	Not aware of any areas with limited NFIP policy coverage.
Staff Resources		
Is the Community FPA or NFIP Coordinator certified?	Community FPA	No
Is floodplain management an auxiliary function?	Community FPA	Floodplain Management is performed through the Advanced Planning section of the Engineering Dept.
Provide an explanation of NFIP administration services (e.g., permit review, GIS, education or outreach, inspections, engineering capability)	Community FPA	Engineering Dept: Pre-Application Review, Plan and Permit Review; GIS, General Public Information. Building Division: Inspections

What are the barriers to running an effective NFIP program in the community, if any?	Community FPA	
Compliance History		
Is the community in good standing with the NFIP?	State NFIP Coordinator, FEMA NFIP Specialist, community records	Yes
Are there any outstanding compliance issues (i.e., current violations)?		No
When was the most recent Community Assistance Visit (CAV) or Community Assistance Contact (CAC)?		Unsure
Is a CAV or CAC scheduled or needed?		No

TABLE 10: FEMA LOCAL MITIGATION PLANNING HANDBOOK WORKSHEET 4.3 DATA.

NFIP Topic	Source of Information	Comments
Regulation		
When did the community enter the NFIP?	Community Status Book http://www.fema.gov/national-flood-insurance-program/national-flood-insurance-program-community-status-book	Init FHBM Identified: 04/08/77 Init FIRM Identified: 08/15/83
Are the FIRMs digital or paper?	Community FPA	Both
Do floodplain development regulations meet or exceed FEMA or State minimum requirements? If so, in what ways?	Community FPA	Yes, it meets the FEMA minimum requirements.
Provide an explanation of the permitting process.	Community FPA, State, FEMA NFIP Flood Insurance Manual http://www.fema.gov/ flood-insurance-manual Community FPA, FEMA CRS Coordinator, ISO representative	1) Developer approaches City with Permit Pre-Application Review or Permit Application. 2) City Planning Dept forwards all Applications in the vicinity of FEMA SFHA to Engineering Dept for FEMA NFIP Review. 3) Engineering Dept provides comments/requirements for development in SFHA; Staff works with Developers to ensure all FEMA conditional approvals are met prior to Grading/Construction Permit issuance. 4) Construction Inspections and Building Inspector staff ensure all above requirements are met during construction before certificate of occupancy is issued.

NFIP Topic	Source of Information	Comments
Provide an explanation of the permitting process.		5) At project completion, City works with Developer to finalize any FEMA Map Revisions as necessary.
Community Rating System (CRS)		
Does the community participate in CRS?	Community FPA, State, FEMA NFIP	No
What is the community's CRS Class Ranking?	Flood Insurance Manual http://www.fema.gov/flood-insurance-manual	N/A
What categories and activities provide CRS points and how can the class be improved?		N/A
Does the plan include CRS planning requirements	Community FPA, FEMA CRS Coordinator, ISO representative	N/A

5. SECTION FIVE: Conduct a Risk Assessment

The planning team conducts a risk assessment to determine the potential impacts of hazards to the people, economy, and built and natural environments of the community. The risk assessment provides the foundation for the rest of the mitigation planning process, which is focused on identifying and prioritizing actions to reduce risk to hazards.

In addition to informing the mitigation strategy, the risk assessment also can be used to establish emergency preparedness and response priorities, for land use and comprehensive planning, and for decision making by elected officials, city and county departments, businesses, and organizations in the community.

When the plan revision process began in 2019, a complete review of the hazards identified in the original plan and first update was conducted to determine if they were still valid and should be kept as a target for mitigation measures or removed from the list. The planning team also reassessed hazards that were not considered for mitigation actions in 2018 to determine if that decision was still applicable or if they should be moved to the active list. Finally, the team examined potential or emerging hazards, including climate change, to see if any should be included on the active list.

While many of the mitigation measures listed in 2018 plan and revision were implemented and accomplished, the risk of the hazard did not significantly diminish. This is easily seen in both the wildfire and earthquake hazards. While mitigation measures have been put in place (such as the update of the fire code and vegetation management measures), wildfire remains, and will continue to be, the greatest hazard risk to the city of Chula Vista.

5.1 Performing a Risk Assessment

Risk Assessment requires the collection and analysis of hazard-related data to enable local jurisdictions to identify and prioritize appropriate mitigation actions that will reduce losses from potential hazards.

Risk Assessment is the process of identifying the potential impacts of hazards that threaten an area, including both natural and human-caused events. A natural event causes a hazard when it harms people or property. Such events would include floods, earthquakes, tornadoes, tsunami, coastal storms, landslides, and wildfires that strike populated areas. Human-caused hazard events are caused by human activity and include technological hazards and terrorism.

Technological hazards are generally accidental and/or have unintended consequences (for example, an accidental hazardous materials release). Terrorism is defined by the Code of Federal Regulations as "…unlawful use of force and violence against persons or property to intimidate or

coerce a government, the civilian population, or any segment thereof, in furtherance of political or social objectives."

Natural hazards that have harmed the County in the past are likely to happen in the future. Consequently, the process of risk assessment includes determining whether the hazard has occurred previously. Approaches to collecting historical hazard data include researching newspapers and other records, conducting a planning document and report literature review in all relevant hazard subject areas, gathering hazard-related GIS data, and engaging in conversation with relevant experts from the community.

5.1.1. *Levels of Risk*

The level of risk associated with each hazard in each jurisdiction was also estimated and assigned a risk level of high, medium, or low depending on several factors unique to that hazard. The hazards assessed were both natural and human-caused.

Probability of future events are described in the plan as:

- Highly Likely – Occurs at intervals of 1 – 10 years
- Likely - Occurs at intervals of 10 - 50 years
- Somewhat Likely - Occurs at intervals greater than every 50 years

Analyzing risk involves evaluating vulnerable assets, describing potential impacts, and estimating losses for each hazard. Vulnerability describes the degree to which an asset is susceptible to damage from a hazard. Vulnerability also depends on an asset's construction, contents, and the economic value of its functions.

Like indirect damages, the vulnerability of one element of the community is often related to the vulnerability of another. Often, indirect effects can be much more widespread and damaging than direct effects. Risk analysis predicts the extent of injury and damage that may result from a hazard event of a given intensity within an area. It identifies the effects of natural and human-caused hazard events by estimating the relative exposure of existing and future population, land development, and infrastructure to hazardous conditions.

The analysis helps set mitigation priorities by allowing local jurisdictions to focus attention on areas most likely to be damaged or most likely to require early emergency response during a hazard event.

Exposure analysis identifies the existing and future assets located in an identified hazard area. It can quantify the number, type and value of structures, critical facilities, and infrastructure located in those areas, as well as assets exposed to multiple hazards. It can also be used to quantify the number of future structures and infrastructure possible in hazard prone areas based on zoning and building codes.

5.2. Hazard Assessment Summary

The planning team reviewed the hazards identified in the 2018 Hazard Mitigation Plan and evaluated each to see if they still posed a risk to the jurisdiction. In addition, the hazards listed in the FEMA Local Mitigation Planning Handbook were also reviewed to determine if they should be added to the list of hazards to include in the plan revision.

Hazard identification is the process of identifying all hazards that threaten an area, including both natural and human-caused events. In the hazard identification stage, the planning team determined hazards that potentially threaten the city of Chula Vista.

All hazards identified by FEMA included: avalanche, coastal storm, coastal erosion, dam failure, drought/water supply, earthquake, expansive soils, extreme heat, flooding, hailstorm, house/building fire, land subsidence, landslide, liquefaction, severe winter storm, tornado, tsunami, wildfire, windstorm, and volcano.

Although not required by the FEMA Disaster Mitigation Act of 2000, human-caused hazards, such as hazardous materials release, nuclear materials release, and terrorism, were also reviewed by the planning team. Climate change was also reviewed and discussed as potential hazard.

The hazard screening process involved narrowing the all-inclusive list of hazards to those most threatening to the city. The screening effort required extensive input from a variety of stakeholders, including representatives from County agencies, special districts, community members, and the private sector.

The City received significant support from the County of San Diego Office of Emergency Services (County OES), County Geographic Information Systems (GIS) experts from the County of San Diego's Planning and Development Services, and used information from FEMA and other nationally and locally available databases to map the hazards, infrastructure, critical facilities, and land uses. This mapping effort was utilized in the hazard screening process to identify the top hazards with the greatest impact on the City.

5.2.1. Hazard Classifications

Definitions for Classifications
Location (Geographic Area Affected)

- **Negligible:** Less than 10 percent of planning area or isolated single-point occurrences
- **Limited:** 10 to 25 percent of the planning area or limited single-point occurrences
- **Significant:** 25 to 75 percent of planning area or frequent single-point occurrences
- **Extensive:** 75 to 100 percent of planning area or consistent single-point occurrences

Maximum Probable Extent (Magnitude/Strength based on historic events or future probability)

- **Weak:** Limited classification on scientific scale, slow speed of onset or short duration of event, resulting in little to no damage

- **Moderate:** Moderate classification on scientific scale, moderate speed of onset or moderate duration of event, resulting in some damage and loss of services for days
- **Severe:** Severe classification on scientific scale, fast speed of onset or long duration of event, resulting in devastating damage and loss of services for weeks or months
- **Extreme:** Extreme classification on scientific scale, immediate onset or extended duration of event, resulting in catastrophic damage and uninhabitable conditions

Hazard	Scale / Index	Weak	Moderate	Severe	Extreme
Drought	Palmer Drought Severity Index3	-1.99 to +1.99	-2.00 to -2.99	-3.00 to -3.99	-4.00 and below
Earthquake	Modified Mercalli Scale4	I to IV	V to VII	VII	IX to XII
	Richter Magnitude5	2, 3	4, 5	6	7, 8
Hurricane Wind	Saffir-Simpson Hurricane Wind Scale6	1	2	3	4, 5
Tornado	Fujita Tornado Damage Scale7	F0	F1, F2	F3	F4, F5

Probability of Future Events

- **Unlikely:** Less than 1 percent probability of occurrence in the next year or a recurrence interval of greater than every 100 years.
- **Occasional:** 1 to 10 percent probability of occurrence in the next year or a recurrence interval of 11 to 100 years.
- **Likely:** 10 to 90 percent probability of occurrence in the next year or a recurrence interval of 1 to 10 years
- **Highly Likely:** 90 to 100 percent probability of occurrence in the next year or a recurrence interval of less than 1 year.

Overall Significance

- **Low:** Two or more criteria fall in lower classifications, or the event has a minimal impact on the planning area. This rating is sometimes used for hazards with a minimal or unknown record of occurrences or for hazards with minimal mitigation potential.
- **Medium:** The criteria fall mostly in the middle ranges of classifications and the event's impacts on the planning area are noticeable but not devastating. This rating is sometimes used for hazards with a high extent rating but very low probability rating.
- **High:** The criteria consistently fall in the high classifications and the event is likely/highly likely to occur with severe strength over a significant to extensive portion of the planning area.

- *Cumulative meteorological drought and wet conditions: http://ncdc.noaa.gov/*
- *Earthquake intensity and effect on population and structures: http://earthquake.usgs.gov*
- *Earthquake magnitude as a logarithmic scale, measured by a seismograph: http://earthquake.usgs.gov*
- *Hurricane rating based on sustained wind speed: http://nhc.noaa.gov*
- *Tornado rating based on wind speed and associated damage: http://spc.noaa.gov*

The table below is a summary of the hazards reviewed and their significance to the city:

Hazard	Location (Geographic Area Affected)	Maximum Probable Extent (Magnitude/Strength)	Probability of Future Events	Overall Significance Ranking
Avalanche	**Negligible**	**Weak**	**Unlikely**	**Low**
Climate Change	**Extensive**	**Moderate**	**Likely**	**Medium**
Dam Failure	**Significant**	**Moderate**	**Unlikely**	**Low**
Drought	**Negligible**	**Moderate**	**Occasional**	**Low**
Earthquake	**Significant**	**Severe**	**Likely**	**High**
Erosion	**Limited**	**Weak**	**Unlikely**	**Low**
Expansive Soils	**Extensive**	**Weak**	**Unlikely**	**Low**
Extreme Cold	**Extensive**	**Weak**	**Unlikely**	**Low**
Extreme Heat	**Extensive**	**Moderate**	**Occasional**	**Medium**
Flood	**Significant**	**Moderate**	**Occasional**	**Medium**
Hail	**Extensive**	**Weak**	**Unlikely**	**Low**
Hurricane	**Negligible**	**Weak**	**Unlikely**	**Low**
Landslide	**Negligible**	**Weak**	**Unlikely**	**Low**
Lightning	**Extensive**	**Weak**	**Unlikely**	**Low**
Sea Level Rise	**Negligible**	**Weak**	**Unlikely**	**Low**
Severe Wind	**Extensive**	**Moderate**	**Occasional**	**Medium**
Severe Winter Weather	**Significant**	**Moderate**	**Occasional**	**Low**
Storm Surge	**Negligible**	**Weak**	**Unlikely**	**Low**
Subsidence	**Extensive**	**Weak**	**Unlikely**	**Low**
Tornado	**Negligible**	**Weak**	**Unlikely**	**Low**
Tsunami	**Negligible**	**Weak**	**Unlikely**	**Low**
Wildfire	**Significant**	**Extreme**	**Likely**	**High**

TABLE 11: FEMA LOCAL MITIGATION PLANNING HANDBOOK WORKSHEET 5.1 DATA.

5.3. Hazard Profiles

The following is a brief rationale of what has been determined as the most significant hazards in the city of Chula Vista.

Wildfire/Structure Fire

Description of Hazard

A structure fire hazard is one where there is a risk of a fire starting in an urban setting and spreading uncontrollably from one building to another across several city blocks, or within high-rise buildings.

A wildfire is an uncontrolled fire spreading through vegetative fuels and exposing or possibly consuming structures. They often begin unnoticed and spread quickly. Naturally occurring and non-native species of grasses, brush, and trees fuel wildfires.

A wildfire is in a wildland area in which development is essentially nonexistent—except for roads, railroads, power lines and similar facilities. An Urban-Wildland/Urban Interface fire is a wildfire in a geographical area where structures and other human development meet or intermingle with wildland or vegetative fuels. Areas that have experienced prolonged droughts or are excessively dry are at risk of wildfires.

Nature of Hazard

Chula Vista has several residential communities and commercial structures built in and around many wildland and open space areas. A number of these structures were developed prior to the enactment of the City's Urban-Wildland interface Code in 2000. Additionally, Chula Vista abuts a rural mountainous region on the eastern boundary of the city that is rated as a very high fire hazard severity zone. Furthermore, Chula Vista is home to a large transient population, a community who often causes accidental vegetation fires throughout the year in the City's riverbeds and open space areas. Couple these factors with the ongoing southern California drought and growing impacts of climate change, wildland/structure fires present the greatest hazard to the City of Chula Vista.

Past Occurrences

Chula Vista has an average of 42 vegetation fires per year, and any one of these fires, under the right conditions, could expand into a major incident. Chula Vista has experienced major historical fires in 2003 and 2007 and natural vulnerabilities to major wildfires continue to exist.

Significance, Likelihood and Probability

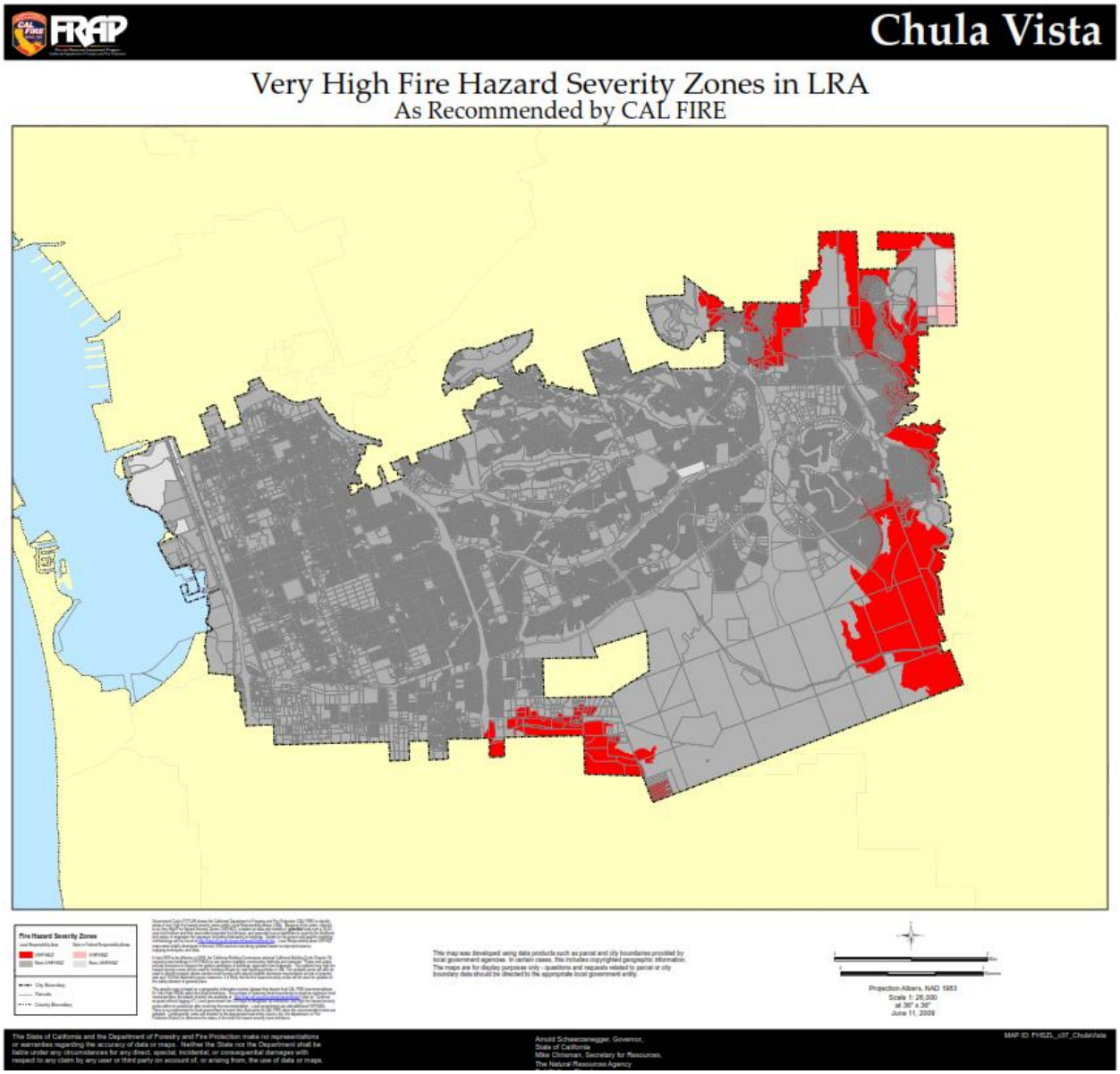
Wildfire is rated as a "high" hazard within the City because of the amount of open space and canyon areas that are located in the center city. These areas, if involved in a wildland fire, have the potential to affect a majority of the City's population. The wildfire criteria consistently fall in the high classifications and the event is likely/highly likely to occur with severe strength over a significant to extensive portion of the planning area. Wildfire conditions could be extreme, and

there is 90 to 100 percent probability of occurrence in the next year or a recurrence interval of less than 1 year.

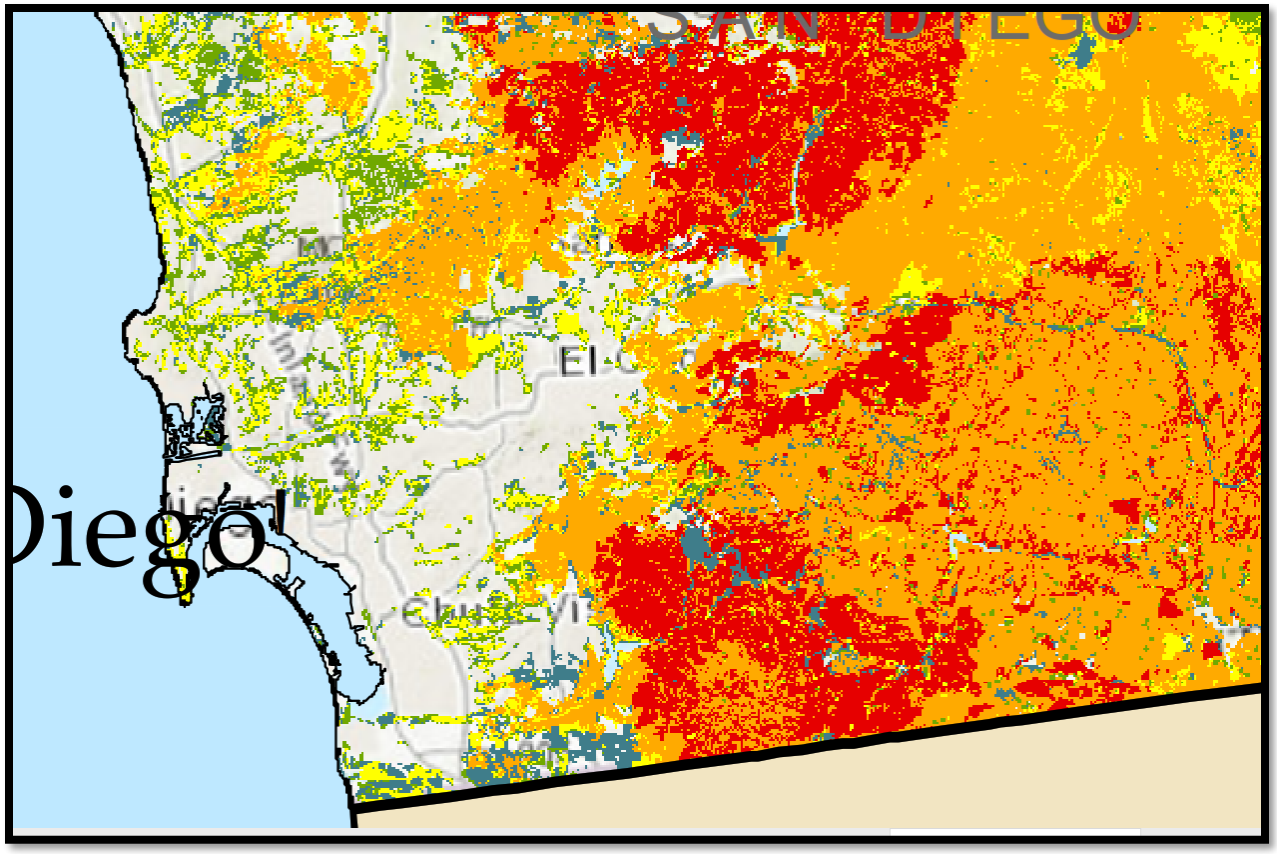
Location

The figures below display the location and extent of the profiled fire hazard areas for Chula Vista:

Chula Vista Fire Hazard Severity Zones

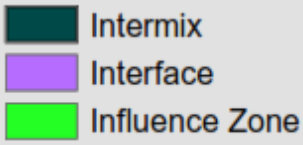


Chula Vista – Fire Threat


SAN DIEGO
Diego

Chula Vista – Wildland Urban Interface

WILDLAND URBAN INTERFACE (WUI)



This dataset was developed for the 2015 Assessment of Forest and Rangelands. It is derived from several data sources, including housing density (input_lsn_HousingDensity12_2), Fire Hazard Severity Zones (FHSZ_Assessment11_1), Unimproved Parcels (input_UnimprovedParcels16_1), and Vegetation Cover (input_FVEG15_2). The current dataset is appropriate for displaying the overall pattern of WUI development at the county level, and comparing counties in terms of development patterns. Until the dataset is refined through a field review process, it is not suited for WUI designations for individual houses or neighborhoods.

Housing Density Classes used in the WUI definitions:

1 - Less than one house per 20 acres
2 - One house per 20 acres to one house per 5 acres
3 - More than one house per 5 acres to 1 house per acre
4 - More than 1 house per acre

Wildland Urban Interface is dense housing adjacent to vegetation that can burn in a wildfire and must meet these criteria:

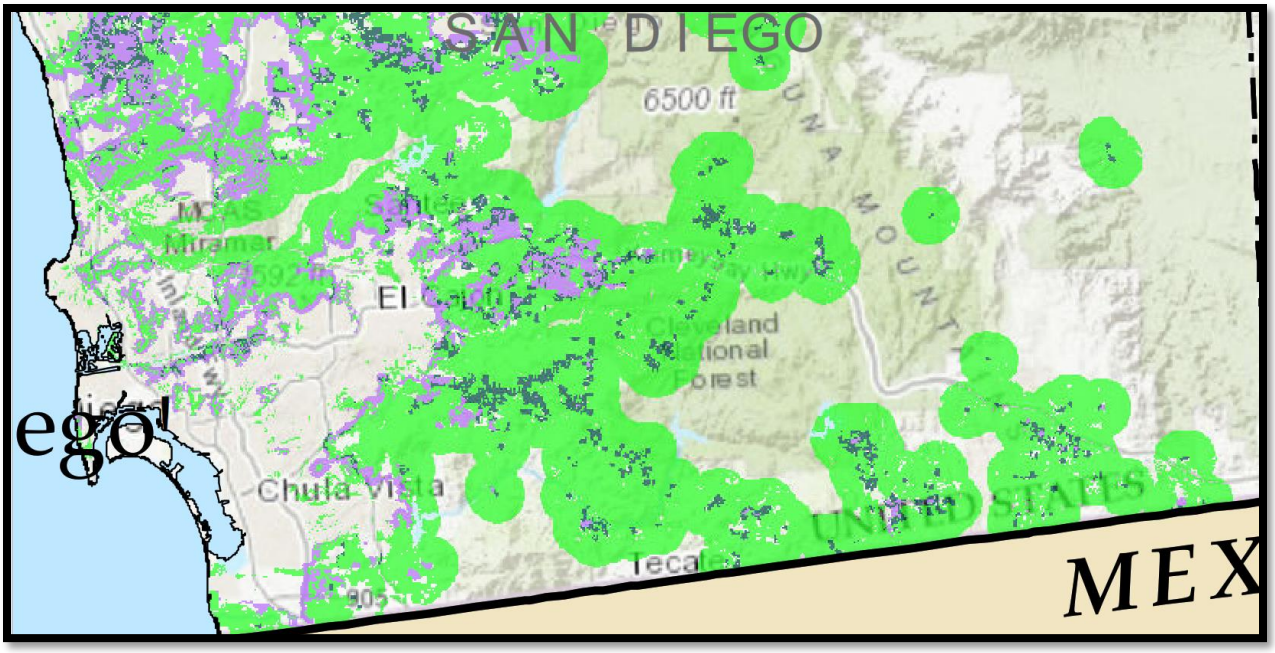
- Housing density class 2, 3 or 4
- In moderate, high, or very high Fire Hazard Severity Zone
- Not dominated by wildland vegetation (i.e., lifeform not herbaceous, hardwood, conifer or shrub)
- Spatially contiguous groups of 30m cells that are10 acres and larger

Wildland Urban Intermix is housing development interspersed in an area dominated by wildland vegetation subject to wildfire and must meet these criteria:

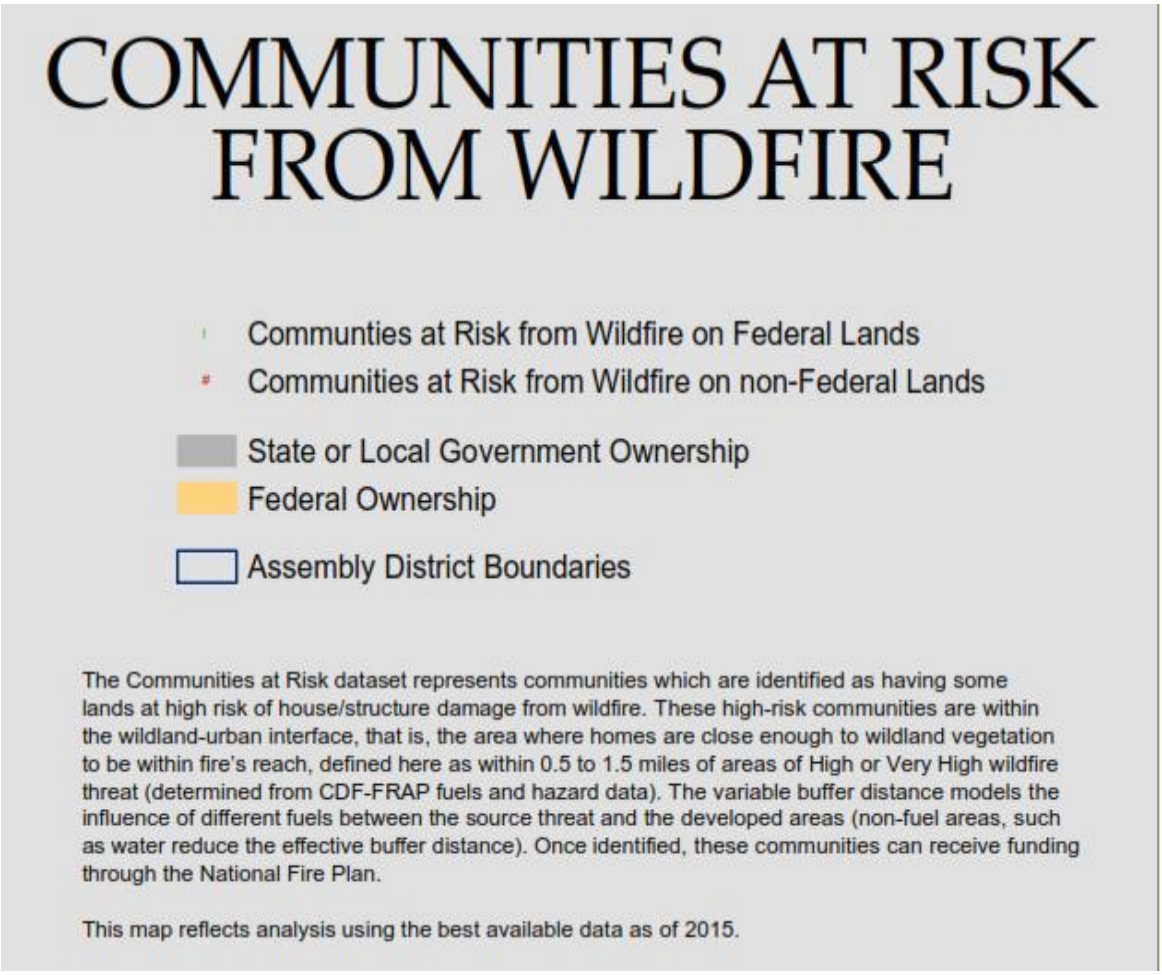
- Not Interface
- Housing density class 2
- Housing density class 3, 4 dominated by wildland vegetation
- In Moderate, High or Very High Fire Hazard Severity Zone
- Improved parcels only
- Spatially contiguous groups of 30m cells 25 acres and larger

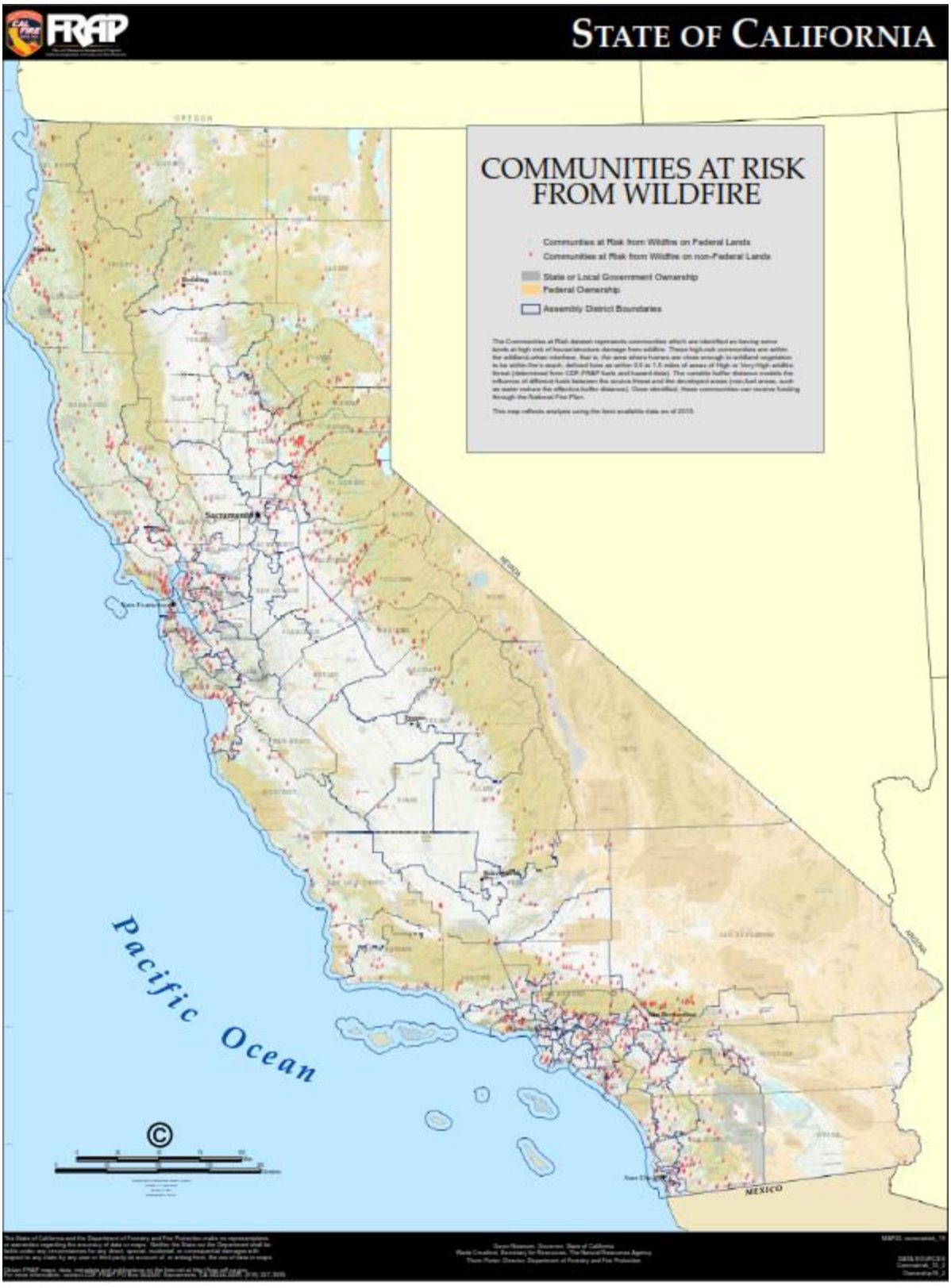
Wildfire Influence Zone is wildfire susceptible vegetation up to 1.5 miles from Wildland Urban Interface or Wildland Urban Intermix and must meet these criteria:

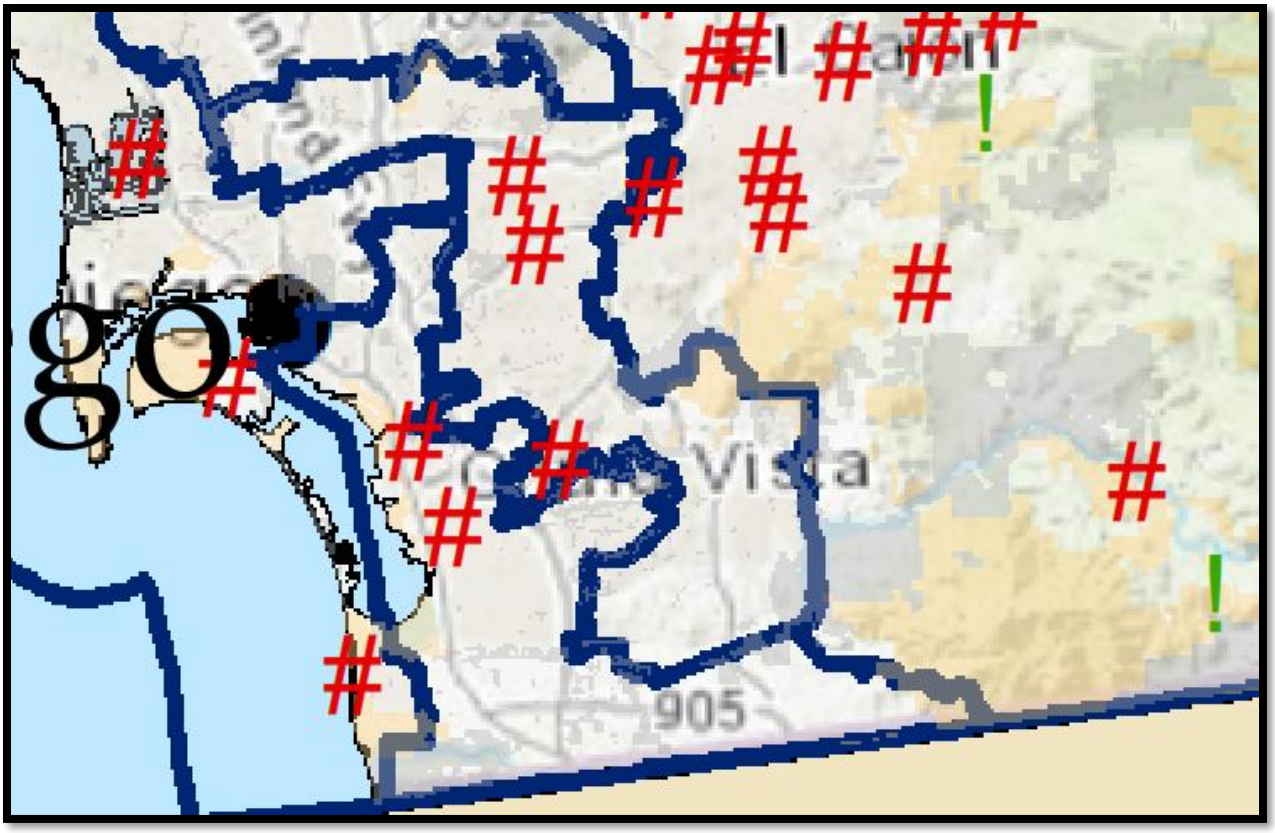
- Wildland vegetation up to 1.5 miles from Interface or Intermix



[Chula Vista – Communities at Risk from Wildfire]




FRAP
STATE OF CALIFORNIA
COMMUNITIES AT RISK FROM WILDFIRE
Communities at Risk from Wildfire on Federal Lands
Communities at Risk from Wildfire on non-Federal Lands
State or Local Government Ownership
Federal Ownership
Assembly District Boundaries
OREGON
NEVADA
ARIZONA
MEXICO
Sacramento
Pacific Ocean



Flooding/Dam Inundation

Description of Hazard

A flood occurs when excess water from snowmelt, rainfall, or storm surge accumulates and overflows onto a river's bank or to adjacent floodplains. Floodplains are lowlands adjacent to rivers, lakes, and oceans that are subject to recurring floods. Most injuries and deaths from flood occur when people are swept away by flood currents, and property damage typically occurs as a result of inundation by sediment-filled water.

Several factors determine the severity of floods, including rainfall intensity and duration. A large amount of rainfall over a short time span can result in flash flood conditions. A sudden thunderstorm or heavy rain, dam failure, or sudden spills can cause flash flooding. The National Weather Service's definition of a flash flood is a flood occurring in a watershed where the time of travel of the peak of flow from one end of the watershed to the other is less than six hours.

Dam failures can result in severe flood events. When a dam fails, a large quantity of water is suddenly released with a great potential to cause human casualties, economic loss, lifeline disruption, and environmental damage. A dam failure is usually the result of age, poor design, or structural damage caused by a major event such as an earthquake or flood.

Nature of Hazard

Significant portions of the southerly, northerly, and westerly-developed areas of the City of Chula Vista are within FEMA-mapped 100-year floodplains. The City continues to reduce the flooding threat due to its emphasis on identifying and prioritizing for improvement a number of undersized and inadequate storm drains and drainage channels since the late 1960's. Additionally the lower end probability of the occurrence of flood-producing storms in any given year and the requirement that new development includes flood-detention and flood control facilities also reduces the City's flood risk. However, there are still several areas in the City that experience nuisance flooding that often causes damage.

Furthermore, the city of Chula Vista is downstream of two major dams – the Savage (Lower Otay) Dam and the Sweetwater Dam – the possibility of dam inundation in and adjacent to the Sweetwater and Otay River Channels exists, although the likelihood of failure of these dams is considered relatively small due to their construction.

Past Occurrences

Chula Vista experienced a dam break incident in 1916, which is known as the Great Flood of 1916, when the Sweetwater Dam broke a swept through the South Bay. The Otay Dam has experienced water overflowing through the spillway in 2017, flooding the Otay River Valley. Although this is a natural occurrence and designed to function as such, these situations require coordinated mitigation and response actions.

Chula Vista also experiences nuisance flooding of roadways and ponding in portions of the City during large rain events. Most recently in 2017, a severe weather storm flooded several properties within the City. The City proclaimed a local emergency for this winter storm event that cost the City over $1 million in response and recovery. According to County provided data, Chula Vista has one repetitive loss property due to flooding.

Significance, Likelihood and Probability

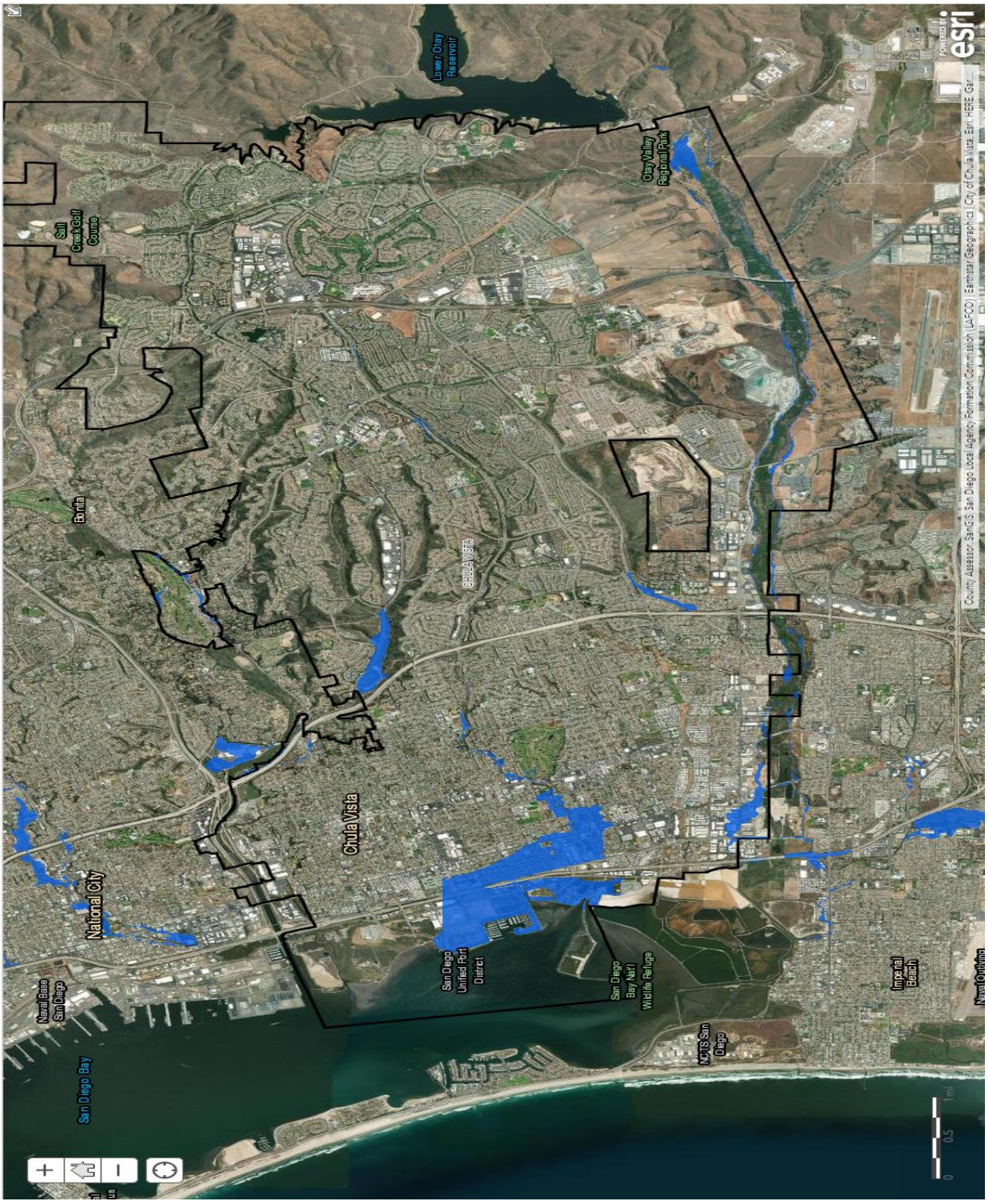
Flooding and dam inundation are rated as a "medium" hazard within the City because of the two large dams that exist within the City and some of the older engineering in portions of the City have experienced flooding problems in the past. The criteria fall mostly in the middle ranges of classifications and the event's impacts on the planning area are noticeable but not devastating. This rating is sometimes used for hazards with a high extent rating but very low probability rating. Additionally, although the severity of complete dam is very high, there is only an occasional probability, a 1 to 10 percent probability of occurrence in the next year or a recurrence interval of 11 to 100 years.

Location

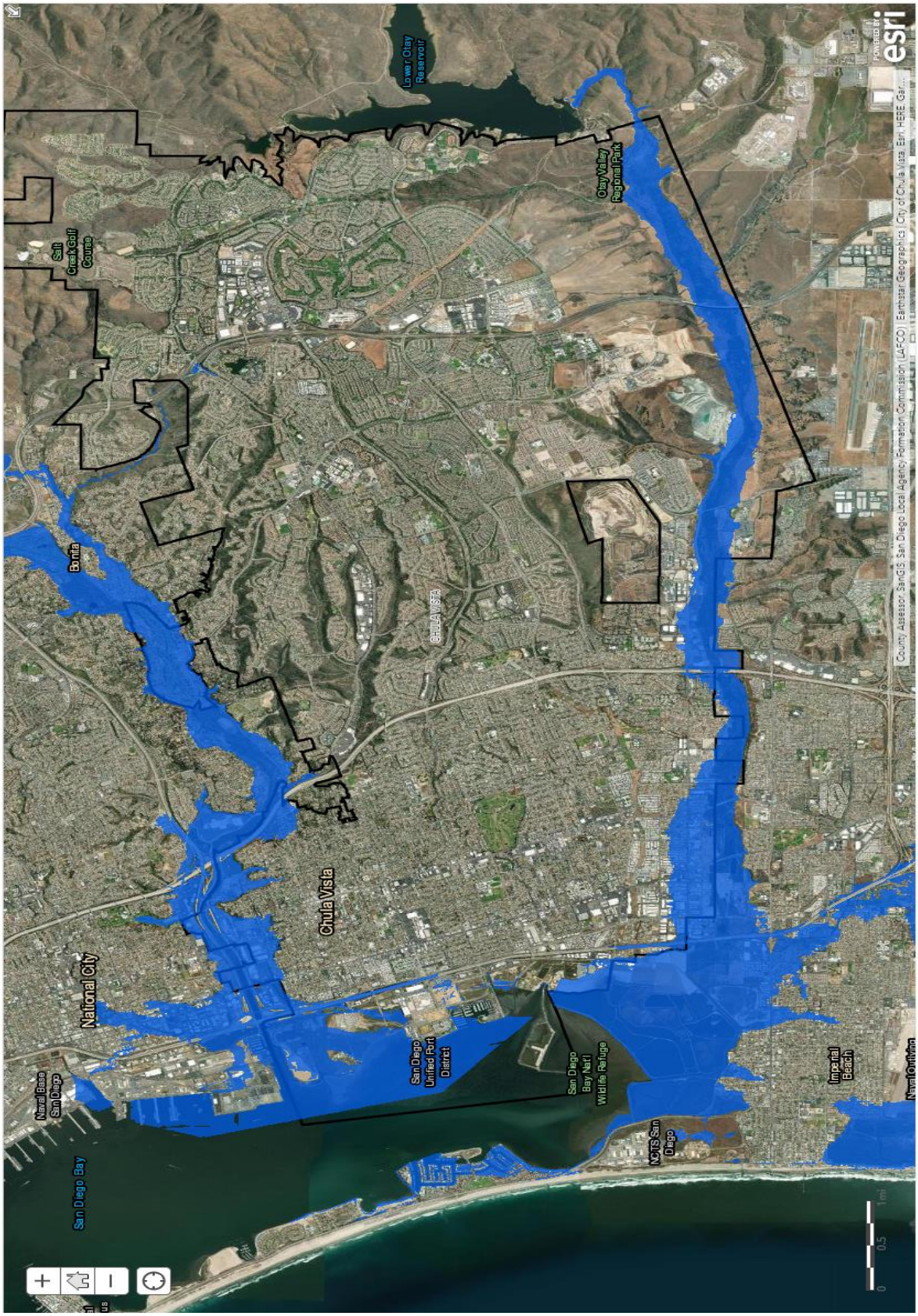
The figures below display the location and extent of the profiled fire hazard areas for Chula Vista:

100-Year Floodplain

500-Year Floodplain



Dam Inundation Areas



Geologic (Earthquake, Landslide, Liquefaction)

Description of Hazard

An earthquake is a sudden motion or trembling that is caused by a release of strain accumulated within or along the edge of the Earth's tectonic plates. The effects of an earthquake can be felt far beyond the site of its occurrence. They usually occur without warning and, after just a few seconds, can cause massive damage and extensive casualties. Common effects of earthquakes are ground motion and shaking, surface fault ruptures, and ground failure. Ground motion is the vibration or shaking of the ground during an earthquake.

When a fault ruptures, seismic waves radiate, causing the ground to vibrate. The severity of the vibration increases with the amount of energy released and decreases with distance from the causative fault or epicenter. Soft soils can further amplify ground motions. The severity of these effects is dependent on the amount of energy released from the fault or epicenter. One way to express an earthquake's severity is to compare its acceleration to the normal acceleration due to gravity. The acceleration due to gravity is often called "g". A 100% g earthquake is very severe.

More damage tends to occur from earthquakes when ground acceleration is rapid. Peak ground acceleration (PGA) is a measure of the strength of ground movement. PGA measures the rate in change of motion relative to the established rate of acceleration due to gravity (980 cm/sec/sec). PGA is used to project the risk of damage from future earthquakes by showing earthquake ground motions that have a specified probability (10%, 5%, or 2%) of being exceeded in 50 years. These ground motion values are used for reference in construction design for earthquake resistance. The ground motion values can also be used to assess relative hazard between sites, when making economic and safety decisions.

Another tool used to describe earthquake intensity is the Richter scale. The Richter scale was devised as a means of rating earthquake strength and is an indirect measure of seismic energy released. The scale is logarithmic with each one-point increase corresponding to a 10-fold increase in the amplitude of the seismic shock waves generated by the earthquake. In terms of actual energy released, however, each one-point increase on the Richter scale corresponds to about a 32-fold increase in energy released. Therefore, a magnitude (M) 7 earthquake is 100 times (10 X 10) more powerful than a M5 earthquake and releases 1,024 times (32 X 32) the energy. An earthquake generates different types of seismic shock waves that travel outward from the focus or point of rupture on a fault. Seismic waves that travel through the earth's crust are called body waves and are divided into primary (P) and secondary (S) waves. Because P waves move faster (1.7 times) than S waves they arrive at the seismograph first. By measuring the time delay between arrival of the P and S waves and knowing the distance to the epicenter, seismologists can compute the Richter scale magnitude for the earthquake.

The Modified Mercalli Scale (MMI) is another means for rating earthquakes, but one that attempts to quantify intensity of ground shaking. Intensity under this scale is a function of distance from the epicenter (the closer to the epicenter the greater the intensity), ground acceleration, duration of ground shaking, and degree of structural damage. This rates the level of severity of an earthquake by the amount of damage and perceived shaking, as displayed in the table below:

MMI Value	Description of Shaking Severity	Summary Damage Description Used on 1995 Maps	Full Description
I.			Not felt
II.			Felt by persons at rest, on upper floors, or favorably placed.
III.			Felt indoors. Hanging objects swing. Vibration like passing of light trucks. Duration estimated. May not be recognized as an earthquake.
IV.			Hanging objects swing. Vibration like passing of heavy trucks; or sensation of a jolt like a heavy ball striking the walls. Standing motorcars rock. Windows, dishes, doors rattle. In the upper range of IV, wooden walls and frame creak.
V.	Light	Pictures Move	Felt outdoors; direction estimated. Sleepers wakened. Liquids disturbed, some spilled. Small unstable objects displaced or upset. Doors swing, close, open. Shutters, pictures move. Pendulum clock stop, start, change rate.
VI.	Moderate	Objects Fall	Felt by all. Many frightened and run outdoors. Persons walk unsteadily. Windows, dishes, glassware broken. Knickknacks, books, etc., off shelves. Pictures off walls. Furniture moved or overturned. Weak plaster and masonry D cracked.
VII.	Strong	Nonstructural Damage	Difficult to stand. Noticed by drivers of motorcars. Hanging objects quiver. Furniture broken. Damage to masonry D, including cracks. Weak chimneys broken at roofline. Fall of plaster, loose bricks, stones, tiles, cornices. Some cracks in masonry C. Small slides and caving in along sand or gravel banks. Concrete irrigation ditches damaged.
VIII.	Very Strong	Moderate Damage	Steering of motorcars affected. Damage to masonry C, partial collapse. Some damage to masonry B; none to masonry A. Fall of stucco and some masonry walls. Twisting, fall of chimneys, factory stacks, monuments, towers, and elevated tanks. Frame houses moved on foundations if not bolted down; loose panel walls thrown out. Cracks in wet ground and on steep slopes.
IX.	Very Violent	Extreme Damage	Most masonry and frame structures destroyed with their foundations. Some well-built wooden structures and bridges destroyed. Serious damage to dams, dikes, embankments. Large landslides. Water thrown on banks of canals, rivers, lakes, etc. Sand and mud shifted horizontally on beaches and flat land.
X.			Rails bent greatly. Underground pipelines completely out of services.
XI.			Damage nearly total. Large rock masses displaced. Lines of sight and level distorted. Objects thrown into air.

Nature of Hazard

Due to its relative distance from the closest known active earthquake fault (Rose Canyon Fault), the city of Chula Vista is at low to moderate earthquake shaking potential, with the majority of risk confined to the western portion of the city. The most shaking would come from the Rose Canyon Fault scenario. The landslide threat is focused in the older developed areas around steep canyon slopes of known slide potential. The threat of liquefaction is relatively low; however, the alluvial areas of the Sweetwater and Otay Rivers and the Telegraph Canyon Channel are subject to liquefaction in both developed and undeveloped areas.

Past Occurrences

Historically, shaking from several earthquakes has been felt in Chula Vista but no identifiable damage has been reported as a result.

Significance, Likelihood and Probability

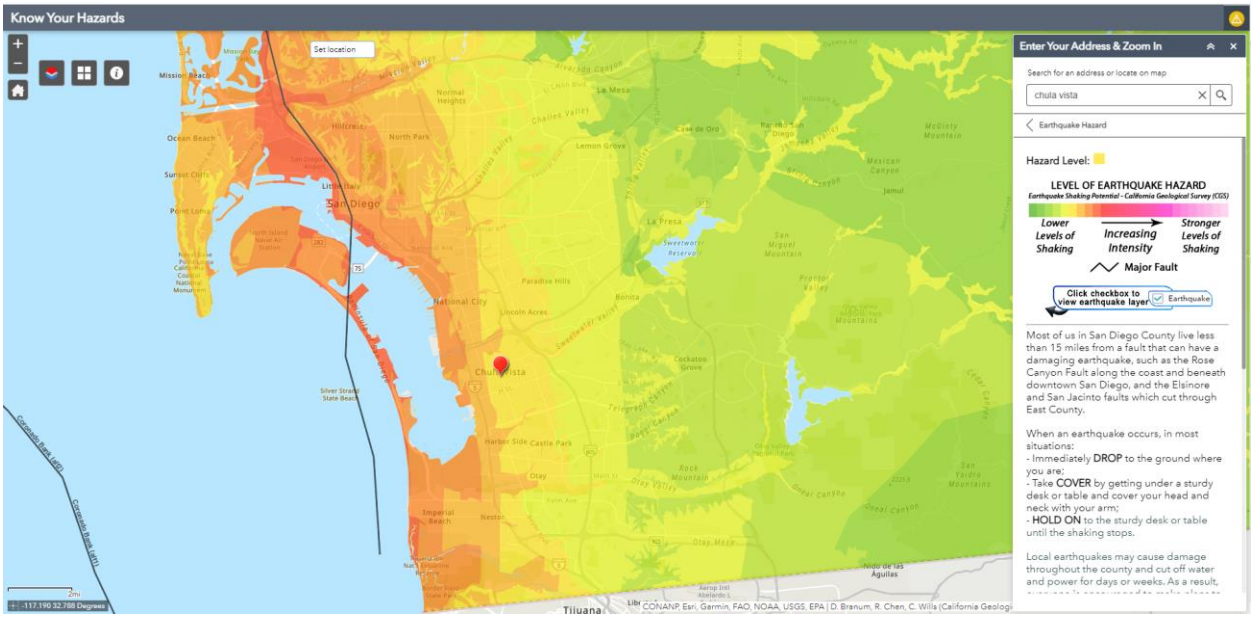
Earthquakes are listed as a "high" hazard significance for Chula Vista because of its close proximity to known fault zones and the construction of the west side of the City prior to established building codes.

The criteria for earthquake consistently fall in the high classifications and the event is likely/highly likely to occur with severe strength over a significant portion of the city. Earthquakes are common in southern California and are likely to occur, with a 10 to 90 percent probability of occurrence in the next year or a recurrence interval of 1 to 10 years.

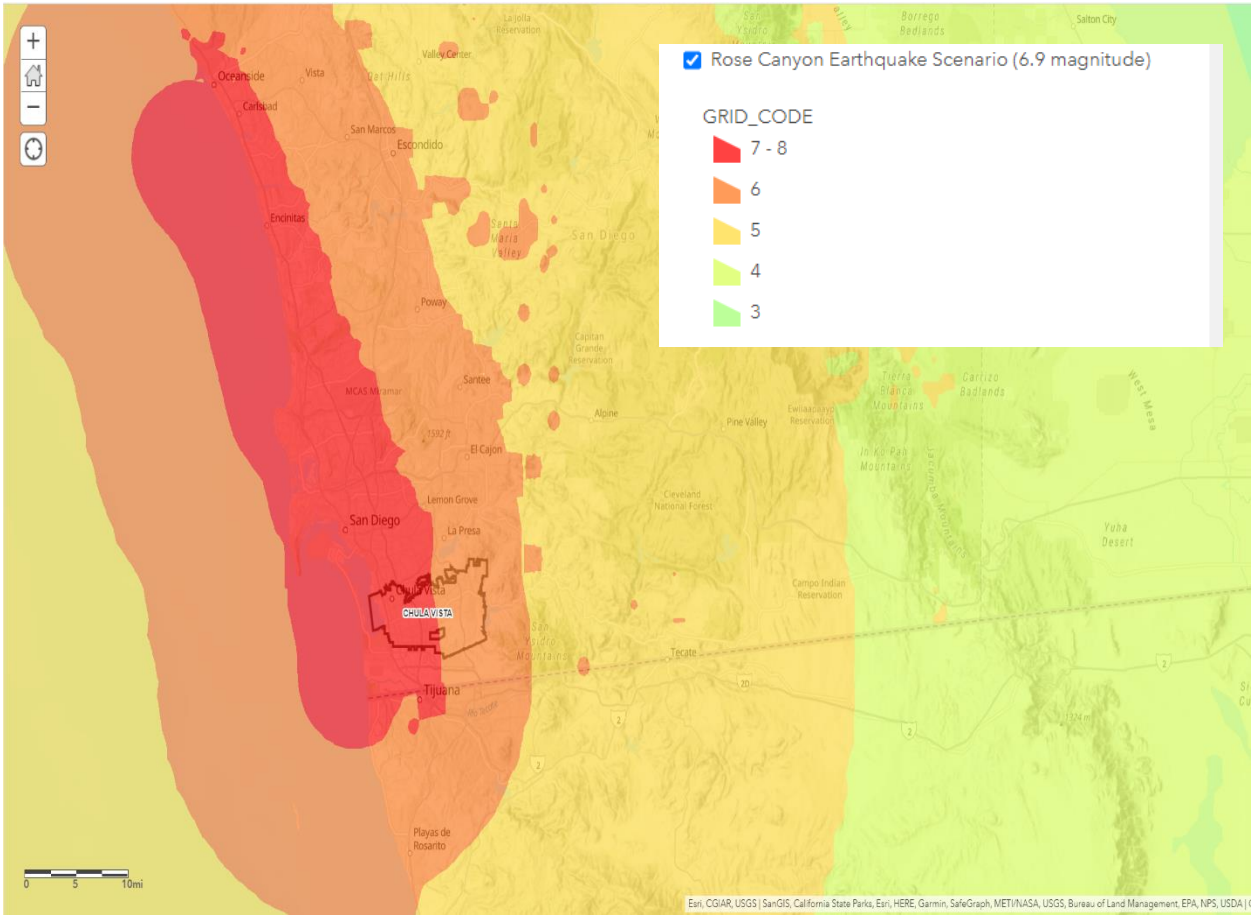
Location

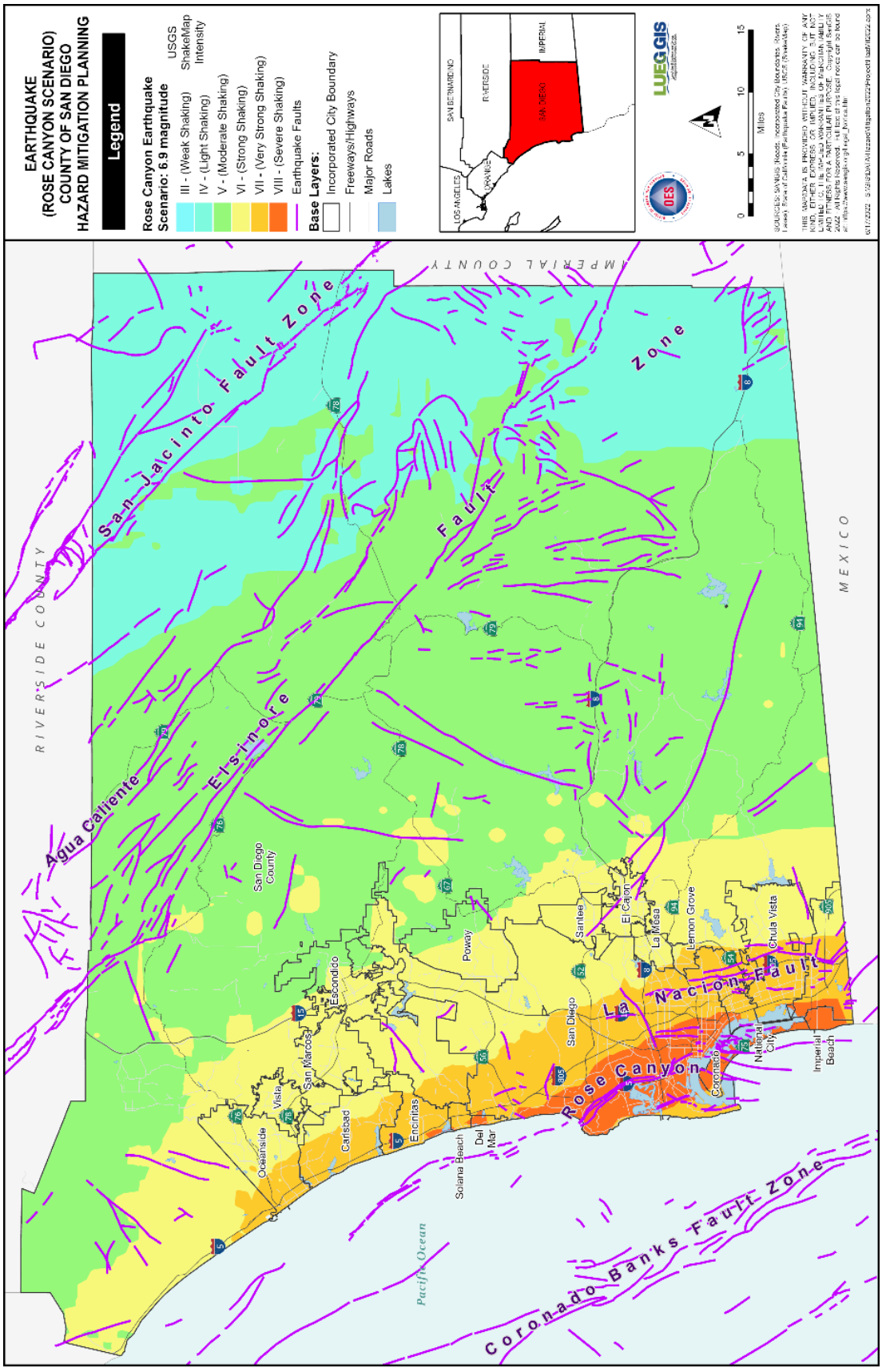
The figures below display the location and extent of the profiled earthquake hazard areas for Chula Vista:

Know Your Hazards – Earthquake (Chula Vista)

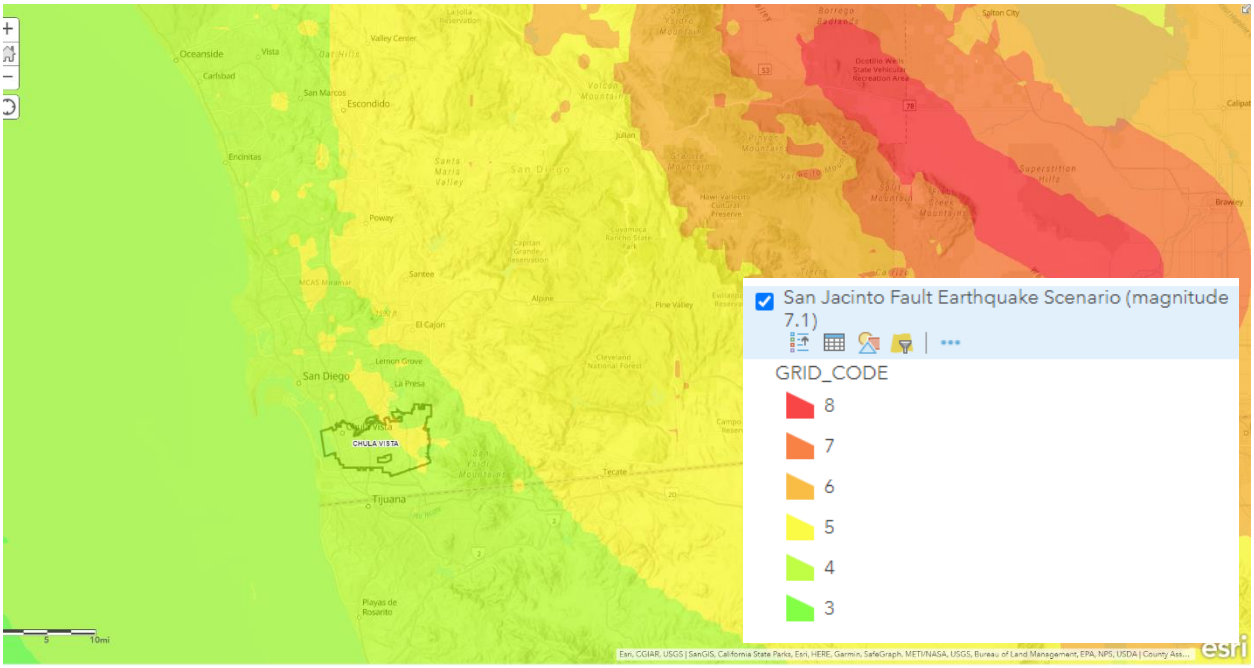


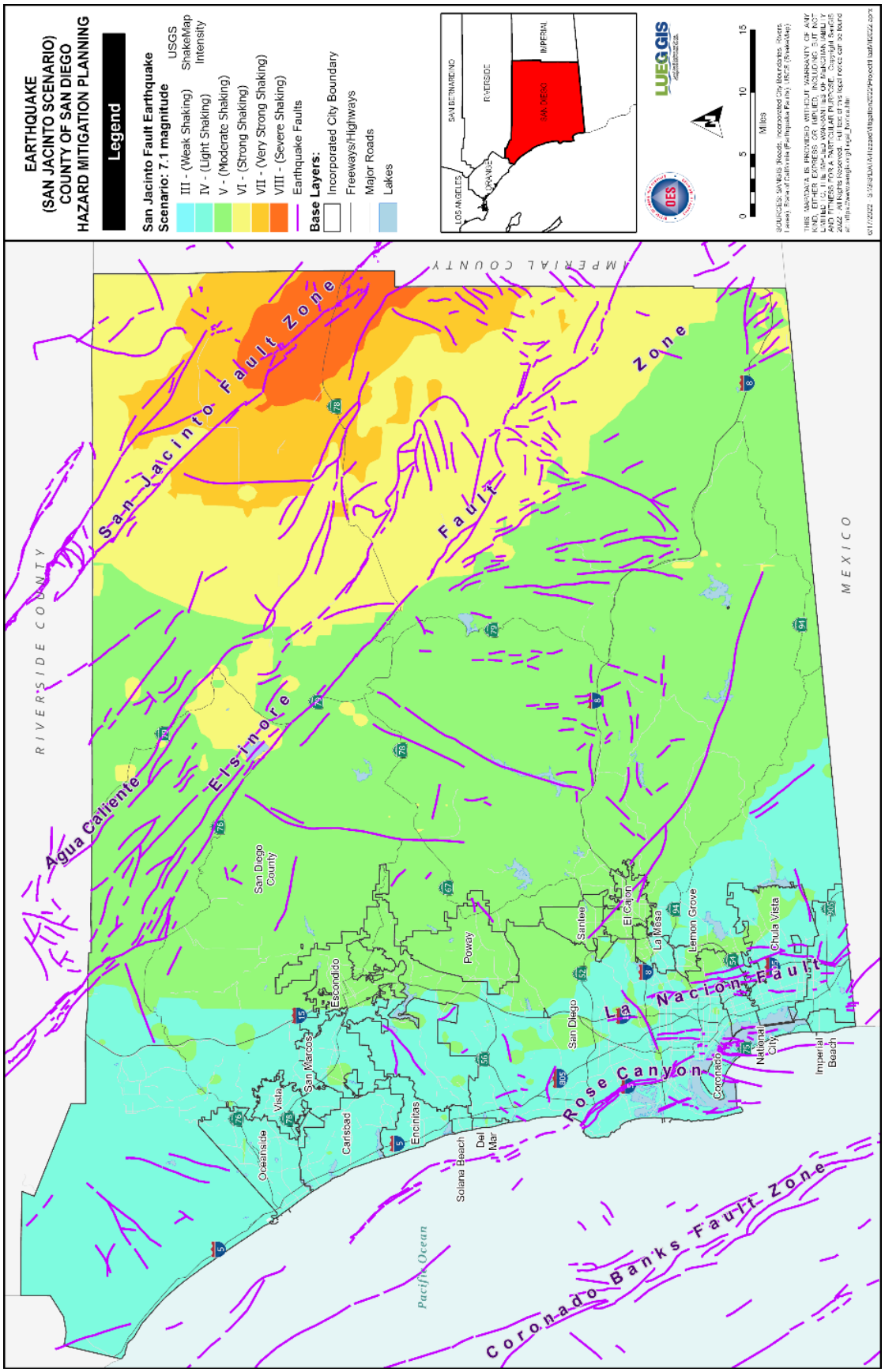
Earthquake - Rose Canyon Scenario (Magnitude 6.9)



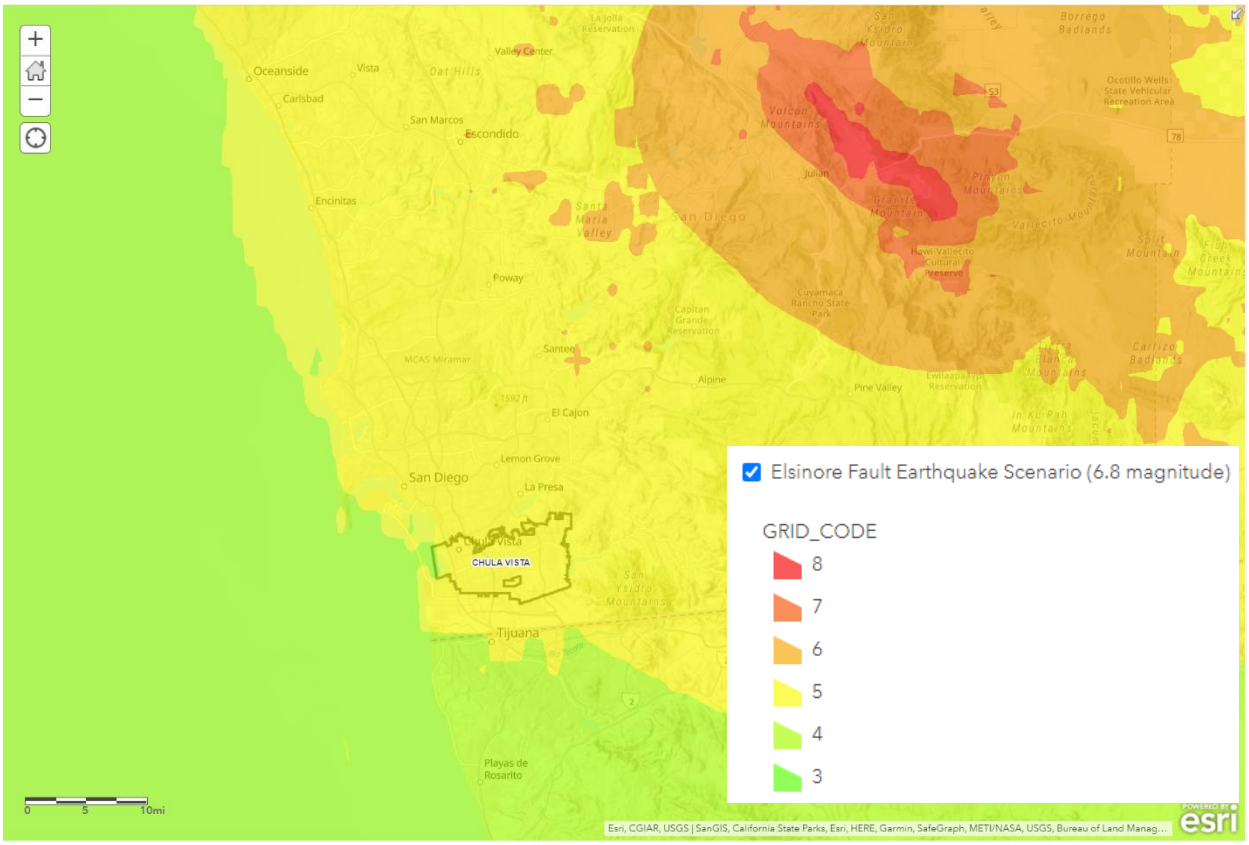

EARTHQUAKE
(ROSE CANYON SCENARIO)
COUNTY OF SAN DIEGO
HAZARD MITIGATION PLANNING
Legend
Rose Canyon Earthquake Scenario: 6.9 magnitude
USGS ShakeMap Intensity
III - (Weak Shaking)
IV - (Light Shaking)
V - (Moderate Shaking)
VI - (Strong Shaking)
VII - (Very Strong Shaking)
VIII - (Severe Shaking)
Earthquake Faults
Base Layers:
Incorporated City Boundary
Freeways/Highways
Major Roads
Lakes
SAN BERNARDINO
RIVERSIDE
IMPERIAL
LOS ANGELES
ORANGE
SAN DIEGO
LUEG GIS
OES
Miles
IMPERIAL COUNTY
RIVERSIDE COUNTY
MEXICO
San Jacinto Fault Zone
Elsinore Fault Zone
Agua Caliente
San Diego County
Escondido
Poway
Santee
El Cajon
La Mesa
Lemon Grove
Chula Vista
San Marcos
Vista
Oceanside
Cardiff
Encinitas
Solana Beach
Del Mar
San Diego
La Nacion Fault
Rose Canyon
National City
Coronado
Imperial Beach
Pacific Ocean
Coronado Banks Fault Zone

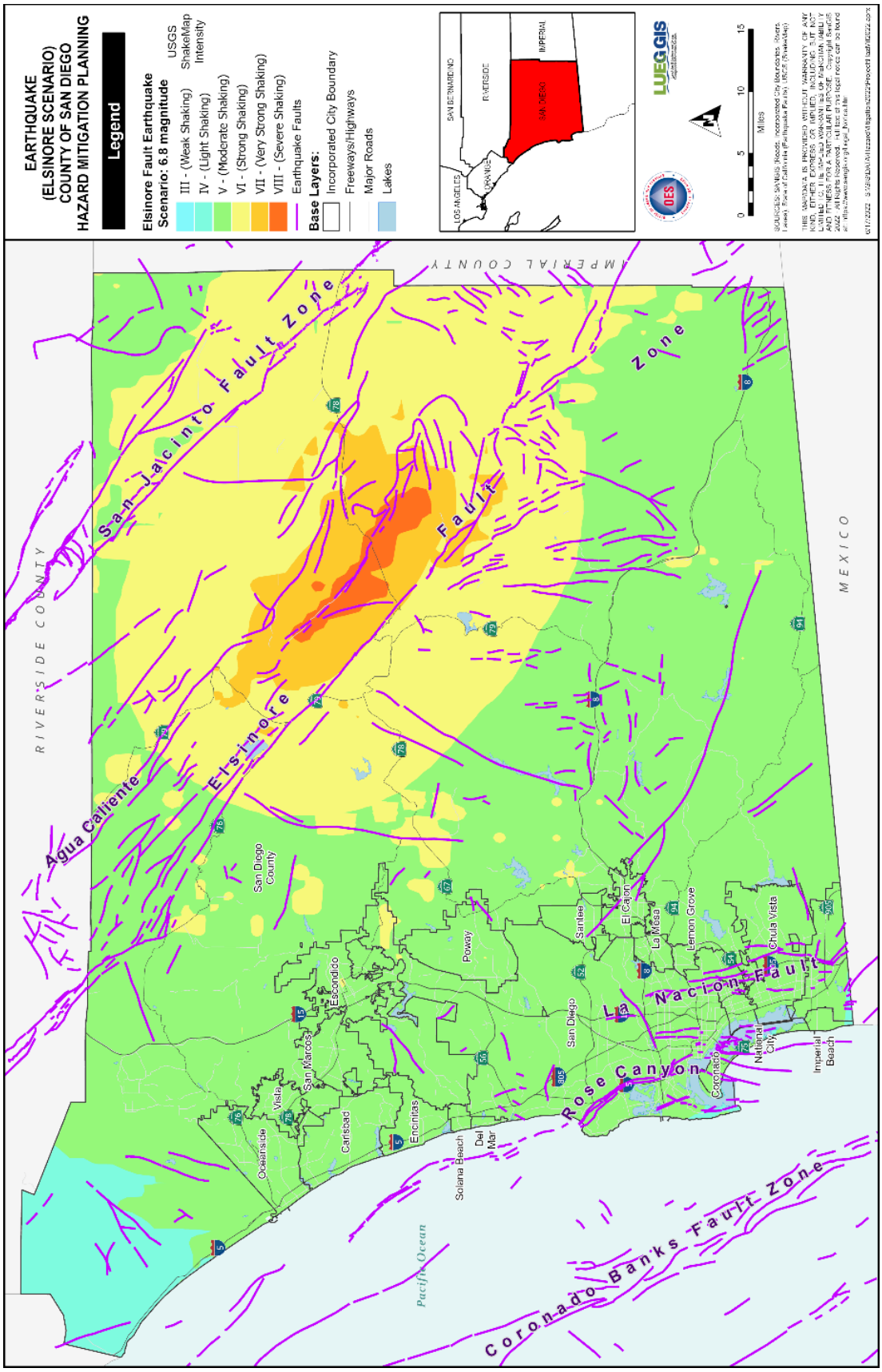
Earthquake - Mt. San Jacinto Fault Scenario (Magnitude 7.1)




EARTHQUAKE
(SAN JACINTO SCENARIO)
COUNTY OF SAN DIEGO
HAZARD MITIGATION PLANNING
Legend
San Jacinto Fault Earthquake
Scenario: 7.1 magnitude
USGS ShakeMap Intensity
III - (Weak Shaking)
IV - (Light Shaking)
V - (Moderate Shaking)
VI - (Strong Shaking)
VII - (Very Strong Shaking)
VIII - (Severe Shaking)
Earthquake Faults
Base Layers:
Incorporated City Boundary
Freeways/Highways
Major Roads
Lakes
SAN BERNARDINO
RIVERSIDE
IMPERIAL
SAN DIEGO
LOS ANGELES
ORANGE
LUEGGIS
OES
0
5
10
15
Miles
RIVERSIDE COUNTY
IMPERIAL COUNTY
MEXICO
San Jacinto Fault Zone
Elsinore Fault Zone
Agua Caliente
San Diego County
Oceanside
Vista
San Marcos
Escondido
Carlsbad
Encinitas
Solana Beach
Del Mar
Poway
Santee
El Cajon
La Mesa
Lemon Grove
Chula Vista
San Diego
La Nacion Fault
Rose Canyon
Coronado
National City
Imperial Beach
Pacific Ocean
Coronado Banks Fault Zone

Earthquake - Elsinore Fault Scenario (Magnitude 6.8)




EARTHQUAKE
(ELSINORE SCENARIO)
COUNTY OF SAN DIEGO
HAZARD MITIGATION PLANNING
Legend
Elsinore Fault Earthquake
Scenario: 6.8 magnitude
USGS ShakeMap Intensity
III - (Weak Shaking)
IV - (Light Shaking)
V - (Moderate Shaking)
VI - (Strong Shaking)
VII - (Very Strong Shaking)
VIII - (Severe Shaking)
Earthquake Faults
Base Layers:
Incorporated City Boundary
Freeways/Highways
Major Roads
Lakes
SAN BERNARDINO
RIVERSIDE
IMPERIAL
SAN DIEGO
LOS ANGELES
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RIVERSIDE COUNTY
MEXICO
San Jacinto Fault Zone
Elsinore Fault Zone
Agua Caliente
San Diego County
Escondido
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Poway
Santee
El Cajon
La Mesa
Lemon Grove
Chula Vista
San Diego
National City
Coronado
Imperial Beach
La Nacion Fault
Rose Canyon
Coronado Banks Fault Zone
Pacific Ocean

Soil Liquefaction Areas

Climate Change Risks

Description of Hazard

Climate change refers to long-term shifts in temperatures and weather patterns. These shifts may be natural, such as through variations in the solar cycle. Climate change changes the usual weather found in a particular place. This could be a change in how much rain a place usually gets in a year. Or it could be a change in a place's usual temperature for a month or season. Climate change affects the frequency and intensity of the various weather conditions. The consequences of climate change now include, among others, intense and longer periods of drought, water scarcity, more frequent and severe wildfires, rising sea levels, flooding, and catastrophic storms.

Nature of Hazard

While the City of Chula Vista enjoys a mild, Mediterranean climate the community is still susceptible to extreme weather events, which are being amplified by climate change. Scientists have seen that average San Diego County temperatures have increased 3□F over historical averages and forecast average summer temperatures will be 5□F to 10□F warmer by the end of the century, with extreme heat events also becoming more frequent and intense in the region. These heat events present a direct hazard to residents without air-conditioning and to vulnerable populations (such as seniors, the medically fragile, homeless, outdoor workers and others who are not able to take shelter). While inland areas typically see larger temperature increases, the strongest health impacts have been found at the coast, where residents are used to relatively mild temperatures and are not acclimated to heat. Extreme heat events can also impact local air quality conditions through the increase of smog-forming, ground-level ozone levels and result in additional public health concerns. Finally, the highly variable precipitation and sustained dry weather conditions further stress local water supplies as well as increase wildfire threats with the potential to increase the area burned in the County by up to 50%. While there is an overall trend towards less precipitation, there is also an expected increase flooding risk because the wettest days are expected to be up to 30% wetter by the end of the century. These events will also be exacerbated along the bay shoreline due to sea level rise that could be as much as 0.8 feet by 2050 and almost 5 feet by 2100.

Past Occurrences

Climate change has never been directly linked to any disasters within Chula Vista. While the planning team noted that climate change is of concern, no specific impacts of climate change could be recalled. Planning team members agree that the strength of storms does appear to be increasing and that temperatures are getting hotter.

Significance, Likelihood and Probability

Climate change is listed as a “medium” hazard significance for Chula Vista because of the trends we continue to see weather impacts having on natural disasters.

The criteria for climate change risks consistently fall into the medium-moderate rating. The occurrences of climate change events cannot be directly tied to any disasters experienced by the gradual increase in climate change is likely to have some occasional impact on the disasters. Climate change impacts are noticeable but not devastating at this time.

Location
There are no specific locations that are impacted by climate change risks. The entire city is vulnerable to climate change risks.

Extreme Heat

Description of Hazard
Extreme heat is a period of high heat and humidity with temperatures above 90 degrees for at least two to three days. In extreme heat your body works extra hard to maintain a normal temperature, which can lead to death. Extreme heat is responsible for the highest number of annual deaths among all weather-related hazards.

Nature of Hazard
In most of the United States, including the entire planning area, extreme heat is a long period (2 to 3 days) of high heat and humidity with temperatures above 90 degrees. Although extreme heat does not cause structural damage like floods, fires, and earthquakes, heat waves claim many lives due to heat exhaustion and heat stroke. According to a California Energy Commission Study, from 1994 to 2009, heat waves have claimed more lives in California than all declared disaster events combined.

Despite this history, not a single heat emergency was formally proclaimed at the state level or as a federal disaster between 1960 and 2008. However, the California State Hazard Mitigation Plan considers extreme heat a legitimate disaster type.

Past Occurrences
Chula Vista has experienced many extreme heat events, with increasing significance since the last update of the MJHMP. During these events across the County, measures are taken to help aid the community in battling the extreme conditions, including opening and operating "Cool Zones' to provide temperature-controlled sheltering for individuals who have no alternate reprieve.

Most recently, San Diego County was pounded with a record-breaking heat wave that lasted for two weeks. Daytime temperatures were above 90 degrees for the entre time period, and nighttime lows were in the seventy to eighty degree range.

Significance, Likelihood and Probability
Probability of future events is highly likely: 90 to 100 percent probability of occurrence in the next year or a recurrence interval of less than 1 year. The overall significance is rated as high, meaning the criteria for extreme heat conditions consistently fall in the high classifications and the event is likely/highly likely to occur with severe strength over a significant to extensive portion of the city.

Location
The entire planning area is facing an increase in the frequency, duration, and strength of heat waves in the coming decades. Research also indicates that heat waves are likely to become more humid in the future and with nighttime temperatures staying high, further stressing public health.

Severe Wind

Although severe wind is listed as a "medium" ranked hazard for the City of Chula Vista. This hazard is omitted from a complete hazard profile because wind events in Chula Vista do not meet the criteria for severe wind as defined by the National Weather Service. To be considered severe, associated wind gusts must be 58 mph or greater (50 knots or greater). Damaging winds are classified as those exceeding 50-60 mph. The city of Chula Vista does not experience sustained winds or wind gusts that reach those levels.

5.4. Potential Hazard Exposure and Loss Estimates

The City of Chula Vista reviewed a set of jurisdictional-level hazard maps and data provided by the County of San Diego, including detailed critical facility information and localized potential hazard exposure/loss estimates related to residential, commercial, and critical asset/facilities to identify the top hazards threatening their jurisdiction. Potential hazard exposure/loss estimates are summarized in the tables below:

SUMMARY OF POTENTIAL HAZARD-RELATED EXPOSURE/LOSS IN CITY OF CHULA VISTA

		Residential		Commercial		Critical Facilities	
Hazard Type	**Exposed Population**	**Number of Residential Buildings**	**Potential Exposure Loss for Residential Buildings**	**Number of Commercial Buildings**	**Potential Exposure Loss for Commercial Buildings**	**Number of Critical Facilities**	**Potential Exposure for Critical Facilities**
Coastal Storm	0	0	$0	0	$0	0	$0
Sea Level Rise							
Coastal Flooding	116	0	$0	0	$0	1	$6,670,000
Mean Higher High Water	0	0	$0	0	0	1	$6,670,000
Dam Failure	15,822	2,297	$892,614,200	628	$189,875,800	28	$1,141,742,000
Earthquake (Loss)							
(Annualized Loss - Includes shaking, liquefaction and landslide components)	3,170	3,342	$2,005,904,611	342	$163,269,000	4	$127,500,000
100 Year	0	0	$0	0	$0	0	0
500 Year	0	0	$0	0	$0	0	0
Rose Canyon M6.9 Scenario	210,011	46,508	$18,068,358,000	4,483	$1,355,435,050	156	$8,601,070,500
Floods (Loss)							
100 Year	1,741	633	$245,983,800	169	$51,097,150	18	$1,019,576,000
500 Year	14,651	3,628	$1,409,840,800	556	$168,106,600	29	$2,102,884,000

Rain-Induced Landslide							
High Risk	865	0	$0	0	$0	0	$0
Moderate Risk	0	0	$0	0	$0	0	$0
Tsunami	228	0	$0	0	$0	0	$0
Wildfire/Structure Fire							
High Fire Hazard	8,464	2,863	$1,112,275,500	57	$17,233,950	6	$67,438,000
Very High Fire Hazard	15,354	2,583	$1,003,753,800	64	$19,350,400	2	$50,048,000

TABLE 5.2B INVENTORY EXPOSURE FOR INFRASTRUCTURE
CITY OF CHULA VISTA

Hazard Type	Data	HWY	OIL GAS	RR	TOTAL
Coastal Storm	Total KMs	0	0	0	0
	Exposure (x$1,000)	$0	$0	$0	$0
Sea Level Rise					
Coastal Flooding	Total KMs	1.83652	0.46008	0	2.30
	Exposure (x$1,000)	$12,245,915	$314,235	$0	$12,560,150
Mean Higher High Water	Total KMs	0.78439	0.19520	0	0.98
	Exposure (x$1,000)	$5,230,333	$133,320	$0	$5,363,652
Dam Failure	Total KMs	114.036169	4.894356	1.94398	120.87
	Exposure (x$1,000)	$760,393,175	$3,342,845	$2,915,970	$766,651,990
Earthquake (Loss)					
100 Year	Total KMs	3.168	0	0	3.168
	Exposure (x$1,000)		$0	$0	
500 Year	Number	0	0	0	0
	Exposure (x$1,000)	$0	$0	$0	$0
Flood (Loss)					
100 Year	Total KMs	31.6111	3.4751	0.13	35.22
	Exposure (x$1,000)	$210,782,781	$2,373,489	$193,889	$213,350,159
500 Year	Total KMs	0	0	0	0
	Exposure (x$1,000)	$0	$0	$0	$0
Rain-Induced Landslide					
High Risk	Total KMs	0.000257	0	0	0.000257
	Exposure (x$1,000)	$1,714	$0	$0	$1,714
Moderate Risk	Total KMs	0.441002	0.000002	0	0.44
	Exposure (x$1,000)	$2,940,601	$1	$0	$2,940,602
Tsunami	Total KMs	0.34857	0	0	0.34857
	Exposure (x$1,000)	$2,324,265	$0	$0	$2,324,265
Wildfire/Structure Fire					
High Fire Hazard	Total KMs	32.84054	1.49899	0	34.34
	Exposure (x$1,000)	$218,980,701	$1,023,809	$0	$220,004,510
Very High Fire Hazard	Total KMs	41.085761	3.757584	0	44.84
	Exposure (x1000)	$273,959,854	$2,566,430	$0	$276,526,284
Total Number		226.152309	14.281312	2.07398	242.506827
Total Exposure (x $1,000)		$1,486,859,339	$9,754,129	$3,109,859	$1,499,723,326

6. SECTION SIX: Develop a Mitigation Strategy

The mitigation strategy serves as the long-term blueprint for reducing potential losses identified in the risk assessment. The mitigation strategy describes how the community will accomplish the overall purpose, or mission, of the planning process.

The mitigation strategy is made up of three main required components: mitigation goals, mitigation actions, and an action plan for implementation. These provide the framework to identify, prioritize, and implement actions to reduce risk to hazards.

Mitigation goals are general guidelines that explain what the community wants to achieve with the plan. They are usually broad policy-type statements that are long-term, and they represent visions for reducing or avoiding losses from the identified hazards

Mitigation actions are specific projects and activities that help achieve the goals.

The action plan describes how the mitigation actions will be implemented, including how those actions will be prioritized, administered, and incorporated into the existing planning mechanisms.

Although not required, **objectives** can be used to help define or organize mitigation actions. Objectives are broader than specific actions, but are measurable, unlike goals. Objectives connect goals with the actual mitigation actions

6.1. Mitigation Action Evaluation

The table below was used to evaluate and prioritize each mitigation action being considered by the planning team. For each action, the planning team evaluated the potential benefits and/or likelihood of successful implementation for the criteria defined below.

Rank each of the criteria with a -1, 0 or 1 using the following scale:

- 1 = Highly effective or feasible
- 0 = Neutral
- -1 = Ineffective or not feasible

Example Evaluation Criteria:

- **Life Safety** – How effective will the action be at protecting lives and preventing injuries?
- **Property Protection** – How significant will the action be at eliminating or reducing damage to structures and infrastructure?

- **Technical** – Is the mitigation action technically feasible? Is it a long-term solution? Eliminate actions that, from a technical standpoint, will not meet the goals.
- **Political** – Is there overall public support for the mitigation action? Is there the political will to support it?
- **Legal** – Does the community have the authority to implement the action?
- **Environmental** – What are the potential environmental impacts of the action? Will it comply with environmental regulations?
- **Social** – Will the proposed action adversely affect one segment of the population? Will the action disrupt established neighborhoods, break up voting districts, or cause the relocation of lower income people?
- **Administrative** – Does the community have the personnel and administrative capabilities to implement the action and maintain it or will outside help be necessary?
- **Local Champion** – Is there a strong advocate for the action or project among local departments and agencies that will support the action's implementation?
- **Other Community Objectives** – Does the action advance other community objectives, such as capital improvements, economic development, environmental quality, or open space preservation? Does it support the policies of the comprehensive plan?

Mitigation Action	Life Safety	Property Protection	Technical	Political	Legal	Environmental	Social	Administrative	Local Champion	Other Community Objectives	Total Score
Local Plans and Regulations											
Goal: Promote Disaster Resistant Existing and Future Development											
Develop a comprehensive approach to implement the City's General Plan and zoning codes to ensure that development is limited in hazard areas.	1	1	1	1	1	1	0	1	1	1	9
Goal: Reduce the Possibility of Damage and Losses to Existing Assets, Including People and Critical Infrastructure, Due to Geological Hazards											
Ensure the City has a comprehensive approach to earthquake impacts, inclusive of data driven mitigation and preparedness efforts, and response procedures.	1	1	0	1	1	1	0	0	0	1	6
Goal: Reduce the Possibility of Damage and Losses to Existing Assets, Including People and Critical Infrastructure, Due to Dam Failure											
Coordinate with local dam operators to review dam plans and exercise response procedures for dam related emergencies,	1	1	1	1	1	1	0	1	0	1	8

Mitigation Action	Life Safety	Property Protection	Technical	Political	Legal	Environmental	Social	Administrative	Local Champion	Other Community Objectives	Total Score
including preparedness efforts to inform the community of the dam failure threat.											
Goal: Reduce the Possibility of Damage and Losses to Existing Assets, Including People and Critical Infrastructure, Due to Flooding											
Reduce the possibility of damage and losses to existing assets, including people and critical infrastructure due to flooding / Flood Plain Management Ordinance	1	1	1	1	1	1	0	1	0	1	8
Reduce the possibility of damage and losses to existing assets, including people and critical infrastructure due to flooding / General Plan Update	1	1	1	1	1	1	0	1	0	1	8
Reduce the possibility of damage and losses to existing assets, including people and critical infrastructure due to flooding / Maintenance	1	1	1	1	1	1	0	1	0	1	8
Goal: Reduce the Possibility of Damage and Losses to Existing Assets, Including People and Critical Infrastructure, Due to Climate Change Risks											
Promote adaptation to climate change impacts	1	1	1	1	1	1	0	1	1	1	9
Goal: Reduce the Possibility of Damage and Losses to Existing Assets, Including People and Critical Infrastructure, Due to Tsunami											
Update and socialize tsunami response plans among City officials and responders.	1	1	1	1	1	1	0	1	0	1	8
Structure and Infrastructure Projects											
Goal: Reduce the Possibility of Damage and Losses to Existing Assets, Including People and Critical Infrastructure, Due to Structure Fire/Wildland Fire											
Reduce the fire risk in the wildland urban interface through improved annual vegetation management and appropriate code enforcement	1	1	1	1	1	1	0	1	1	1	9

Mitigation Action	Life Safety	Property Protection	Technical	Political	Legal	Environmental	Social	Administrative	Local Champion	Other Community Objectives	Total Score
Goal: Reduce the Possibility of Damage and Losses to Existing Assets, Including People and Critical Infrastructure, Due to Flooding											
Reduce the possibility of damage and losses to existing assets, including people and critical infrastructure due to flooding / Land Development	1	1	1	1	1	1	0	1	0	1	8
Reduce the possibility of damage and losses to existing assets, including people and critical infrastructure due to flooding / Telegraph Canyon Channel Improvement Project	0	1	1	1	1	1	0	1	0	1	7
Natural Systems Protection											
Goal: Reduce the Possibility of Damage and Losses to Existing Assets, Including People and Critical Infrastructure, Due to Flooding											
Reduce Emissions	0	0	1	1	1	1	0	1	1	1	7
Education and Awareness Programs											
Goal: Promote Public Understanding, Support, and Demand for Hazard Mitigation											
Improve public knowledge of natural and non-natural hazards and protective measures so individuals appropriately prepare for and respond to such hazards.	1	1	1	1	1	1	0	1	1	1	9
Goal: Build and Sustain a Local Commitment to Become Less Vulnerable to Hazards											
Establish public and private relationships and partnerships to build an increased (resource) capacity for preparing for and responding to emergencies	1	1	1	1	1	1	0	0	0	1	7
Goal: Reduce the Possibility of Damage and Losses to Existing Assets, Including People and Critical Infrastructure, Due to Structure Fire/Wildland Fire											
Conduct a fuels study to better understand the wildfire risk is all areas of the city.	1	1	1	1	1	1	0	0	1	1	8

Mitigation Action	Life Safety	Property Protection	Technical	Political	Legal	Environmental	Social	Administrative	Local Champion	Other Community Objectives	Total Score
Goal: Reduce the Possibility of Damage and Losses to Existing Assets, Including People and Critical Infrastructure, Due to Flooding											
Reduce the possibility of damage and losses to existing assets, including people and critical infrastructure due to flooding by maintaining clear & improving risk prone areas / Education	1	1	1	1	1	1	0	1	0	1	8

6.2. Mitigation Action Implementation

A mitigation action is a specific action, project, activity, or process taken to reduce or eliminate long-term risk to people and property from hazards and their impacts. Implementing mitigation actions helps achieve the plan's mission and goals. The actions to reduce vulnerability to threats and hazards form the core of the plan and are a key outcome of the planning process.

Mitigation actions will be reviewed on an annual basis to track progress and effectiveness. Mitigation actions will be completed, revised, or removed with every five-year update of the Hazard Mitigation Plan.

The mitigation actions listed below include information on the hazard identified, the primary issue, ideas for implementing the mitigation action and the lead and supporting agencies for ensuring its implementation. Additionally, potential funding sources are including for each mitigation action. For more information on potential funding sources and grants, please see the County of San Diego Multi-jurisdictional Hazard Mitigation Base Plan, Section 6.2

This annex details the following mitigation action implementations:

6.2.1. Goal: Promote Public Understanding, Support, and Demand for Hazard Mitigation

Hazard:	All-hazards
Background/Issue:	Although natural disasters do not occur as frequently in Chula Vista, the threat and risk of significant impact exists. As a result, there is a false sense of security and negligence surrounding personal disaster preparedness and mitigation efforts. The community should have a thorough understanding of the existing hazards and their risk. More information should be provided to residents and be made available through City sponsored channels so that residents can educate and protect themselves.
Mitigation Action/Project:	Public Education Program - Improve public knowledge of natural and non-natural hazards and protective measures so individuals appropriately prepare for and respond to such hazards, accomplished by: • Developing educational videos identifying the various threats within the City of Chula Vista • Participate in national preparedness month through promoting awareness to introduce new hazard information or reeducate the community of all hazards
Ideas for Integration:	• Produce educational videos of the threats that exist within the city and publicize withing the community • Utilize national disaster preparedness and awareness campaigns to introduce or reeducate the community about risks/hazards within the city.
Responsible Agency:	Fire Department, Emergency Management
Partners:	Office of Communications County of San Diego Office of Emergency Services

Potential Funding:	State Homeland Security Grant Program
Cost Estimate:	Unknown
Benefits: (Losses Avoided)	Protection of life and property
Timeline:	2022-2027 and ongoing
Priority:	Low
Worksheet Completed by:	Marlon King, Fire Department

6.2.2. Goal: Build and Sustain a Local Commitment to Become Less Vulnerable to Hazards

Hazard:	All-hazards
Background/Issue:	Disaster mitigation must involve investment and participation from the entire community. Local governments have a limit to the resources available and could benefit from having private sector partners who can support mitigation efforts. Public private partnerships are mutually beneficial and maximize resources that help protect the community.
Mitigation Action/Project:	Public/Private Partnership Initiative - Establish public and private relationships and partnerships to build an increased (resource) capacity for preparing for and responding to emergencies.
Ideas for Integration:	• Begin discussions with the Chamber of Commerce to identify strategies to integrate with the business community on disaster mitigation efforts • Attend local Chamber of Commerce meetings to promote disaster preparedness and mitigation efforts • Establish a community incentive program that promotes preparedness and mitigation
Responsible Agency:	Chula Vista Fire Department, Emergency Management
Partners:	Chamber of Commerce Economic Development Department

Potential Funding:	General Fund Public-Private Partnership Grants Economic Development Funding
Cost Estimate:	Unknown
Benefits: (Losses Avoided)	Protection of life and property, including lifeline infrastructure of local businesses.
Timeline:	2022-2027
Priority:	Low
Worksheet Completed by:	Marlon King, Fire Department

6.2.3. Goal: Promote Disaster Resistant Existing and Future Development

Hazard:	All-hazards
Mitigation Action/Project:	Comprehensive and Inclusive Planning Procedures - Develop a comprehensive approach to implementing the City's General Plan and zoning codes to ensure that development is limited in hazard areas.
Background/Issue:	Existing and Future development need to ensure the safety of the residents in their homes. Existing homes would be assisted by any retrofitting needs or additions to the structure to ensure the safety of the homeowner. Future development needs to be placed in areas that are outside of areas identified as hazard areas. If a future development is adjacent to a hazard area, technical studies, defensible space between the development and hazard area would be applied, and any additional measures identified through technical analysis of the specific hazard area.
Ideas for Integration:	• Update the City's Safety Element of the General Plan. • Update the City's zoning ordinance to ensure new development is prohibited in extreme hazard areas that cannot be mitigated and set aside as open space. • Amend the Fire Code and Building Code, as necessary, to be consistent with the appropriate policies of the General Plan. • Establish and enforce buffer zones for development near hazard prone areas. • Identify land uses appropriate to specific hazard areas. • Continue to provide hazmat compliance review any time a permit is obtained for any improvement on new and existing hazardous occupancies. • Use hazard overlays, including updating databases/GIS to identify hazard prone new development.

Responsible Agency:	Development Services Department
Partners:	Engineering Department, Fire Department, IT Department
Potential Funding:	Development Impact Fees from development projects and possible Grant Funding (Federal/State)
Cost Estimate:	Unknown
Benefits: (Losses Avoided)	This will allow the City to reduce/eliminate potential hazards with existing and future development that will ensure safety to our residents.
Timeline:	2022-2027
Priority:	High
Worksheet Completed by:	Laura C. Black, Assistant Director of Development Services, Development Services

6.2.4. Goal: Reduce the Possibility of Damage and Losses to Existing Assets, Including People and Critical Infrastructure, Due to Structure Fire/Wildland Fire

Hazard:	Wildfire
Background/Issue:	The City of Chula Vista has more than 30 wildland urban interface (WUI) areas throughout the city. More than 2,000 homes directly border these open space areas, and more than 350,000 structures are within "ember spotting zones". The City does not have an adequate budget to properly maintain the recommended separation of wild land vegetation and adjacent structures. Fire modeling has identified many of the canyons within the city of Chula Vista as "High" and "Very High" Fire Hazard areas. The homes that line the canyon rim and homes within the ember zones are at highest risk of fires, such as those experienced during the 2003, 2007, and 2014 wildfire events in San Diego County. Since the last fires, several years have gone by without adequate vegetation management, which has led to increased fuel loading within the open space areas, allowing both native and invasive species to grow uncontrolled. In some cases, species have grown up to 20 feet tall. Additionally, much of the adjacent construction was completed prior to fuel modification requirements and subsequent

	establishment of open-space areas within the canyons, which has allowed for the accumulation of vegetative biomass in close proximity to residential structures that do not include the latest structural code improvements. These open space areas are also occupied by the city's transient population, which has previously resulted in accidental vegetation fires. These vegetation fires occur several times per month. Since 2005, Chula Vista has averaged 38+ wildland responses per year. With limited funds to establish a vegetation management program, homes within the ember zone will continue to remain at high risk. As it stands, the city's wildland urban interface protection is inadequate and does not provide a defensible space for the Fire Department to defend these homes
Mitigation Action/Project:	Vegetation Management Program - Reduce the fire risk in the wildland urban interface through improved annual vegetation management and appropriate code enforcement
Ideas for Integration:	• Continually seek mitigation funding from several funding sources, including the State Hazard Mitigation Grant Program, Pre-Disaster Mitigation Program, Cal Fire Wildfire Prevention Grants Program, etc. • Adopt local ordinances allowing residences in wildfire threat areas to assist with vegetation management adjacent to their property • Coordinate with the State to identify additional vegetation management options
Responsible Agency:	Chula Vista Fire Department
Partners:	Chula Vista Public Works Department Chula Vista Development Services Department State of California Governor's Office of Emergency Services
Potential Funding:	Hazard Mitigation Grant Program Pre-Disaster Mitigation Grant Program Cal Fire Wildfire Prevention Grants Program
Cost Estimate:	TBD
Benefits: (Losses Avoided)	Protect life and property within several communities in Chula Vista
Timeline:	2022-2027 and ongoing
Priority:	High
Worksheet Completed by:	Marlon King, Fire Department

Hazard:	Wildfire/Structure Fire
Background/Issue:	The wildfire risk that exists in Chula Vista is based on several factors, including fuel type, fuel density, topography, etc. To better understand the risk that the city faces, a risk assessment should be conducted, inclusive of a fuels study that can help the Fire Department understand how fires will behave in various locations throughout the city. All open space areas and canyons are not the same and the risk and fire behavior in each area will also be different. A better understanding of the fire potential and characteristics as well as modeling will help the City be better prepared to respond.
Mitigation Action/Project:	Fuels Study Project - Conduct a fuels study to better understand the wildfire risk in all areas of the city.
Ideas for Integration:	• Identify scientific agencies or groups that can perform a study of the fuels in Chula Vista • Identify scientific agencies or groups that could perform fire behavior modeling for the various fire threats in the city
Responsible Agency:	Chula Vista Fire Department
Partners:	Development Services Department Public Works Department
Potential Funding:	General Fund Hazard Mitigation Grant Program
Cost Estimate:	Unknown
Benefits: (Losses Avoided)	Protect life and property within the city
Timeline:	2022-2027
Priority:	Medium
Worksheet Completed by:	Marlon King, Fire Department

6.2.5. Goal: Reduce the Possibility of Damage and Losses to Existing Assets, Including People and Critical Infrastructure, Due to Geological Hazards

Hazard:	Earthquake
Background/Issue:	Due to its relative distance from the closest known active earthquake fault (Rose Canyon Fault), the city of Chula Vista is at low to moderate earthquake shaking potential, with most of the risk confined to the western portion of the city. The landslide threat is focused in the older developed areas around steep canyon slopes of known slide potential. The threat of liquefaction is relatively low; however, the alluvial areas of the Sweetwater and Otay Rivers and the Telegraph Canyon Channel are subject to liquefaction in both developed and undeveloped areas.
Mitigation Action/Project:	Earthquake Mitigation Planning Guidance - Ensure the City has a comprehensive approach to earthquake impacts, inclusive of data driven mitigation and preparedness efforts, and response procedures.
Ideas for Integration:	• Develop a comprehensive approach to reducing the possibility of damage and losses due to geological hazards. • Protect existing assets with the highest relative vulnerability to the effects of geological hazards. • Coordinate with and support existing efforts to mitigate geological hazards (e.g., California Geological Survey, US Geological Survey).
Responsible Agency:	Chula Vista Fire Department, Emergency Management
Partners:	Development Services Department
Potential Funding:	Hazard Mitigation Grant Program
Cost Estimate:	Unknown
Benefits: (Losses Avoided)	Protection of life and property
Timeline:	2022-2027
Priority:	Medium

Worksheet Completed by:	Marlon King, Fire Department

6.2.6. Goal: Reduce the Possibility of Damage and Losses to Existing Assets, Including People and Critical Infrastructure, Due to Dam Failure

Hazard:	Dam Failure
Background/Issue:	The threat of dam failure is not widely known within the city of Chula Vista and response exercises and training has not been provided to first responders. Dam Plans should be shared among first responders and response operations should be practiced on a continual basis.
Mitigation Action/Project:	Dam Preparedness and Response Guide - Coordinate with local dam operators to review dam plans and exercise response procedures for dam related emergencies, including preparedness efforts to inform the community of the dam failure threat.
Ideas for Integration:	• Coordinate with local dam operators to review and update plans as necessary • Review and understand the impacts of dam failure within the community • Inform community members of potential threats from dam failure emergencies • Provide training and exercise for first responders on dam failure emergencies
Responsible Agency:	Chula Vista Fire Department
Partners:	Otay Water District Sweetwater Authority Chula Vista Police Department Chula Vista Public Works Department Chula Vista Office of Communications County of San Diego Office of Emergency Services
Potential Funding:	General Fund Federal Community Preparedness Grants
Cost Estimate:	Unknown
Benefits: (Losses Avoided)	Protect loss of life and property
Timeline:	2022-2027 and ongoing

Priority:	Medium
Worksheet Completed by:	Marlon King, Fire Department

6.2.7. Goal: Reduce the Possibility of Damage and Losses to Existing Assets, Including People and Critical Infrastructure, Due to Flooding

Hazard:	Flooding
Background/Issue:	By having a Floodplain Ordinance & Drainage Master Plan, which is regularly monitored and updated, the city can keep damage and loss to assets, people, and infrastructure to a minimum.
Mitigation Action/Project:	Flooding Education Program - Reduce the possibility of damage and losses to existing assets, including people and critical infrastructure due to flooding by maintaining clear & improving risk prone areas / Education
Ideas for Integration:	• Minimize repetitive losses caused by flooding. • Request assistance from State and Federal governments, as necessary, to enable the City to maintain compliance with the National Flood Insurance Program (NFIP) requirements. • Maintain strict development standards for any request to develop in risk prone areas. • Education Program on importance of maintaining drainage system clear of debris.
Responsible Agency:	City of Chula Vista
Partners:	City of Chula Vista Engineering Department & Public Works Department.
Potential Funding:	Floodplain Management, Protection and Risk Awareness (FMPRA) Grant Program
Cost Estimate:	$100,000
Benefits: (Losses Avoided)	Unknown.

Timeline:	Complete by end of FY23.
Priority:	Low
Worksheet Completed by:	Frank Rivera, Engineering & Capital Projects Department.

Hazard:	Flooding
Background/Issue:	The City of Chula Vista covers approximately 52-square miles and a population of over 275,000. Chula Vista Municipal Code includes a Flood Plain Ordinance which allows for residents to qualify for the FEMA Flood Insurance Risk Program to enable the City to maintain compliance with the National Flood insurance Program (NFIP) requirements. Thus, residents are allowed to reduce their risk caused by flood events which helps protect their assets and keep personal financial losses to assets, people, and infrastructure to a minimum.
Mitigation Action/Project:	Flood Plain Management Ordinance
Ideas for Integration:	• Incorporate information on projected sea level rise into the assessment of areas affected by the 100-year flood. • Provide information on State and Federal funding sources available to flood-proof existing structures/facilities in flood-prone areas. • Periodically review City compliance with NFIP requirements. • Review current dam failure information/data for clarity and accuracy. • Review current evacuation plans for accuracy and practicality and publicize these plans. • Obtain and review State-mandated annual dam assessment reports. • Identify and prioritize critical facilities within dam inundation zones. • Identify vulnerable populations within dam inundation areas. • Identify Federal and State funding to minimize/mitigate dam inundation hazards to critical facilities and vulnerable populations. • Update plans/data periodically to adequately represent existing conditions/ vulnerable populations. • Conduct survey of assets within dam inundation areas.
Responsible Agency:	City of Chula Vista Engineering & Capital Projects Department
Partners:	City of Chula Vista Development Services Department, Public Works, GIS.
Potential Funding:	Development Impact Fees, Master Fee Schedule, General Fund.

Cost Estimate:	Partial Full Cost Recovery
Benefits: (Losses Avoided)	Unknown.
Timeline:	Ongoing program.
Priority:	Medium
Worksheet Completed by:	Frank Rivera/Engineering & Capital Projects Department

Hazard:	Flooding
Background/Issue:	The General Plan identifies land uses and features such as drainage basins within our jurisdiction and sphere of influence. Clearly defined areas for development and open spaces help protect assets and keeps losses to assets, people and infrastructure to a minimum.
Mitigation Action/Project:	General Plan Update
Ideas for Integration:	• Encourage the establishment of adequate open space in flood zones as indicated on FEMA flood maps. • Update Drainage Element of the General Plan based upon actual developed conditions (General Plan, GMOC Section). • Discourage the disruption of natural flowage patterns and encourage the maximum use of natural and naturalized drainage ways in new development (General Plan drainage and flood control policies). • Update plans/data periodically to adequately represent existing conditions/ vulnerable populations.
Responsible Agency:	City of Chula Vista
Partners:	City of Chula Vista. Public via outreach and workshop events.
Potential Funding:	General Fund.
Cost Estimate:	$1,000,000

Benefits: (Losses Avoided)	Unknown.
Timeline:	Three years.
Priority:	High
Worksheet Completed by:	Frank Rivera/Engineering & Capital Projects Department

Hazard:	Flooding
Background/Issue:	The City of Chula Vista covers approximately 52-square miles and a population of over 275,000. Due to land use regulations at the local, state & federal level, all land development applications must be carefully evaluated on a case-by-case basis for conformance to these regulations in order to help protect assets and keep losses to assets, people and infrastructure to a minimum.
Mitigation Action/Project:	Review, Update and Enforce Land Development Policies and Procedures
Ideas for Integration:	• Continue to review applications for new development within the City in compliance with the California Environmental Quality Act (CEQA) provisions set forth by the State of California, thereby requiring individualized studies for flood hazards on an as-needed basis and establishing mitigation measures for the development project before construction begins. • Monitor and enforce compliance with CEQA-mandated mitigation measures and FEMA requirements during development and construction, as the project requires. • Continue to require flood control improvements of new development where flooding is already a problem (existing ordinances). • Where possible, implement drainage improvements with an emphasis on improving downstream facilities before improving upstream facilities, unless upstream mitigation (such as detention or retention basins) is provided. • Require the submittal of Letters of Map Revision (LOMRs)/ Letters of Map Amendment (LOMAs) as required by FEMA. • Continue to review applications for new development within the City in compliance with the California Environmental Quality Act (CEQA) provisions set forth by the State of California, thereby requiring individualized studies for flood hazards on an as-needed basis and establishing mitigation measures for the development project before construction begins. • Monitor and enforce compliance with CEQA mandated mitigation measures during development and construction, as the development project requires.

Responsible Agency:	City of Chula Vista Development Services Department
Partners:	City of Chula Vista Engineering Department, Public Works, GIS.
Potential Funding:	Development Impact Fees, Master Fee Schedule.
Cost Estimate:	Full Cost Recovery
Benefits: (Losses Avoided)	Unknown.
Timeline:	Ongoing program.
Priority:	Medium
Worksheet Completed by:	Frank Rivera/Engineering & Capital Projects Department

Hazard:	Flooding
Background/Issue:	The City of Chula Vista covers approximately 52-square miles. Due to the development, there are many natural and manmade drainage facilities that must be maintained clear of debris and functional to help protect assets and keeps losses to assets, people and infrastructure to a minimum.
Mitigation Action/Project:	Maintenance Program
Ideas for Integration:	• Develop a comprehensive approach to reducing the possibility of damage and losses due to floods by maintaining an annual maintenance program & capital program. • Protect existing assets with the highest relative vulnerability to the effects of floods within the 100-year floodplain. • Prevent deposit of fill or construction within any floodway. • Identify and define local hazard areas and to monitor floodplain management. • Update Flood layers in GIS upon FEMA approval of LOMRs/LOMAs. • Obtain and review State-mandated annual dam assessment reports. • Identify and prioritize critical facilities within dam inundation zones. • Conduct survey of assets within dam inundation areas.

Responsible Agency:	City of Chula Vista Public Works Department
Partners:	City of Chula Vista Public Works, GIS.
Potential Funding:	General Fund, Storm Drain Fund
Cost Estimate:	$2.0 million
Benefits: (Losses Avoided)	Unknown.
Timeline:	Annual maintenance program.
Priority:	High
Worksheet Completed by:	Frank Rivera/Engineering & Capital Projects Department

Hazard:	Flooding
Background/Issue:	By having a Drainage Master Plan that identifies assets and needs in all drainage basins within our jurisdiction, the city can stay aware of drainage system maintenance needs and improvement needs to keep damage and loss to assets, people, and infrastructure to a minimum.
Mitigation Action/Project:	Telegraph Canyon Channel Improvement Project
Ideas for Integration:	• Develop a comprehensive approach to reducing the possibility of damage and losses due to floods. • Protect existing assets with the highest relative vulnerability to the effects of floods within the 100-year floodplain.
Responsible Agency:	City of Chula Vista
Partners:	City of Chula Vista, adjacent property owners, resource agencies.

Potential Funding:	Local sales tax, developer impact fees and Federal ARPA funds.
Cost Estimate:	$13,000,000
Benefits: (Losses Avoided)	Unknown.
Timeline:	Preliminary studies & design have started. Construction to be completed by FY25.
Priority:	High
Worksheet Completed by:	Frank Rivera/Engineering & Capital Projects Department

6.2.8. Goal: Reduce the Possibility of Damage and Losses to Existing Assets, Including People and Critical Infrastructure, Due to Climate Change Risks

Hazard:	Climate Change Risks
Background/Issue:	The average San Diego County temperatures have increased 3 degrees F over historical averages and forecasted average summer temperatures will be 5 degrees F to 10 degrees F warmer by the end of the century. Wildfires are expected to increase in size and while our region is projected to receive less precipitation, it is expected to come in more high intensity events, which can increase flooding. These known and expected consequences of climate change require us to put in place policies and programs that reduce the impact to residents and businesses.
Mitigation Action/Project:	Promote adaptation to climate change impacts
Ideas for Integration:	• Promote Chula Vista Climate Equity Index and Cal EnviroScreen tool to identify populations effected by extreme heat and other climate impacts. • Update Climate Equity Index to identify highest heat island index areas in order to more effectively target mitigation activities such as shade trees, cool roofs and cool pavement. • Continue to operate cool zones in diverse areas around the City and ensure that critical facilities in the city, such as community services, cool zones and other emergency shelters, are able to provide adequate air-conditioning during loss of grid-supplied power.

	• Update, as needed, and continue to implement the Healthy Chula Vista Action Plan or any other plans that comprehensively support public health • Update, as needed, and continue to implement the Chula Vista General Plan and Climate Action Plan, including the most recently adopted adaptation plan to incorporate the most recent scientific data and to ensure that public service and infrastructure are resilient to climate change. • Continue promotion of public awareness about extreme heat, drought and related climate change concerns. • Increase building codes and update city facilities to best prepare buildings for impacts of heat waves, drought and other climate change risks. • Work with regional partners, such as the San Diego Regional Climate Collaborative and the County's 211 helpline to promote regional action and information distribution.
Responsible Agency:	Economic Development
Partners:	Development Services, Public Works, Fire, Community Services Departments, SANDAG, The Port of San Diego, County of San Diego, State of California
Potential Funding:	City General Fund, SANDAG, State grants (CalRecycle, CEC, CPUC, Natural Resource Agency) and incentives programs, Sweetwater Authority, Otay Water District
Cost Estimate:	Unknown
Benefits: (Losses Avoided)	By adapting and reducing the negative impacts our community is seeing from climate change, such as increased heat waves, wildfire, sea level rise, flooding, and droughts we will reduce the economic and health impacts to community members and city infrastructure.
Timeline:	2022-2027
Priority:	High
Worksheet Completed by:	Cory Downs, Economic Development

Hazard:	Climate Change Risks
Background/Issue:	Rising greenhouse gas emissions increase the impacts of climate change felt in Chula Vista. The City must reduce community wide emissions to net zero by 2045 to be in line with the state of California and the Science Based Reduction targets.
Priority Mitigation Action/Project:	Reduce Emissions
Ideas for Integration:	• Implement the Climate Action Plan and work with community stakeholders to updated as necessary, approximately every 5-7 years. • Work with local energy utilities to reach 100% decarbonized energy sources of electricity and natural gas by 2045 at the latest. • Update building codes to promote water conservation, decarbonized buildings and decarbonized transportation • Implement the Zero Waste Plan to reduce direct and upstream greenhouse gas emission from the waste sector • Implement the Active transportation plan to support biking and walking transportation items. • Continue to implement complete communities, transit focused development and other land use planning efforts called out in Specific Area Plans, Urban Plans and General Plan to reduce Vehicle Miles Traveled (VMT) • Study to opportunity for carbon sequestration in Chula Vista and implement a pilot project to learn about costs and benefits.
Responsible Agency:	*Economic Development*
Partners:	Development Services, Public Works, Fire, Community Services Departments, SANDAG, The Port of San Diego, County of San Diego, State of California, San Diego Gas & Electric, San Diego Community Power
Potential Funding:	City General Fund, SANDAG, State grants (CalRecycle, CEC, CPUC) and incentives programs, San Diego Gas & Electric, San Diego Community Power, Sweetwater Authority, Otay Water District
Cost Estimate:	Unknown
Benefits: (Losses Avoided)	By reducing greenhouse gas emissions, we will reduce our community's contribution to climate change and minimize our contribution to impacts such as increased heat waves, wildfire, sea level rise, flooding and droughts.
Timeline:	2022-2027
Priority:	High

Worksheet Completed by:	*Cory Downs, Economic Development*

6.2.9. Goal: Reduce the Possibility of Damage and Losses to Existing Assets, Including People and Critical Infrastructure, Due to Tsunami

Hazard:	Tsunami
Background/Issue:	The city of Chula Vista is a coastline community with some level of Tsunami threat. The most recent State of California tsunami maps for San Diego County were last updated in 2009. Neighboring counties have updated tsunami maps in 2021. Although existing data shows there is low impact from tsunami inundation in Chula Vista, the tsunami threat is not widely known and tsunami response operations have not been shared, exercised, or publicized.
Priority Mitigation Action/Project:	Update and socialize tsunami response plans among City officials and responders.
Ideas for Integration:	• Participate in the Tsunami Playbook update with the County of San Diego • Coordinate with County and the State to update tsunami inundation maps • Provide training to all City responders on tsunami response protocols • Coordinate with the Office of Communications to provide tsunami hazard and threat information to Chula Vista residents
Responsible Agency:	Chula Vista Fire Department, Emergency Management
Partners:	Office of Communications County of San Diego Office of Emergency Services California Geological Survey California Governor's Office of Emergency Services National Weather Service Chula Vista Police Department Chula Vista Public Works Department
Potential Funding:	Hazard Mitigation Grant Program Building Resilient Infrastructure and Communities (BRIC) grant program
Cost Estimate:	Unknown
Benefits: (Losses Avoided)	Will protect loss of life and property

Timeline:	2022-2027
Priority:	Medium
Worksheet Completed by:	Marlon King, Chula Vista Fire Department

7. SECTION SEVEN: Keep the Plan Current

Hazard Mitigation Plan maintenance is the process the planning team establishes to track the plan's implementation progress and to inform the plan update. The plan must include a description of the method and schedule for monitoring, evaluating, and updating it within a 5-year cycle. These procedures help to:

- Ensure that the mitigation strategy is implemented according to the plan.
- Provide the foundation for an ongoing mitigation program in your community.
- Standardize long-term monitoring of hazard-related activities.
- Integrate mitigation principles into community officials' daily job responsibilities and department roles.
- Maintain momentum through continued engagement and accountability in the plan's progress.

Hazard Mitigation Plan updates provide the opportunity to consider how well the procedures established in the previously approved plan worked and revise them as needed. This annex is part of the most recent *San Diego County Multi-Jurisdictional Hazard Mitigation Plan* update. The plan was last updated in 2018. See the *San Diego County Multi-Jurisdictional Hazard Mitigation Plan* for more information.

7.1. Mitigation Action Progress

Plan monitoring means tracking the implementation of the plan over time. Below is a review of the progress of mitigation actions listed in the 2018 Hazard Mitigation Plan.

2018 Priority Action #1		
Progress Report Period	From Date: 2017	To Date: 2022
Action/Project Title	Provide and maintain adequate training for City emergency personnel to carry out local responsibilities during various types of emergencies.	
Responsible Department	Fire	
Contact Name	Marlon King	
Contact Phone/Email	619-409-5482 Mking@chulavistaca.gov	
Project Status	• Ongoing	
Project Accomplishments	• The Chula Vista Emergency Management Program hosted several drills and trainings for Emergency Operations Center	

2018 Priority Action #1	
	staff and first responder personnel during this period. Trainings are designed to increase the education and understanding of roles and responsibilities during emergencies. • The City also activated the EOC multiple times for real world emergencies during this time and allowed staff to implement the skills and knowledge developed during trainings. Real world responses were successful.
Obstacles, Problems, or Delays	• Emergency response trainings often compete with day-to-day duties of City employees who are tasked with emergency roles as ancillary duties. Additionally, with the movement of employees throughout the City to various departments and new roles, and the constant turnover of employees in and out of the city, maintaining a cache of trained employees is difficult.
Relevancy and Anticipated Project Changes	• This project will always be relevant because being prepared is a staple of effective emergency management. Preparedness is imperative to the success of mitigation.
Other Comments	• None

2018 Priority Action #2		
Progress Report Period	From Date: 2017	To Date: 2022
Action/Project Title	Update the City's zoning ordinance periodically and address development in hazard areas and minimize zoning ambiguities.	
Responsible Department	Development Services Department	
Contact Name	Todd Philips	
Contact Phone/Email	619.409.5465 – Tphilips@chulavistaca.gov	
Project Status	• Project delayed	
Project Accomplishments	• Fee program was put in place to fund staff to support the proactive zoning ordinance update.	
Obstacles, Problems, or Delays	• A dedicated staff member was hired and began work but left City employment after 1 year. City recruiting to fill the position.	
Relevancy and Anticipated Project Changes	• This effort is still relevant and will continue to move forward.	

2018 Priority Action #2	
Other Comments	• None

2018 Priority Action #3		
Progress Report Period	From Date: 2017	To Date: 2022
Action/Project Title	Finalize and adopt a Community Wildfire Protection Plan.	
Responsible Department	Fire Department	
Contact Name	Justin Gipson – Division Chief of Fire Prevention/Fire Marshal	
Contact Phone/Email	(619) 409-5841 - jgipson@chulavistaca.gov	
Project Status	• Project completed	
Project Accomplishments	• Although the development of the CWPP was completed in 2011, many of the objectives and activities within the plan are on-going. During this time, grant funding has been secured to perform vegetation management in the City's highest risk open space areas. • Additionally, a mitigation project was completed in partnership with the Urban Corp to perform vegetation management activities in several other open space areas around the list.	
Obstacles, Problems, or Delays	• None	
Relevancy and Anticipated Project Changes	• None	
Other Comments	• None	

2018 Priority Action #4		
Progress Report Period	From Date: 2017	To Date: 2022
Action/Project Title	Develop, implement, and maintain, when necessary, mutual aid agreements.	
Responsible Department	All City Departments	
Contact Name	Marlon King	
Contact	(619) 409-5482 mking@chulavistaca.gov	

2018 Priority Action #4	
Phone/Email	
Project Status	• Project On-going
Project Accomplishments	• The City continuously engages in partnerships that will enhance the City's capabilities as it relates to disaster management. The City has established several MOUs with County partners, neighboring jurisdictions, non-profit agencies, and non-governmental organizations.
Obstacles, Problems, or Delays	• None
Relevancy and Anticipated Project Changes	• On-going. This project will always be relevant as new threats emerge and the need for cooperation among agencies will always exist.
Other Comments	• None

2018 Priority Action #5		
Progress Report Period	From Date: 2017	To Date: 2022
Action/Project Title	Require Flood Hazards Studies for New Developments	
Responsible Department	Development Services Department	
Contact Name	Laura C. Black, AICP, Assistant Director of Development Services	
Contact Phone/Email	619.691.5002 lblack@chulavistaca.gov	
Project Status	• Project on schedule ○ This project is an ongoing effort that occurs as part of the new development review process. Projects are evaluated for potential flood hazards and studies are required as part of that review process.	
Project Accomplishments	• All new development projects were/are evaluated for potential flood hazards.	
Obstacles, Problems, or Delays	• None	

2018 Priority Action #5	
Anticipated Project Changes	• This project remains on-going
Other Comments	• None

2018 Priority Action #6		
Progress Report Period	From Date: 2017	To Date: 2022
Action/Project Title	Provide citizens with Community Emergency Response Team training opportunities to increase public awareness of hazards and response to hazards, as resources are available.	
Responsible Department	Fire Department	
Contact Name	Marlon King	
Contact Phone/Email	619-409-5482 mking@chulavistaca.gov	
Project Status	On-going	

Project Accomplishments	• The Chula Vista Fire Depart CERT continued to operate during this time and hosted several public trainings, CERT Academies, and real-world deployments for CERT members.
	  ○ Public Trainings included CPR certification, wildland urban interface education, fire extinguisher, first-aid, and gas meters, active shooter + stop the bleed.
	  ○ CERT Academy was offered in both English and Spanish. Multiple academies were conducted in both languages during this time. A Teen CERT Academy was also conducted for the youth.
	  ○ Deployments included smoke alarm installation, food distribution during COVID-19, and participation in full scale emergency response exercises.	

Obstacles, Problems, or Delays	• None	
Relevancy and Anticipated Project Changes	• None	

2018 Priority Action #6	
Other Comments	• Funding continues to be a challenge. Additionally, keeping members engaged with new training opportunities and activations areas for improvement.

2018 Priority Action #7		
Progress Report Period	From Date: 2017	To Date: 2022
Action/Project Title	Require structural flood control improvements of new development where flooding is already a problem (existing ordinances).	
Responsible Department	Engineering Department	
Contact Name	William Valle; Frank Rivera	
Contact Phone/Email	WValle@chulavistaca.gov; FRivera@chulavistaca.gov	
Project Status	*On-going*	
Project Accomplishments	• The project we completed in this period has been the Willow Street Bridge which the new design is at a higher elevation than the old bridge as it crosses the Sweetwater River. The construction transfer memo is dated February 2017 and we finished it in December 2020.	
Obstacles, Problems, or Delays	• None	
Relevancy and Anticipated Project Changes	• None	
Other Comments	• In our Floodplain Ordinance from 2019, there is language in it regarding the requirements for new development and also for any existing development that may have been approved prior. Note that there are many requirements in Chula Vista Municipal Code 14.18.270 through 290 on variances and appeals to allow for building in a Special Flood Hazard Area. We have a good system of checks & balances: ○ CVMC 14.18.010 - Our requirements to continue to participate in the Federal NFIP. ○ CVMC 14.18.050 – No structure will be allowed to be allowed in special flood areas without compliance to the ordinance. ○ CVMC 14.18.110 – Permits required for any development within the Special Flood Hazard Area	

2018 Priority Action #7	
	○ CVMC 14.18.230 – Duties of the City Engineer ○ CVMC 14.18.240 – Duties of the Building Official ○ CVMC 14.18.250 – Duties of the Planning Director ○ CVMC 14.18.270/280/290 – Floodplain Variances/Findings Necessary/Appeals • We have adopted the most recent model template ordinance that FEMA sent us and are in full compliance with their requirements.

7.2. Plan Update Evaluation

Plan Section	Considerations	Explanation
Planning Process	Should new jurisdictions and/or districts be invited to participate in future plan updates?	Future plan updates should include any agencies, or districts that have or support critical infrastructure.
	Have any internal or external agencies been invaluable to the mitigation strategy?	All City Departments have been invaluable to the development of the City's mitigation strategy. Moving forward, the Sustainability division within the City will be increasingly important because of the rapidly evolving climate change. The County of San Diego and State of California have been integral in the development of the mitigation plan and the securing of mitigation funding to support the goals and objectives identified within the plan.
	Can any procedures (e.g., meeting announcements, plan updates) be done differently or more efficiently?	The new format of the hazard mitigation plan will streamline future plan updates and progress reporting.
	Has the Planning Team undertaken any public outreach activities?	Yes, various departments have engaged with community groups and community members to understand concerns and identify areas for increased education and hazard mitigation improvement.
	How can public participation be improved?	Public participation during this plan update was difficult and limited because of the COVID-19 pandemic. In the future, multiple community forums will be beneficial to the plan update.
	Have there been any changes in public support and/or decision- maker priorities related to hazard mitigation?	Unknown. City leadership and public support remain aligned that hazard mitigation projects are necessary. The main point of contention is agreement on where the funding should come from.
Capability Assessment	Have jurisdictions adopted new policies, plans, regulations, or reports that could be incorporated into this plan?	New ordinances (with a nexus to hazard mitigation) are developed as necessary, and as they are adopted, they will be incorporated into the hazard mitigation plan.
	Are there different or additional administrative, human, technical, and financial resources available for mitigation planning?	Not at this time.
	Are there different or new education and outreach programs and resources available for mitigation activities?	Unknown, but City staff will continue to explore educational and outreach options.

	Has NFIP participation changed in the participating jurisdictions?	No
Risk Assessment	Has a natural and/or technical or human-caused disaster occurred?	Yes
	Should the list of hazards addressed in the plan be modified?	Yes, only relevant hazards should be listed in the plan. Hazards vary by geographic location.
	Are there new data sources and/or additional maps and studies available? If so, what are they and what have they revealed? Should the information be incorporated into future plan updates?	It is unknown if there are new mapping products and/or data sources available, however, new maps and data would be extremely helpful to portray how the disaster risk has changed from previous years.
	Do any new critical facilities or infrastructure need to be added to the asset lists?	All new critical infrastructure should be included in the plan upon every plan update.
	Have any changes in development trends occurred that could create additional risks?	The City is unaware of any development trends that have created more risk.
	Are there repetitive losses and/or severe repetitive losses to document?	According to the 2022 FEMA Repetitive Loss Summary Report, the City of Chula Vista has 1 Repetitive Loss property, but no Severe Repetitive Loss properties.

TABLE 12: FEMA LOCAL MITIGATION PLANNING HANDBOOK WORKSHEET 7.2 DATA.

Plan Section	Considerations	Explanation
Mitigation Strategy	Is the mitigation strategy being implemented as anticipated? Were the cost and timeline estimates accurate?	Mitigation strategies are implemented as anticipated and within planned budgets.
	Should new mitigation actions be added to the Action Plan? Should existing mitigation actions be revised or eliminated from the plan?	At this time no new action should be added or eliminated but will be reviewed and evaluated for future updates of the plan.
	Are there new obstacles that were not anticipated in the plan that will need to be considered in the next plan update?	Not at this time
	Are there new funding sources to consider?	The City constantly reviews grant opportunities to maximize hazard mitigation funding.
	Have elements of the plan been incorporated into other planning mechanisms?	Yes
	Was the plan monitored and evaluated as anticipated?	Yes

Plan Maintenance Procedures	What are needed improvements to the procedures?	None at this time.

TABLE 13: FEMA LOCAL MITIGATION PLANNING HANDBOOK WORKSHEET 7.2 DATA CONTINUE

7.3. Plan Maintenance, Monitoring, Evaluation and Updates

Hazard Mitigation Plan maintenance is the process the Planning Team establishes to track the plan's implementation progress and to inform the plan update. The plan must include a description of the method and schedule for monitoring, evaluating, and updating it within a 5-year cycle. These procedures help to:

- Ensure that the mitigation strategy is implemented according to the plan.
- Provide the foundation for an ongoing mitigation program in your community.
- Standardize long-term monitoring of hazard-related activities.
- Integrate mitigation principles into community officials' daily job responsibilities and department roles.
- Maintain momentum through continued engagement and accountability in the plan's progress.

7.3.1. Plan Monitoring

Plan monitoring means tracking the implementation of the plan over time. The plan must identify how, when, and by whom the plan will be monitored.

The planning team participants will be responsible for monitoring the plan annually for updates to goals, objectives, and action items. The Emergency Management Program will be responsible for monitoring the plan and incorporating necessary updates on an annual basis.

At the end of the five-year cycle for hazard mitigation plans, planning participants will report on the status of mitigation projects, the success of various implementation processes, difficulties encountered, success of coordination efforts, and strategies that should be revised.

7.3.2. Plan Evaluation

The Plan is evaluated by the planning team annually to determine the effectiveness of programs, and to reflect changes in land development, policies, or programs that may affect mitigation priorities. This includes re-evaluation by project leads based upon the initial STAPPLEE criteria used to draft goals, objectives, and action items. Planning team members also review the goals and action items to determine their relevance to changing situations in the city, as well as changes in State or Federal regulations and policy.

Planning team members also review the risk assessment portion of the plan to determine if this information should be updated or modified, given any new available data. The departments responsible for the various action items will report on the status of their projects, the success of

various implementation processes, difficulties encountered, success of coordination efforts, and which strategies should be revised.

Any updates or changes necessary will be forwarded to the Emergency Management Program for inclusion in further updates to the Plan.

7.3.3. Plan Updates

Since this Plan's original adoption in 2005 the hazard mitigation planning team has participated in an annual review. This process was continued after the adoption of the 2010 plan. The review details all mitigation actions that were deferred, begun, continued, or completed during that calendar year. In the past five years, there has been progress made with the successful completion several action items developed in 2018. Section 7.1 details the status of the action items from the 2018 plan.

This review process has been effective in identifying gaps and shortfalls in funding, support, and other resources. It has also allowed for the re-prioritization of specific actions as circumstances change. It allows the hazard mitigation plan to be a living document. This review process has enabled the planning team to improve the document by eliminating actions that have been completed, adding new actions that have been identified since the plan's adoption and reprioritizing other actions to reflect new priorities and/or limitations.

The planning team will evaluate to progress of the goals, objectives, and actions on a annual basis, update them as necessary, and participate in a complete plan review and update process again in five years.

7.3.4. Implementation Through Existing Programs and Other Planning Mechanisms

Chula Vista has implemented all of the identified priority actions from the 2018 Multi-Jurisdictional Hazard Mitigation Plan (MJHMP).

Planning participants used (and will continue to use) this plan as a baseline of information related to priority hazards impacting their jurisdictions, to identify vulnerable communities and critical assets, and plan for their protection. The planning participants have also been able to refer to existing institutions, integrations, plans, policies, and ordinances defined for each jurisdiction, which was outlined in Section 2 of this plan (e.g., General Plan).

After regional adoption of this MJHMP update, the planning team will work to incorporate this plan into the General Plans and/or other comprehensive plans and procedures as those plans require review and revisions. The hazard mitigation plan can influence other City plans to focus on hazard mitigation activities and/or policies that support hazard mitigation. City plans that can be influenced by the hazard mitigation plan include but are not limited to:

EXISTING PLANS/EFFORTS	INTEGRATION WITH HAZARD MITIGATION
GENERAL PLAN	The City of Chula Vista General Plan includes a safety element. Upon the next revision of the city's General Plan, the following section should be reviewed to ensure they account for existing hazards and new hazards within the various Chula Vista communities: • Land Use and Transportation Element • Public Facilities and Services Element • Environmental Element • Growth Element. Land use, land development, and transportation corridors must not exacerbate existing hazards or impinge on hazard areas. As the City continues to grow, the general plan will guide the City's growth and must consider hazard impact on the community.
EMERGENCY OPERATIONS PLAN	The Emergency Operations Plan guides the city's coordination of resources during emergency response. This plan should be reviewed annually along with the Hazard Mitigation Plan to ensure the EOP is preparing for and addressing responses to all identified hazards.
BAYFRONT MASTER PLAN	In cooperation with the Port of San Diego, the Bayfront Master Plan should be reviewed to ensure the threats of tsunami and coastal erosion are being planned for and addressed.
REGIONAL PLANNING EFFORTS	The city takes part in several San Diego County Operational Area planning efforts. The city should continue bringing the content and goals of the Hazard Mitigation Plan into future regional planning efforts, to include the OA Emergency Operations Plan, Recovery plans, Debris removal plans, and the next iteration of the Regional Hazard Mitigation Plan.
RESPONSE PLANS	Several operational or functional response plans are influenced by information contained in the Hazard Mitigation Plan. These plans should be cross referenced with the Hazard Mitigation Plan, and they include but are not limited to: • Damage Assessment Plan: A review of the vulnerability and estimated losses detailed in the hazard profiles can help identify what areas to initially prioritize following a hazard event. Section 5 table can inform this plan. • Debris Management Plan: HAZUS runs conducted for earthquake scenarios include an estimate of how many tons of debris would likely be generated by those scenarios. These estimates can be used as bounding limits for how much and what type of debris generation is likely to be required, as well as what areas are most likely to see heavy debris generations. Moreover, assessments done by the GIS personnel within Chula Vista can inform specific considerations for a Debris plan.

PUBLIC INFORMATION AND OUTREACHING PLANS	The jurisdictions' ongoing public education and outreach efforts should reflect the hazards and vulnerabilities described in this Plan. In addition to preparing for disasters, public education should include ways in which the public can reduce their vulnerability to natural and human caused hazards. Furthermore, mitigation activities and success stories should be communicated to the public to show the benefits of effective mitigation planning.
CAPITAL IMPOROVEMENT PLANS	All capital improvement projects should undergo a hazard mitigation review to ensure these projects either improve and existing hazard, avoid an existing hazard, or do not exacerbate an existing hazard.