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AGENDA
OXNARD CITY COUNCIL
COMMUNITY SERVICES, PUBLIC SAFETY,
HOUSING & DEVELOPMENT COMMITTEE
Council Chambers, 305 West Third Street
July 26, 2022
Regular Meeting - 6:45 to 8:15 PM

Zoom details to call-in for public comment during a meeting:

- 1. Dial Phone Number: (888) 475-4499**
- 2. Enter Meeting ID: 894 3849 3728**
- 3. Passcode: 651006**

If you wish to speak during public comments or a particular item on the agenda, please sign-on by following the zoom calling in steps listed above. Once the Mayor calls for public speakers, **press *9 to raise your hand to inform the City Clerk you would like to speak during the public speaking section for that particular item on the agenda, while in the zoom waiting room.**

The public may view the meeting from home on Spectrum channel 10, Frontier channel 35, or YouTube at Youtube.com/oxnardnews. Video recordings of the meeting are typically available online following the meeting at the City's website at www.oxnard.org/city-meetings.

*Please see the link for the Measure M pre-recorded presentation video for each item listed on this agenda.

YOU MAY PARTICIPATE IN THE MEETING IN THE FOLLOWING WAYS:

- 1. ATTEND THE MEETING AT THE LOCATION LISTED ABOVE:** Submit a speaker card to the City Clerk.
- 2. EMAIL COMMENTS OR SIGN UP TO SPEAK REMOTELY BEFORE THE MEETING**
 - a. Submit a request to speak by no later than 3 p.m. on the day of the meeting by using the form available at www.oxnard.org/citymeetings.
 - b. Submit an email to cityclerk@oxnard.org no later than 3 p.m. on the day of the meeting (indicate the agenda item number in the subject line). All email correspondence will be forwarded to the City Council prior to the start of the meeting and made part of the legislative record.
 - c. Contact the City Clerk's Office at (805) 385-7803 to submit your request.
- 3. PROVIDING PUBLIC COMMENTS REMOTELY DURING THE MEETING**
 - a. To provide public comment during the meeting dial (888) 475-4499 and enter the Meeting ID and Passcode listed above as the Zoom details for this meeting. When the Mayor announces the particular item on the agenda you want to speak on, press *9 to raise your hand while in the zoom waiting room. Once called on, press *6 to unmute your phone.
 - b. Public comments on agenda items will be taken following the announcement of the item. After the item is announced, members of the public may register or otherwise be recognized for the purpose of providing public comment.

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In compliance with the Americans with Disabilities Act, if you require special assistance to participate in a meeting, please contact the City Clerk's Office at 385-7803. Notice at least 72 hours prior to the meeting will enable the City to reasonably arrange for your accessibility to the meeting.

Agenda Item time estimates: (Presentation / Committee Discussion / Public Comment)

* The City has filed pre-election and post-election lawsuits regarding the validity of Measure M.

A. ROLL CALL, POSTING OF AGENDA, FLAG SALUTE

B. PUBLIC COMMENTS ON ITEMS NOT ON THE AGENDA

A person may address the legislative body only on matters not appearing on the agenda and within the subject matter jurisdiction of the legislative body. Speaker requests shall be submitted as set forth on the first page of this agenda. Speakers are limited to three minutes. After 30 minutes, if all speakers have not had the opportunity to speak, the remaining speakers will be given an opportunity to speak prior to adjournment of the meeting. The legislative body cannot enter into a detailed discussion or take action on any items presented during public comments at this time. Such items may only be referred to the City Manager/Executive Director/Secretary for administrative action or scheduled on a subsequent agenda for discussion. Persons wishing to speak on public hearing items should do so at the time of the hearing.

C. CONSENT AGENDA

1. City Clerk Department

SUBJECT: Approval of Minutes.

RECOMMENDATION: That the Community Services, Public Safety, Housing & Development Committee approve the minutes of the June 14, 2022 regular meeting as presented.

Contact: Rose Chaparro, (805) 385-7805

D. REPORTS

1. Fire Department

SUBJECT: Adoption of a Resolution Approving the 2022 Update of the Ventura County Multi-Jurisdictional Hazard Mitigation Plan. (0/5/5)

RECOMMENDATION: That the Community Services, Public Safety, and Housing & Development Committee recommends that the City Council adopt the attached Resolution approving the 2022 update of the Ventura County Multi-Jurisdictional Hazard Mitigation Plan.

Please click the following link to view the required Measure M pre-recorded presentation video: <https://youtu.be/UPTJy62qbYs>

Contact: Alexander Hamilton, (805) 385-7700

E. ITEMS FOR FUTURE AGENDAS

F. ADJOURNMENT



**COMMUNITY SERVICES, PUBLIC SAFETY, HOUSING &
DEVELOPMENT COMMITTEE AGENDA REPORT**

**CONSENT AGENDA
AGENDA ITEM NO. C.1**

DATE: July 26, 2022

TO: Community Services, Public Safety, Housing & Development Committee

FROM: Rose Chaparro, City Clerk, (805) 385-7805, rose.chaparro@oxnard.org

SUBJECT: Approval of Minutes.

RECOMMENDATION

That the Community Services, Public Safety, Housing & Development Committee approve the minutes of the June 14, 2022 regular meeting as presented.

BACKGROUND

Approval of Minutes.

STRATEGIC PRIORITIES

This agenda item is a routine operational item.

FINANCIAL IMPACT

There is no financial impact.

Prepared by: Rose Chaparro, City Clerk

ATTACHMENTS

1. MINUTES 06 14 2022 Community Services, Public Safety, Housing & Development

AGENDA
OXNARD CITY COUNCIL
COMMUNITY SERVICES, PUBLIC SAFETY,
HOUSING & DEVELOPMENT COMMITTEE
June 14, 2022

A. ROLL CALL, POSTING OF AGENDA, FLAG SALUTE

At 6:45 p.m., Chair Bryan A. MacDonald called to order the regular meeting of the Oxnard City Council Community Services, Public Safety, Housing & Development Committee in the City Hall Council Chambers at 305 W. Third Street, Oxnard, California. The City Clerk called the roll and announced the posting of the agenda. Chair Bryan MacDonald, Member Oscar Madrigal, and Member John C. Zaragoza were present in person.

Staff members Ashley Golden, Assistant City Manager; Ken Rozell, Chief Assistant City Attorney; Alexander Hamilton, Fire Chief; Denise Shadinger, Assistant Chief of Police; Marc Amon, Police Commander; Emilio Ramirez, Housing Director; Albert Ramirez, Assistant Housing Director; Terrel Harrison, Cultural & Community Services Director; Renee Rakestraw, Community Services Manager; and Rose Chaparro, City Clerk were present in person.

Staff members that participated via videoconference were Jason Benites, Police Chief and Tim Kelley, Special Operations Commander.

B. PUBLIC COMMENTS ON ITEMS NOT ON THE AGENDA (None received.)

C. CONSENT AGENDA

1. City Clerk Department

SUBJECT: Approval of Minutes.

RECOMMENDATION: That the Community Services, Public Safety, Housing & Development Committee approve the minutes of the May 24, 2022 regular meeting as presented.

It was moved by Member Madrigal, seconded by Chair MacDonald, to approve the Information/Consent item as presented. VOTE: MacDonald, Madrigal, and Zaragoza voted in favor; the motion carried 3-0.

D. REPORTS

1. Housing Department

SUBJECT: License Agreement A-8457 to Oxnard Housing Authority for use of property located at 1500 Camino Del Sol. (0/5/5)

RECOMMENDATION: That the Community Services, Public Safety, Housing & Community Development Committee recommend that the City Council approve and authorize the Mayor to execute License Agreement A-8457 with the Oxnard Housing Authority for the use of property located at 1500 Camino del Sol in the amount of \$564,000 over a term of five years.

Emilio Ramirez, Housing Director, presented and answered the Committee's questions. There were no public comments. Discussion ensued among the Committee and staff.

It was moved by Chair MacDonald, seconded by Member Madrigal, to approve the recommended action as presented. VOTE: MacDonald, Madrigal, and Zaragoza voted in favor; the motion carried 3-0.

2. Police Department

SUBJECT: Donation from Transcend Robotics of a Vantage Patrol Robot to the Oxnard Police Department. (0/5/5)

RECOMMENDATION: That the Community Services, Public Safety, Housing, and Development Committee recommends that the Oxnard City Council

1. Authorize the Oxnard Police Department to accept ownership of a Transcend Robotics Incorporated Vantage Patrol Robot donated by Mr. Huei Thahn Doan, and
2. Authorize the acquisition and use of the Transcend Robotics Incorporated Vantage Patrol Robot pursuant to the provisions of Assembly Bill 481 (Government Code sections 7070-7075).

Tim Kelley, Special Operations Commander, presented and answered the Committee's questions. No public comments were received. Discussion ensued among the Committee and staff.

It was moved by Chair MacDonald, seconded by Member Madrigal, to approve the recommended action as presented. VOTE: MacDonald, Madrigal, and Zaragoza voted in favor; the motion carried 3-0.

3. Cultural & Community Services Department

SUBJECT: Amendment to an Agreement with the Hueneme Elementary School District (A-8337) for the Operations of the After School Education and Safety Grant (ASES), to increase the total value of the agreement by \$3,857,261, bringing the total agreement amount to \$7,017,157. (0/5/5)

RECOMMENDATION: That the Committee recommend that the City Council approve and authorize the Mayor to execute an amendment to the agreement (A-8337) with the Hueneme Elementary School District (HESD) for the operations of the Hueneme After School Education and Safety (ASES) Grant to:

(1) Increase the agreement amount by \$3,857,261 resulting in a total agreement amount of \$7,017,157; and

(2) Approve a budget appropriation recognizing \$1,901,786 in grant funding for FY 2022-2023.

Renee Rakestraw, Community Services Manager, presented and answered the Committee's questions. No public comments were received. Discussion ensued among the Committee and staff.

It was moved by Member Zaragoza, seconded by Member Madrigal, to approve the recommended action as presented. VOTE: MacDonald, Madrigal, and Zaragoza voted in favor; the motion carried 3-0.

E. ITEMS FOR FUTURE AGENDAS (No requests were made.)

F. ADJOURNMENT

There being no further business on the agenda, and without objection, Chair MacDonald adjourned the meeting at 7:04 p.m.

ROSE CHAPARRO

City Clerk

BRYAN A. MACDONALD

Chair



COMMUNITY SERVICES, PUBLIC SAFETY, HOUSING & DEVELOPMENT COMMITTEE AGENDA REPORT

REPORTS AGENDA ITEM NO. D.1

DATE: July 26, 2022

TO: Community Services, Public Safety, Housing & Development Committee

FROM: Alexander Hamilton, Fire Chief, (805) 385-7700, alexander.hamilton@oxnard.org

SUBJECT: Adoption of a Resolution Approving the 2022 Update of the Ventura County Multi-Jurisdictional Hazard Mitigation Plan. (0/5/5)

RECOMMENDATION

That the Community Services, Public Safety, and Housing & Development Committee recommends that the City Council adopt the attached Resolution approving the 2022 update of the Ventura County Multi-Jurisdictional Hazard Mitigation Plan.

Please click the following link to view the required Measure M pre-recorded presentation video: <https://youtu.be/UPTJy62qbYs>

BACKGROUND

Hazard Mitigation Planning for the Ventura County Planning Area:

In May 2021, a coalition of Ventura County planning partners embarked on a planning process to prepare for and lessen the impacts of specified natural hazards. Responding to federal mandates in the Disaster Mitigation Act of 2000 (Public Law 106-390), the partnership was formed to pool resources and create a uniform hazard mitigation strategy that can be consistently applied to the defined planning area and used to ensure eligibility for specified grant funding sources. The 25 member planning partnership that completed this plan update process includes:

1. Ventura County (Unincorporated Areas)
2. City of Camarillo
3. City of Fillmore
4. City of Moorpark
5. City of Ojai
6. City of Oxnard
7. City of Port Hueneme
8. City of Santa Paula
9. City of Simi Valley
10. City of Thousand Oaks
11. City of Ventura
12. California State University, Channel Islands
13. Calleguas Municipal Water District
14. Casitas Municipal Water District

15. Channel Islands Beach Community Services District
16. Conejo Recreation and Park District
17. Ojai Valley Sanitary District
18. Pleasant Valley Recreation and Park District
19. Saticoy Sanitary District
20. Triunfo Water and Sanitation District
21. United Water Conservation District
22. Ventura County Fire Protection District
23. Ventura County Office of Education
24. Ventura County Public Works Agency-Watershed Protection
25. Ventura Regional Sanitation District

The planning area for the hazard mitigation plan encompasses all of Ventura County. The result of the organizational efforts has been to produce a Federal Emergency Management Agency (FEMA) and the California Governor's Office of Emergency Services (Cal OES) approved multi-agency multi-hazard mitigation plan.

Mitigation is defined in this context as any sustained action taken to reduce or eliminate long-term risk to life and property from a hazard event. Mitigation planning is the systematic process of learning about the hazards that can affect the community, setting clear goals, identifying appropriate actions, and following through with an effective mitigation strategy. Mitigation encourages long-term reduction of hazard vulnerability and can reduce the enormous cost of disasters to property owners and all levels of government. Mitigation can also protect critical community facilities, reduce exposure to liability, and minimize post-disaster community disruption.

The hazard identification and profiling in the hazard mitigation plan addresses the following natural hazards considered to be of significant importance within the Ventura County planning area:

- Dam Failure Inundation
- Drought
- Earthquake
- Flooding (includes Levee Failures)
- Landslide & Mass Movements
- Sea Level Rise/Coastal Erosion (SLR)
- Severe Storms
- Severe Weather Events (Heat/Freeze Events)
- Tsunami
- Wildfire

The Ventura County Office of Emergency Services secured funding for developing the hazard mitigation plan and was the lead coordinating agency for this multi-jurisdictional effort. All participating local jurisdictions have been responsible for assisting in the development of the hazard and vulnerability assessments and the mitigation action strategies for their respective jurisdictions and organizations. The plan presents the accumulated information in a unified framework to ensure a comprehensive and coordinated plan covering all planning partners within the Ventura County Planning Area. Each jurisdiction has been responsible for the review and approval of their individual sections of the plan.

A team of City of Oxnard staff members representing Fire, Police, Public Works, HR, IT, Finance, Cultural and Community Services, the City Attorney's Office, Community Development and the City Manager's Office

provided updates to Oxnard’s jurisdictional annex that is included within the plan.

The plan was prepared in accordance with the Cal OES Local Hazard Mitigation Plan and FEMA preparation guidelines.

The plan update process was overseen by a 17-member, stakeholder Steering Committee. The Steering Committee is composed of representative stakeholders from within the planning area and is an established committee that was leveraged for this planning process. In addition, residents were asked to contribute by sharing local knowledge of their individual area’s vulnerability to natural hazards based on past occurrences. Public involvement has been solicited via a multi-media campaign that included public meetings, web-based information, questionnaires, and progress updates via the news media.

NEXT STEPS

Why adopt this Plan?

Once the hazard mitigation plan has been approved by Cal OES and FEMA and adopted by all of the jurisdictional partners, the partnership will collectively and individually become eligible to apply for hazard mitigation project funding from the suite of grant programs under FEMA’s Hazard Mitigation Assistance (HMA) program. The Plan needs to be adopted as the final step in the process.

Where do we go from here?

Once Cal OES and FEMA have approved the Plan (APA – Approval Pending Adoption), each jurisdiction will need to adopt Volume 1 and its respective annex by governing body resolution to be eligible to apply for funding sources including grants.

Grant funds are made available to local governments and states and can be used to implement the various hazard mitigation measures specified in the respective annexes. The Hazard Mitigation Plan is considered a living document, such that as awareness of additional hazards develop and new strategies and projects are conceived to offset or prevent loss due to natural hazards, the Plan will be evaluated and revised on an annual basis during the 5 year plan timeframe.

As a living document, the hazard mitigation plan information can be integrated and used in conjunction with other emergency and related plans, such as Emergency Operation Plans (EOPs).

STRATEGIC PRIORITIES

This agenda item supports the Public Safety strategy. The purpose of the Public Safety strategy is to restore and modernize the delivery of public safety services to provide for the safety of our neighborhoods and health of our community.

FINANCIAL IMPACT

There is no fiscal impact for the approval of the Ventura County Multi-Jurisdictional Hazard Mitigation Plan. However, the implementation of the plan will require time and resources.

Prepared by: Katie Casey, Communications Manager

ATTACHMENTS

1. Exhibit 1a_Ventura County Multi-Jurisdictional Hazard Mitigation Plan_ Volume 1
2. Exhibit 1b_Ventura County Multi-Jurisdictional Hazard Mitigation Plan_ Volume 2

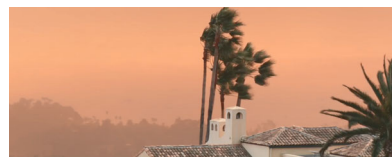
3. VC HMP Resolution_Oxnard_Committee Review 7.26.22 (1)
4. VC HMP PPT.pptx

Ventura County

Multi-Jurisdictional Hazard Mitigation Plan

Update 2022

Volume 1—Area-wide Information



June 2022



Ventura County Multi-Jurisdictional Hazard Mitigation Plan

Update 2022

June 2022

PREPARED FOR

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DEFINITION OF TERMS

0.2 percent-annual-chance flood—the flood that has a 0.2 percent chance of being equaled or exceeded in any given year; often referred to as the 500-year flood

1 percent-annual-chance flood—the flood that has a 1 percent chance of being equaled or exceeded in any given year; often referred to as the 100-year flood

AB—Assembly Bill

ADA—Americans with Disabilities Act

asset—any man-made or natural feature that has value, including people; buildings; infrastructure, such as bridges, roads, sewers, and water systems; lifelines, such as electricity and communication resources; and environmental, cultural, or recreational features such as parks, wetlands, and landmarks.

base flood—the flood having a 1% chance of being equaled or exceeded in any given year, also known as the “100-year” or “1 percent annual chance” flood. The base flood is a statistical concept used to ensure that all properties subject to the National Flood Insurance Program (NFIP) are protected to the same degree against flooding.

basin—the area within which all surface water—whether from rainfall, snowmelt, springs, or other sources—flows to a single water body or watercourse. The boundary of a river basin is defined by natural topography, such as hills, mountains, and ridges. Basins are also referred to as “watersheds.”

benefit/cost analysis—a systematic, quantitative method of comparing projected benefits to projected costs of a project or policy. It is used as a measure of cost effectiveness.

benefit—a net project outcome and is usually defined in monetary terms. Benefits may include direct and indirect effects. For the purposes of benefit/cost analysis of proposed mitigation measures, benefits are limited to specific, measurable, risk reduction factors, including reduction in expected property losses (buildings, contents, and functions) and protection of human life.

BLM—Bureau of Land Management

CAL FIRE—California Department of Forestry and Fire Protection

Cal OES—California Governor’s Office of Emergency Services

capability assessment—an analysis of a community’s capacity to address threats associated with hazards. The assessment includes two components: an inventory of an agency’s mission, programs, and policies, and an analysis of its capacity to carry them out.

CCR—California Code of Regulations

CDBG-DR—Community Development Block Grant Disaster Recovery grants

CEQA—California Environmental Quality Act

CFR—Code of Federal Regulations

climate action plan—a detailed and strategic framework for measuring, planning, and reducing greenhouse gas emissions and related climatic impacts. Climate action plans, at a minimum, include an inventory of existing emissions, reduction goals or targets, and analyzed and prioritized reduction actions.

climate change—a change in global or regional climate patterns, in particular a change apparent from the mid to late 20th century onwards and attributed largely to the increased levels of atmospheric carbon dioxide produced by the use of fossil fuels.

Community Rating System (CRS)—a voluntary program under the NFIP that rewards participating communities (provides incentives) for exceeding the minimum requirements of the NFIP and completing activities that reduce flood hazard risk by providing flood insurance premium discounts.

critical facilities—facilities and infrastructure that are critical to the health and welfare of the population. These become especially important after any hazard event occurs.

CWA—Clean Water Act

dam failure—an uncontrolled release of impounded water due to a partial or complete breach in a dam (or levee) that impacts its integrity.

dam—any artificial barrier or controlling mechanism that can or does impound or divert water.

DART—Disaster Assistance Response Team

debris flow—dense mixtures of water-saturated debris that move down-valley, looking and behaving much like flowing concrete. They form when loose masses of unconsolidated material are saturated, become unstable, and move down slope. The source of water varies but includes rainfall, melting snow or ice, and glacial outburst floods.

DFIRM—Digital Flood Insurance Rate Map

Disaster Mitigation Act (DMA; Public Law 106-390)—the latest federal legislation enacted to encourage and promote proactive, pre-disaster planning as a condition of receiving certain federal financial assistance.

drought—the cumulative impacts of long periods of dry weather. These can include deficiencies in surface and

subsurface water supplies and general impacts on health, well-being, and quality of life.

DWR—Department of Water Resources

EAP—emergency action plan

earthquake—the shaking of the ground caused by an abrupt shift of rock along a fracture in the earth or a contact zone between tectonic plates.

ecosystem services—an ecosystem service is any positive benefit that wildlife or ecosystems provide to people. The benefits can be direct or indirect—small or large.

epidemic—the spread of an infectious disease beyond a local population, reaching people in a wider geographical area. Several factors determine whether an outbreak will become an epidemic: the ease with which the disease spreads from vectors, such as animals, to people, and the ease with which it spreads from person to person.

equity—the absence of avoidable or remediable differences among groups of people, whether those groups are defined socially, economically, demographically, racially, or geographically.

ESA—Endangered Species Act

exposure—the number and dollar value of assets considered to be at risk during the occurrence of a specific hazard.

extent—the size or location of an area affected by a hazard. For hazards that do not have a clearly defined extent, this definition expands to the strength or magnitude (severity) of the hazard. For hazards in this plan that do not have mapping, extent is addressed by the severity discussion of the hazard profile.

extreme cold—temperatures from winter storms associated with freezing rain, sleet, snow and strong winds that may cause hypothermia or frostbite.

extreme heat—temperatures that hover 10 °F or more above the average high temperature for a region and last for several days.

federal disaster declaration—declarations for events that cause more damage than state and local governments and resources can handle without federal government assistance. A federal disaster declaration puts into motion long-term federal recovery programs, some of which are matched by state programs, to help disaster victims, businesses, and public entities.

FEMA—Federal Emergency Management Agency

FERC—Federal Energy Regulatory Commission

FHSZ—Fire Hazard Severity Zone

flash flood—a flood that occurs with little or no warning when water levels rise at an extremely fast rate

Flood Insurance Rate Map (FIRM)—the official map on which the Federal Emergency Management Agency delineates the special flood hazard area.

Flood Insurance Study—a report published by the Federal Insurance and Mitigation Administration for a community in conjunction with the community's Flood Insurance rate Map. The study contains such background data as the base flood discharges and water surface elevations that were used to prepare the FIRM. In most cases, a community FIRM with detailed mapping will have a corresponding flood insurance study.

floodplain—the land area along the sides of a river that becomes inundated with water during a flood.

flood—the inundation of normally dry land resulting from the rising and overflowing of a body of water.

FRA—federal responsibility area

freeboard—the margin of safety added to the base flood elevation.

frequency—how often a hazard of specific magnitude, duration, and/or extent is expected to occur on average. Statistically, a hazard with a 100-year frequency is expected to occur about once every 100 years on average and has a 1 percent chance of occurring any given year. Frequency reliability varies depending on the type of hazard considered.

Fujita tornado damage scale—scale for rating tornado wind speeds, estimated on the basis of damage sustained. The scale rates the intensity or severity of tornado events using numeric values from F0 to F5 based on tornado wind speed and damage. An F0 tornado (wind speed less than 73 miles per hour (mph)) indicates minimal damage (such as broken tree limbs), and an F5 tornado (wind speeds of 261 to 318 mph) indicates severe damage.

g—the acceleration associated with gravity (%g is an acceleration calculated as a percentage of the acceleration of gravity)

geographic information system (GIS)—a computer software application that relates data regarding physical and other features on the earth to a database for mapping and analysis.

goal—a general guideline that explains what is to be achieved. Goals are usually broad-based, long-term, policy-type statements and represent global visions. Goals help define the benefits that a plan is trying to achieve. The success of a hazard mitigation plan is measured by the degree to which its goals have been met (that is, by the actual benefits in terms of actual hazard mitigation).

greenhouse gases—methane, nitrous oxide and other gases that trap heat and warm the Earth, as a greenhouse traps heat from the sun.

ground shaking—the result of rapid ground acceleration caused by seismic waves passing beneath buildings, roads, and other structures.

hazard—a source of potential danger or adverse condition that could harm people and/or cause property damage.

hazardous material—a substance or combination of substances (biological, chemical, radiological, and/or

physical) that, because of its quantity, concentration, or physical, chemical or infectious characteristics, has the potential to cause harm to humans, animals, or the environment, either by itself or through interaction with other factors.

Hazus (Hazards U.S.)—a nationally standardized, GIS-based multi-hazard risk analysis tool developed and distributed by FEMA

high-hazard dam—a dam that can cause loss of human life from the failure or improper operation of the dam

IBC—International Building Code

intensity—the measure of the effects of a hazard

inventory—the assets identified in a study region comprise an inventory. Inventories include assets that could be lost when a disaster occurs and community resources are at risk. Assets include people, buildings, transportation, and other valued community resources.

IT—information technology

LiMWA—Limit of Moderate Wave Action

liquefaction—loosely packed, water-logged sediments losing their strength in response to strong shaking, causing major damage during earthquakes.

local government—any county, municipality, city, town, township, public authority, school district, special district, intrastate district, council of governments (regardless of whether the council of governments is incorporated as a nonprofit corporation under State law), regional or interstate government entity, or agency or instrumentality of a local government; any Indian tribe or authorized tribal organization, or Alaska Native village or organization; and any rural community, unincorporated town or village, or other public entity.

LRA—local responsibility area

magnitude—the measure of the strength of an earthquake.

mitigation actions—specific actions to achieve goals and objectives that minimize the effects from a disaster and reduce the loss of life and property.

mitigation—a preventive action taken in advance of an event to reduce or eliminate risk to life or property.

mph—miles per hour

Mw—Moment Magnitude Scale

N/A—not applicable

NASA—National Aeronautics and Space Administration

NCEI—National Centers for Environmental Information

NEHRP—National Earthquake Hazard Reduction Program

NFIP—National Flood Insurance Program

NOAA—National Oceanic and Atmospheric Administration

NWS—National Weather Service

OES—Office of Emergency Services (Ventura County Sheriff's)

pandemic—an epidemic of infectious disease that has spread through human populations across a large region, multiple continents, or worldwide.

peak ground acceleration (PGA)—a measure of the highest amplitude of ground shaking that accompanies an earthquake, based on a percentage of the force of gravity.

ppm—parts per million

preparedness—actions that strengthen the capability of government, people, and communities to respond to disasters.

probability of occurrence—a statistical measure or estimate of the likelihood that a hazard will occur. This probability is generally based on past hazard events in the area and a forecast of events that could occur in the future. A probability factor based on yearly values of occurrence is used to estimate probability of occurrence.

recurrence interval—the inverse of the probability that a given event will be equaled or exceeded in any given year (sometimes called the return period)

repetitive loss property—any NFIP-insured property that, since 1978 and regardless of any changes of ownership during that period, has experienced—Four or more paid flood losses in excess of \$1000.00; or two paid flood losses in excess of \$1000.00 within any 10-year period since 1978; or three or more paid losses that equal or exceed the current value of the insured property.

risk assessment—the process of measuring potential loss of life, personal injury, economic injury, and property damage resulting from hazards. This process assesses the vulnerability of people, buildings, and infrastructure to hazards

risk ranking—process to score and rank hazards based on the probability that they will occur and the impact they will have if they do.

risk—the estimated impact that a hazard would have on people, services, facilities, and structures in a community. Risk measures the likelihood of a hazard occurring and resulting in an adverse condition that causes injury or damage. Risk is often expressed in relative terms such as a high, moderate, or low likelihood of sustaining damage above a particular threshold due to occurrence of a specific type of hazard. Risk also can be expressed in terms of potential monetary losses associated with the intensity of the hazard.

riverine—of or produced by a river. Riverine floodplains have readily identifiable channels.

Robert T. Stafford Act (Robert T. Stafford Disaster Relief and Emergency Assistance Act, Public Law 100-107)—the statutory authority for most federal disaster response activities, especially as they pertain to FEMA and its programs. Signed into law November 23, 1988; amended by the Disaster Relief Act of 1974 (Public Law 93-288).

SEMS—Standardized Emergency Management System

SFHA—special flood hazard area

significant-hazard dam—a dam that can cause economic loss, environmental damage or disruption of lifeline facilities, or can impact other concerns, but not necessarily loss of life.

special flood hazard area—the base floodplain delineated on a Flood Insurance Rate Map. The SFHA is mapped as a Zone A in riverine situations and zone V in coastal situations. The SFHA may or may not encompass all of a community's flood problems

SRA—state responsibility area

stakeholder—business leaders, civic groups, academia, non-profit organizations, major employers, managers of critical facilities, farmers, developers, special purpose districts, and others whose actions could impact hazard mitigation.

subsidence—the caving in or sinking of an area of land.

surface fault rupture—an offset of the ground surface when fault rupture extends to the Earth's surface.

thunderstorm—a storm with lightning and thunder produced by cumulonimbus clouds. Thunderstorms usually produce gusty winds, heavy rains, and sometimes hail. Thunderstorms are usually short in duration (seldom more than 2 hours).

tornado—a violently rotating column of air extending between and in contact with a cloud and the surface of the earth. Tornadoes are often (but not always) visible as funnel clouds.

USDA—U.S. Department of Agriculture

USDM—U.S. Drought Monitor

USGS—U.S. Geological Survey

vulnerability—an assessment of how susceptible an asset is to damage, based on its construction, contents, and the economic value of its functions

watershed—an area that drains downgradient from areas of higher land to areas of lower land to the lowest point.

Zone X—area determined to be outside the 1 percent and 0.2 percent annual chance floodplains.

zoning ordinance—ordinance that designates allowable land use and intensities for a local jurisdiction.

EXECUTIVE SUMMARY

Ventura County’s hazard mitigation plan update for 2022 defines measures to reduce risks from natural disasters in the Ventura County planning area, which includes unincorporated areas, incorporated cities, and special purpose districts. The plan updates the County’s previous plan, the *2015 Ventura County Multi-Hazard Mitigation Plan*. It complies with federal and state hazard mitigation planning requirements to establish eligibility for funding under Federal Emergency Management Agency (FEMA) grant programs for all jurisdictions that participated as planning partners:

- City of Camarillo
- City of Fillmore
- City of Moorpark
- City of Ojai
- City of Oxnard
- City of Port Hueneme
- City of San Buenaventura (Ventura)
- City of Santa Paula
- City of Simi Valley
- City of Thousand Oaks
- California State University, Channel Islands
- Calleguas Municipal Water District
- Casitas Municipal Water District
- Channel Islands Beach Community Services District
- Conejo Recreation & Park District
- Ojai Valley Sanitary District
- Pleasant Valley Recreation & Park District
- Saticoy Sanitary District
- Triunfo Water & Sanitation District
- United Water Conservation District
- Ventura County Fire Protection District
- Ventura County Office of Education
- Ventura County Public Works Agency—Watershed Protection
- Ventura Regional Sanitation District

PLAN DEVELOPMENT APPROACH

Organization

A core planning team consisting of a contract consultant and Ventura County staff was assembled to facilitate this plan update. A planning partnership was formed by engaging eligible local governments and making sure they understood their expectations for compliance under the updated plan. A steering committee was assembled to oversee the plan update, consisting of both governmental and non-governmental stakeholders within the planning area. Coordination with other local, state, and federal agencies involved in hazard mitigation occurred throughout the plan update process. Organization

efforts included a review of the County's 2015 hazard mitigation plan, the California statewide hazard mitigation plan, and existing programs that may support hazard mitigation actions.

Public Outreach

The planning team implemented a multi-media public involvement strategy utilizing the outreach capabilities of the planning partnership that was approved by the Steering Committee. The strategy included virtual public meetings, a community hazard mitigation awareness survey, a project website, and multiple print, web-based, and social media releases. Additionally, the Steering Committee was made up of community-based organizations, non-profit organizations, and other agencies that helped amplify public outreach efforts to their networks.

Plan Document Development

The planning team and Steering Committee assembled a document that is designed to meet federal hazard mitigation planning requirements for all partners. The updated plan contains two volumes. Volume 1 contains components that apply to all partners and the broader planning area. Volume 2 contains components that are jurisdiction-specific, including each planning partner's dedicated annex.

Adoption

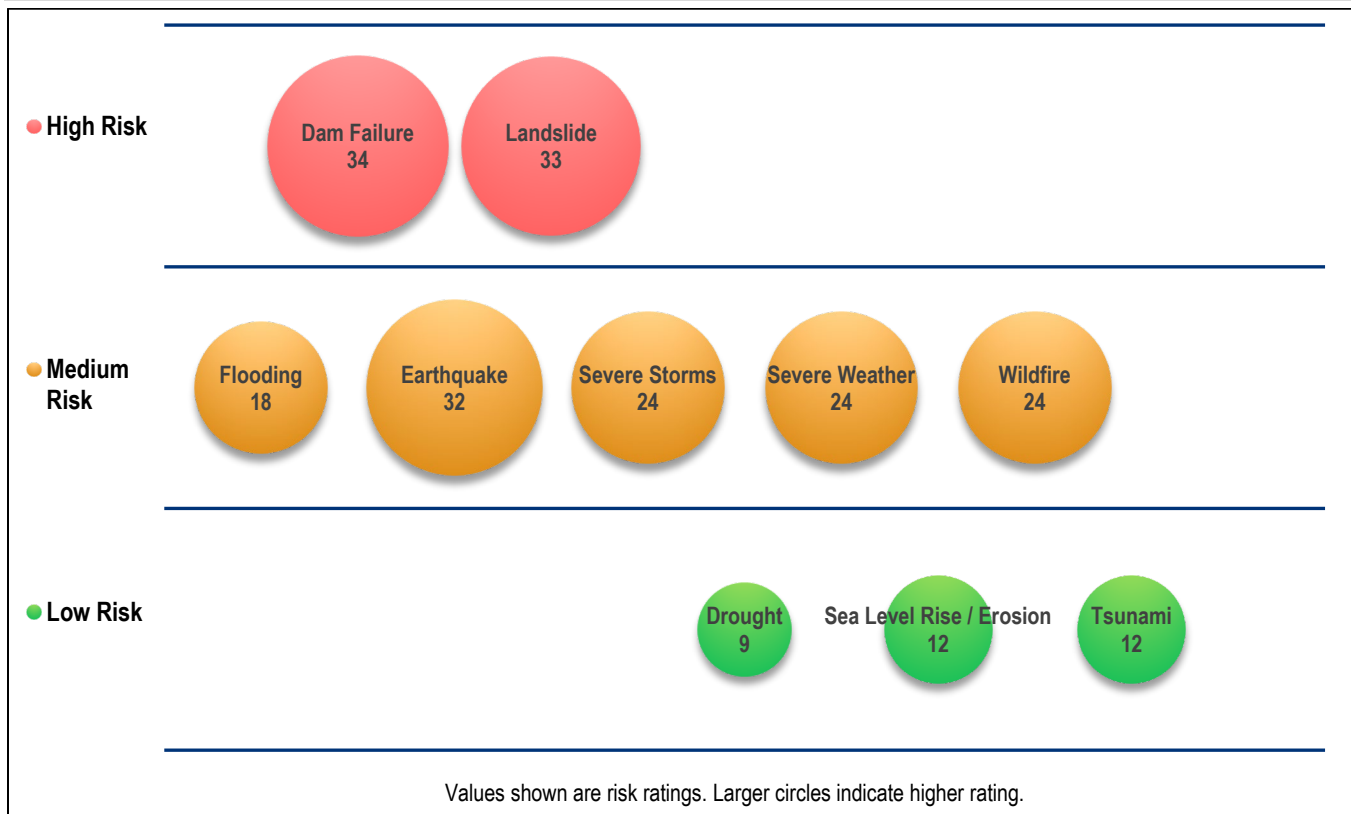
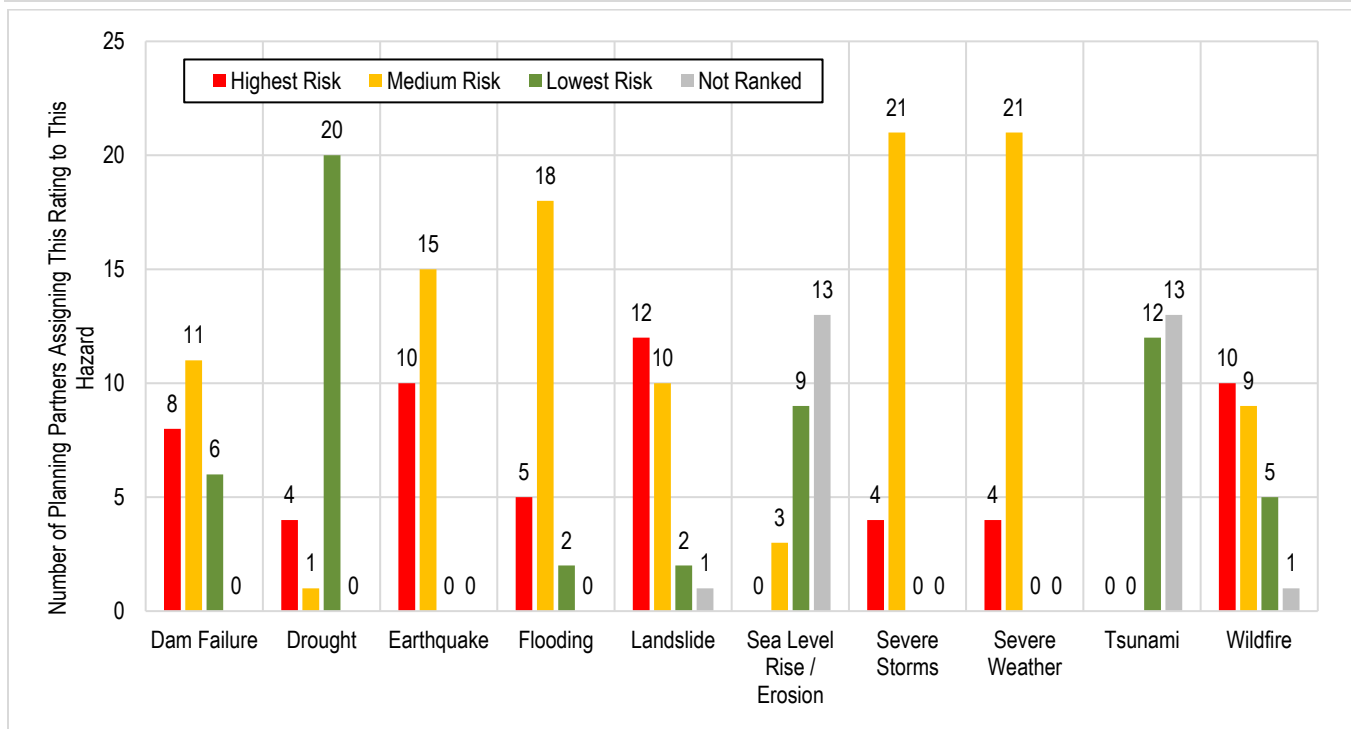
Once pre-adoption approval has been granted by the California Governor's Office of Emergency Services and FEMA, each planning partner will individually adopt the updated plan. Each partner has up to one year from FEMA approval to adopt the plan.

RISK ASSESSMENT

Risk assessment is the process of measuring the potential loss of life resulting from natural hazards, as well as personal injury, economic injury, and property damage, in order to determine the vulnerability of people, buildings, and infrastructure. For this update, the risk assessment included the following:

- Hazard identification and profiling
- Assessment of the impact of hazards on physical, social, and economic assets
- Identification of particular areas of vulnerability
- Estimates of the cost of potential damage

Based on the risk assessment, each hazard of concern was ranked for the risk it poses to the overall planning area using risk ranking criteria provided by the core planning team. These rankings were reviewed and validated by each planning partner through the jurisdictional annex process. Figure ES-1 shows scores and ratings for the entire Ventura County planning area. All planning partners also rated the hazards for their impacts on their own individual planning areas. Figure ES-2 summarizes how the participating planning partners rated each hazard.

Figure ES-1. Countywide Hazard Risk Rating**Figure ES-2. Summary of Risk Rating for Individual Planning Partners**

The Steering Committee considered the full range of natural hazards that could affect the planning area and then selected those that present the greatest concern for risk assessment in this plan. The process incorporated a review of state and local hazard planning documents as well as information on the frequency of, magnitude of, and costs associated with hazards that have struck the planning area or could do so. Anecdotal information regarding natural hazards and the perceived vulnerability of the planning area's assets to them was also used. Based on the review, this plan includes risk assessments for the following hazards of concern:

- Dam failure
- Drought
- Earthquake
- Flood
- Landslide
- Sea-level rise and coastal erosion
- Severe storms
- Severe weather
- Tsunami
- Wildfire

In addition to the risk assessment of the hazards of concern, this plan provides a qualitative review of "hazards of interest." The Steering Committee determined that these other hazards, though not required to be evaluated under federal guidelines for hazard mitigation plans, are important to recognize qualitatively in this plan. Hazard profiles, without quantitative risk assessments, are provided for the following hazards of interest:

- Agricultural and biological hazards
- Pandemic

Climate change is not assessed as an individual hazard, but a profile is provided describing how climate change could affect the hazards of concern assessed in this plan.

MITIGATION GOALS AND OBJECTIVES

The Steering Committee reviewed the *2015 Ventura County Multi-Hazard Mitigation Plan* and noted that neither a vision statement nor a list of objectives was part of the previous plan. The following vision statement was selected to guide the Steering Committee and planning partners in selecting the actions contained in this plan update:

The Ventura County Multi-Jurisdictional Hazard Mitigation Plan will establish and promote a comprehensive mitigation strategy and efforts to equitably reduce risk and increase the resiliency of the community and environment from natural hazards.

Goals

The Steering Committee and planning team established the following 10 goals for the plan update:

- Protect life, property, and the environment, and minimize displacement due to natural hazard events.
- Effectively communicate natural hazard risks and mitigation strategies to the whole community.
- Pursue development and implementation of feasible, cost-effective, and environmentally sound hazard mitigation measures.
- Prioritize multi-objective hazard mitigation actions and those that reduce risk to vulnerable communities.
- Coordinate with other plans and programs that can support or enhance hazard mitigation.
- Enhance the County's capability and capacity to prepare for, respond to, and recover from the impacts of natural hazards.
- Proactively anticipate the risks of future impacts from hazards.
- Increase the County's adaptive capacity to reduce risk from hazard impacts.
- Promote proactive, self-sufficient mitigation and response abilities.
- Reduce risk to and increase the resilience of critical infrastructure and community lifelines.

The effectiveness of a mitigation strategy is assessed by determining how well these goals are achieved.

Objectives

Each of the selected plan objectives meets multiple goals, serving as a stand-alone measurement of the effectiveness of a mitigation action, rather than as a subset of a goal. The objectives were used to help establish priorities for each action identified in the plan. The plan objectives are as follows:

- Utilize the best available data, science, and technology to identify and communicate the risk exposure to hazards to state, regional, and local agencies, as well as the private sector and non-profit groups.
- Support efforts to improve the resilience of community lifelines in socially vulnerable communities.
- Enhance supply chain diversity and improved resilience by supporting local food and energy production and increased multi-modal transportation.
- Research, develop, promote, adopt, and enforce codes and standards to preserve life and property that are affordable and feasible to implement.
- Promote and implement measures to mitigate the risk of wildfires, such as greenbelts and fire breaks around communities and along roadways.
- Support the protection of vital records, and strengthen or replace buildings, infrastructure, and lifelines to minimize post-disaster disruption and facilitate short-term and long-term recovery.
- Improve and expand systems that provide warning and emergency communications to the whole community.

- Continue developing and strengthening inter-jurisdictional coordination and cooperation in the area of emergency services.
- Promote and implement the retrofit or replacement of at-risk structures and lifelines to increase community resilience.
- Incentivize mitigation measures for high-risk and repetitive loss areas to address repairs, major alterations, development plans, and practices to increase community resilience.
- Reduce repetitive property losses due to hazard impacts through acquisition, retrofitting, design, and updated construction and land use regulations.
- Encourage and support leadership within the private sector, non-profit agencies, and community-based organizations to promote and implement local hazard mitigation activities.
- Proactively manage and care for natural resources, including grasslands, forests, oak woodlands, riparian forests, stream channels, coastal wetlands, and beaches, to enhance their ability to withstand and recover from natural disasters and minimize public safety risks.
- Support hazard mitigation measures that promote and enhance natural processes.
- Support hazard mitigation measures, where feasible, that utilize nature-based practices and solutions (e.g., holistic watershed management and green belts) and support and enhance natural processes.
- Encourage the creation of financial and regulatory incentives to motivate stakeholders such as homeowners, private sector businesses, and non-profit community organizations to mitigate hazards and risks.
- Conduct public outreach activities that increase community awareness and understanding of hazard risk, mitigation options, and preparedness strategies.
- Minimize impacts of hazard events on the economic drivers for the County.
- Align the hazard mitigation plan with state mitigation plans; city and county general, community, capital improvement plans; special-purpose district plans; and climate action, resilience, and adaptation plans.

MITIGATION ACTION PLAN

The mitigation actions presented in this update are activities designed to reduce or eliminate losses resulting from natural hazards. The update process resulted in the identification of 300 mitigation actions for implementation by individual planning partners, as presented in Volume 2 of this plan. In addition, the Steering Committee and planning partners identified three countywide actions benefiting the whole partnership, as listed in Table ES-1.

Table ES-1. Countywide Mitigation Initiatives

Action Number and Description	Priority for Implementation	Priority for Grant Pursuit
CW-1— Continue to maintain a website that will house the multi-jurisdictional hazard mitigation plan and any amendments to it adopted during the next 5-year period to provide the planning partners and the public with ongoing access to the plan and its implementation.	High	Low
CW-2— Continue to leverage/support/enhance ongoing, regional public education and awareness programs, such as VCAAlert, CERT (Community Emergency Response Team), DART (Disaster Assistance Response Team), TsunamiReady, and StormReady, as methods to educate the public on risk, risk reduction, and community resilience.	High	Low
CW-3— Continue to provide a virtual hub for sharing information on hazard mitigation resources on the readyventuracounty.org website that will support mitigation efforts and awareness of grant funding opportunities to the planning partnership.	High	Low

IMPLEMENTATION

The Steering Committee developed a plan implementation and maintenance strategy that includes monitoring of the plan’s implementation, progress reporting, a strategy for continued public involvement, and plan integration with other relevant plans and programs.

Full implementation of the recommendations of this plan will require time and resources. The measure of the plan’s success will be its ability to adapt to changing conditions. Ventura County and its planning partners will assume responsibility for adopting the recommendations of this plan and committing resources toward implementation. The framework established by this plan will enable all planning partners to pursue Hazard Mitigation Assistance grant funding for feasible, eligible and cost-effective actions. The planning partnership developed this plan with extensive public input, and public support of the actions identified in this plan will help ensure the plan’s success.

Part 1—BACKGROUND AND METHODS

1. INTRODUCTION

1.1 WHY PREPARE THIS PLAN?

Hazard mitigation is defined as any action taken to reduce or alleviate the loss of life, personal injury, and property damage that can result from a disaster. Hazard mitigation activities include planning efforts, policy changes, programs, studies, improvement projects, and other steps to reduce the impacts of hazards. These actions may be long- or short-term in nature, and are implemented before, as well as during and after disasters.

1.1.1 Federal Eligibility

Disaster Mitigation Act

The federal Disaster Mitigation Act (DMA) emphasizes planning for disasters before they occur. The DMA requires state and local governments to develop hazard mitigation plans in order to be eligible for certain hazard-related federal grant programs. The grant eligibility requires that the hazard mitigation plan be approved by the Federal Emergency Management Agency (FEMA), formally adopted by the local community, and regularly updated. Regulations developed to fulfill the DMA's requirements are included in Title 44 of the Code of Federal Regulations (44 CFR).

The DMA encourages cooperation among state and local authorities in pre-disaster planning. The responsibility for hazard mitigation lies with not only with local, state, and federal governments, but also with private property owners and commercial and institutional interests. The enhanced planning network called for by the DMA helps local governments to articulate accurate needs for mitigation, resulting in faster allocation of funding and more cost-effective risk-reduction projects.

The DMA also promotes sustainability in hazard mitigation. To be sustainable, hazard mitigation needs to incorporate sound management of natural resources and address hazards and mitigation in the largest possible social and economic context.

Community Rating System

FEMA's Community Rating System (CRS) is a voluntary incentive program that encourages community floodplain management activities that go beyond the minimum requirements of FEMA's National Flood Insurance Program (NFIP). The CRS describes 18 activities that communities can take to reduce or eliminate exposure to floods. To implement these activities, FEMA published the *2013 NFIP CRS Coordinators Manual*, which spells out the credit and credit criteria for CRS activities. Some of these activities can be implemented through the adoption of a qualifying hazard mitigation plan.

1.1.2 Purposes for Planning

Ventura County prepared a hazard mitigation plan in compliance with the DMA in 2005 and has updated the plan every five years since then, most recently in 2015. The *Ventura County Multi-Jurisdictional Hazard Mitigation Plan 2022* update fulfills the ongoing update requirement.

This update identifies resources, information, and strategies for reducing risk from natural hazards. Elements and strategies in the plan were selected because they meet a program requirement and because they best meet the needs of the County and communities within it. The focus of this plan is on better decision-making to avoid future risk and on activities that will eliminate or reduce current risks.

In preparing this update, the County partnered with local cities and special-purpose districts. Such multi-jurisdictional planning benefits from pooled resources and the elimination of redundant activities. FEMA encourages multi-jurisdictional planning under its guidance for the DMA. The plan will help guide and coordinate mitigation activities throughout the planning area.

The planning effort identified risks posed by hazards and developed strategies to reduce the impact of hazard events on people and property in Ventura County. The plan was developed to meet the following objectives:

- Meet or exceed program requirements specified under the DMA.
- Enable Ventura County to continue to qualify for federal grant funding to reduce risk through mitigation.
- Create a risk assessment that focuses on Ventura County's hazards of concern.
- Coordinate existing plans and programs so that high-priority mitigation activities are funded and implemented.
- Address the Activity 510 Floodplain Management Planning activities of the CRS for the three participating partners:
 - Ventura County Public Works Agency—Watershed Protection (VCPWA-WP) on behalf of Unincorporated Ventura County, which joined the CRS in 2011 (currently rated at CRS Class 5)
 - The City of Oxnard, which joined the CRS in 2013 (currently rated at CRS Class 7)
 - The City of Simi Valley, which joined the CRS in 1993 (currently rated at CRS Class 5).

1.2 WHO WILL BENEFIT FROM THIS PLAN?

All residents, visitors, and businesses in Ventura County are the ultimate beneficiaries of this hazard mitigation plan update. The plan identifies strategies and actions to reduce risk for those who live in, work in, and visit the planning area. It provides a viable planning framework for all foreseeable natural hazards. Participation by key stakeholders in developing the plan helped ensure that outcomes will benefit the broadest possible range of communities in the county. The plan's goals and recommendations can lay the groundwork for development and implementation of local mitigation activities and partnerships.

1.3 CONTENTS OF THE PLAN

This plan has been organized into two volumes so that elements that are specific to the individual planning partners can easily be distinguished from those that apply to the whole planning area:

- **Volume 1**—Volume 1 includes all federally required elements that apply to the entire planning area. This includes the description of the planning process, public involvement strategy, goals and objectives, countywide hazard risk assessment, countywide mitigation actions, and a plan maintenance strategy.
- **Volume 2**—Volume 2 includes all federally required jurisdiction-specific elements, in annexes for each participating jurisdiction. It includes a description of the participation requirements confirmed by the core planning team and Steering Committee, as well as instructions and templates that the partners used to complete their individual annexes.

Both volumes include elements required under federal guidelines. The CRS floodplain management planning activities for the participating planning partners are identified in their individual annexes. Where sections of this plan address specific DMA requirements, the CFR section number in which the requirement is found is cited.

The following appendices provided at the end of Volume 1 include information or explanations to support the main content of the plan:

- Appendix A—Public involvement information used in preparation of this update
- Appendix B—A summary of federal and state programs and regulations relevant to hazard mitigation
- Appendix C—A description of data sources and methods used for mapping hazard areas
- Appendix D—Quantitative risk assessment modeling results by jurisdiction
- Appendix E—Peak stream flow levels for waterways within Ventura County
- Appendix F—Plan adoption resolutions from planning partners

Each planning partner will adopt Volume 1 in its entirety and at least the following parts of Volume 2: the introduction, the partner's jurisdiction-specific annex, and the appendices.

2. PLAN UPDATE—WHAT HAS CHANGED?

2.1 PREVIOUS PLANS

2.1.1 2005 Ventura County Hazard Mitigation Plan

The 2005 hazard mitigation plan was prepared by Ventura County and other members of the Local Hazard Mitigation Group—consisting of members of the Inter-Agency Coordination Group, including fire chiefs/officials, emergency managers, safety coordinators, planners, and other officials and staff from 34 local participants including Ventura county, cities, and special districts). Technical support was provided by URS Corporation. The 2005 plan was developed between June 2004 to January 2005. It was adopted by the Ventura County Board of Supervisors on June 7, 2005.

2.1.2 2010 Ventura County Hazard Mitigation Plan

The 2010 Ventura County Hazard Mitigation Plan was a multi-jurisdictional plan covering Ventura County, the Cities of Camarillo, Moorpark, Ojai, Oxnard, Port Hueneme, Santa Paula, Thousand Oaks, and Ventura, eight special purpose districts, and the Ventura County Office of Education. The plan was adopted by the Ventura County Board of Supervisors in December 2010 and was approved by FEMA Region IX in February 2011. The planning process was overseen by a planning committee that was based on the standing Emergency Coordinators' Council. The plan identified eight goals and identified and prioritized 102 actions to be implemented by the planning partners.

2.1.3 2015 Ventura County Multi-Hazard Mitigation Plan

The 2015 update of the Ventura County Multi-Hazard Mitigation Plan was a multi-jurisdictional plan that covered Ventura County, the Cities of Camarillo, Moorpark, Ojai, Oxnard, Port Hueneme, Santa Paula, Thousand Oaks, and Ventura, eight special purpose districts, and the Ventura County Office of Education. Like the 2010 and 2005 plans before it, the 2015 plan focused on the hazards considered to be the greatest risk to the county based on historical disaster events, future probabilities and degree of vulnerability—including wildfire, earthquake, flood, dam and levee failures, landslide, winter storms, tsunamis, and agriculture/biological events.

The 2015 update process was expanded to address the implications that climate change and drought may have on hazard trends in Ventura County. Additionally, the 2015 process was enhanced to meet FEMA's Community Rating System Activity 510 planning requirements.

Based on its assessment of the identified hazards, the 2015 Plan recommended 22 mitigation actions for all partners that addressed the following 12 hazards of concern:

- Agricultural/biological
- Climate change
- Dam failure/inundation
- Drought
- Earthquake
- Flood
- Landslide
- Levee failure inundation
- Post-fire debris flow
- Tsunami
- Wildfire
- Winter storm

The 18 planning partners identified and prioritized 95 actions to be implemented by individual partners.

The planning process was overseen by a planning committee that included staff from County departments and agencies, representatives for each participating city and special district, and other entities, including the California Governor's Office of Emergency Services (Cal OES). The committee met two times during the plan update process. The plan was adopted by the Ventura County Board of Supervisors in May 2016 and was approved by FEMA Region IX in August 2016.

2.2 WHY UPDATE?

2.2.1 Federal Eligibility

Under 44 CFR, hazard mitigation plans must present a schedule for monitoring, evaluating, and updating the plan. This provides an opportunity to reevaluate recommendations, monitor the impacts of actions that have been accomplished, and determine if there is a need to change the focus of mitigation strategies. A jurisdiction covered by a plan that has expired is not able to pursue elements of federal funding for which a current hazard mitigation plan is a prerequisite.

2.2.2 Changes in Development

Hazard mitigation plan updates need to reflect any changes in development in the planning area that may have increased or decreased the vulnerability of a jurisdiction to hazards since the last plan was approved (44 CFR Section 201.6(d)(3)). The intent of this requirement is to ensure that the mitigation strategy addresses the risk and vulnerability of existing and potential development, as well as taking into consideration possible future conditions that could affect vulnerability.

The following are significant development and demographic changes in Ventura County since the 2015 hazard mitigation plan update:

- As of January 1, 2021, the reported population for Ventura County was 835,459, representing a decrease of 1.7 percent from 2016 (California Department of Finance, 2021)
- The valuation of the general building stock increased by 21.5 percent (County of Ventura Assessor, 2021)
- Based on development permit data provided by the municipal planning partners (see Volume 2), permits were issued for the construction of nearly 20,000 new structures over the past five years. This does not include accessory dwelling units, which are often classified as alterations

to an existing property rather than new construction. More than 80 percent of this development occurred in the cities of Camarillo, Ojai and Thousand Oaks.

Although the population decreased slightly during the performance period of the 2015 plan, the county experienced an overall increase in general building stock (see Volume 2). This plan update assumes that some of this new development occurred in hazard-prone areas. Because all such new development would have been regulated pursuant to local programs and codes, it is assumed that vulnerability did not increase even if exposure did. Ventura County and its incorporated cities and towns have general plans that govern land-use decisions and policymaking, as well as building codes and flood-management regulations based on state and federal mandates. More detailed information on the types and location of new construction over the last five years is available in the city and County annexes located in Volume 2 of this plan.

2.3 THE UPDATED PLAN—WHAT IS DIFFERENT?

The updated plan differs from the 2015 plan in a variety of ways. Table 2-1 indicates the major changes between the two plans as they relate to 44 CFR requirements for hazard mitigation plans.

Table 2-1. Key Changes from Previous Hazard Mitigation Plan

44 CFR Requirement	2015 Plan	Updated Plan
<i>Requirement §201.6(b): In order to develop a more comprehensive approach to reducing the effects of natural disasters, the planning process shall include:</i> <i>An opportunity for the public to comment on the plan during the drafting stage and prior to plan approval;</i> <i>An opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, and agencies that have the authority to regulate development, as well as businesses, academia and other private and non-profit interests to be involved in the planning process; and</i> <i>Review and incorporation, if appropriate, of existing plans, studies, reports and technical information.</i>	The 2015 plan included all of these components as summarized in Section 3 of the plan. This planning effort included enhanced coordination with floodplain management agencies to meet CRS requirements. The process was overseen by a designated planning committee and facilitated through an oversight hazard mitigation planning committee. The process included a public outreach and stakeholder involvement strategy that included: - Multi-media releases - Website - Web portal - Engagement with the Emergency Planning Council - Town hall - Virtual town hall - Brochure	This plan update utilized many of the same mitigation planning best-management practices but enhanced them on multiple fronts. The update process was facilitated by a planning team consisting of key County staff and a contract consultant, working with a multidiscipline stakeholder steering committee that met more frequently than the committee established for the 2015 effort. The steering committee confirmed a public engagement strategy that included: - Plan website - Story map - Survey - Public meetings - Social media - Media outreach This plan update also included enhanced efforts to coordinate with other agencies and community stakeholders that could support or enhance the outcomes of the update effort.

44 CFR Requirement	2015 Plan	Updated Plan
§201.6(c)(2): <i>The plan shall include a risk assessment that provides the factual basis for activities proposed in the strategy to reduce losses from identified hazards. Local risk assessments must provide sufficient information to enable the jurisdiction to identify and prioritize appropriate mitigation actions to reduce losses from identified hazards.</i>	The 2015 plan included a risk assessment of 12 hazards of concern: • Agricultural/biological • Climate change • Dam failure inundation • Drought • Earthquake • Flood • Landslide • Levee failure inundation • Post-fire debris flow • Tsunami • Wildfire • Winter storm Each hazard was profiled with discussions on nature, history, location, extent, and probability of future events. However, the 2015 plan did not rank the hazards.	Volume 1 Part 2 presents a risk assessment of 10 hazards of concern and risk profiles for two “other hazards of interest” (agricultural/biological and pandemic). The identified hazards of concern are as follows: • Dam failure • Drought • Earthquake • Flood • Landslide • Sea-level rise and coastal erosion • Severe storms • Severe weather • Tsunami • Wildfire Hazard profiles are standardized for each hazard of concern, so that there is uniformity in the discussion of each hazard and the information provided can support rating of risk for each jurisdiction. All profiled hazards of concern were ranked based on their quantified impacts. The “other hazards of interest” profile was added to address agricultural/biological and pandemic hazards. These hazards were not ranked, but were qualitatively assessed to develop a more complete picture of the hazards facing the planning area. A climate change chapter was included that qualitatively profiles the potential impacts of climate change on each hazard of concern.
§201.6(c)(2)(i): <i>[The risk assessment shall include a] description of the ... location and extent of all natural hazards that can affect the jurisdiction. The plan shall include information on previous occurrences of hazard events and on the probability of future hazard events.</i>	Each hazard of concern was profiled with discussions of nature, history, location, extent and probability of future events.	Each hazard of concern was profiled in the following categories: • General Background • Hazard Profile ○ Past events ○ Location ○ Frequency ○ Severity ○ Warning Time ○ Secondary Hazards • Exposure • Vulnerability • Future trends in development • Scenario • Issues

44 CFR Requirement	2015 Plan	Updated Plan
§201.6(c)(2)(ii): <i>[The risk assessment shall include a] description of the jurisdiction's vulnerability to the hazards described in paragraph (c)(2)(i). This description shall include an overall summary of each hazard and its impact on the community</i>	The vulnerability analysis in the 2015 plan is based solely on exposure and does not estimate loss. The plan does include an overall summary of each hazard's impact based on exposure but does not determine the value of that exposure.	For this plan update, this aspect of the plan was significantly enhanced. Vulnerability was assessed for all hazards of concern. FEMA's Hazus risk assessment platform was used for evaluating dam failure, earthquake, flood, sea-level rise and tsunami hazards. The analyses supplemented the data built into the Hazus program with locally defined city and county data (Hazus refers to this as a Level 2 analysis). Site-specific data on County-identified critical facilities were entered into the Hazus model. Hazus outputs were generated for other hazards by applying an estimated damage function to an asset inventory extracted from Hazus. The risk assessment methodology used is described in Chapter 7 of this volume.
§201.6(c)(2)(ii): <i>[The risk assessment] must also address National Flood Insurance Program insured structures that have been repetitively damaged floods</i>	Section 5.5 of the plan was dedicated to FEMA-identified repetitive loss properties	Section 11.2.7 of Volume 1 of this plan includes a comprehensive analysis of repetitive loss areas that includes an inventory of the number and types of structures in the repetitive loss area. Repetitive loss areas are delineated, causes of repetitive flooding are cited, and these areas are reflected on maps. This analysis includes all repetitive loss properties within the county.
§201.6(c)(2)(ii)(A): <i>The plan should describe vulnerability in terms of the types and numbers of existing and future buildings, infrastructure and critical facilities located in the identified hazard area.</i>	The focus of the vulnerability analysis for the 2015 plan was exposure of residential structures and identified critical facilities and infrastructure. The analysis includes no loss estimation.	The current update used Hazus to model impacts from dam failure, earthquake, flood, sea-level rise, and tsunami. A complete inventory of the numbers and types of buildings exposed (both residential and non-residential) was generated for each hazard of concern. Critical facilities were defined for the planning area, and these facilities were inventoried by exposure. Each hazard chapter provides a discussion on future development trends.
§201.6(c)(2)(ii)(B): <i>[The plan should describe vulnerability in terms of an] estimate of the potential dollar losses to vulnerable structures identified in paragraph (c)(2)(i)(A) and a description of the methodology used to prepare the estimate.</i>	The 2015 vulnerability analysis includes no loss estimation.	Dollar loss estimates were generated for all hazards of concern. These estimates were generated by Hazus for dam failure, earthquake, flood, and tsunami. For the other hazards, loss estimates were generated by applying a regionally relevant damage function to the exposed inventory. In all cases, a damage function was applied to an asset inventory. The asset inventory was the same for all hazards and was generated in Hazus.
§201.6(c)(2)(ii)(C): <i>[The plan should describe vulnerability in terms of] providing a general description of land uses and development trends within the community so that mitigation options can be considered in future land use decisions.</i>	The 2015 Plan does not describe vulnerability in terms of land uses and development trends within the community so that mitigation options can be considered in future land use decisions.	There is a discussion of the overall land use within the planning area, and a spatial analysis of land use was performed for hazards with a clearly defined extent and location. There is a discussion on future development trends as they pertain to each hazard of concern. This discussion looks predominantly at the existing land use and the current regulatory environment.

44 CFR Requirement	2015 Plan	Updated Plan
§201.6(c)(3): <i>The plan shall include a mitigation strategy that provides the jurisdiction's blueprint for reducing the potential losses identified in the risk assessment, based on existing authorities, policies, programs and resources, and its ability to expand on and improve these existing tools.</i>	The 2015 plan includes two identified goals, overarching potential mitigation actions for all local participants, and jurisdiction-specific actions for each planning partner.	The plan contains a vision statement, goals, objectives, and actions. The actions are jurisdiction-specific and strive to meet multiple objectives. The objectives are broad but measurable. All objectives meet multiple goals and stand alone as components of the plan. Each planning partner was asked to complete a capability assessment that looks at its regulatory, technical, and financial capabilities
§201.6(c)(3)(i): <i>[The hazard mitigation strategy shall include a] description of mitigation goals to reduce or avoid long-term vulnerabilities to the identified hazards.</i>	The 2015 plan identified two goals.	A vision statement, 10 goals, and 19 objectives are described in Chapter 21 of this volume. Objectives were identified that meet multiple goals and were used to help establish priorities for the action items identified in the plan. The objectives are the basis for identifying and prioritizing multi-objective actions.
§201.6(c)(3)(ii): <i>[The mitigation strategy shall include a] section that identifies and analyzes a comprehensive range of specific mitigation actions and projects being considered to reduce the effects of each hazard, with particular emphasis on new and existing buildings and infrastructure.</i>	The 2015 plan prescribes a methodology for identifying potential actions from which each planning partner would draw to prepare an action plan. For each potential action, the methodology identifies the hazard addressed, the mitigation category, and whether action applies to new or existing construction.	Volume 1, Chapter 22 includes a catalog of mitigation best management practices that was developed through a facilitated process. This catalog identifies actions that manipulate the hazard, reduce exposure to the hazard, reduce vulnerability, or increase mitigation capability. The catalog segregates actions by scale of implementation. A table in each planning partner's action plan analyzes each action by mitigation type to illustrate the range of actions selected.
§201.6(c)(3)(ii): <i>[The mitigation strategy] must also address the jurisdiction's participation in the National Flood Insurance Program, and continued compliance with the program's requirements, as appropriate.</i>	The 2015 Plan addresses the NFIP in the context of the mapping available within the planning area. The addresses the NFIP as a financial resource available to mitigate the impacts of the flood hazard, and it profiles the unincorporated County's participation in the NFIP.	The plan addresses the NFIP and the participation status of all cities within the county. Each municipal planning partner's annex in volume 2 of the plan profiles its NFIP status. All municipal planning partners that participate in the NFIP identified an action stating their commitment to maintain compliance and good standing under the program.
§201.6(c)(3)(iii): <i>[The mitigation strategy shall describe] how the actions identified in section (c)(3)(ii) will be prioritized, implemented and administered by the local jurisdiction. Prioritization shall include a special emphasis on the extent to which benefits are maximized according to a cost benefit review of the proposed projects and their associated costs.</i>	The 2015 plan establishes priority project criteria centered on meeting FEMA's Hazard Mitigation Assistance program requirements. All actions identified in the 2015 plan are considered to be "high priority" projects based on these criteria.	Each recommended action was prioritized using a qualitative methodology that looked at the objectives the project will meet, the timeline for completion, how the project will be funded, the impact of the project, the benefits of the project and the costs of the project. This prioritization scheme is detailed in the introduction to Volume 2 of this plan.
§201.6(c)(4)(i): <i>[The plan maintenance process shall include a] section describing the method and schedule of monitoring, evaluating, and updating the mitigation plan within a five-year cycle.</i>	Section 8 of the 2015 plan includes a plan maintenance methodology that meets this requirement	Volume 1, Chapter 24 details a strategy for monitoring, evaluating, and updating the mitigation plan within a five-year cycle.

44 CFR Requirement	2015 Plan	Updated Plan
<i>§201.6(c)(4)(ii): [The plan shall include a] process by which local governments incorporate the requirements of the mitigation plan into other planning mechanisms such as comprehensive or capital improvement plans, when appropriate.</i>	Section 8.3 of the 2015 plan includes a plan maintenance methodology that meets this requirement	Volume 1, Chapter 24 details recommendations for incorporating the plan into other planning mechanisms, such as: • Comprehensive plan • Emergency response plan • Capital improvement programs • Municipal code and standards Specific current and future plan and program integration activities are detailed in each participating jurisdiction's annex in Volume 2.
<i>§201.6(c)(4)(iii): [The plan maintenance process shall include a] discussion on how the community will continue public participation in the plan maintenance process.</i>	Section 8.4 of the 2015 plan includes a plan maintenance methodology that meets this requirement.	Volume 1, Chapter 24 details a comprehensive strategy for continuing public involvement.
<i>§201.6(c)(5): [The local hazard mitigation plan shall include] documentation that the plan has been formally adopted by the governing body of the jurisdiction requesting approval of the plan (e.g., City Council, County Commissioner, Tribal Council).</i>	Adoption documentation and the FEMA approval letter are provided in the plan as an appendix.	Volume 1, Appendix F includes all supporting documentation for adoption of the plan by all planning partners

3. PLAN DEVELOPMENT METHODOLOGY

3.1 FUNDING

Funding for this planning effort was supplemented by a FEMA Hazard Mitigation Assistance grant (DR-4344-341-P). Ventura County Sheriff's Office of Emergency Services (OES) was the applicant agent for the grant. The grant covered 75 percent of the cost for development of this plan; the County covered the balance through in-kind match funding.

3.2 FORMATION OF THE CORE PLANNING TEAM

The County of Ventura contracted with Tetra Tech, Inc. to assist with development and implementation of the plan (the procurement process complied with 2 CFR A.II.200). The Tetra Tech project manager managed the overall plan development; Tetra Tech's lead planner was tasked with interacting with the County of Ventura's grant manager. A core planning team was formed to lead the planning effort, made up of the members shown in Table 3-1.

The core planning team met 14 times during the update process to track plan development milestones and identify meeting content for a steering committee established to help with development of the plan.

Table 3-1. Core Planning Team Makeup

Ventura County	
Bonnie Luke, OES, Senior Program Administrator/Grant Manager	Ruth Venus, IT Services, GIS Manager
Kathy Gibson, OES, Program Administrator	Eric Alger, IT Services, GIS Program Analyst
Patrick Maynard, OES, Director	Richard Paschal, IT Services, GIS Program Analyst
Glenn Shephard, VCPWA-WP, Director	Ashley Bautista, CEO, Public Information Officer
Gerard Kapuscik, VCPWA-WP, Staff Services Manager	Jackie Nuñez, CEO, Assistant Public Information Officer
Tetra Tech	
Rob Flaner, Project Manager	Jeana Wiser-Gomez, Public Outreach Lead
Cindy Rolli, Lead Project Planner	Des Alexander, Planner
Carol Baumann, Lead Risk Assessor	Megan Brotherton, Planner

3.3 ESTABLISHMENT OF THE PLANNING PARTNERSHIP

In June 2021, a planning partnership was formed to leverage resources and to meet requirements of the federal Disaster Mitigation Act for as many eligible local governments as possible. Ventura County opened this planning effort to all eligible local government and special districts within the planning area.

The new partnership expanded the partnership that had been established for the 2010 and 2015 hazard mitigation plan updates.

Each jurisdiction wishing to join the planning partnership was asked to provide a letter of intent to participate that designated a point of contact for the jurisdiction and confirmed the jurisdiction's commitment to the process and understanding of expectations. The planning partners covered under this plan are listed in Table 3-2.

Table 3-2. Hazard Mitigation Planning Partners

Jurisdiction	Point of Contact	Title
Cities/County		
City of Camarillo	Carmen Nichols	Assistant City Manager
City of Fillmore	Keith Gurrola	Fire Chief
City of Moorpark	Mackenzie Douglass	Program Manager
City of Ojai	James Vega	City Manager
City of Oxnard	Scott Brewer	Emergency Manager
City of Port Hueneme	Scott Matalon	Emergency Manager (Police)
City of San Buenaventura (Ventura) ^a	Daniel Wall	Emergency Manager
City of Santa Paula	Scott Varner	Emergency Manager
City of Simi Valley ^b	Eileen Connors	Emergency Manager
City of Thousand Oaks	Grahame Watts	Emergency Manager
Ventura County	Bonnie Luke	Senior Program Administrator
Special Purpose Districts		
California State University, Channel Islands ^b	Maggie Tougas	Emergency Manager
Calleguas Municipal Water District	Daniel Cohen	Emergency Response Coordinator
Casitas Municipal Water District	Julia Aranda	Engineering Manager
Channel Islands Beach Community Services District	Peter Martinez	General Manager
Conejo Recreation & Park District ^b	Bill Palermo	Park Operations Analyst
Ojai Valley Sanitary District	Jeff Palmer	General Manager
Pleasant Valley Recreation & Park District ^b	Mary Otten	General Manager
Saticoy Sanitary District ^b	Tim Doyle	Engineering Analyst
Triunfo Water & Sanitation District ^b	Tim Doyle	Engineering Program Manager
United Water Conservation District	Brian Collins	Chief Operations Officer
Ventura County Fire Protection District	Mark Lorenzen	Fire Chief
Ventura County Office of Education	Russ Olsen	Director of Risk Management
Ventura County Public Works Agency—Watershed Protection	Glenn Shephard	Director
Ventura Regional Sanitation District ^b	Tina Rivera	Director of Finance

a. San Buenaventura is the official name of the city commonly called the City of Ventura.

b. New planning partner

3.4 DEFINING THE PLANNING AREA

The planning area was defined to consist of the unincorporated county areas, incorporated cities, and special purpose districts within the geographical boundary of Ventura County. All partners to this plan have jurisdictional authority within this planning area. A map showing the geographic boundary of the defined planning area for this plan update is provided in Chapter 4, along with a description of the planning area characteristics.

3.5 THE STEERING COMMITTEE

Hazard mitigation planning enhances collaboration among diverse parties who can be affected by hazard losses. A key element of the public engagement strategy for this plan update was the formation of a stakeholder steering committee to oversee all phases of the update. The members of this committee included Ventura County staff, planning partner representatives, and other stakeholders from within the planning area.

For this process, “stakeholder” was defined as any person or public or private entity that owns or operates facilities that would benefit from the mitigation actions of this plan, and/or has an authority or capability to support mitigation actions identified by this plan or be impacted by its recommendations. Stakeholders were separated into two categories:

- **Participatory Stakeholders**—Stakeholders that actively participated in the planning process as planning partners or members of the Steering Committee.
- **Coordinating Stakeholders**—Stakeholders that were not able to commit to actively participating in the process as a participatory stakeholder but were kept apprised of plan development milestones or were able to provide data that was used in the plan development.

The planning team assembled a list of steering committee candidates representing diverse interests within the planning area. Guidance on the committee’s composition was also obtained from reviewing FEMA’s 2017 recommendations on CRS credit for planning committees. The planning team confirmed a committee of 17 members at the May 19, 2021, kickoff meeting. Table 3-3 lists the Steering Committee members and designated alternates.

Table 3-3. Steering Committee Members

Point of Contact	Organization	Title	Alternate
Ashley Bautista	Ventura County Chief Executive Office	Public Information Officer	Jackie Nuñez
Daniel Cohen	Calleguas Municipal Water District	Emergency Response Coordinator	
Doug Graham	American Red Cross of Ventura County	Volunteer Lead	Scott O’Connell
Louise Lampara	Ventura County Coalition of Labor, Agriculture, & Business	Executive Director	
Alyssa Mann	The Nature Conservancy	Project Director, Disaster Resilience	Kat Selm
Brian McCarthy	City of Fillmore	Senior Planner	
Russ Olsen	Ventura County Office of Education	Director of Risk Management	Michelle Kelly
Chris Rosa	Ventura County Emergency Medical Services	Deputy Administrator	Janelle Hahn
Jeff Shea	Ventura County Fire Protection District	Division Chief	Mark Lorenzen
Glenn Shephard	Ventura County Public Works Agency—Watershed Protection	Director	Gerard Kapuscik
John Tolson	Simi Valley Chamber of Commerce	Director of Membership & Marketing	
Maggie Tougas	California State University Channel Islands	Emergency Manager	
	Ventura County Voluntary Organizations Active in Disaster	Chair	
Julie Tumamait-Stenslie	The Barbareño/Ventureño Band of Mission Indians	Tribal Chair	Frank Arrendondo
Lauren Utterback	Independent Living Resource Center	Emergency Preparedness Services Manager	Jamie Zimmerman
Dave Ward	Ventura County Planning Division	Planning Director	Aaron Engstrom
Grahame Watts	City of Thousand Oaks Public Works	Emergency Manager	
Matt Wyatt	Ventura County Building and Safety	District Manager West County Office	Dave Hansen

Leadership roles and ground rules were established during the Steering Committee's initial meeting on May 19, 2021. The Steering Committee then met every one to two months as needed throughout the course of the plan's development. The core planning team facilitated each Steering Committee meeting, which addressed a set of objectives based on an established work plan. The Steering Committee met six times from May 2021 through February 2022. Agendas were posted to the website prior to each scheduled Steering Committee meeting, and meeting summaries were posted to the hazard mitigation plan website following their approval by the Steering Committee.

3.6 COORDINATION WITH STAKEHOLDERS AND AGENCIES

Opportunities for involvement in the planning process must be provided to neighboring communities, local and regional agencies involved in hazard mitigation, agencies with authority to regulate development, businesses, academia, and other private and nonprofit interests (44 CFR, Section 201.6(b)(2)). The planning team met this requirement as described below.

3.6.1 Notifications About Plan Development Milestones

The following agencies, organizations and entities were invited to participate in the plan development process, including all steering committee meetings, and were kept apprised of plan development milestones:

- Aera Energy
- American Red Cross of Ventura County
- Amgen
- Barbareño/Ventureño Band of Mission Indians
- California State University Channel Islands
- Calleguas Municipal Water District
- Camrosa Water District
- Casitas Municipal Water District
- Channel Islands Beach Community Services District
- City of Camarillo
- City of Fillmore
- City of Moorpark
- City of Ojai
- City of Oxnard
- City of Port Hueneme
- City of Santa Paula
- City of Simi Valley
- City of Thousand Oaks
- City of Ventura
- Conejo Recreation & Park District
- Independent Living Resource Center
- MICOP (Mixteco/Indigena Community Organizing Project)
- Ojai Valley Sanitary District
- Oxnard Chamber of Commerce
- Pleasant Valley Recreation and Park District
- Saticoy Sanitary District
- Simi Valley Chamber of Commerce
- Strickland Mutual Water Company
- The Nature Conservancy
- Triunfo Water & Sanitation District
- United Water Conservation District
- Ventura Chamber of Commerce

- Ventura County ACS/ARES
- Ventura County Building and Safety
- Ventura County Chief Executive Office
- Ventura County Coalition of Labor, Agriculture, and Business
- Ventura County Emergency Medical Services
- Ventura County Fire Protection District
- Ventura County Health Services Agency
- Ventura County Office of Education
- Ventura County Planning Division
- Ventura County Public Works Agency—Watershed Protection
- Ventura County Sheriff's OES
- Ventura County Voluntary Organizations Active in Disaster
- Ventura Regional Fire Safe Council
- Ventura Regional Sanitation District

These entities received meeting announcements, meeting agendas, and meeting minutes by e-mail throughout the plan development process. Some of them supported the effort by attending meetings or providing feedback on issues.

3.6.2 Pre-Adoption Review

All the entities listed above were provided an opportunity to review and comment on this plan during the public comment period, primarily through the hazard mitigation plan website (see Section 3.8.1). All were sent an e-mail message informing them that draft portions of the plan were available for review. Upon completion of a public comment period, the complete draft plan was sent to the California Governor's Office of Emergency Services (Cal OES) and FEMA for a pre-adoption review to ensure program compliance.

3.7 REVIEW OF EXISTING PROGRAMS

Hazard mitigation planning must include review and incorporation, as appropriate, of existing plans, studies, reports and technical information (44 CFR, Section 201.6(b)(3)). Chapter 6 of this plan provides a review of laws and ordinances in effect within the planning area that can affect hazard mitigation actions. In addition, the following programs can affect mitigation within the planning area:

- California Fire Code
- 2019 California Building Code
- California State Hazard Mitigation Forum
- Local capital improvement programs
- Local emergency operations plans
- Local general plans
- Housing elements
- Safety elements
- Local zoning ordinances
- Local coastal program policies

Assessments of all planning partners' regulatory, technical, and financial capabilities to implement hazard mitigation actions are presented in the individual jurisdiction-specific annexes in Volume 2. Many of these relevant plans, studies and regulations are cited in the capability assessments.

3.8 PUBLIC PARTICIPATION

Broad public participation in the planning process helps ensure that diverse points of view about the planning area's needs are considered and addressed. The public must have opportunities to comment on disaster mitigation plans during the drafting stages and prior to plan approval (44 CFR, Section 201.6(b)(1)). The Community Rating System (CRS) expands on these requirements by making CRS credits available for optional public involvement activities. The public outreach process for this plan update consisted of a combination of general outreach and information provided during partner meetings and events.

3.8.1 Strategy

As a result of the ongoing COVID-19 pandemic, in-person events were not able to be held during the course of this plan update. Therefore, the strategy for involving the public in this plan update emphasized the following elements:

- Identify and involve planning area stakeholders.
- Open Steering Committee meetings to members of the public for ongoing input.
- Use a survey to evaluate the public's perception of risk.
- Invite public participation and engagement at virtual meetings, including a call-in option for community members to provide input by phone.
- Attempt to reach as many planning area residents as possible using multiple media sources, including print, website, and social media.
- Publish agendas and minutes for Steering Committee meetings on the website.

In order to engage the broadest segment of the population, all social media posts were posted in both English and Spanish. Additionally, translation into Spanish, Mixteco and American Sign Language was provided during all virtual meetings. Translation services were advertised in meeting announcements and at the beginning of each meeting. Non-English-speaking participants could take advantage of this service by joining a break-out room of the virtual meeting. Recordings of public meetings were posted on the hazard mitigation website.

Stakeholders and the Steering Committee

The inclusion of stakeholders on the Steering Committee (see Section 3.5) served as a significant component of public involvement activities. Stakeholders targeted for this process included the following:

- Ventura County and local jurisdiction departments relevant for hazard mitigation planning
- Members of the academic community
- Community member representatives

- Representatives of humanitarian aid and access and functional needs (AFN) support services
- Tribal representatives
- Local special-purpose districts
- Local businesses and business interests
- Local environmental organizations

Internet

At the beginning of the plan update process in May 2021, the County established a hazard mitigation website (<https://www.readyventuracounty.org/local-multijurisdictional-hazards-mitigation-plan-update/>) to provide information about the process (see Figure 3-1). The website was used to keep the public informed about milestones and public participation opportunities and to solicit input.

Figure 3-1. Example Page of the Hazard Mitigation Plan Web Site



The site's address was publicized in all press releases, mailings, surveys, and public meetings. Information on the plan development process, the Steering Committee, the community awareness survey, and drafts of the plan were made available to the public on the site throughout the process.

Ventura County intends to keep a website active after the plan is complete to keep the public informed about successful mitigation projects and future plan updates.

Hazard Mitigation Survey

The planning team developed a 27-question community awareness survey with guidance from the Steering Committee (see Figure 3-2). The survey was used to gauge household and individual awareness of natural hazards and community members’ level of knowledge about tools and techniques to assist them in reducing risk and loss from natural hazards.

Figure 3-2. Sample Page from Survey Distributed to the Public



2021 Ventura County Multi-Jurisdictional Hazard Mitigation Plan Update: Community Survey

Hazard Awareness

English

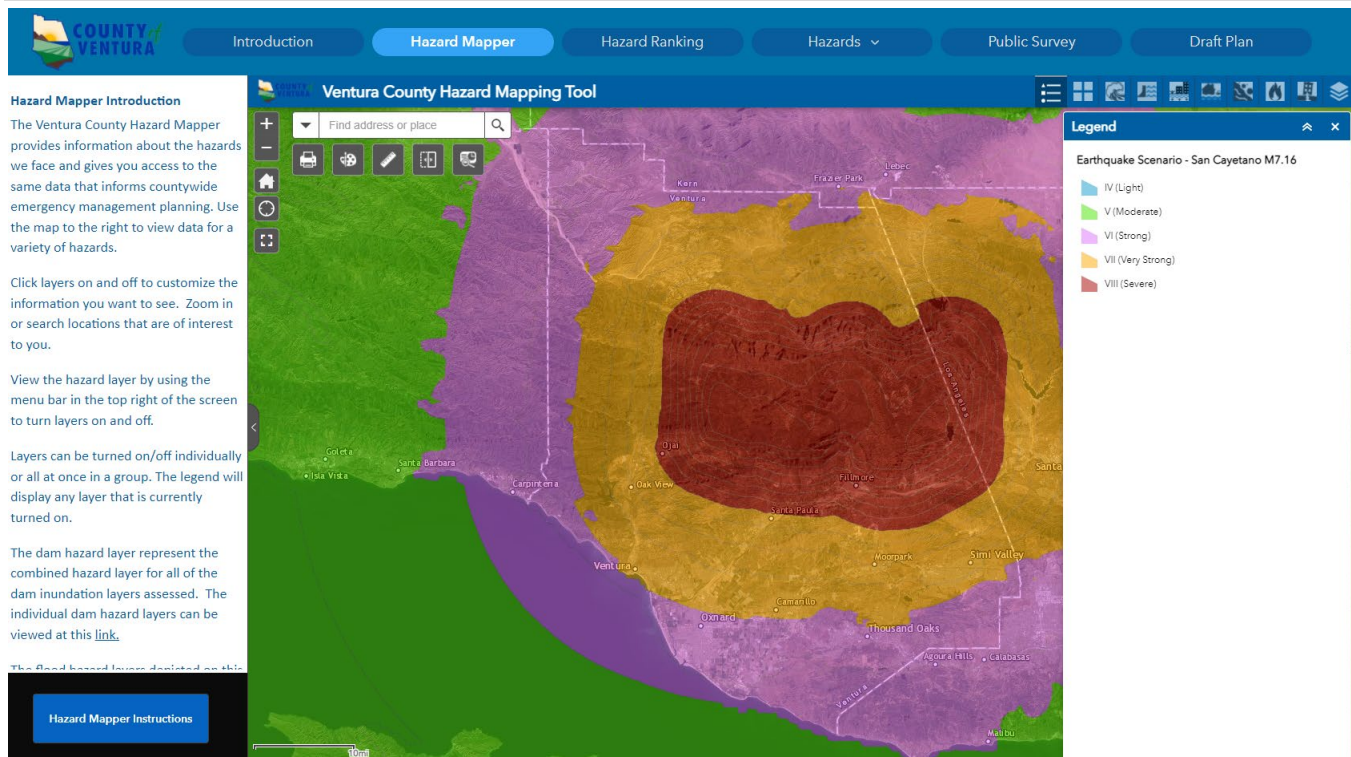
*** 9. How concerned are you about the following hazards?**
(Check one response for each hazard)

	Not Concerned	Somewhat Concerned	Concerned	Very Concerned	Extremely Concerned
Agricultural Biological (e.g. west nile, epidemic diseases)	☐	☐	☐	☐	☐
Dam Failure	☐	☐	☐	☐	☐
Drought	☐	☐	☐	☐	☐
Earthquake	☐	☐	☐	☐	☐
Flood	☐	☐	☐	☐	☐
Landslide	☐	☐	☐	☐	☐
Sea Level	☐	☐	☐	☐	☐

The survey was made available on the hazard mitigation plan website in both Spanish and English and was advertised throughout the course of the planning process (June 2021 to September 2021). Information on the survey was disseminated via an initial press release, the hazard mitigation plan website, social media (Facebook and Twitter), presentations during five publicly held Community Emergency Preparedness Workshops, and emails to emergency management stakeholders and interested parties. Interim results collected through September helped guide the Steering Committee and planning partners in affirming goals and objectives and in developing mitigation strategies. The survey remained active until the end of December 2021 for continued public input.

Story Map

An online “Story Map” was created (using Esri StoryMap software) to communicate the variety and severity of hazards facing Ventura County (see Figure 3-3). During the update process, the Story Map was released to the public and promoted through print and social media, the project website, and during public meetings. It includes risk assessment results for all relevant hazards, an interactive hazard mapping tool, and a report function to produce comprehensive hazard exposure summaries for any given property, block, or defined area. The Story Map expanded the ways in which members of the public could interact with hazard data as the hazard mitigation plan update was underway.

Figure 3-3. Example Story Map Data Page

After completion of the hazard mitigation plan update, the Ventura County Story Map will continue to support visual and data-based communication about the range of hazards relevant in Ventura County. New and revised data can be loaded into the platform in the future to compare hazard risk with any other spatial data set.

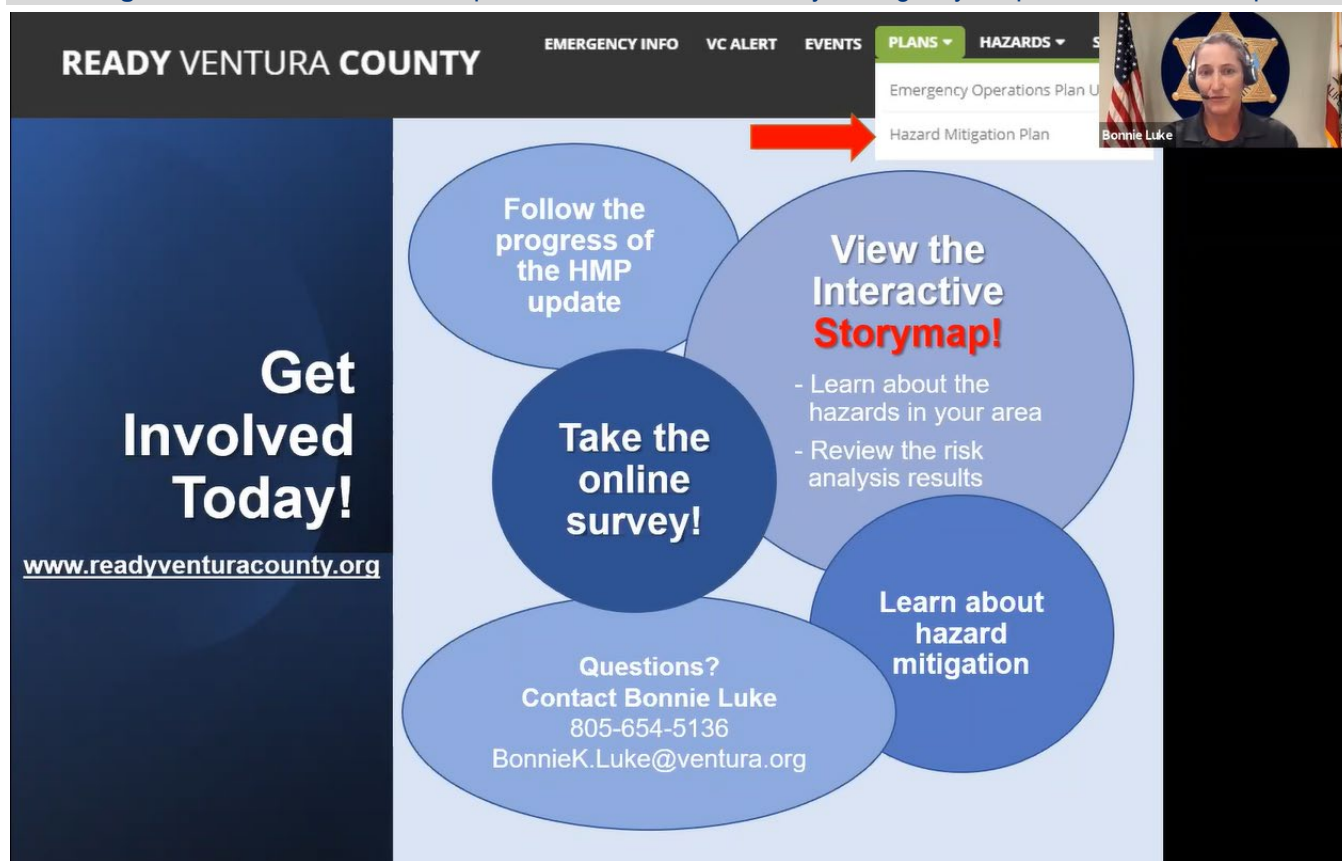
Public Meetings

Five virtual public meetings—Community Emergency Preparedness Workshops on September 15, 16, 22, and 23 and October 11, 2021—described the hazard mitigation plan update process and provided information on the Story Map and community survey. Guest panelists from different cities were featured at each workshop to speak about local emergency preparedness efforts and current plan updates. The meetings described how participants could learn about hazard mitigation, follow the progress of the plan update, and participate in the plan update process. Each meeting featured a question-and-answer component and was presented in English, Spanish, Mixteco, and American Sign Language. Recordings of each meeting were posted on the website. Figure 3-4 shows an example screen shot from one of these meetings.

Additionally, the Emergency Planning Council meeting held on November 18, 2021 included an update on the status of the hazard mitigation plan update process.

Social Media

The Ventura County Sheriff's OES social media accounts (Twitter, Facebook, Nixle, and Nextdoor) were used to share information about the hazard mitigation planning process, including the community awareness survey, Community Emergency Preparedness Workshops, and the public comment period.

Figure 3-4. Screenshot from September 16, 2021 Community Emergency Preparedness Workshop

Print and Other Media Outreach

Press releases were distributed over the course of the plan's development as key milestones were achieved and before each public meeting. Each press release was supplemented by meeting announcements on the project website. The planning effort received widespread press coverage, including the following:

- Announcements of hazard mitigation plan update process and requests for community input:
 - June 24, 2021—Nixle
 - June 24, 2021—Citizens Journal
 - June 2021—City of Thousand Oaks Sustainability Blog
 - July 1, 2021—City of Thousand Oaks City Scene
 - July 6, 2021—Ojai Valley News
 - July 7, 2021—VC Reporter
 - July 14, 2021—Ojai Valley News
 - July 19, 2021—The Fillmore Gazette
 - July 21, 2021—Simi Valley Police Department
 - July 21, 2021—VC Reporter
 - July 21, 2021—Simi Valley News
 - September 2, 2021—City of Moorpark
 - July 21, 2021—Citizens Journal
- July 29, 2021—Simi Valley News announcement of the plan update and community survey

- Announcements of the five virtual Community Emergency Preparedness Workshops that included presentations on the plan update process:
 - September 8, 2021—Nixle
 - September 8, 2021—Citizens Journal
 - September 8, 2021—VC Reporter
 - September 15, 2021—VC Reporter
- HMP Update public service announcement (PSA) video release
 - September 2021—A public service announcement was created to support and inform the public about the hazard mitigation plan update and process. The video is posted on the County's hazard mitigation website at [Hazard Mitigation Plan – Ready Ventura County](#).

Public Comment

The public outreach process for this plan update consisted of a combination of general outreach and information provided during partner meetings and events. Five virtual public meetings—on September 15, 16, 22, and 23 and October 11, 2021—described the hazard mitigation plan update process and provided information on the Story Map and community survey. The draft plan was made available to the public for comment during a noticed, three-week period in March 2022. The public comment period gave the public an opportunity to comment on the draft plan update prior to its submittal to Cal OES and FEMA. The principle avenue for public comment on the draft plan was the website established for this plan update.

3.8.2 Public Participation Results

Survey Results

From June through December 2021, more than 800 surveys were completed, covering all geographic areas of the County. The survey and detailed results are included in Appendix A; a summary is as follows:

- 832 surveys were completed.
- Surveys were received from all 10 incorporated cities as well as the unincorporated areas of the County.
- Respondents ranked wildfire as the hazard of greatest concern, followed by drought, earthquake, severe weather (wind, heat, cold), agricultural/biological hazards, severe storms, sea-level rise and coastal erosion, flood, landslide, tsunami, and dam failure.
- 84 percent of respondents have experienced or been affected by a wildfire.
- Nearly half of the respondents felt that their household was not prepared or only somewhat prepared to deal with a hazard event.

Most respondents (nearly 76 percent) felt that personal experience with one or more natural hazards or disasters provided useful hazard and disaster preparedness to the public, followed by emergency preparedness information from government sources (federal, state, or local) (59 percent).

- The concept of incentives to promote hazard mitigation actions on a personal scale was strongly supported, with 67 percent of the respondents supporting a property tax break or incentive and

63 percent supporting an insurance premium discount to encourage them to spend money to retrofit their homes.

Survey results were provided to the Steering Committee for use in confirming goals, objectives and county-wide actions for this plan update. Additionally, the survey results were included in the toolkit provided to each planning partner through the jurisdictional annex process described in Volume 2. Each planning partner was able to use the survey results to:

- Gauge the public's perception of risk and identify what citizens are concerned about.
- Identify the best ways to communicate with the public.
- Determine the level of public support for different mitigation strategies.
- Understand the public's willingness to invest in hazard mitigation.

Meeting Attendance and Participation

Table 3-4 summarizes the attendance at the public meetings. As a result of the COVID-19 pandemic, all meetings were held virtually.

Table 3-4. Summary of Public Meetings

Date	Type of Meeting	Number in Attendance
May 19, 2021	Steering Committee Meeting #1	29
June 9, 2021	Steering Committee Meeting #2	27
July 14, 2021	Steering Committee Meeting #3	24
September 8, 2021	Steering Committee Meeting #4	16
September 15, 2021	Community Emergency Preparedness Workshop	106
September 16, 2021	Community Emergency Preparedness Workshop	90
September 22, 2021	Community Emergency Preparedness Workshop	83
September 23, 2021	Community Emergency Preparedness Workshop	55
October 11, 2021	Community Emergency Preparedness Workshop	30
November 10, 2021	Steering Committee Meeting #5	22
November 18, 2021	Ventura County Emergency Planning Council	
January 27, 2022	Presentation at the Santa Clara River Watershed Committee's community organization meeting	Unknown
February 9, 2022	Steering Committee Meeting #6	20
Total		

3.9 PLAN DEVELOPMENT CHRONOLOGY/MILESTONES

Table 3-5 summarizes important milestones in the development of the plan update.

Table 3-5. Plan Development Milestones

Date	Event	Description	Attendance
2021			
1/21	Support Contractor Secured	County selects Tetra Tech to facilitate plan update process	N/A
Feb/ March	COVID-19	COVID-19 pandemic caused delays in onboarding of project lead and initiation of update process	
4/7	Organize Resources	Core planning team formed	N/A
4/8	Core Planning Team Meeting #1	• Core planning team kickoff • Planning process overview and schedule • Steering Committee function defined • Planning partner discussion • Data acquisition • Public outreach strategy • Meeting coordination	11
4/13	Core Planning Team Meeting #2	• Review of 2015 hazards of concern • Steering Committee • Schedule kickoff meeting	11
4/27	Core Planning Team Meeting #3	• Steering Committee • Hazards of concern • Planning partner kickoff meeting • Public outreach	11
5/5	Project Kickoff Meeting	• Review work plan • Discuss planning partner expectations • Obtain input on Steering Committee • Risk assessment data needs • Discuss public involvement strategy	34
5/6	Jurisdictional Annex Process Phase 1	• Planning partners begin the jurisdiction annex update process with the team, profile, trends, and previous plan status updates.	N/A
5/11	Core Planning Team Meeting #4	• Hazard scenarios • Public outreach • Steering Committee confirmation • Planning partner kickoff meeting review	12
5/13	Public Outreach	ReadyVentura County website adapted and expanded for information on 2022 plan update process	N/A
5/19	Steering Committee Meeting #1	• Project overview • Role of the Steering Committee • Discuss public outreach strategy • Review of 2015 hazard mitigation plan	29
5/25	Core Planning Team Meeting #5	• Hazard scenarios confirmed • Draft mission, goals, and objectives • Public outreach—community preparedness survey	14
6/02	Public Outreach	Hazard mitigation community awareness survey deployed and kept open through December 31, 2021. https://www.surveymonkey.com/r/G7T7W5R (Survey closed after December 31, 2021)	N/A
6/08	Core Planning Team Meeting #6	• Public outreach • Finalized hazards of concern and scenarios • Mission and goals discussion • Define FEMA community lifelines	14

Date	Event	Description	Attendance
6/09	Steering Committee Meeting #2	- Finalize and confirm Steering Committee guidelines - Public outreach strategy - Website - Survey - Volume 1 and 2 overview - Vision and goal setting - Hazards of concern accepted and hazard scenarios explained - Critical infrastructure / FEMA lifelines definition accepted	27
6/22	Core Planning Team Meeting #7	- Public outreach, bilingual survey - Mission goals and objectives discussion	13
7/06	Jurisdictional Annex Process Phase 2	Planning partners continue the jurisdictional annex update process with the capability assessment, integration review, and information sources updates.	N/A
7/14	Steering Committee Meeting #3	- Public outreach - Website - Survey update - Vision, goals, and objectives accepted - Planning partner update - Story map overview	24
7/20	Core Planning Team Meeting #8	- Final mission, goals, and objectives - Public outreach - Story map review - Jurisdictional Annex Phase 3 Workshop discussion	9
8/03	Core Planning Team Meeting #9	- Public outreach, survey updates - Jurisdictional Annex Phase 3 Workshop overview	11
8/31	Core Planning Team Meeting #10	- Public outreach update - PSA video update - Story map presentation - Planning partner update - Steering Committee meeting preparation	6
9/08	Steering Committee Meeting #4	- Public outreach - Website - Survey status - Community meetings - Story map - PSA video	16
9/14	Core Planning Team Meeting #11	- Story map review - PSA video status	8
9/15	Public Outreach	Community Emergency Preparedness Workshop—Featuring Unincorporated County Areas	106
9/16	Public Outreach	Community Emergency Preparedness Workshop—Featuring the City of Oxnard	90
9/22	Jurisdictional annex Workshop - Municipalities	Workshop for municipal planning partners to assist in completion of Phase 2 of the jurisdictional annex process. Remote technical support provided by Tetra Tech	30
9/22	Public Outreach	Community Emergency Preparedness Workshop—Featuring the City of Camarillo	83
9/23	Jurisdictional annex Workshop – Special Purpose Districts	Workshop for special district planning partners to assist in completion of Phase 2 of the jurisdictional annex process. Remote technical support provided by Tetra Tech	35
9/28	Phase 3 Annex Conference Call #1	Remote technical support provided to planning partners by Tetra Tech in support of Phase 2 annex completion	

Date	Event	Description	Attendance
9/17	Public Outreach	- Closure of hazard mitigation survey - Tabulation of results	
9/23	Public Outreach	Community Emergency Preparedness Workshop—Featuring the City of Simi Valley	55
Sept	Public Outreach	PSA video released in English and Spanish	N/A
10/05	Phase 3 Annex Conference Call #2	Remote technical support provided to planning partners by Tetra Tech in support of Phase 3 annex completion	
10/11	Public Outreach	Community Emergency Preparedness Workshop—Featuring the City of Santa Paula	30
10/12	Phase 3 Annex Conference Call #3	Remote technical support provided to planning partners by Tetra Tech in support of Phase 3 annex completion	
10/19	Phase 3 Annex Conference Call #4	Remote technical support provided to planning partners by Tetra Tech in support of Phase 3 annex completion	
10/26	Core Planning Team Meeting #12	- Planning partner Phase 3 annex status update - Countywide initiatives - Plan maintenance strategy - Public meeting to coordinate with the Emergency Planning Council - Public comment period discussion - Plan development schedule update	
11/10	Steering Committee Meeting #5	- Update on planning partner activities - Review of proposed county-wide initiatives - Confirmation of plan maintenance strategy	22
11/16	Core Planning Team Meeting #13	Discuss and determine plan maintenance strategy and grant monitoring	5
11/18	Public Outreach	- Emergency Planning Council meeting - Status update on the hazard mitigation plan update	not available
2022			
1/11	Core Planning Team Meeting #14	- Draft plan Volume 1 review - Planning partner update - Plan development schedule	5
2/09	Steering Committee Meeting #6	- Discuss plan progress - Draft plan presentation - Draft plan public comment method - Public comment period - Plan development, submittal and adoption discussion	20
2/08	Core Planning Team Meeting #15	- Draft plan Volume 1 internal review update - Steering Committee meeting preparation - Public comment press release discussion - Plan development schedule updates	5
3/03	Public Outreach	Opening of the 3-week public comment period	N/A
3/24	Public Outreach	Closure of the 3-week public comment period	N/A
4/1	Plan Submittal to Cal OES	Submittal of draft plan to Cal OES for review and approval	N/A
4/1	Plan Submittal to FEMA	Submittal of draft plan to FEMA	N/A
TBD	Approval Pending Adoption	Approval Pending Adoption provided by FEMA	N/A
TBD	Adoption	Adoption window for planning partners opens	N/A
TBD	Approval	Proof of adoption documentation submitted to FEMA and Cal OES	N/A
TBD	Approval	Final approval of the plan by FEMA	N/A

4. VENTURA COUNTY PROFILE

4.1 PHYSICAL SETTING

4.1.1 Geography and Topography

Ventura County covers 2,208 square miles along southern California's Pacific coast (1,845 square miles of land and 363 square miles of water). It is bordered by Kern County to the north, Santa Barbara County to the northwest, the Pacific Ocean to the southwest, and Los Angeles County to the east and southeast. National forest makes up 53 percent of Ventura County's total area. Of the remaining 47 percent (555,953 acres), 59 percent is agricultural and 17.5 percent is urban. Two of California's eight Channel Islands are also part of the county: Anacapa Island, which is the most visited island in Channel Islands National Park, and San Nicolas Island, which is operated by the U.S. Navy.

The topography in the county is highly variable and includes mountainous areas, rolling hills, a fertile river valley and coastal plain, steep coastal bluffs, and sections of rocky coastline. The northern half of the county is mountainous and sparsely inhabited, and contains some of the most unspoiled, rugged and inaccessible wilderness remaining in southern California. Most of this land lies within the Los Padres National Forest, and includes the Chumash Wilderness in the northernmost portion, adjacent to Kern County, as well as the Sespe Wilderness and portions of the Dick Smith Wilderness and Matilija Wilderness (both of which straddle the line with Santa Barbara County) (California Department of Conservation 2021). This is an area of high topographic relief; eight mountains within this portion of the county exceed 6,000 feet in elevation, and the only major river valley is Lockwood Valley.

Conversely, the southwestern portion of the county consists of a large coastal plain known as the Oxnard Plain. The plain was formed by the deposition of sediments from the Santa Clara River and from the streams of the Calleguas-Conejo drainage system. It has a mean elevation of 50 feet, but the elevation is as much as 150 feet at points south of the Santa Clara River and as much as 300 feet at points north of the river. The part east of the Revolon Slough that centers on Camarillo is called Pleasant Valley. Most of the arable land in the county is found on the coastal plain, as well as the cities of Camarillo, Oxnard, Ventura, and Port Hueneme.

A series of smaller east-west trending hills and mountain ranges make up much of the remainder of the county. The Santa Ynez Mountains, the Topatopa Mountains, and the Piru Mountains constitute the northern boundary of the Oxnard Plain. The Santa Susana Mountains lie alongside the eastern boundary of the county, and the Simi Hills and the Santa Monica Mountains are along the southern border with Los Angeles County. These coastal mountains range in elevation from 50 feet along the coast south of the coastal plain to about 3,100 feet in the Santa Monica Mountains. Inland, the low, long South Mountain and Oak Ridge ranges separate Santa Clara Valley from the Las Posas Valley

and Simi Valley. The Camarillo Hills and the Las Posas Hills extend from Camarillo to Simi Valley and separate the Las Posas-Simi area from the Santa Rosa Valley and Tierra Rejada Valley (U.S. Department of Agriculture 1970).

4.1.2 Watersheds and Surface Waters

Ventura County contains four main watershed zones. The Santa Clara River is by far the largest river, with a drainage area of 1,625 square miles at its mouth. The Ventura River is also a prominent river in the county, with a drainage area of 263 square miles at the Pacific Ocean. Chapter 11 discusses the watershed areas in greater detail. The county also has numerous lakes and reservoirs. The largest dam-created reservoir by volume is Lake Casitas, which holds 254,000 acre-feet of water. It is used primarily for drinking water, irrigation, flood control, and recreation. Lake Piru, another large dam-created reservoir in the county, has a slightly larger surface area than Lake Casitas but is shallower and only holds 83,244 acre-feet of water. Lake Piru is used for recreation, flood control, surface water conservation and groundwater conservation and replenishment.

4.1.3 Climate

Ventura County features a Mediterranean climate characterized by cool, dry summers near the coast and warm, dry summers inland. Winters are typically mild and wet, with the area receiving 95 percent of its annual rainfall from November through April.

Average precipitation is highly variable across the region and varies dramatically with elevation as well as distance from the coast. For example, average annual rainfall ranges from less than 8 inches in the Cuyama Valley in northwestern Ventura County to approximately 38 inches in the Ventura River watershed west of the City of Ojai. Prevailing weather patterns during winter and the orientation of the mountain ranges in the northern half of the county can also combine to produce extremely high-intensity rainfall. Along the coast near Oxnard, Ventura, Simi Valley, and Thousand Oaks, the average rainfall is 14 inches.

Like most of southern California, Ventura County also observes high interannual precipitation variability, where an average rainfall year is the exception rather than the rule.

Table 4-1 summarizes normal climate data from 2000 through 2020 at the National Centers for Environmental Information (NCEI) weather station at the Oxnard Airport.

Table 4-1. Normal Precipitation and Temperatures, 2000 – 2020

	Precipitation (inches)	Temperature (°F)		
		Minimum	Average	Maximum
Annual	17.6	46.5	58.6	71.3
Winter	10.99	37.7	48.9	60.2
Summer	0.09	55.5	69.3	83.1
Spring	4.29	42.6	54.9	67.1
Autumn	2.16	50.2	61.3	74.6

Weather Station: Oxnard Ventura County Airport

Source: (National Centers for Environmental Information 2021)

4.2 HISTORICAL OVERVIEW

Ventura County was historically inhabited by the Chumash people, who also settled throughout much of Santa Barbara and San Luis Obispo Counties. The Chumash were originally hunters, gatherers, fisherman, and traders, and are known for their rock paintings and basketry.

Spanish explorers began arriving in the area in the mid-1500s, although active occupation did not effectively occur until more than 200 years later. The Spanish encouraged settlement of the area with large land grants called ranchos. The Catholic church established the Mission San Buenaventura in 1782 in what is now the City of San Buenaventura (commonly called the City of Ventura).

The County of Ventura was established on January 1, 1873, when it separated from Santa Barbara County, just 23 years after California's statehood was attained. At this time, the area remained largely rural, consisting of a population of less than 5,000 individuals that engaged predominantly in ranching and the cultivation of grain crops.

During the early 1900s, increased demand from new markets in the burgeoning Los Angeles area led to a significant expansion and diversification of agriculture in Ventura. Together with the discovery of vast oil reserves in the area, this resulted in an influx of immigrants, wealth, and substantial improvements to transportation infrastructure in the region.

A second, intense population boom (>5% annually) occurred beginning in the 1940s with the construction of Port Hueneme and the establishment of a military base at Point Mugu, which brought numerous professionals and ancillary industries to the region. Ventura County, and the Oxnard area in particular, benefited from the hiring of more than 10,000 civilian workers and 21,000 military personnel, thus providing jobs for local residents and reviving the economy following the Depression of the 1930s. By 1950, the population of the county had increased to over 114,000, more than double its population in 1930.

The East County saw a large growth in population starting in the mid-20th century with people moving from the San Fernando Valley in Los Angeles to the Conejo and Simi Valleys. Many working-class people migrated to these areas during the 1960s and 1970s out of East and Central Los Angeles. Making the U.S. 101 a full freeway in the 1960s, and the expansions that followed, helped make commuting to Los Angeles easier and opened the way for development westward. The communities that saw the most substantial development were Calabasas, Hidden Hills, Agoura Hills, Westlake Village, Thousand Oaks, and Newbury Park. The East County area of Simi Valley saw its already considerable population of nearly 60,000 inhabitants in 1970 grow to over 100,000 over the following two decades.

Development moved farther out the U.S. 101 corridor and sent population rising in West County cities as well. The largest population growth there was in Camarillo, Oxnard, and Ventura. Development in the East County and along the U.S. 101 corridor is rare today, because most of these cities are master-planned cities, such as Thousand Oaks and Simi Valley, and are approaching buildout. Although the area still has plenty of open space and land, almost all of it is mandated to never be developed as part of the master plan of each city.

4.3 POPULATION CENTERS, TRANSPORTATION, AND GOVERNMENT

The major population centers in Ventura County today are in the southern part of the county, within the incorporated cities of Camarillo, Fillmore, Moorpark, Ojai, Oxnard, Port Hueneme, Santa Paula, Simi Valley, Thousand Oaks, and San Buenaventura (Ventura). Unincorporated communities of note include La Conchita, Lake Sherwood, Meiners Oaks, Oak Park, Oak View, Santa Rosa Valley, El Rio, and Saticoy. The City of Ventura, located along the northwestern coast of the county, is the county seat. The nearby City of Oxnard is the most populous city. Both these cities are located on the Oxnard Plain, a large alluvial fan formed by deposition from the Santa Clara River. The planning area is shown in Figure 4-1. The risk analysis for this hazard mitigation plan assessed risk both countywide and for each planning partner's jurisdictional area.

U.S. Highway 101 is the main highway in the county, running east to west through the southern half of the county, and connecting the cities of Thousand Oaks, Camarillo, Oxnard, and Ventura. U.S. Highway 126 runs east to west along the Santa Clara River Valley, through the cities of Fillmore, Santa Paula, and Ventura, before joining with U.S. Highway 101. Highway 1 follows the coastline along the county's southern boundary. Other major roadways include State Highways 33, 34, 118, and 150. Airports in the county include Camarillo Airport, Oxnard Airport, Santa Paula Airport, and Naval Base Ventura County. Both Camarillo and Oxnard airports are operated by the Ventura County Department of Airports. Santa Paula airport is a privately owned, public-use airport. Naval Base Ventura County is operated by the U.S. Navy. The National Railroad Passenger Corporation (Amtrak) and Metrolink trains carry passengers on track extending from Simi Valley to Oxnard. Amtrak service continues to Ventura and along the coastline/Highway 101 to Santa Barbara County.

The Ventura County Board of Supervisors sits as the governing board of Ventura County and of various special jurisdictions such as the Sonoma County Water Agency, the Ventura County Air Pollution Control District, the Agricultural Preservation and Open Space District, County Sanitation Districts, and the Community Development Commission. The Board is composed of five supervisors elected from supervisorial districts for four-year terms. The boundaries of these districts are included on Figure 4-1.

4.4 DEVELOPMENT

4.4.1 Land Use

The Ventura County 2040 General Plan and its land use maps govern the types of land uses and development that may occur in different areas of the unincorporated county. The focus of current land use policies is to preserve agricultural, rural, and open space lands while directing growth to cities and unincorporated communities. Figure 4-2 shows the distribution of current land uses in the unincorporated county.

4.4.2 Building Count, Occupancy Class and Estimated Replacement Value

Table 4-2 presents planning area building counts by occupancy class; these are broad use classes assigned in the Hazus model. Table 4-3 summarizes estimated replacement value for building structures and contents combined, based on County assessor data.

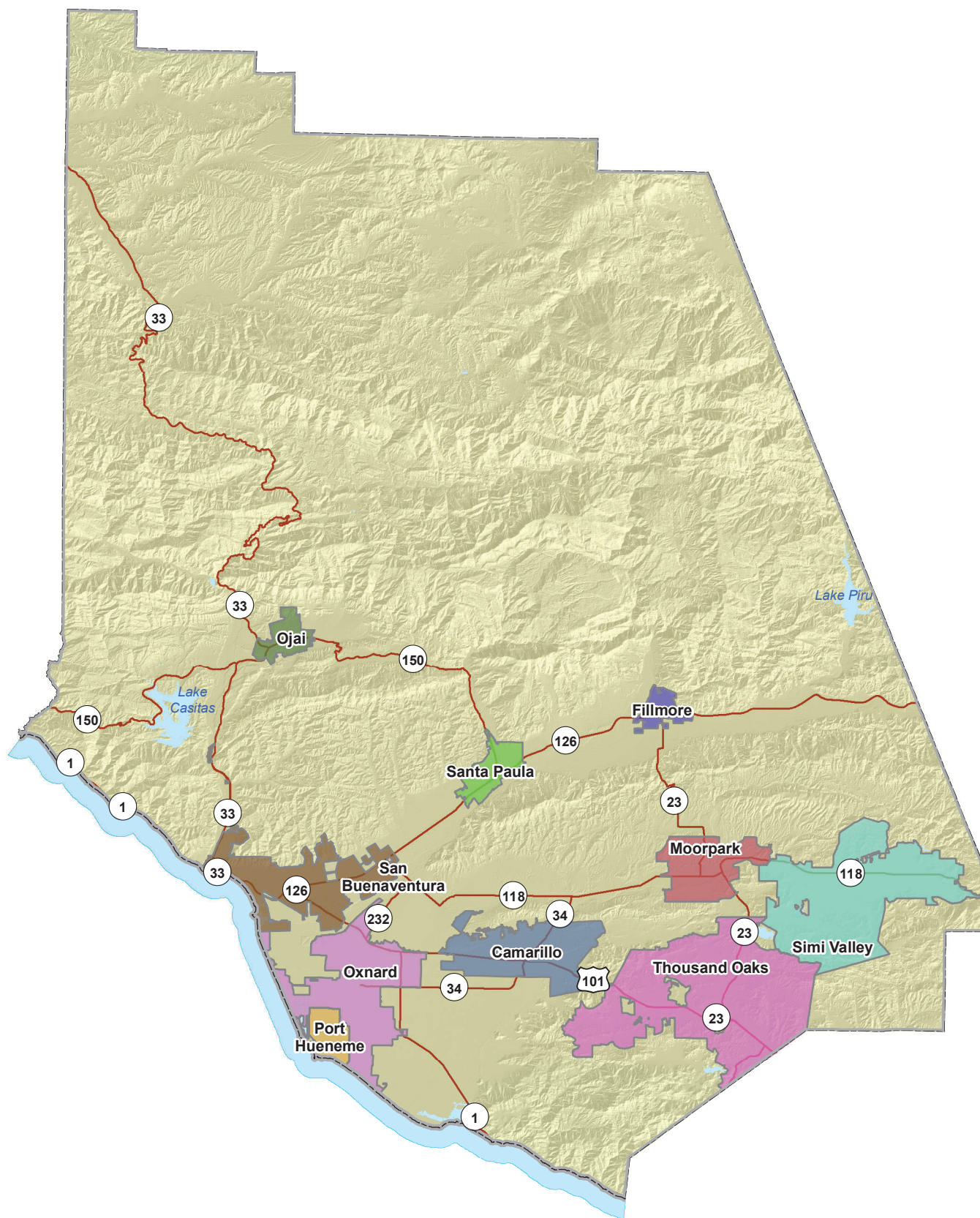
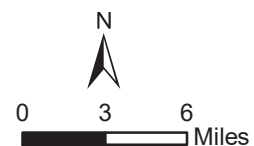


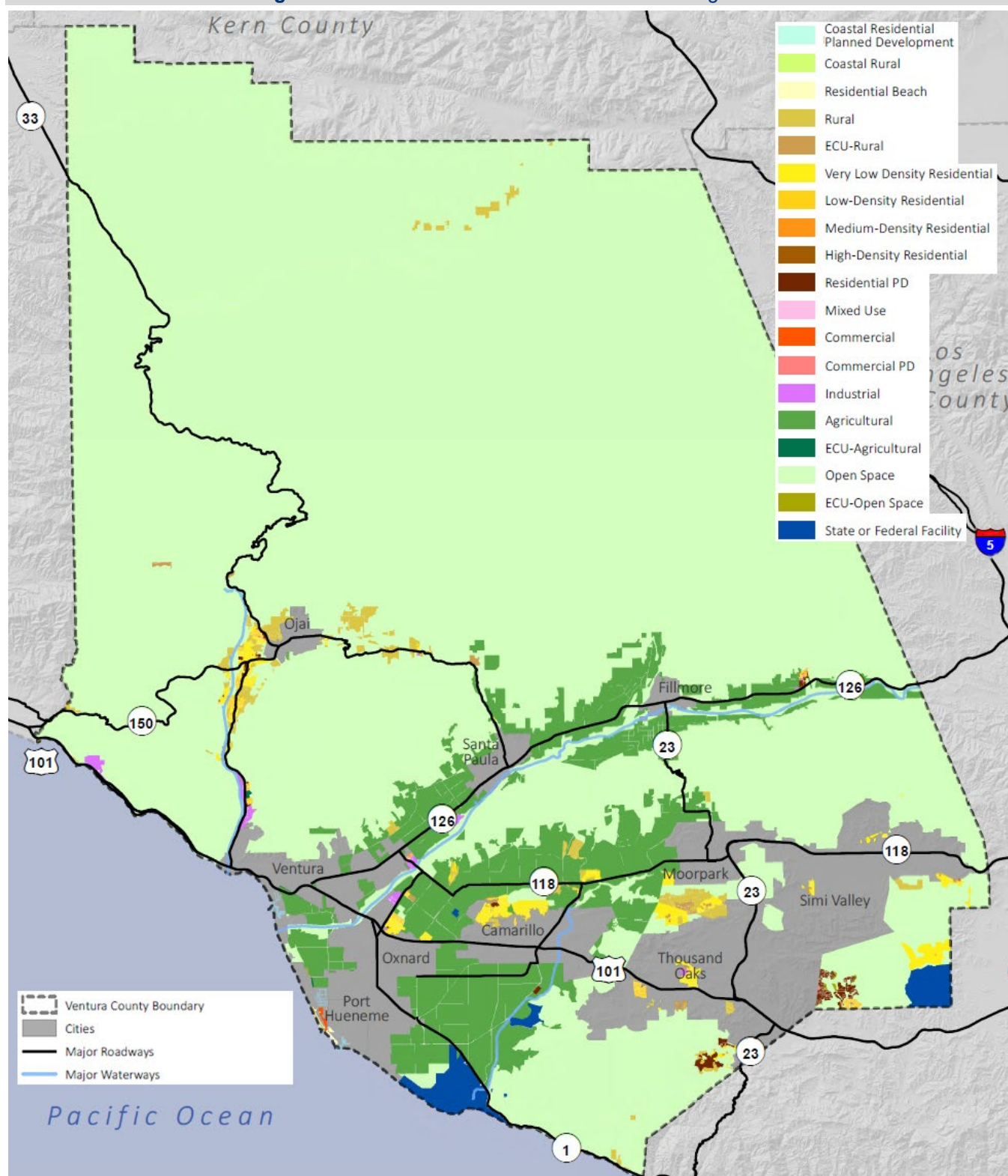
Figure 4-1. Planning Area

-  County Boundary
-  Cities
-  Major Roads



Data Sources: Ventura Co., Esri

Figure 4-2. Land Use Classifications in the Planning Area



Source: Ventura County 2020

Table 4-2. Planning Area Building Counts by Occupancy Class

	Number of Buildings							Total
	Agricultural	Commercial	Education	Government	Industrial	Religion	Residential	
Camarillo	24	736	215	280	832	85	19,657	21,829
Fillmore	7	328	85	69	39	17	4,310	4,855
Moorpark	101	410	183	63	153	18	9,769	10,697
Ojai	23	345	56	48	54	87	2,918	3,531
Oxnard	92	3,117	654	429	961	150	40,471	45,874
Port Hueneme	0	299	57	430	26	18	5,583	6,413
San Buenaventura	72	2,933	381	250	788	192	30,694	35,310
Santa Paula	55	833	119	50	190	69	7,211	8,527
Simi Valley	56	1,210	434	53	301	108	35,640	37,802
Thousand Oaks	7	1,442	325	171	286	218	36,348	38,797
Unincorporated	11,027	3,172	494	745	523	493	32,568	49,022
Total	11,464	14,825	3,003	2,588	4,153	1,455	225,169	262,657

Table 4-3. Estimated Replacement Value of Planning Area Buildings

	Estimated Total Replacement Value (Structure and Contents)		Estimated Total Replacement Value (Structure and Contents)
Camarillo	\$17,707,287,595	San Buenaventura	\$23,838,143,638
Fillmore	\$2,467,839,895	Santa Paula	\$4,571,072,937
Moorpark	\$8,222,512,567	Simi Valley	\$24,328,139,279
Ojai	\$2,340,202,613	Thousand Oaks	\$30,560,756,798
Oxnard	\$32,903,823,044	Unincorporated	\$29,161,232,550
Port Hueneme	\$4,655,956,714	Total	\$180,756,967,629

Source: Ventura County tax parcel data

4.4.3 Critical Facilities

Critical facilities are those that are essential to the health and welfare of the population. These become especially important after a hazard event. Also included are facilities that hold significant amounts of hazardous materials with a potential to impact public welfare during a hazard event. The risk assessment for each hazard in this plan discusses potential impacts on critical facilities. This plan update uses the following definition of critical facilities:

A structure, facility, or other improvement that, because of its function, service area, or uniqueness, provides service that enables the continuous operation of critical business and government functions, and is critical to human health and safety, or economic security.

The planning team and Steering Committee recommended that this plan update include a definition of critical facilities that aligns with FEMA's "community lifelines" concept. This will position the County for future funding under FEMA grant programs and initiatives. The FEMA-defined lifeline categories are as follows:

- **Safety and Security**—Law enforcement/security, search and rescue, fire services, government service, responder safety, and imminent hazard mitigation

- **Food, Water and Shelter**—Evacuations, schools, food/potable water, shelter, durable goods, water infrastructure and agriculture
- **Health and Medical**—Medical care (hospitals), patient movement, public health, fatality management, health care and supply chain
- **Energy**—Power (grid), temporary power and fuel
- **Communications**—Infrastructure, alerts, warnings, messages, 911 and dispatch, responder communications and financial services
- **Transportation**—Highway/roadway, mass transit, railway, aviation, maritime and pipeline
- **Hazardous Materials**—Facilities, hazardous debris, pollutants, and contaminants

Table 4-4 provides a summary of the critical facilities in the planning area by category and jurisdiction. General locations of identified critical facilities are shown on Figure 4-3 and Figure 4-4. The County and its planning partners consider this information to be subject to change as new information about critical facilities becomes available during the performance period for this plan. Due to the sensitivity of this information, a detailed list of facilities is not provided; however, all critical facilities were analyzed in Hazus to help rank risk and identify mitigation actions. The risk assessment for each hazard discusses critical facilities with regard to that hazard.

Table 4-4. Critical Facilities by Jurisdiction and Category

	Number of Facilities Present							Total
	Communications	Energy	Food, Water, Shelter	Hazardous Material	Health & Medical	Safety & Security	Transportation	
Camarillo	20	5	34	14	1	35	32	141
Fillmore	3	1	4	1	0	10	3	22
Moorpark	5	1	7	9	0	19	11	52
Ojai	6	1	14	0	1	13	2	37
Oxnard	24	33	11	23	2	59	36	188
Port Hueneme	7	2	1	2	0	7	8	27
San Buenaventura	34	10	6	6	3	54	63	176
Santa Paula	5	1	3	3	1	15	20	48
Simi Valley	19	4	4	13	1	51	71	163
Thousand Oaks	53	7	20	13	1	55	54	203
Unincorporated	74	46	106	9	0	73	223	531
Total	250	111	210	93	10	391	523	1,588

4.4.4 Development Trends

An understanding of population and development trends can assist in planning for future development and ensuring that appropriate mitigation, planning, and preparedness measures are in place to protect human health and community infrastructure. The Disaster Mitigation Act requires that communities consider land use trends, which can alter the need for, and priority of, mitigation options over time. Land use and development trends significantly affect exposure and vulnerability to various hazards. For example, significant development in a hazard area increases the building stock and population exposed to that hazard.

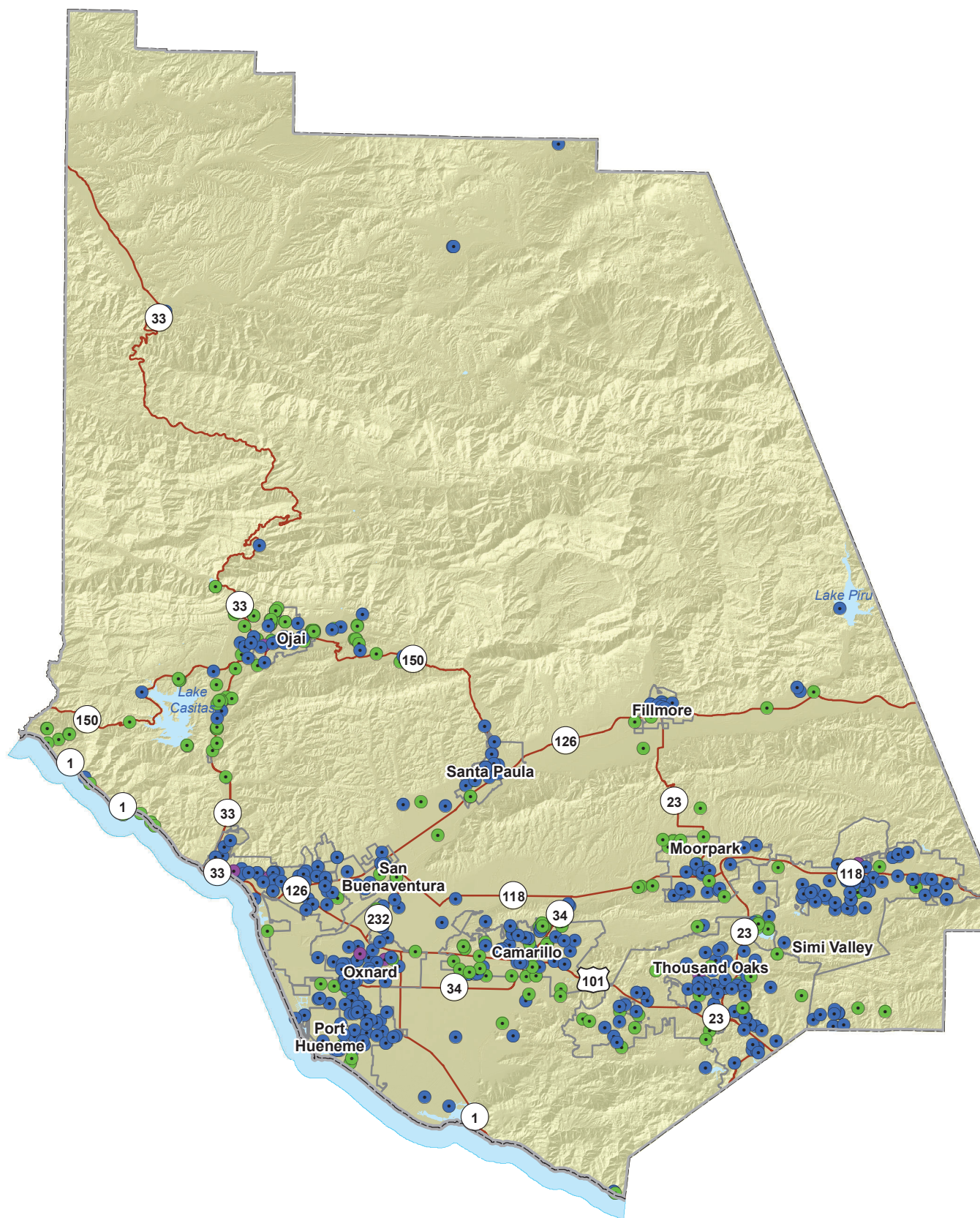
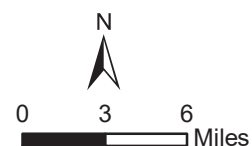


Figure 4-3. Critical Facilities (1 of 2)

- Health and Medical
- Food, Water, Shelter
- Safety and Security
- County Boundary
- Cities
- Major Roads



Data Sources: Ventura Co., VCFD, Casitas MWD, Calleguas MWD, City of Camarillo, CA Energy Commission, Cal Trans, EPA, HIFLD, Esri

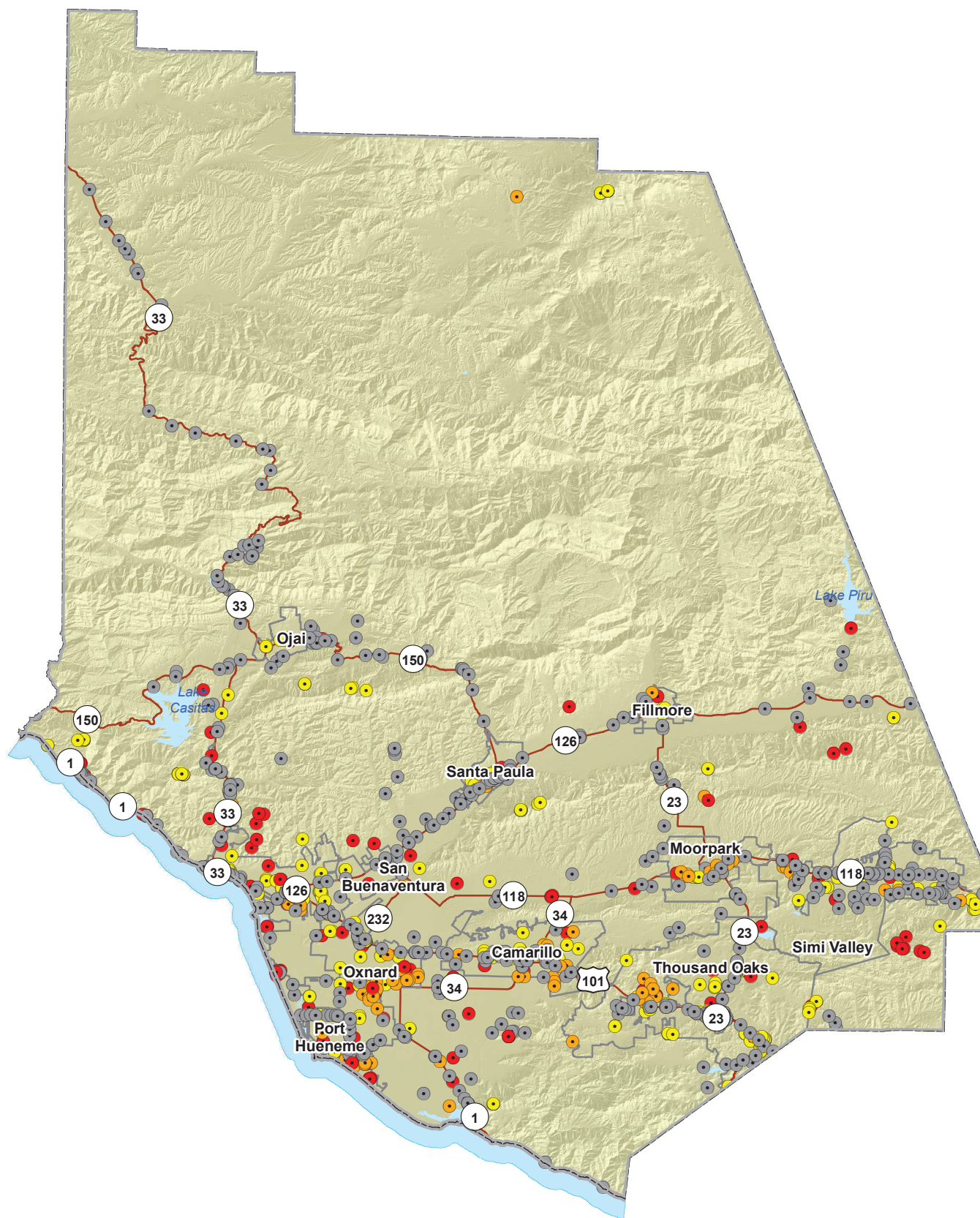
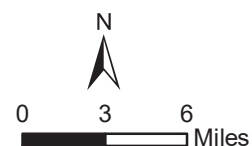


Figure 4-4. Critical Facilities (2 of 2)

- Communications
- Energy
- Hazardous Material
- Transportation
- County Boundary
- Cities
- Major Roads



Data Sources: Ventura Co., VCFD, Casitas MWD, Calleguas MWD, City of Camarillo, CA Energy Commission, Cal Trans, EPA, HIFLD, Esri

Projected Future Trends

The Regional Housing Needs Assessment (RHNA) is mandated by state law as part of the periodic process of updating local general plan housing elements. RHNA quantifies the need for housing within each jurisdiction during specified planning periods. The Southern California Association of Governments is in the process of developing its sixth cycle RHNA allocation plan, which will cover the planning period October 2021 through October 2029 (Southern California Association of Governments 2021a). Ventura County's 2021-2029 allocation is 24,452 housing units (Southern California Association of Governments 2021b).

Planning Framework

Ventura County and all incorporated cities included in this hazard mitigation plan have general plans, adopted under state law, to ensure that their governing bodies take actions that the community has determined to be the most orderly, beneficial, and supportive of the community vision. All partners have committed to link their general plans to this hazard mitigation plan. This will create an opportunity for wise land use decisions as future growth impacts hazard areas.

The County of Ventura has land use regulatory authority over most unincorporated land in the county. The County lacks land use authority within the city limits of incorporated cities and in unincorporated areas that are owned and managed by the state or federal government (e.g., state parks, national parks, Bureau of Land Management areas, and tribal lands), except for portions of state parks and other state land in the coastal zone. Under state law, the County has land use authority over land owned and managed by special districts in the unincorporated area (e.g., school districts, cemetery districts, water districts), subject to limited exceptions (Ventura County 2020).

All city and county planning partners have specific capabilities to manage growth in a way that limits increased risk associated with hazards. Details on these capabilities for each hazard assessed in this plan are provided in Section 6.4. Each of these planning partners reviewed their general plans under the capability assessments performed for this effort, as presented in Volume 2 of the hazard mitigation plan. Deficiencies identified by these reviews can be identified as mitigation actions to increase the capability to deal with future trends in development.

4.5 DEMOGRAPHICS PROFILE

4.5.1 Population Counts

Information about population is a critical part of planning because it directly relates to land needs such as housing, industry, stores, public facilities and services, and transportation. Population changes are useful socio-economic indicators. A growing population generally indicates a growing economy, while a decreasing population may signify economic decline. Due to delays associated with the COVID-19 pandemic, some 2020 census information was not yet available at the time of this plan update. The Census Bureau changed the 2020 American Community Survey release schedule.

Current and Historical Population

Table 4-5 shows the population of the County and its incorporated cities from 1990 to 2020. Oxnard and Thousand Oaks are the largest cities in Ventura County, together accounting for 39.4 percent of the planning area's population in 2010 and 39.5 percent in 2020. Unincorporated areas accounted for 11.5 percent of the planning area's population in 2010 and about 11.3 percent in 2020.

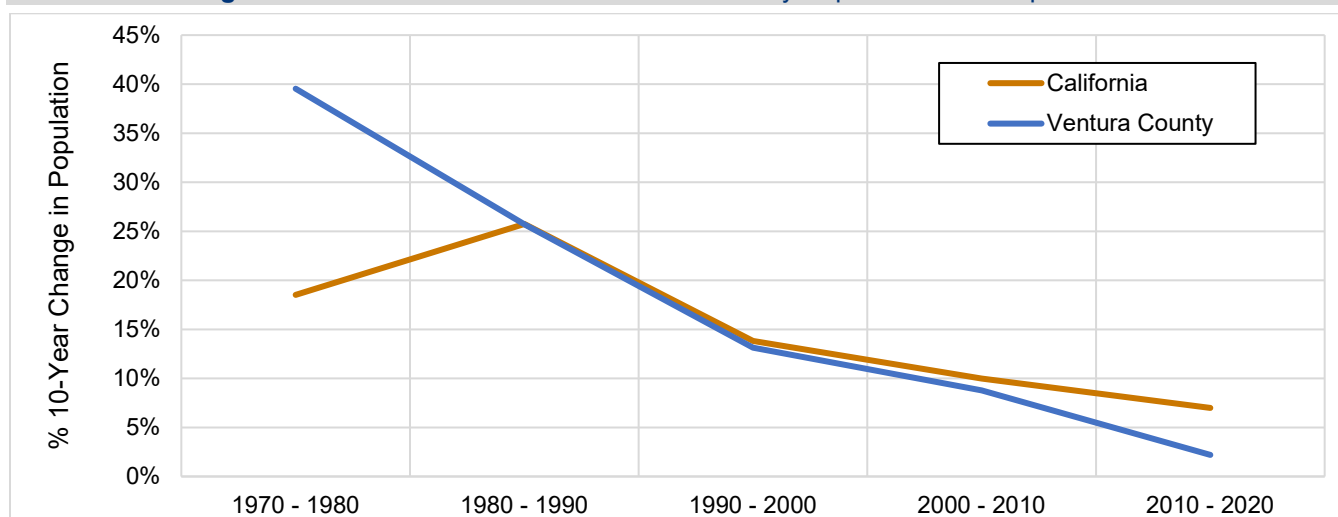
Table 4-5. Recent Population by Jurisdiction

	Population			
	1990	2000	2010	2020
Camarillo	52,297	57,084	65,201	69,964
Fillmore	11,992	13,643	15,002	15,558
Moorpark	25,494	31,415	34,421	36,264
Ojai	7,613	7,862	7,461	7,450
Oxnard	142,560	170,358	197,899	205,950
Port Hueneme	20,322	21,845	21,723	23,707
Ventura	92,557	100,916	106,433	105,878
Santa Paula	25,062	28,598	29,321	30,386
Simi Valley	100,218	111,351	124,237	124,953
Thousand Oaks	104,381	117,005	126,683	126,384
Unincorporated	86,500	93,120	94,937	94,725
Total	669,016	753,197	823,318	841,219

Source: California Department of Finance, 2021

Overall decrease in population of the unincorporated areas was 0.2 percent from 2010 to 2020; the City of Oxnard grew 3.9 percent during the same timeframe, and the population of the City of Thousand Oaks decreased 0.2 percent. Figure 4-5 shows the planning area's 10-year population growth rates from 1970 to 2020 compared to those of the state.

Figure 4-5. State of California and Ventura County Population Growth per Decade



Source: California Department of Finance, 2021

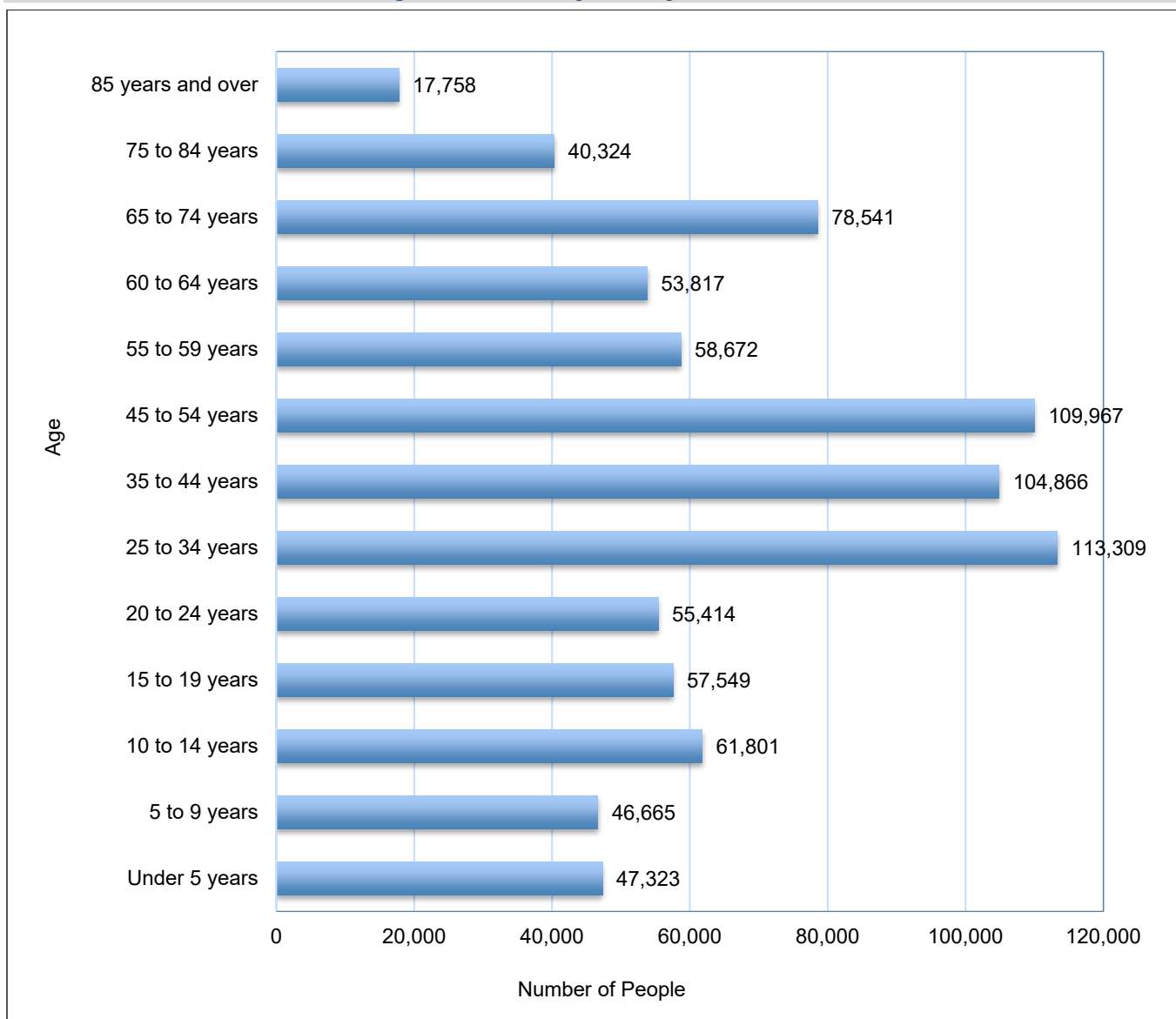
Projected Future Population

According to projections by the California Department of Finance, Ventura County's population is expected to increase to 885,628 by 2040. This represents about a 5 percent increase from the 2020 population of 841,219.

4.5.2 Age Distribution

The overall age distribution for the County is shown in Figure 4-6. Based on U.S. Census 2019 data estimates, 15.9 percent of the planning area's population is 65 or older, compared with the state average of 14.8 percent. It is also estimated that 18.4 percent of the population is 14 or younger, which varies slightly from the state's average of 18.7 percent.

Figure 4-6. Planning Area Age Distribution

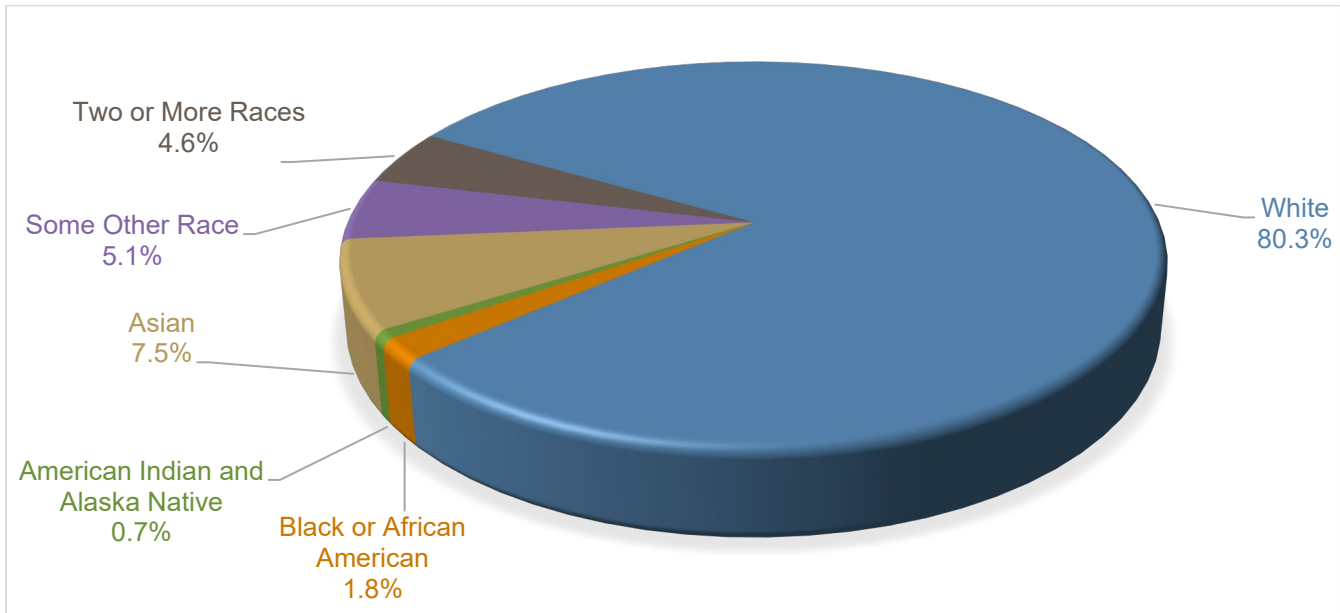


Source: U.S. Census—American Community Survey 5-Year Estimates

4.5.3 Race, Ethnicity and Language

According to the U.S. Census, the racial composition of the planning area is predominantly white, at 56 percent. The largest minority populations are Asian at 7.5 percent, and some other race at 5.1 percent. Figure 4-7 shows the racial distribution in the planning area. Based on the U.S. Census ethnicity definitions, Ventura County consists of 43.2 percent of individuals of Hispanic or Latino ethnicity (of any race). The planning area has a 21.6 percent foreign-born population. Other than English, the most spoken language in the planning area is Spanish. The Census estimates 53.6 percent of the residents speak English “less than very well.”

Figure 4-7. Planning Area Race Distribution



4.5.4 Persons with Disabilities or with Access and Functional Needs

According to the 2018 Census estimates, persons with disabilities or with access and functional needs make up 10.8 percent of the total civilian non-institutionalized population of Ventura County. According to U.S. Census data, 32.1 percent of the over-65 population have disabilities of some kind.

4.6 ECONOMY

4.6.1 Income

Based on 2019 Census data, per capita income in the County of Ventura was \$40,293 and the median household income was \$92,236. The Department of Housing and Urban Development estimated a 2021 median family income for Oxnard-Thousand Oaks-Ventura of \$94,340.

The Census estimates that 7.9 percent of all families in the planning area and 7.2 percent of the over-65 population have incomes below the poverty level. Children under the age of 18 account for 11.3 percent of individuals who are below the poverty line.

4.6.2 Homeownership and Renter-Occupied Housing

According to 2019 American Community Survey estimates, there are 268,524 occupied housing units in Ventura County. Table 4-6 compares general demographic statistics for renter-occupied and owner-occupied housing units.

Table 4-6. Comparative Statistics for Renter-Occupied and Owner-Occupied Housing Units

	Renter-Occupied Housing Units	Owner-Occupied Housing Units
Occupied Housing Units		
Number	100,014	168,510
% of Total	37.2	62.8
Age of Residents		
< 35	26,463	8,547
55 and older	30,084	105,535
Time Living at Current Residence		
Moved in in 2017 or Later	41,142	21,887

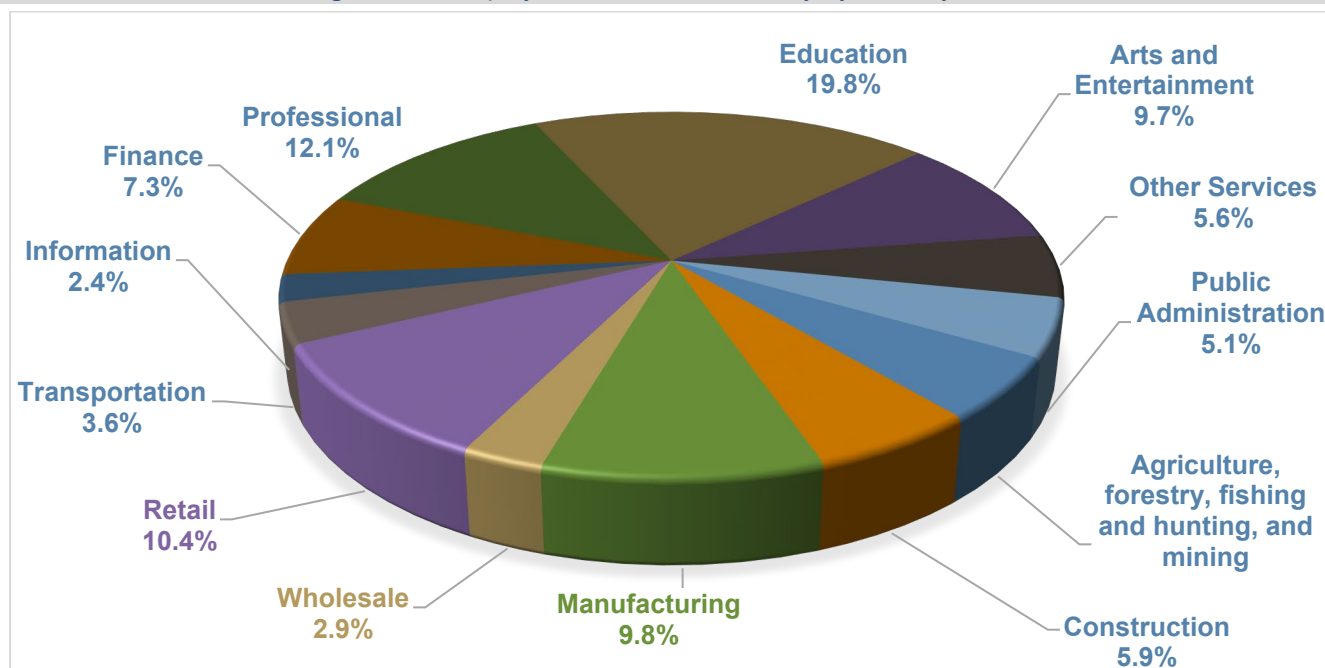
4.6.3 Industry, Businesses, and Institutions

Table 4-7 identifies the principal employers in Ventura County in 2019 as provided by the American Community Survey. Figure 4-8 shows the breakdown of employment in the planning area by industry sector. The County's economy is strongly based in the education/health services sector and the professional/scientific/management sector. Information and wholesale trade make up the smallest sectors of the local economy.

Table 4-7. 2021 Principal Employers within Ventura County

Employer	Employer Type
Adventist Health Simi Valley	Hospitals
Amgen Inc	Biological Specimens-Manufacturers
Baxter Healthcare	Medical Manufacturers
Community Memorial Health System	Health Care Management
County of Ventura	Government
Haas Automation Inc	Machinery-Manufacturers
Harbor Freight Tools	Tools-New & Used
Los Robles Hospital	Hospitals
Moorpark College	Education
Nancy Reagan Breast Center	Diagnostic Imaging Centers
National Guard	Government
Ojai Valley Inn	Hotels & Hospitality
Oxnard College	Education
Pentair Aquatic Systems	Retail
Port Hueneme	Military
Procter & Gamble	Manufacturing
Rancho Simi Recreation Park District	Public Administration

Employer	Employer Type
Sheriff's Department	Government
City of Simi Valley	Government
City of Simi Valley City Manager	Government
St. John's Regional Medical Center	Hospitals
U.S. Department of the Navy	Military
Ventura County Medical Center	Hospital
Ventura County Office of Education	School District

Figure 4-8. Employment in Ventura County by Industry Sector

4.6.4 Employment Trends and Commuting

Ventura County's local employment base has remained nearly the same since 2010. In 2019, the estimated total number of employed Ventura County residents was 422,172, an increase of only 0.58 percent from 2010. Of the working-age population who make up the labor force, 52.1 percent are men and 47.9 percent are women.

Figure 4-9 compares unemployment rates for the State of California and Ventura County from 2010 through 2019. The 2019 Ventura County unemployment rate was the lowest in 10 years at 2.6 percent. The rate peaked at 7.3 percent in 2011 and declined overall through 2019. In each year from 2010 through 2019, the County unemployment rate was lower than that of the state.

Figure 4-10 shows U.S. Census data for the most common occupations for the employed population of Ventura County. This includes wage and salary jobs, and jobs held by business owners and self-employed persons. The total job count does not include unpaid volunteers or family workers, or private household workers.

The 2019 U.S. Census Bureau data shows 78.4 percent of the County's population work and live in Ventura County; 21.6 percent commute to other places. In 2019, 34.4 percent of Ventura County commuters spent more than 30 minutes to travel to work.

Figure 4-9. 10-Year Unemployment Rates for California and Ventura County

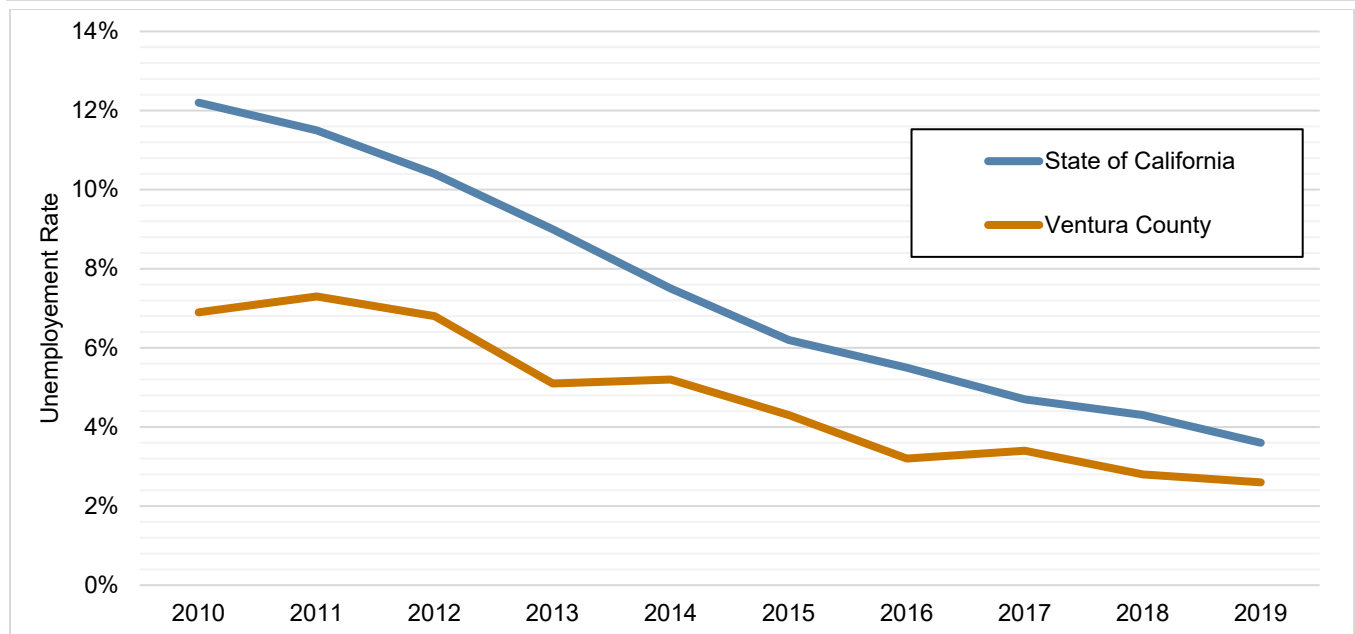
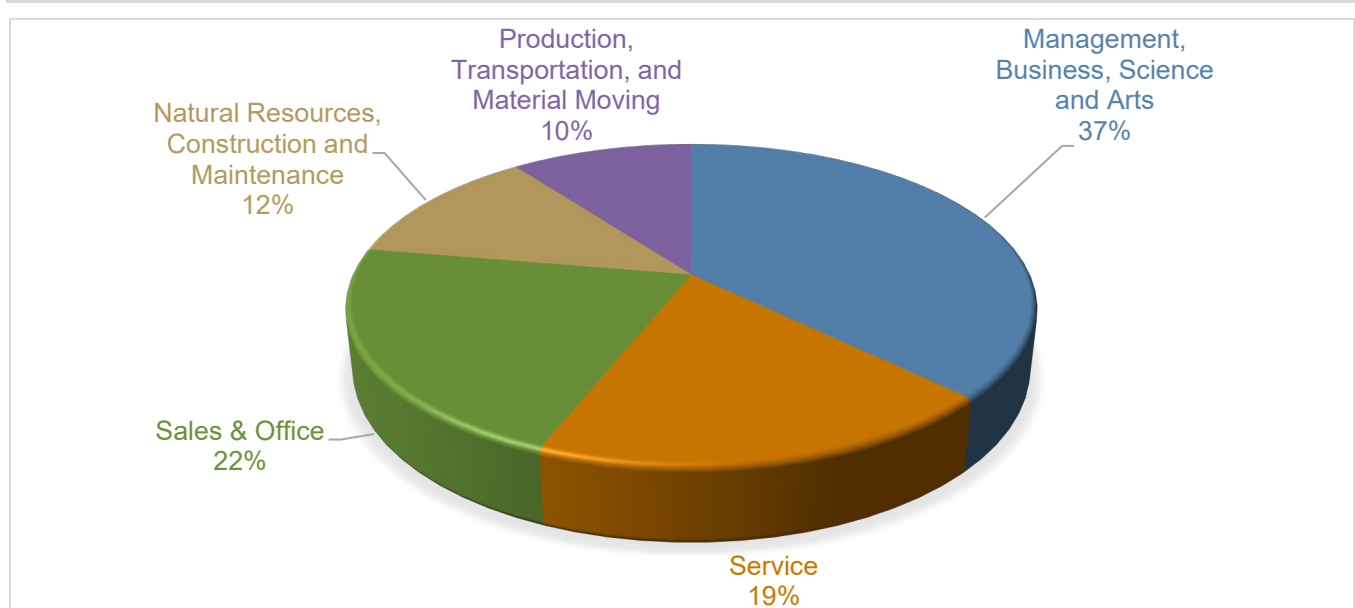


Figure 4-10. Employment in the Planning Area by Type of Work



5. HAZARDS OF CONCERN

Defining the hazards that present the greatest risk to the planning area is the first step in assessing overall risk to the community. The planning team and Steering Committee reviewed available information to determine what types of hazards may affect the planning area, how often they can occur, and their potential severity.

5.1 MAJOR PAST HAZARD EVENTS

Federal disaster declarations are typically issued for hazard events that cause more damage than state and local governments can handle without assistance from the federal government, although no specific dollar loss threshold has been established for these declarations. A federal disaster declaration puts federal recovery programs into motion to help disaster victims, businesses, and public entities. Some of the programs are matched by state programs. Federal disaster, emergency, or fire management assistance declarations were issued for 46 events since 1954 in the planning area. These events are listed in Table 5-1.

Table 5-1. Federal Disaster Declarations for Hazard Events that Affected the Planning Area

Type of Event	Disaster Declaration #	Date
Flood ^a	DR-15	02/05/1954
Flood ^a	DR-47	12/23/1955
Fire ^a	DR-65	12/29/1956
Flood ^a	DR-82	4/4/1958
Flood ^a	DR-122	3/6/1962
Severe Storm ^a	DR-138	10/24/1962
Flood ^a	DR-145	2/25/1963
Heavy Rains, Flooding	DR-211	December 7, 1965
Severe Storms, Flooding	DR-253	January 26, 1969
Forest, Brush Fires	DR-295	September 29, 1970
Severe Storms, High Tides, Flooding	DR-364	February 8, 1973
Coastal Storms, Mudslides, Flooding	DR-547	February 15, 1978
Severe Storms, Mudslides, Flooding	DR-615	January 8, 1980
Coastal Storms, Floods, Slides, Tornadoes	DR-677	January 21 – March 30, 1983
Grass, Wildlands, Forest Fires	DR-739	June 26 – July 19, 1985
Severe Storms, High Tides, Flooding	DR-812	January 17 – 22, 1988
Severe Freeze	DR-894	December 19, 1990 – January 3, 1991
Snow Storm, Heavy Rain, High Winds, Flooding, Mudslide	DR-935	February 10 – 19, 1992

Type of Event	Disaster Declaration #	Date
Severe Storm, Winter Storm, Mud & Landslides, Flooding	DR-979	January 5 – March 20, 1993
Fires, Mud & Landslides, Soil Erosion, Flooding	DR-1005	October 26 – April 22, 1994
Northridge Earthquake	DR-1008	January 17 – November 30, 1994
Severe Winter Storms, Flooding, Landslides, Mud Flows	DR-1044	January 3 – February, 1995
Severe Winter Storms, Flooding, Landslides, Mud Flows	DR-1046	February 13 – April 19, 1995
Severe Fires	EM-3120	October 21 – 31, 1996
Severe Winter Storms and Flooding	DR-1203	February 2 – April 30, 1998
Severe Storms, Tornadoes, High Winds and Flooding	DR-1267	December 20 – 28, 1998
Wildfires, Flooding, Mudflow and Debris Flow	DR-1498	October 21, 2003 – March 31, 2003
Severe Storms, Flooding, Debris Flows, and Mudslides	DR-1577	December 27, 2004 – January 11, 2005
Severe Storms, Flooding, Landslides, and Mud and Debris Flows	DR-1585	February 16 – 23, 2005
Hurricane Katrina Evacuation	EM-3248	August 29 – October 1, 2005
Topanga Fire	FM-2583	September 28 – October 10, 2005
School Fire	FM-2586	November 18 – 23, 2005
Day Fire	FM-2677	September 25 – 30, 2006
Shekell Fire	FM-2681	December 3 – 6, 2006
Severe Freeze	DR-1689	January 11 – 17, 2007
Wildfires, Flooding, Mudflows, and Debris Flows	DR-1731	October 21 – March 31, 2008
Guiberson Fire	FM-2839	September 22 – 29, 2009
Springs Fire	FM-5024	May 2 – 11, 2013
Thomas Fire	FM-5224	December 4, 2017
Wildfires, Flooding, Mudflows, and Debris Flows	DR-4353	December 4, 2017- January 31, 2018
Wildfires	DR-4407	November 8 – 25, 2018
Saddleridge Fire	FM-5293	October 10, 2019
Getty Fire	FM-5297	October 28, 2019
Easy Fire	FM-5298	October 30, 2019
Maria Fire	FM-5302	November 1, 2019
COVID-19 Pandemic	DR-4482	January 20, 2020 and continuing

a. FEMA did not begin distinguishing declarations by county until 1964. Declarations prior to then are statewide, not county-specific.
Source: FEMA 2021

Review of these events helps identify hazards of concern and targets for risk reduction activities. However, many natural hazard events do not trigger federal disaster declaration protocol but have significant impacts on their communities (e.g. landslides that result in road closures). These events are also important to consider in identifying hazards of concern and establishing their recurrence intervals.

5.2 HAZARDS EVALUATED IN 2015 PLAN

The planning team also reviewed information on hazards from the previous plan update conducted in 2015. That plan addressed the following 12 hazards of concern:

- Agricultural / biological
- Climate change
- Dam failure/inundation
- Drought
- Earthquake
- Flood

- Landslide
- Levee failure inundation
- Post-fire debris flows
- Tsunami
- Wildfire
- Winter storm

5.3 IDENTIFIED HAZARDS FOR THE 2022 UPDATE

The Steering Committee considered the full range of natural hazards that could affect the planning area and then selected those that present the greatest concern for risk assessment in this plan. The process incorporated a review of state and local hazard planning documents as well as information on the frequency of, magnitude of, and costs associated with hazards that have struck the planning area or could do so. Anecdotal information regarding natural hazards and the perceived vulnerability of the planning area's assets to them was also used.

Based on the review, this plan includes risk assessments for the hazards of concern listed in Table 5-2. Climate change is not assessed as an individual hazard, but a profile is provided describing how climate change could affect the hazards of concern assessed in this plan.

Table 5-2. Hazards Addressed in This Hazard Mitigation Plan

Hazards of Concern	Hazards of Interest
• Dam failure inundation • Drought • Earthquake • Flooding (includes levee failures) • Landslide & mass movements • Sea-level rise and coastal erosion • Severe storms • Severe weather (heat/freezing events) • Tsunami • Wildfire	• Agricultural biological incidents • Pandemic

Note: Hazards are listed in alphabetical order in this table and in the risk assessment portion of this plan; the order presented does not indicate the hazards' relative severity or risk.

In addition to the risk assessment of the hazards of concern, this plan provides a qualitative review of the "hazards of interest" listed in Table 5-2. The Steering Committee determined that these other hazards, though not required to be evaluated under federal guidelines for hazard mitigation plans, are important to recognize qualitatively in this plan. Hazard profiles, without quantitative risk assessments, are provided for these hazards of interest.

6. EXISTING REGULATIONS

Existing regulations, agencies and programs at the federal, state, and local level can support or impact hazard mitigation actions identified in this plan. Hazard mitigation plans are required to include a review and incorporation, if appropriate, of existing plans, studies, reports, and technical information as part of the planning process (44 CFR, Section 201.6(b)(3)). Information presented in this section can be used to review local capabilities to implement the action plan this hazard mitigation plan presents. Individual review by each planning partner of existing local plans, studies, reports, and technical information is presented in the annexes in Volume 2.

6.1 FEDERAL AND STATE AGENCIES, PROGRAMS AND REGULATIONS

State and federal regulations and programs that need to be considered in hazard mitigation are constantly evolving. For this plan, a review was performed to determine which regulations and programs are currently most relevant to hazard mitigation planning. The findings are summarized in Table 6-1 and Table 6-2. Short descriptions of each program are provided in Appendix B.

Table 6-1. Summary of Relevant Federal Agencies, Programs and Regulations

Agency, Program or Regulation	Hazard Mitigation Area Affected	Relevance
Americans with Disabilities Act	Action Plan Implementation	FEMA hazard mitigation project grant applications require full compliance with applicable federal acts.
Bureau of Land Management	Wildfire Hazard	The Bureau funds and coordinates wildfire management programs and structural fire management and prevention on BLM lands.
Civil Rights Act of 1964	Action Plan Implementation	FEMA hazard mitigation project grant applications require full compliance with applicable federal acts.
Clean Water Act	Action Plan Implementation	FEMA hazard mitigation project grant applications require full compliance with applicable federal acts.
Community Development Block Grant Disaster Resilience Program	Action Plan Funding	This is a potential alternative source of funding for actions identified in this plan.
Community Rating System	Flood Hazard	This voluntary program encourages floodplain management activities that exceed the minimum National Flood Insurance Program requirements.
Disaster Mitigation Act	Hazard Mitigation Planning	This is the current federal legislation addressing hazard mitigation planning.
Emergency Relief for Federally Owned Roads Program	Action Plan Funding	This is a possible funding source for actions identified in this plan.

Agency, Program or Regulation	Hazard Mitigation Area Affected	Relevance
Emergency Watershed Program	Action Plan Funding	This is a possible funding source for actions identified in this plan.
Endangered Species Act	Action Plan Implementation	FEMA hazard mitigation project grant applications require full compliance with applicable federal acts.
Federal Energy Regulatory Commission Dam Safety Program	Dam Failure Hazard	This program cooperates with a large number of federal and state agencies to ensure and promote dam safety.
Federal Wildfire Management Policy and Healthy Forests Restoration Act	Wildfire Hazard	These documents mandate community-based collaboration to reduce risks from wildfire.
National Dam Safety Act	Dam Failure Hazard	This act requires a periodic engineering analysis of most dams in the country
National Environmental Policy Act	Action Plan Implementation	FEMA hazard mitigation project grant applications require full compliance with applicable federal acts.
National Fire Plan	Wildfire Hazard	This plan calls for joint risk reduction planning and implementation by federal, state and local agencies.
National Flood Insurance Program	Flood Hazard	This program makes federally backed flood insurance available to homeowners, renters, and business owners in exchange for communities enacting floodplain regulations
National Incident Management System	Action Plan Development	Adoption of this system for government, nongovernmental organizations, and the private sector to work together to manage incidents involving hazards is a prerequisite for federal preparedness grants and awards
National Landslide Preparedness Act	Risk Assessment of Landslide Hazard	This act authorized a national landslide hazards reduction program and a 3D elevation program, providing tools and data to assess the landside hazard.
Presidential Executive Order 11988 (Floodplain Management)	Flood Hazard	This order requires federal agencies to avoid long and short-term adverse impacts associated with modification of floodplains
Presidential Executive Order 11990 (Protection of Wetlands)	Action Plan Implementation	FEMA hazard mitigation project grant applications require full compliance with applicable presidential executive orders.
Rural Development Program	Action Plan Implementation	The program provides project financing and technical assistance to help rural communities provide the infrastructure needed by rural businesses, community facilities, and households.
U.S. Army Corps of Engineers Dam Safety Program	Dam Failure Hazard	This program is responsible for safety inspections of dams that meet size and storage limitations specified in the National Dam Safety Act.
U.S. Army Corps of Engineers Flood Hazard Management	Flood Hazard, Action Plan Implementation, Action Plan Funding	The Corps of Engineers offers multiple funding and technical assistance programs available for flood hazard mitigation actions
U.S. Bureau of Reclamation Safety Evaluation of Existing Dams Program	Dam Failure Hazard	The program emphasizes site evaluations to identify potential safety deficiencies on Interior Department dams and analyses to expedite corrective action decisions.
U.S. Fire Administration	Wildfire Hazard	This agency provides leadership, advocacy, coordination, and support for fire agencies and organizations.
U.S. Fish and Wildlife Service	Wildfire Hazard	This service's fire management strategy employs prescribed fire throughout the National Wildlife Refuge System to maintain ecological communities.

Table 6-2. Summary of Relevant State Agencies, Programs and Regulations

Agency, Program or Regulation	Hazard Mitigation Area Affected	Relevance
AB 9: Fire safety: Wildfires: Fire Adapted Communities	Wildfire Hazard	Establishes the Regional Forest and Fire Capacity Program to support regional leadership to build local and regional capacity and develop, prioritize, and implement strategies and projects that create fire adapted communities and landscapes by improving watershed health, forest health, community wildfire preparedness, and fire resilience.
AB 32: The California Global Warming Solutions Act	Action Plan Development	This act establishes a state goal of reducing greenhouse gas emissions to 1990 levels by 2020
AB 38: Fire safety: Low-Cost Retrofits: Regional Capacity Review: Wildfire Mitigation	Wildfire Hazard	Directs the California Natural Resources Agency to review the regional capacity of each county that contains a very high fire hazard severity zone and establishes a comprehensive wildfire mitigation and assistance program.
AB 70: Flood Liability	Flood Hazard	A city or county may be required to partially compensate for property damage caused by a flood if it unreasonably approves new development in areas protected by a state flood control project
AB 162: Flood Planning	Flood Hazard	Cities and counties must address flood-related matters in the land use, conservation, and safety and housing elements of their general plans.
AB 267: California Environmental Quality Act: Exemption: Prescribed Fire, Thinning, and Fuel Reduction Projects.	Wildfire Hazard	Extends to January 1, 2026, the exemption from requirements of the California Environmental Quality Act for prescribed fire, thinning, or fuel reduction projects on federal lands to reduce the risk of high-severity wildfire that had been reviewed under the National Environmental Policy Act.
AB 380: Forestry: Priority Fuel Reduction Projects	Wildfire Hazard	Requires the Department of Forestry and Fire Protection to identify priority fuel reduction projects annually and exempts the identified priority fuel reduction projects from certain legal requirements.
AB 431: Forestry: Timber Harvesting Plans: Defensible Space: Exemptions	Wildfire Hazard	Extends to January 1, 2026, the exemption from a requirement to complete a timber harvest plan for maintaining defensible space between 150 feet and 300 feet from a habitable structure.
AB 497: Forestry and Fire Protection: Local Assistance Grant Program: Fire Prevention Activities: Street and Road Vegetation Management	Wildfire Hazard	Appropriates funds for local assistance grants for fire prevention activities with priority for projects that that manage vegetation along streets and roads to prevent the ignition of wildfire.
AB 575: Civil Liability: Prescribed Burning Activities: Gross Negligence	Wildfire Hazard	Provides that a private entity engaging in a prescribed burning activity that is supervised by a person certified as burn boss is liable for damages to a third party only if the prescribed burning activity was carried out in a grossly negligent manner.
AB 642: Wildfires	Wildfire Hazard	This bill is an omnibus fire prevention bill that makes various changes to support cultural and prescribed fire, including the creation of a Cultural Burning Liaison at the Department of Forestry and Fire Protection, and requires a proposal for creating a prescribed fire training center.
AB 747: General Plans—Safety Element	Hazard Mitigation Planning	The safety elements of cities' and counties' general plans must address evacuation routes and include any new information on flood and fire hazards and climate adaptation and resiliency strategies.
AB 800: Wildfires: local general plans: safety elements: fire hazard severity zones.	Wildfire Hazard	This Bill has provisions for wildfire hazard mapping and applications for that mapping in the Safety elements General plans within the state.

Agency, Program or Regulation	Hazard Mitigation Area Affected	Relevance
AB 1255: Fire prevention: Department of Forestry and Fire Protection: Grant Programs	Wildfire Hazard	Requires the Natural Resources Agency to develop a guidance document that describes goals, approaches, opportunities, and best practices in each region of the state for ecologically appropriate, habitat-specific fire risk reduction. Requires consultation with counties related to the Department of Forestry and Fire Protection's local fire prevention grant program.
AB 1295: Residential development Agreements: Very High-Risk Fire Areas	Wildfire Hazard	Prohibits the legislative body of a city or county from entering into a residential development agreement for property in a very high fire risk area as designated by a local agency or a fire hazard severity zone classified by the director of CAL FIRE.
AB 1439: Property Insurance Discounts	Wildfire Hazard	Requires residential or commercial property insurance policies to include a discount if a local government where the insured property is located funds a local wildfire protection or mitigation program.
AB 1500: Safe Drinking Water, Wildfire Prevention, Drought Preparation, Flood Protection, Extreme Heat Mitigation, and Workforce Development Bond Act of 2022.	Drought, Flood, Extreme Heat and Wildfire Hazards	If approved by the voters, would authorize the issuance of bonds to finance projects for safe drinking water, wildfire prevention, drought preparation, flood protection, extreme heat mitigation, and workforce development programs.
AB 2140: General Plans—Safety Element	Hazard Mitigation Planning	This bill enables state and federal disaster assistance and mitigation funding to communities with compliant hazard mitigation plans.
AB 2800: Climate Change—Infrastructure Planning	Action Plan Development	This act requires state agencies to take into account the impacts of climate change when developing state infrastructure.
Alquist-Priolo Earthquake Fault Zoning Act	Earthquake Hazard	This act restricts construction of buildings used for human occupancy on the surface trace of active faults.
Board of Forestry and Fire Protection Fire Safe Regulations	Wildfire Hazard	The Fire Safe Regulations set the floor for fire safety standards for perimeters and access to residential, commercial, and industrial building construction.
California Coastal Management Program	Flood, Landslide, Tsunami and Wildfire Hazards	This program requires coastal communities to prepare coastal plans and requires that new development minimize risks to life and property in areas of high geologic, flood, and fire hazard.
California Department of Forestry and Fire Protection (CAL FIRE)	Wildfire Hazard	CAL FIRE has responsibility for wildfires in areas that are not under the jurisdiction of the Forest Service or a local fire organization.
California Department of Parks and Recreation	Wildfire Hazard	State Parks Resources Management Division has wildfire protection resources available to suppress fires on State Park lands.
California Department of Water Resources	Flood Hazard	This state department is the state coordinating agency for floodplain management.
California Division of Safety of Dams	Dam Failure Hazard	This division monitors the dam safety program at the state level and maintains a working list of dams in the state.
California Environmental Quality Act	Action Plan Implementation	This act establishes a protocol of analysis and public disclosure of the potential environmental impacts of development projects. Any project action identified in this plan will seek full California Environmental Quality Act compliance upon implementation.
California Fire Alliance	Wildfire Hazard	The alliance works with communities at risk from wildfires to facilitate the development of community fire loss mitigation plans.
California Fire Plan	Wildfire Hazard	This plan's goal is to reduce costs and losses from wildfire through pre-fire management and through successful initial response.

Agency, Program or Regulation	Hazard Mitigation Area Affected	Relevance
California Fire Safe Council	Wildfire Hazard	This council facilitates the distribution of National Fire Plan grants for wildfire risk reduction and education.
California Fire Service and Rescue Emergency Mutual Aid Plan	Wildfire Hazard	This plan provides guidance and procedures for agencies developing emergency operations plans, as well as training and technical support.
California General Planning Law	Hazard Mitigation Planning	This law requires every county and city to adopt a comprehensive long-range plan for community development, and related laws call for integration of hazard mitigation plans with general plans.
California Multi-Hazard Mitigation Plan	Hazard Mitigation Planning	Local hazard mitigation plans must be consistent with their state's hazard mitigation plan.
California Residential Mitigation Program	Earthquake Hazard	This program helps homeowners with seismic retrofits to lessen the potential for damage to their houses during an earthquake.
California State Building Code	Action Plan Implementation	Local communities must adopt and enforce building codes, which include measures to improve buildings' ability to withstand hazard events.
Disadvantaged and Low-Income Communities Investments	Action Plan Funding	This is a potential source of funding for actions located in disadvantaged or low-income communities.
Division of the State Architect's AB 300 List of Seismically At-Risk Schools	Earthquake Hazard, Action Plan Development	The Division of the State Architect recommends that local school districts conduct detailed seismic evaluations of seismically at-risk schools identified in the inventory that was required by AB 300.
Governor's Executive Order S-13-08 (Climate Impacts)	Action Plan Implementation	This order includes guidance on planning for sea-level rise in designated coastal and floodplain areas for new projects.
Office of the State Fire Marshal	Wildfire Hazard	This office has a wide variety of fire safety and training responsibilities.
Senate Bill 12: Local government: planning and zoning: wildfires.	Wildfire Hazard	Requires the safety element to be reviewed and updated as necessary to include a comprehensive retrofit strategy to reduce the risk of property loss and damage during wildfires. Requires the planning agency to submit the adopted strategy to the Office of Planning and Research for inclusion into a central clearinghouse.
Senate Bill 92: Public Resources Portion of Biennial Budget Bill	Dam Failure Hazard	This bill requires dams (except for low-risk dams) to have emergency action plans that are updated every 10 years and inundation maps updated every 10 years, or sooner if specific circumstances change.
Senate Bill 97: Guidelines for Greenhouse Gas Emissions	Action Plan Implementation	This bill establishes that greenhouse gas emissions and the effects of greenhouse gas emissions are appropriate subjects for California Environmental Quality Act analysis.
Senate Bill 99: General Plans: Safety Element: Emergency Evacuation Routes	Action Plan Implementation	This bill requires the safety element must include information to identify residential developments in hazard areas that do not have at least two emergency evacuation routes.
Senate Bill 182: Local Government: Planning and Zoning: Wildfires	Wildfire Hazard	This bill made a number of changes to state law regarding planning for and permitting development in areas designated as very high fire risk areas.
Senate Bill 379: General Plans: Safety Element—Climate Adaptation	Action Plan Implementation	This bill requires cities and counties to include climate adaptation and resiliency strategies in the safety element of their general plans.
Senate Bill 1000: General Plan Amendments—Safety and Environmental Justice Elements	Action Plan Implementation	Under this bill, review and revision of general plan safety elements are required to address only flooding and fires (not climate adaptation and resilience), and environmental justice is required to be included in general plans.

Agency, Program or Regulation	Hazard Mitigation Area Affected	Relevance
Senate Bill 1035: Fire, Flood, and Adaptation Safety Element Updates	Action Plan Implementation	Clarifies that revisions to the Safety Element to address fire hazards, flood hazards, and climate adaptation and resilience strategies all must occur upon each revision to a Housing Element or Local Hazard Mitigation Program.
Senate Bill 1241: General Plans: Safety Element—Fire Hazard Impacts	Wildfire Hazard	This bill requires cities and counties to make findings regarding available fire protection and suppression services before approving a tentative map or parcel map.
Standardized Emergency Management System	Action Plan Implementation	Local governments must use this system to be eligible for state funding of response-related personnel costs.
Western Governors Association Ten-Year Comprehensive Strategy	Wildfire Hazard	This strategy implementation plan prepared by federal and Western state agencies outlines measures to restore fire-adapted ecosystems and reduce hazardous fuels.

6.2 LOCAL PLANS, REPORTS AND CODES

Plans, reports, and other technical information were identified and provided directly by participating jurisdictions and stakeholders or were identified through independent research by the planning consultant. These documents were reviewed to identify the following:

- Existing jurisdictional capabilities.
- Needs and opportunities to develop or enhance capabilities, which may be identified within the local mitigation strategies.
- Mitigation-related goals or objectives considered during the development of the overall goals and objectives.
- Proposed, in-progress, or potential mitigation projects, actions and initiatives to be incorporated into the updated jurisdictional mitigation strategies.

The following local regulations, codes, ordinances, and plans were reviewed in order to develop complementary and mutually supportive goals, objectives, and mitigation strategies that are consistent across local and regional planning and regulatory mechanisms:

- General plans (land use, housing, safety, and open space elements)
- Building codes
- Zoning and subdivision ordinances
- NFIP flood damage prevention ordinances
- Stormwater management plans
- Emergency management and response plans
- Land use and open space plans
- Climate action plans
- Community wildfire protection plans

6.3 LOCAL CAPABILITY ASSESSMENT

All participating jurisdictions compiled an inventory and analysis of existing authorities and capabilities called a “capability assessment.” A capability assessment creates an inventory of a jurisdiction’s mission, programs, and policies, and evaluates its capacity to carry them out. This assessment identifies potential gaps in the jurisdiction’s capabilities.

The planning partnership views all core jurisdictional capabilities as fully adaptable to meet a jurisdiction’s needs. Every code can be amended, and every plan can be updated. Such adaptability is itself considered to be an overarching capability. If the capability assessment identified an opportunity to add a missing core capability or expand an existing one, then doing so has been selected as an action in the jurisdiction’s action plan, which is included in the individual annexes presented in Volume 2 of this plan.

Capability assessments for each planning partner are presented in the jurisdictional annexes in Volume 2. The sections below describe the specific capabilities evaluated under the assessment.

6.3.1 Planning and Regulatory Capabilities

Jurisdictions have the ability to develop policies and programs and to implement rules and regulations to protect and serve residents. Local policies are typically identified in a variety of community plans, implemented via a local ordinance, and enforced through a governmental body.

Jurisdictions regulate land use through the adoption and enforcement of zoning, subdivision, and land development ordinances, building codes, building permit ordinances, floodplain, and stormwater management ordinances. When effectively prepared and administered, these regulations can lead to hazard mitigation.

6.3.2 Fiscal Capabilities

Assessing a jurisdiction’s fiscal capability provides an understanding of the ability to fulfill the financial needs associated with hazard mitigation projects. This assessment identifies both outside resources, such as grant-funding eligibility, and local jurisdictional authority to generate internal financial capability, such as through impact fees.

6.3.3 Administrative and Technical Capabilities

Planning, regulatory, and fiscal capabilities provide the backbone for successfully developing a mitigation strategy; however, without appropriate personnel, the strategy may not be implemented. Administrative and technical capabilities focus on the availability of personnel resources responsible for implementing all the facets of hazard mitigation. These resources include technical experts, such as engineers and scientists, as well as personnel with capabilities that may be found in multiple departments, such as grant writers.

6.3.4 NFIP Compliance

Flooding is the costliest natural hazard in the United States and, with the promulgation of recent federal regulation, homeowners throughout the country are experiencing increasingly high flood insurance premiums. Community participation in the NFIP opens up opportunity for additional grant funding associated specifically with flooding issues. Assessment of the jurisdiction's current NFIP status and compliance provides planners with a greater understanding of the local flood management program, opportunities for improvement, and available grant funding opportunities.

6.3.5 Public Outreach Capability

Regular engagement with the public on issues regarding hazard mitigation provides an opportunity to directly interface with community members. Assessing this outreach and education capability illustrates the connection between the government and community members, which opens a two-way dialogue that can result in a more resilient community based on education and public engagement.

6.3.6 Community Classifications

Other programs, such as the Community Rating System, Storm/Tsunami Ready, and Firewise USA, can enhance a jurisdiction's ability to mitigate, prepare for, and respond to natural hazards. These programs indicate a jurisdiction's desire to go beyond minimum requirements set forth by local, state, and federal regulations in order to create a more resilient community. These programs complement each other by focusing on communication, mitigation, and community preparedness to save lives and minimize the impact of natural hazards on a community.

6.3.7 Development and Permitting Capability

Identifying previous and future development trends is achieved through a comprehensive review of permitting since completion of the previous plan and in anticipation of future development. Tracking previous and future growth in potential hazard areas provides an overview of increased exposure to a hazard within a community.

6.3.8 Adaptive Capacity

An adaptive capacity assessment evaluates a jurisdiction's ability to anticipate impacts from future conditions. By looking at public support, technical adaptive capacity, and other factors, jurisdictions identify their core capability for resilience against issues such as sea-level rise. The adaptive capacity assessment provides jurisdictions with an opportunity to identify areas for improvement by ranking their capacity high, medium, or low.

6.3.9 Integration Opportunity

The assessment looked for opportunities to integrate this mitigation plan with the planning and regulatory capabilities identified. Capabilities were identified as integration opportunities if they can support or enhance the actions identified in this plan or be supported or enhanced by components of this plan. Planning partners considered actions to implement this integration as described in their jurisdictional annexes.

6.3.10 Expansion of Existing Capabilities

Local hazard mitigation plans are required to document each jurisdiction's ability to expand on and improve existing policies and programs. For this plan update, all planning partners reviewed their existing capabilities through the jurisdictional annex process (see Volume 2) and developed mitigation actions to address identified gaps in their capabilities or to expand on or improve existing capabilities. In the analysis to assign each mitigation action to a defined category (see Section 23.3), these actions are classified as "community capacity building" actions, which are defined as follows:

Actions that increase or enhance local capabilities to adjust to potential damage, to take advantage of opportunities, or to respond to consequences. Includes staff training, memorandums of understanding, development of plans and studies, and monitoring programs.

Of 275 actions identified by the jurisdictions adopting this plan, 105 were identified as community capacity building actions that will expand on or improve the capabilities of the planning partnership.

6.4 HAZARD MITIGATION CAPABILITIES FOR FUTURE DEVELOPMENT

The identification of hazards of concern and the areas that they affect allows local communities to review expected future development to assess whether it would be at risk from those identified hazards. Avoiding such future risk is a core element of local hazard mitigation. Through the capability assessment described in Section 6.3, all planning partners identified their ability to address risks to future development posed by identified planning area hazards of concern. The planning partners' general plans and other planning activities provide guidance related to hazard mitigation and future development as follows:

- **Dam failure**—Dam failure is currently addressed as a stand-alone hazard in the safety elements of many municipal partners' general plans. Flood-related policies in the general plans will help to reduce the risk associated with dam failure for all future development in the planning area. Municipalities participating in this plan have established comprehensive policies regarding sound land use in identified dam failure inundation hazard areas. Most of the areas vulnerable to severe impacts from dam failure intersect the mapped flood hazard areas. However, there are structures on the perimeter of the dam failure inundation outside of the regulated floodplain that are not subject to floodplain management codes and standards. These structures would be considered to be more vulnerable than those constructed with floodplain codes and standards.
- **Drought**—Each municipal planning partner in this effort has a general plan with policies directing land use and dealing with issues of water supply and the protection of water resources. These plans provide the capability at the local municipal level to protect future development from the impacts of drought. In addition, water providers in the planning area have plans and programs in place to balance competing needs for water resources within the planning area.
- **Earthquake**—Ventura County and participating cities strictly enforce all seismic building codes and design standards to prevent loss of life and property caused by earthquake. Municipal planning partners are encouraged to establish general plans with policies directing land use and dealing with issues of seismic safety. These plans provide the capability at the municipal level to protect future development from the impacts of earthquakes. Public education, cooperation with the development community, and individual preparedness are essential as the planning area welcomes thousands of new residents and hundreds of new businesses to each year.

- **Flood**—All municipal planning partners have general plans that address frequently flooded areas in their safety elements. Additionally, all municipal planning partners are participants in the NFIP and have adopted flood damage prevention ordinances in response to its requirements. With 20 percent of communities and the County participating in the CRS program, there is incentive to adopt consistent, appropriate, higher regulatory standards in communities with the highest degree of flood risk. All municipal planning partners have committed to maintain their good standing under the NFIP through initiatives identified in this hazard mitigation plan. Communities participating or considering participation in the CRS program will be able to refine this commitment using CRS programs and templates as a guide.
- **Landslide**—The State of California has adopted the International Building Code (IBC) by reference in its California Building Standards Code. The IBC includes provisions for geotechnical analyses in steep slope areas that have soil types considered susceptible to landslide hazards. These provisions assure that new construction is built to standards that reduce the vulnerability to landslide risk.
- **Sea-Level Rise and Coastal Erosion**—Sea-level rise and coastal erosion are addressed as part of climate change adaptation and resilience in the general plans of Ventura County and coastal cities. By coordinating their general plans with climate change adaptation strategies, cities and the County will be better able to make wise land use decisions as future growth impacts coastal areas affected by sea-level rise and coastal erosion.
- **Severe Storms**—Impacts from winter storms and thunderstorms can be addressed through proactive planning and utilization of best available information in making land use decisions. Severe storms are not currently addressed as a stand-alone hazard in the safety elements of municipal partners' general plans, but programs such as building code enforcement, public information, and early warning will help Ventura County manage the likely impacts of severe storm events as the County expands and grows.
- **Severe Weather**—The most common severe weather events that impact the planning area are damaging winds, extreme temperatures, and heavy rain. Many of the impacts associated with severe weather hazards, including wind events, can be addressed through proactive planning and utilization of best available information in making land use decisions. Severe weather is not currently addressed as a stand-alone hazard in the safety elements of municipal partners' general plans, but programs such as building code enforcement, public information, and early warning will help Ventura County manage the likely impacts of severe weather as the County expands and grows.
- **Tsunami**—The tsunami inundation maps provided by the California Department of Conservation offer jurisdictions a way to guide development away from tsunami-prone areas. By coordinating their general plans, cities and the County will be better able to make wise land use decisions as future growth impacts tsunami hazard areas.
- **Wildfire**—The expansion of development into high wildfire hazard areas can be managed with strong land use and building codes. The planning area is well equipped with these tools, and this planning process asked each planning partner to assess its capabilities with regards to the tools. As Ventura County experiences future growth, it is anticipated that the exposure to this hazard will remain as assessed or even decrease over time due to these capabilities.
- **Other hazards of interest**—Agricultural and biological as well as pandemic hazards primarily result in ecological, recreational, economic, and vital impacts, but are not considered in the future development and land use decisions of municipal partners' general plans.

Part 2—RISK ASSESSMENT

7. RISK ASSESSMENT METHODOLOGY

This plan evaluated risks associated with each identified hazard of concern for individual incorporated cities and for the unincorporated portion of Ventura County. The following steps were used to assess risk for each hazard:

- **Identify and profile the hazard**—The following information is given for each hazard:
 - A summary of past events that have impacted the planning area
 - Geographic areas most affected by the hazard
 - Event frequency estimates
 - Severity descriptions
 - Warning time likely to be available for response.
- **Determine exposure to the hazard**—Exposure was assessed by overlaying hazard maps with an inventory of structures, facilities, and systems to decide which of them would be exposed to each hazard.
- **Assess the vulnerability of exposed facilities**—Vulnerability of exposed structures and infrastructure was evaluated by estimating potential impacts on people and damage to property and the environment in the event of a hazard incident.

For each hazard, one of the following assessment approaches was used, depending on the nature of information available for the hazard:

- **Quantitative assessment**—Performed when numerical data is available to define risk. Available hazard data may include financial impact, probability, or the number of injuries and deaths.
- **Qualitative assessment**—Uses words to describe and categorize the likelihood and consequences of a risk when numerical data is unavailable. In this type of analysis, defined terms (words) can represent a range of possibilities.

7.1 RISK ASSESSMENT TOOLS

7.1.1 Mapping

National, state, and county databases were reviewed to locate available spatially based data relevant to this planning effort. Maps were produced using geographic information system (GIS) software to show the spatial extent and location of hazards when such datasets were available. These maps are included in the hazard profile chapters of this document and the jurisdiction-specific annexes in Volume 2.

Details regarding the data sources and methodologies employed in these mapping efforts is located in Appendix C.

7.1.2 Modeling

Overview

FEMA developed the GIS-based program Hazards U.S. (Hazus) to identify areas that face high risk from earthquakes, hurricanes, floods, and tsunamis by estimating losses. Hazus provides a wide range of inventory data, such as demographics, building stock, critical facilities, transportation and utility infrastructure, and multiple models to estimate potential losses from natural disasters. The program maps and calculates hazard data and damage and economic loss estimates for buildings and infrastructure. Its advantages include the following:

- Provides a consistent methodology for assessing risk across geographic and political entities.
- Provides a way to save data so that it can readily be updated as population, inventory, and other factors change and as mitigation planning efforts evolve.
- Facilitates the review of mitigation plans because it helps to ensure that FEMA methodologies are incorporated.
- Supports grant applications by calculating benefits using FEMA definitions and terminology.
- Produces hazard data and loss estimates that can be used in communication with local stakeholders.
- Is administered by the local government and can be used to manage and update a hazard mitigation plan throughout its implementation.

Levels of Detail for Evaluation

Hazus provides default data for inventory, vulnerability, and hazards; this default data can be supplemented with local data to provide a more refined analysis. The model can carry out three levels of analysis, depending on the format and level of detail of information about the planning area:

- **Level 1**—All of the information needed to produce an estimate of losses is included in the software's default data. This data is derived from national databases and describes in general terms the characteristic parameters of the planning area.
- **Level 2**—More accurate estimates of losses require more detailed information about the planning area. To produce Level 2 estimates of losses, detailed information is required about local geology, hydrology, hydraulics and building inventory, as well as data about utilities and critical facilities. This information is needed in a GIS format.
- **Level 3**—This level of analysis generates the most accurate estimate of losses. It requires detailed engineering and geotechnical information to customize it for the planning area.

7.2 RISK ASSESSMENT APPROACH

7.2.1 Hazard Profile Development

Hazard profiles were developed through web-based research and review of previously developed reports and plans, including community general plans and state and local hazard mitigation plans. Frequency and severity indicators include past events and the expert opinions of geologists, emergency management specialists, and others.

7.2.2 Exposure and Vulnerability

Flood, Dam Failure, Earthquake, and Tsunami

Community exposure and vulnerability to the following hazards were evaluated using Hazus:

- **Dam Failure, Flood, and Tsunami**—A Level 2 (user-defined) analysis was performed for general building stock and for critical facilities. Current mapping for the planning area was used to delineate hazard areas for flood, dam failure, and tsunami and estimate potential losses. To estimate damage that would result from these inundation-based hazards, Hazus uses pre-defined relationships between water depth at a structure and resulting damage, with damage given as a percent of total replacement value. Curves defining these relationships have been developed for damage to structures and for damage to typical contents within a structure. By inputting inundation depth data and known property replacement cost values, dollar-value estimates of damage were generated.
- **Earthquake**—A Level 2 analysis was performed to assess earthquake exposure and vulnerability for four scenario events and one probabilistic event:
 - A Magnitude-7.16 event on the Oak Ridge Fault with an epicenter 4.5 miles northwest of Moorpark.
 - A Magnitude-7.16 event on the San Cayetano Fault with an epicenter 10 miles north-northwest of Fillmore.
 - A Magnitude-8.03 event on the San Andreas Fault with an epicenter 27.5 miles north-northeast of Fillmore.
 - A Magnitude-7.12 event on the Ventura-Pitas Point Fault with an epicenter 2.5 miles north of San Buenaventura.
 - The standard Hazus 100-year probabilistic event.

Landslide, Sea-Level Rise & Coastal Erosion, Severe Storms, Severe Weather, and Wildfire

Historical datasets were not adequate to model future losses for these hazards of concern. However, areas and inventory susceptible to some of the hazards of concern were mapped by other means to evaluate exposure. A qualitative analysis was conducted for other hazards using the best available data and professional judgment.

Drought

The risk assessment methodologies used for this update focus on damage to structures. Because drought does not impact structures, the risk assessment for this hazard was more limited and qualitative than the assessment for the other hazards of concern.

7.3 SOURCES OF DATA USED IN MODELING AND EXPOSURE ANALYSES

7.3.1 Building and Cost Data

Replacement cost is the cost to replace an entire structure with one of equal quality and utility. Replacement cost is based on industry-standard cost-estimation models published in the 2021 edition of *RS Means Square Foot Costs*. It is calculated using the RS Means square foot cost for a structure,

which is based on the Hazus occupancy class (i.e., multi-family residential or commercial retail trade), multiplied by the square footage of the structure. The construction class and number of stories for single-family residential structures also factor into determining the square foot costs.

Replacement cost values and detailed structure information derived from parcel and building footprints data were loaded into Hazus. When available, an updated inventory was used in place of the Hazus defaults for critical facilities and infrastructure.

7.3.2 Hazus Data Inputs

The following hazard datasets were used for the Hazus Level 2 analysis conducted for the risk assessment:

- **Flood**—The effective Digital Flood Insurance Rate Map (DFIRM) for the planning area was used to delineate flood hazard areas and estimate potential losses from the FEMA 1-percent-annual chance and 0.2-percent-annual-chance (100- and 500-year) flood events. Using the DFIRM floodplain boundaries and base flood elevation information, and the USGS's 1-meter digital elevation model data, flood depth grids were generated and integrated into the Hazus model.
- **Dam Failure**—Dam failure inundation area boundaries and depth grids data for were provided by the California Department of Water Resources the following dams: Arundell Barranca, Bouquet Canyon, Castaic, Lake Eleanor, Lake Sherwood, Lang Creek Detention Basin, Las Lajas, Matilija, Pyramid, Runkle, Santa Felicia, Senior Canyon, Sinaloa Lake, Stewart Canyon Debris Basin, Sycamore Canyon, Westlake Reservoir, and Wood Ranch. The individual dam depth grids were combined, and the combined depth grid was integrated into the Hazus model. Where dam inundation areas overlapped the maximum depth was used.
- **Tsunami**—California Geological Survey tsunami inundation zone data and NOAA's 5-meter digital elevation model data were used to develop an inundation depth grid that was integrated into the Hazus model.
- **Earthquake**—Earthquake ShakeMaps and probabilistic data prepared by USGS were used for the analysis of this hazard. A National Earthquake Hazard Reduction Program soils map from the California Department of Conservation was integrated into the Hazus model, as were liquefaction zones and susceptibility to deep-seated landslide data from the California Geological Survey.

7.3.3 Other Local Hazard Data

Locally relevant information on hazards was gathered from a variety of sources. Data sources for specific hazards were as follows:

- **Drought**—No GIS format drought hazard area datasets were identified for Ventura County.
- **Landslide**—The California Geological Survey provided data on susceptibility to deep-seated landslides. Areas categorized as very high and high susceptibility (Categories X, XI, VIII, and VII) were used in the exposure analysis.
- **Sea-Level Rise and Coastal Erosion**—Sea-level rise data were provided by USGS's Our Coast, Our Future tool. Sea-level rises of 25 cm (no storm) and 100 cm (no storm) were used for the exposure analysis. The 25-cm scenario was chosen as the level nearest to the "high"

projection of 8 inches (20 cm) of sea-level rise by 2030 used by the VC Resilient Project. The 100-cm scenario was chosen as the interval nearest to the State of California Sea-Level Rise Guidance (2018 Update) of 3.5 feet (106 cm) by 2050.

- **Severe Storms**—No GIS format severe storm area datasets were identified for Ventura County.
- **Severe Weather**—No GIS format severe weather area datasets were identified for Ventura County.
- **Wildfire**—Fire severity zone data for local and state responsibility areas were acquired from California Department of Forestry and Fire Protection (CAL FIRE). Very high and high fire severity zones were used in the exposure analysis.

7.3.4 Data Source Summary

Table 7-1 and Table 7-2 summarize the data sources used for the risk assessment for this plan.

Table 7-1. Hazus Model Property and Hazard Data Documentation

Data	Source	Date	Format
Property parcel data including building information (use code, square footage, year built)	Ventura County	2021	Digital (GIS)
Building footprints	Ventura County	2018	Digital (GIS)
Building replacement (square foot) costs	RS Means	2021	Digital (pdf)
Dam breach inundation maps (inundation boundaries and depth grids)	California Department of Water Resources	2018-20	Digital (GIS)
ShakeMaps—Oak Ridge (Onshore) M7.16; San Cayetano M7.16; S. San Andreas (PK+CH+CC+BB+NM+SM+NSB+SSB) M8.03; Ventura-Pitas Point M7.12	USGS	2017	Digital (GIS)
NEHRP soils (VsMapV3_Geology)	California Department of Conservation	2015	Digital (GIS)
Seismic Hazard Zone Maps for Liquefaction	California Geological Survey	2017	Digital (GIS)
Digital Flood Insurance Rate Map (DFIRM) – Ventura County effective 1/29/2021 with latest LOMR effective date 6/18/2021	FEMA	2021	Digital (GIS)
Susceptibility to deep-seated landslides	California Geological Survey	2011	Digital (GIS)
Sea-level rise data (USGS Coastal Storm Modeling System v3.0, Phase 2)	Our Coast Our Future (OCOF)	2018	Digital (GIS)
Tsunami Inundation Map for Emergency Planning	California Emergency Management Agency, California Geological Survey, and University of Southern California – Tsunami Research Center	2009	Digital (GIS)
Very High Fire Hazard Severity Zones in Local Responsibility Areas	California Department of Forestry and Fire Protection	2007	Digital (GIS)
Fire Hazard Severity Zones for State Responsibility Areas	California Department of Forestry and Fire Protection	2007	Digital (GIS)
USGS 1-meter LiDAR digital elevation model	U.S. Geological Survey	2018	Digital (GIS)
NOAA Coastal Services Center Coastal Inundation Digital Elevation Model (5-meter resolution)	National Oceanic and Atmospheric Administration	2012	Digital (GIS)

Table 7-2. Hazus Model Critical Facilities Data Documentation

Data	Source	Date	Format
Sheriff stations	Ventura County	Provided 2021	Digital (GIS)
Fire stations	Ventura County	Provided 2021	Digital (GIS)
Schools	Ventura County	Provided 2021	Digital (GIS)
Wastewater treatment plants	Ventura County	Provided 2021	Digital (GIS)
Sewer lift stations	Ventura County	Provided 2021	Digital (GIS)
Recycled water pumps	Ventura County	Provided 2021	Digital (GIS)
Red Cross shelters	Ventura County	Provided 2021	Digital (GIS)
Hospitals	Ventura County	Provided 2021	Digital (GIS)
Fire district facilities	Ventura County Fire Protection District	Provided 2021	Digital (GIS)
Potable water system facilities	Casitas Municipal Water District	Provided 2021	Digital (GIS)
Potable water system facilities	Calleguas Municipal Water District	Provided 2021	Digital (GIS)
Potable water system facilities	City of Camarillo	Provided 2021	Digital (GIS)
California jurisdictional dams	California Department of Water Resources	Downloaded 2020	Digital (GIS)
Wastewater treatment facilities	California State Water Resources Control Board	Downloaded 2020	Digital (GIS)
Power plants	California Energy Commission	Downloaded 2020	Digital (text)
Electric substations	California Energy Commission	Downloaded 2020	Digital (GIS)
Natural gas stations	California Energy Commission	Downloaded 2018	Digital (GIS)
California rail stations	California Department of Transportation	Downloaded 2020	Digital (GIS)
Public airports	California Department of Transportation	Downloaded 2020	Digital (GIS)
Military airports	California Department of Transportation	Downloaded 2020	Digital (GIS)
Ports	California Department of Transportation	Downloaded 2020	Digital (GIS)
Local highway bridges	California Department of Transportation	Downloaded 2020	Digital (GIS)
State highway bridges	California Department of Transportation	Downloaded 2020	Digital (GIS)
Local Emergency Operations Centers	Homeland Infrastructure Foundation-Level Data	Downloaded 2020	Digital (GIS)
Veterans Health Administration Medical Facilities	Homeland Infrastructure Foundation-Level Data	Downloaded 2020	Digital (GIS)
Cellular towers	Homeland Infrastructure Foundation-Level Data	Downloaded 2022	Digital (GIS)
FM transmission towers	Homeland Infrastructure Foundation-Level Data	Downloaded 2020	Digital (GIS)
AM transmission towers	Homeland Infrastructure Foundation-Level Data	Downloaded 2022	Digital (GIS)
TV analog station transmitters	Homeland Infrastructure Foundation-Level Data	Downloaded 2022	Digital (GIS)
FDIC insured banks	Homeland Infrastructure Foundation-Level Data	Downloaded 2022	Digital (GIS)
Toxic Release Inventory (TRI) facilities extracted from EPA Facility Registry Service (FRS): Facility Interests Dataset	U.S. Environmental Protection Agency	Downloaded 2020	Digital (GIS)
Critical facilities identified in the planning partner annexes for the Ventura County Multi-Jurisdictional Hazard Mitigation Plan	Planning partners (California State University Channel Islands, Calleguas Municipal Water District, Ojai Valley Sanitary District, Saticoy Sanitary District, United Water Conservation District, Ventura County)	2021	Digital (text)

7.4 LIMITATIONS

Loss estimates, exposure assessments and hazard-specific vulnerability evaluations rely on the best available data and methodologies. Uncertainties are inherent in any loss estimation methodology and

arise in part from incomplete scientific knowledge concerning natural hazards and their effects on the built environment. Uncertainties also result from the following:

- Approximations and simplifications necessary to conduct a study
- Incomplete or outdated inventory, demographic or economic parameter data
- The unique nature, geographic extent, and severity of each hazard
- Mitigation measures already employed
- The amount of advance notice residents have to prepare for a specific hazard event.

These factors can affect loss estimates by a factor of two or more. Therefore, potential exposure and loss estimates are approximate and should be used only to understand relative risk. Over the long term, the planning partners will collect additional data to assist in estimating potential losses associated with other hazards.

8. DAM FAILURE

8.1 GENERAL BACKGROUND

8.1.1 Definition and Classification of Dams

A dam is an artificial barrier that can store water, wastewater, or liquid-borne materials for many reasons—flood control, human water supply, irrigation, livestock water supply, energy generation, containment of mine tailings, recreation, or pollution control. Many dams fulfill a combination of these functions. They are an important resource in the United States. In California, dams are regulated by the State of California Division of Safety of Dams. Additional regulatory oversight of dams is cited in Chapter 6 and described in Appendix B.

The California Water Code (Division 3) defines a dam as any artificial barrier, together with appurtenant works, that does or may impound or divert water, and that either:

- Is 25 feet or more in height from the natural bed of the stream or watercourse at the downstream toe of the barrier (or from the lowest elevation of the outside limit of the barrier if it is not across a stream channel or watercourse) to the maximum possible water storage elevation; or
- Has an impounding capacity of 50 acre-feet or more.

Dams can be classified according to their purpose, the construction material or methods used, their slope or cross-section, the way they resist the force of the water pressure, or the means used for controlling seepage. Materials used to construct dams include earth, rock, tailings from mining or milling, concrete, masonry, steel, timber, plastic, rubber, and combinations of these.

8.1.2 Causes of Dam Failure

A dam failure can damage ecosystems and communities downstream. Partial or full failure can occur as a result of one or a combination of the following reasons (Federal Emergency Management Agency 2016):

- Overtopping caused by floods that exceed the dam capacity (inadequate spillway capacity)
- Prolonged periods of rainfall and flooding
- Deliberate acts of sabotage (terrorism)
- Structural failure of materials used in dam construction
- Movement and/or failure of the foundation supporting the dam

- Settlement and cracking of concrete or embankment dams
- Piping and internal erosion of soil in embankment dams
- Inadequate or negligent operation, maintenance, and upkeep
- Failure of upstream dams on the same waterway
- Earthquake (liquefaction/landslides).

Many dam failures in the United States have been secondary results of other disasters. The most common causes are earthquakes, landslides, extreme storms, equipment malfunction, structural damage, foundation failures, and sabotage. Poor construction, lack of maintenance and repair, and deficient operational procedures are preventable or correctable by a program of regular inspections. Terrorism and vandalism are serious concerns that all operators of public facilities must plan for; these threats are under continuous review by public safety agencies.

8.1.3 Planning Requirements

State of California

All dams whose inundation areas may impact the planning area have emergency action plans (EAPs) on file. The EAPs must include the following (Cal OES 2021):

- Emergency notification flow charts
- Information on a four-step response process
- Description of agencies' roles and actions in response to an emergency incident
- Description of actions to be taken in advance of an emergency
- Inundation maps
- Additional information such as revision records and distribution lists.

After the EAPs are approved by the state, the law requires dam owners to send the approved EAPs to relevant stakeholders. Local public agencies can then adopt emergency procedures that incorporate the information in the EAP in a manner that conforms to local needs and includes methods and procedures for alerting and warning the public and other response and preparedness related items (Cal OES 2021).

Federal Energy Regulatory Commission

Dams that fall under the jurisdiction of the Federal Energy Regulatory Commission (FERC) also have specified planning requirements. FERC cooperates with a large number of federal and state agencies to ensure and promote dam safety and, more recently, homeland security. FERC requires licensees to prepare emergency action plans and conducts training sessions on how to develop and test these plans. The plans are designed to serve as an early warning system if there is a potential for, or a sudden release of water from, a dam failure or accident to the dam. The plans include operational procedures that may be used, such as reducing reservoir levels and reducing downstream flows and procedures for notifying affected residents and agencies responsible for emergency management.

These plans are frequently updated and tested to ensure that in emergency situations everyone knows what to do, thus saving lives and minimizing property damage.

8.1.4 Secondary Hazards

Dam failure can cause secondary hazards of landslides, bank erosion, and downstream habitat destruction. It may worsen the severity of a drought by releasing water that might have been used as a potable water source.

8.2 HAZARD PROFILE

8.2.1 Past Events

There is no record of a failure of any dam located in Ventura County. However, the failure of one dam in another county had catastrophic effects in Ventura County. The St. Francis Dam in the San Francisquitos Canyon in Los Angeles County (within the Santa Clara River watershed) was constructed to provide 38,000 acre-feet of storage for water from the Los Angeles–Owens River Aqueduct. The midnight collapse of the dam in March 1928 occurred after the newly constructed concrete-arch dam was completely filled for the first time. The resulting flood swept through the Santa Clara Valley in Ventura County toward the Pacific Ocean, about 54 miles away. At its peak, the wall of water was reported to be 78 feet high; by the time it hit Santa Paula, 42 miles south of the dam, the water was estimated to be 25 feet deep. Almost everything in its path was destroyed, including structures, railways, bridges, livestock, and orchards. By the time the flood subsided, parts of Ventura County lay under 70 feet of mud and debris. Nearly 500 people were killed, and damage estimates exceeded \$20 million. The communities of Piru, Fillmore, Santa Paula, Bardsdale, Saticoy, Montalvo, and El Rio sustained extensive life and property loss from the flood (Ventura County 2015).

According to the *2013 State of California Multi-Hazard Mitigation Plan*, there have been nine failures of federally regulated dams in the state since 1950. Overtopping caused two of the nine dam failures in the state, and the others were caused by seepage or leaks. The state's most recent dam emergency occurred in February 2017 when the Oroville Dam in Butte County was on the verge of overflow. The dam's concrete spillway was damaged by erosion and a massive hole developed. The auxiliary spillway was used to prevent overtopping of the dam, and it experienced erosion problems also. Evacuation orders were issued in advance of a potential large uncontrolled release of water from Lake Oroville, but such a release did not occur.

After this incident, state officials ordered that flood-control spillways be reinspected on 93 California dams with potential geologic, structural or performance issues that could jeopardize their ability to safely pass a flood event. The 2017-2018 Ventura County Grand Jury investigated the condition of more than 20 dams in or adjoining Ventura County. The Grand Jury found that 14 of these dams (10 in Ventura County and 4 in Los Angeles County) could cause significant loss of life and property if they failed. Four of these dams, all under the jurisdiction of the State of California Division of Safety of Dams (DSOD), are identified as having existing or potential deficiencies (Ventura County 2018).

8.2.2 Location

List of High-Hazard Dams

There are 10 state regulated dams in Ventura County, and 4 state regulated dams outside the County whose failure could lead to inundation in Ventura County. In particular, if dams in the Santa Clara River watershed in Los Angeles County fail, the resulting flood would affect the Santa Clara River corridor, which includes Fillmore, Santa Paula, Oxnard, and Port Hueneme, as demonstrated by the 1928 event (Ventura County 2015). Table 8-1 lists the dams that constitute failure hazards for Ventura County. Their locations are shown on Figure 8-1. The National Inventory of Dams (NID) provides the most recent inspection dates for these dams, as shown in Table 8-2.

Table 8-1. Ventura County Dams with Potential to Endanger Lives and Property

Name	National ID#	Hazard Potential	Owner	Year Built	Dam Type	Crest Length (feet)	Height (feet)	Storage Capacity (acre-feet)	Condition Assessment
Arundell Barranca	CA01412	Extremely High	VCPWA-WP ^a	1996	Earthen Embankment	368	57	155	Satisfactory
Casitas	CA10139	High	Federal	1959	Earthen Embankment	N/A	334	283,727	N/A
Ferro Debris Basin	CA01299	Significant	VCPWA-WP ^a	1986	Earthen Embankment	265	45	24	Satisfactory
Lake Eleanor	CA00737	High	COSCA ^b	1881	Constant Radius Arch	140	37	104	Satisfactory
Lake Sherwood	CA00736	Extremely High	SDC ^c	1904	Constant Radius Arch	350	45	2,600	Satisfactory
Lang Creek Detention Basin	CA01368	Extremely High	VCPWA-WP ^a	2004	Earthen Embankment	345	67	263	Satisfactory
Las Lajas	CA01217	Extremely High	VCPWA-WP ^a	1981	Earthen Embankment	580	96	1,250	Satisfactory
Matilija	CA00312	Extremely High	VCPWA-WP ^a	1949	Variable Radius Arch	620	163	1,800	Poor
Runkle	CA00313	Extremely High	VCPWA-WP ^a	1949	Earthen Embankment	250	41	100	Satisfactory
Santa Felicia	CA00805	Extremely High	UWCD ^d	1955	Earthen Embankment	1,275	213	100,000	Fair
Senior Canyon	CA01019	High	SCMWC ^e	1964	Earthen Embankment	970	76	72	Satisfactory
Silt Pond	CA01589	High	Brett Jones	N/A	Earthen Embankment	N/A	80	20	N/A
Sinaloa Lake	CA01018	High	SLOA ^f	1925	Earthen Embankment	800	30	205	Satisfactory
Stewart Canyon	CA01159	Extremely High	VCPWA-WP ^a	1963	Earthen Embankment	1,263	34	890	Satisfactory
Sycamore Canyon	CA01266	Extremely High	VCPWA-WP ^a	1981	Earthen Embankment	1,520	40	890	Satisfactory
Wood Ranch	CA00850	Extremely High	CMWD ^g	1965	Earthen Embankment	1,020	146	11,000	Satisfactory

a. Ventura County Public Works Agency—Watershed Protection

b. Conejo Open Space Conservation Agency

c. Sherwood Development Company

d. United Water Conservation District

e. Senior Canyon Mutual Water Company

f. Sinaloa Lake Owners Associates, Inc.

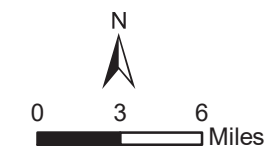
g. Calleguas Municipal Water District

Sources: California Department of Water Resources Division of Safety of Dams, 2020; U.S. Army Corp of Engineers National Inventory of Dams, 2021



Figure 8-1. Locations of Dams in Ventura County

-  California Jurisdictional Dams
-  County Boundary
-  Cities
-  Major Roads



Data Sources: Ventura Co.,
CA DWR, Esri

Table 8-2. Ventura County Dam Inspection Dates

Dam	Inspection Date	Dam	Inspection Date
Arundell Barranca	2/13/2018	Runkle	2/14/2018
Casitas	N/A	Santa Felicia	5/10/2017
Ferro Debris Basin	2/13/2018	Senior Canyon	5/24/2018
Lake Eleanor	5/25/2018	Silt Pond	N/A
Lake Sherwood	5/24/2018	Sinaloa Lake	5/23/2018
Lang Creek Detention Basin	2/14/2018	Stewart Canyon	2/13/2018
Las Lajas	2/14/2018	Sycamore Canyon	2/14/2018
Matilija	2/13/2018	Wood Ranch	5/23/2018

The Ventura County Public Works Agency—Watershed Protection (VCPWA-WP) owns and operates the Matilija Dam, which received a “Poor” rating by the DSOD. The DSOD rating was based on concerns as to the ability of the dam—specifically the wing walls—to withstand a 7.5 magnitude earthquake. While the analysis did not appear to indicate complete failure, it indicated a likelihood of significant weakening. There are roughly 8 million cubic yards of debris behind Matilija Dam, and a big storm could push huge amounts of mud and water over the top, overwhelming bridges, culverts and roads below (Ventura County 2018). The VCPWA-WP is working to complete the feasibility analyses, design engineering, CEQA, and implementation of a project to remove the Matilija Dam.

The United Water Conservation District owns and operates Santa Felicia Dam on Lake Piru. The District is currently designing improvements to the existing outlet and spillway. The dam’s “Fair” rating is primarily due to deficiencies in the dam’s outlet that could result in damage should a maximum credible earthquake occur before the District completes the planned upgrades (Ventura County 2018).

Inundation Mapping

A key element for EAPs required for dams in California is a map defining the potential downstream inundation should the dam fail. For this risk assessment, dam failure inundation areas for which inundation mapping was available were combined into a single inundation area. These included all extremely high and high hazard dams where dam breach inundation area data is available. The combined dam failure inundation area is shown in Figure 8-2. Simultaneous failure of all dams is highly unlikely, but the assessment provides information adequate for planning purposes.

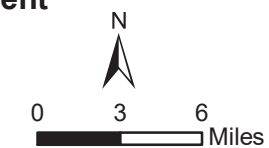
8.2.3 Frequency

Dam failure events are infrequent and usually coincide with or follow events such as earthquakes, landslides and excessive rainfall and snowmelt. Only one recorded failure has occurred on a dam that impacted the planning area, so no estimate of frequency or probability of future occurrence can be developed based on the historical record. Although the 2017 Oroville event raised public concern about dam failure, the probability of such failures remains low in today’s regulatory environment.



Figure 8-2. Dam Failure Inundation Area Used for Risk Assessment

- Combined Dams Inundation Area
- County Boundary
- Cities
- Major Roads



Data Sources: Ventura Co.,
CA DWR, Esri

All dams face a “residual risk” of failure, which represents the risk that conditions may exceed those for which the dam was designed. For example, dams may be designed to withstand a probable maximum precipitation, defined as “the maximum depth of precipitation at a location for a given duration that is meteorologically possible” (Sarkar and Maity 2020). The chance of occurrence of a precipitation event of a greater magnitude than that represents residual risk for such dams. This in turn represents a theoretical probability of future occurrence for a dam failure event, though the probability of an event exceeding the assumed maximum is not generally calculated as part of dam design.

8.2.4 Severity

California’s Division of Safety of Dams has developed a hazard potential classification system for state-jurisdiction dams, as shown on Table 8-3. This system is modified from federal guidelines, which recommend three-tier classification. The California system adds a fourth hazard classification of “extremely high.” Dams classified as extremely high hazard are expected to cause considerable loss of human life or would result in an inundation area with a population of 1,000 or more. (California Division of Safety of Dams 2021) Dams within state jurisdiction listed in Table 8-1 are classified in this system.

Table 8-3. State of California Downstream Hazard Potential Classification

Hazard Category	Direct Loss of Life	Economic, Environmental, and Lifeline Losses
Low	None expected	Low and principally limited to dam owner’s property
Significant	None expected	Yes
High	Probable (one or more expected)	Yes, but not necessary for this classification
Extremely High	Considerable	Yes, major impacts to critical infrastructure or property

Source: California Division of Safety of Dams, 2021

8.2.5 Warning Time

Advance Warning of Failure

Warning time for dam failure varies depending on the cause of the failure. Events of extreme precipitation or massive snowmelt can be predicted in advance, so evacuations can be planned with sufficient time. In the event of a structural failure due to earthquake, there may be no or limited warning time. The USGS Earthquake Hazards Program has several dam-safety related earthquake programs, including dam-specific earthquake monitoring programs in California to help monitor safety concerns following seismic events.

Time for Failure to Occur

The process of the dam failure affects warning time. Earthen dams do not tend to fail completely or instantaneously. Once a breach is initiated, discharging water erodes the breach until either the reservoir water is depleted or the breach resists further erosion. Concrete gravity dams also tend to have a partial breach as one or more monolith sections are forced apart by escaping water. The time of breach formation ranges from a few minutes to a few hours.

Time After Failure Before Downstream Areas Are Affected

Flood waters from a failure of the Wood Ranch dam at Bard Reservoir would reach the City of Camarillo in approximately 1 hour and 40 minutes. The natural drainage would enter Camarillo along the Las Posas Arroyo through Somis (City of Camarillo 2007). The number of people to be alerted and evacuated can vary widely. There may be few people along the river in winter, when only permanent residents are apt to be present; but there may be many more people in summer, with the presence of recreational visitors.

Another factor that must be considered is the initial flow in the river when the failure occurs. The initial flow is normally very low on all the rivers from May through October. During the winter, the initial flow is much higher and at times may even be equal to or greater than flood stage. This wide variation in initial flow has a significant impact on the areas that must be evacuated.

8.3 EXPOSURE

Exposure to the dam failure hazard was assessed by overlaying the mapped combined inundation area in Figure 8-2 with planning area features including general building stock and critical facilities. Detailed results by jurisdiction are included in Appendix D; countywide summaries are provided below.

8.3.1 Population

The estimated total population living in the evaluated dam failure inundation zone is 267,136 (31.7 percent of the total planning area population).

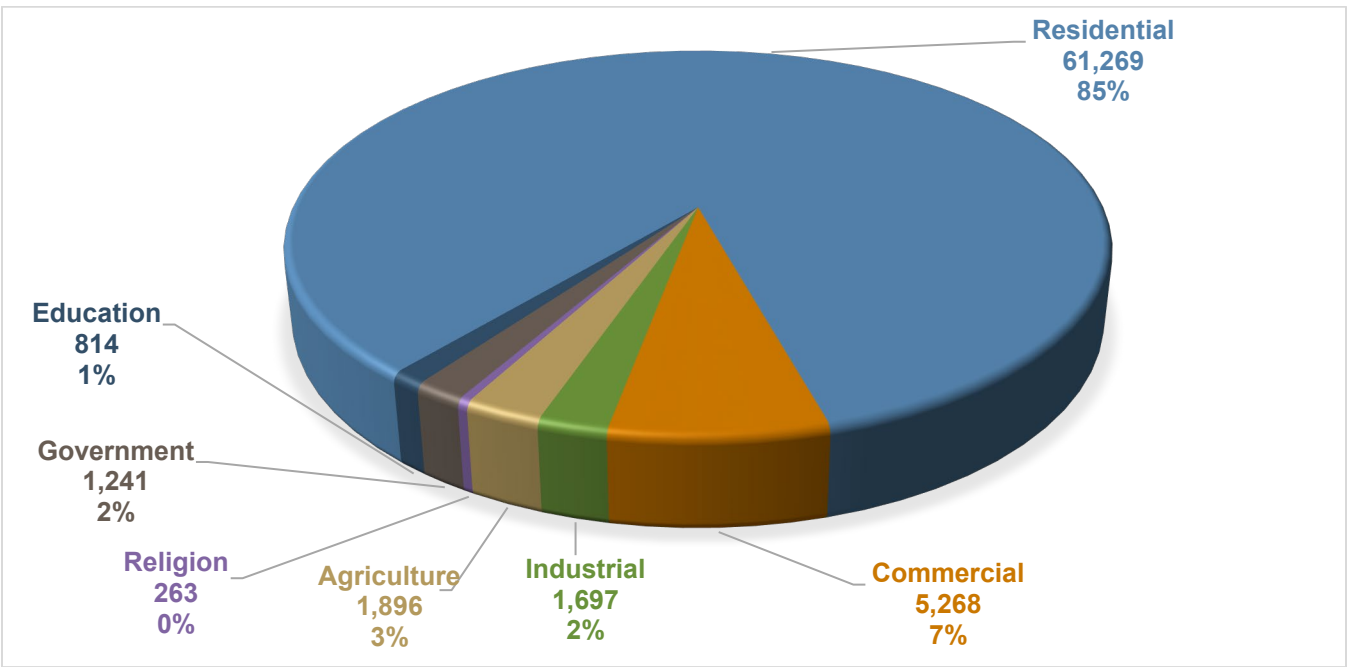
8.3.2 Property

Table 8-4 summarizes the estimated property exposure in the evaluated dam failure inundation area. Figure 8-3 shows the Hazus-defined occupancy class of all buildings in the combined dam failure inundation area. These occupancy classes provide an indication of land use within the mapped hazard area. Some land uses are more vulnerable to dam failure inundation, such as single-family homes, while others are less vulnerable, such as agricultural land or parks.

Table 8-4. Exposed Property in Evaluated Dam Failure Inundation Area

Acres of Inundation Area	254,761
Number of Buildings Exposed	72,448
Value of Exposed Structures	\$28,821,842,548
Value of Exposed Contents	\$22,630,155,206
Total Exposed Property Value	\$51,451,998,753
Total Exposed Value as % of Planning Area Total	28.5%

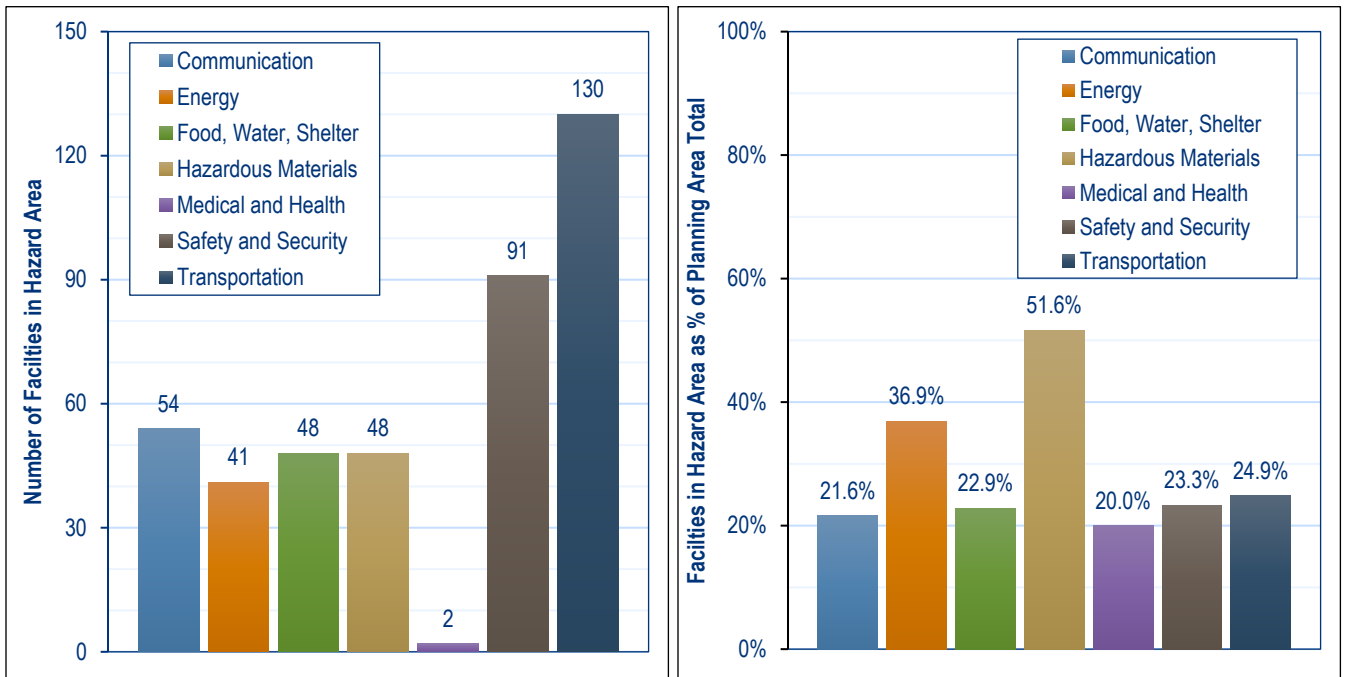
Figure 8-3. Building Count by Occupancy Class in the Dam Failure Inundation Zone



8.3.3 Critical Facilities

Figure 8-4 shows critical facilities located in the dam failure inundation zone by facility type. The total count of critical facilities in the dam failure inundation zone (406) represents 26 percent of the planning area total of 1,588. A breakdown by municipality is provided in Appendix D.

Figure 8-4. Critical Facilities in Dam Failure Inundation Area



8.3.4 Environment

All natural features in the dam failure inundation zone are at risk from the dam failure hazard.

8.4 VULNERABILITY

The vulnerability of people, property, and critical facilities was evaluated for the combined dam failure inundation area. Appendix D shows results by jurisdiction; countywide summaries are provided below.

8.4.1 Population

Vulnerable populations are all populations downstream from dam failures that are incapable of escaping the area before floodwaters arrive. This population includes the elderly and young who may be unable to get themselves out of the inundation area. The vulnerable population also includes those who would not have adequate warning from a television, radio emergency warning system, siren, or cell phone alert. Impacts on persons and households for the combined dam failure inundation area are estimated through the Level 2 Hazus analysis. Table 8-5 summarizes the results.

Table 8-5. Estimated Dam Failure Impacts on Population

Number of Persons Displaced	207,158
Number of Residents Requiring Short-Term Shelter	14,254

8.4.2 Property

Properties closest to the dam failure inundation zone would experience the largest, most destructive surge of water. Low-lying areas are also vulnerable since they are where the dam waters would collect. Properties in the dam failure inundation zone that are built to National Flood Insurance Program (NFIP) minimum construction standards may have some level of protection against dam failure inundation, depending on the velocity and elevation of the inundation waters. These properties also are more likely to have flood insurance. Table 8-6 summarizes the loss estimates for dam failure.

Table 8-6. Estimated Impact of a Dam Failure in the Planning Area

Number of Buildings Impacted	63,936
Estimated Loss, Structures	\$6,795,872,395
Estimated Loss, Contents	\$8,126,268,419
Estimated Loss, Total	\$14,922,140,815
Total Loss as % of Total Replacement Value	8.3%

8.4.3 Critical Facilities

Significant facilities predicted by Hazus to be affected by the modeled dam failure include the following:

- 10 wastewater treatment facilities
- 36 hazardous material sites
- 1 hospital
- 18 fire stations or battalion headquarters
- 60 schools
- 120 road bridges

Hazus was used to estimate the number of critical facilities affected by dam failure and the resulting percent of damage to the building and contents. Figure 8-5 compares the predicted number of affected facilities to the number of exposed facilities. Between 50 and 96 percent of exposed facilities are predicted to experience some damage, depending on the category.

Figure 8-5. Critical Facilities Exposed to and Affected by Mapped Dam Failure Inundation Area

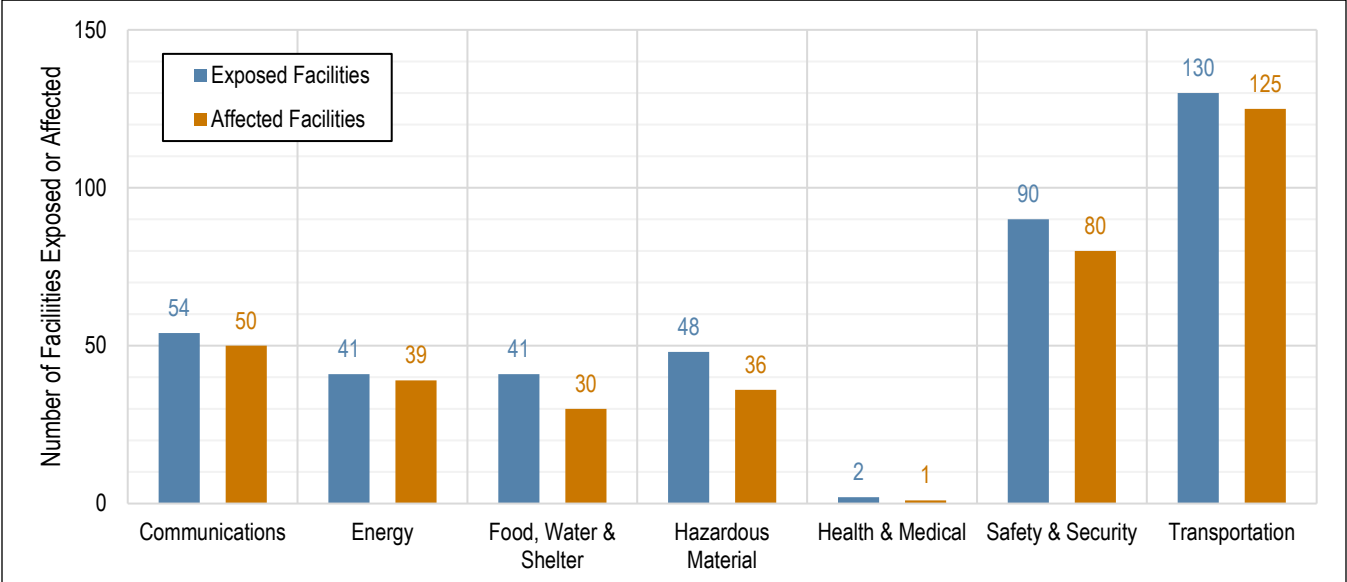
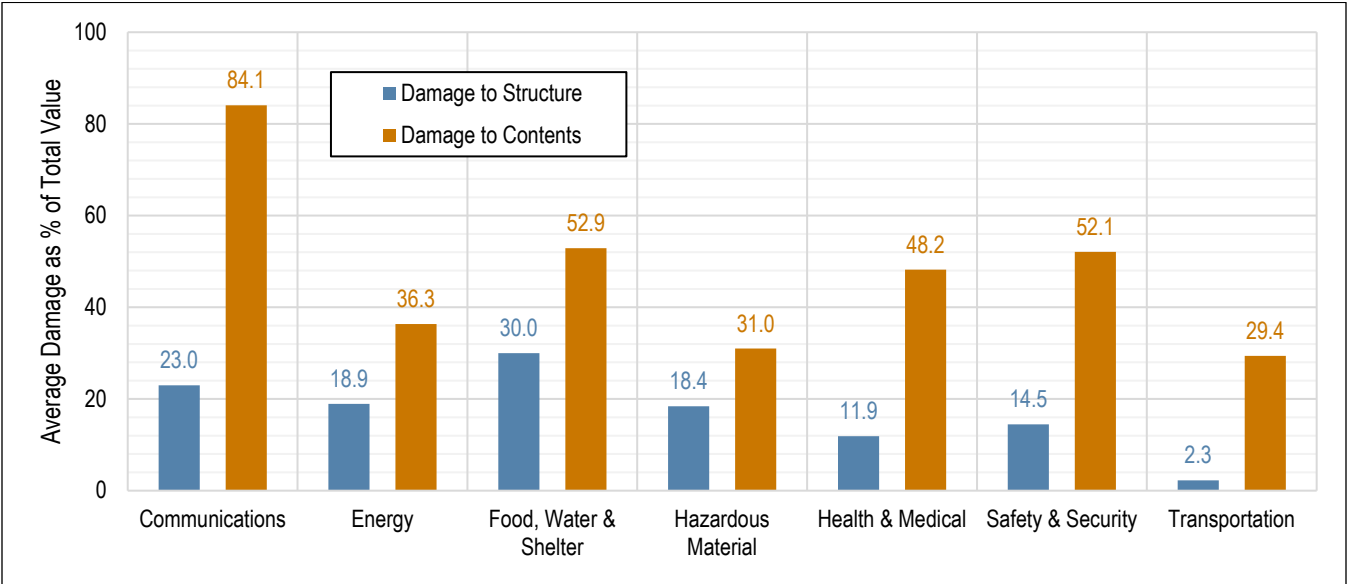


Figure 8-6 shows the estimated damage to critical facilities for the modeled dam failure. Depending on critical facility category, the average amount of damage to structures, measured as a percentage of total value, ranges from 2.3 to 30.0 percent of total value, and average damage to contents ranges from 29.4 to 84.1 percent.

Figure 8-6. Average % of Damage to Critical Facilities Caused by Modeled Dam Failure



Typical vulnerabilities of these facilities include the following:

- Transportation routes are vulnerable to dam failure inundation and have the potential to be wiped out, creating isolation issues and significant disruption to travel. Those that are most vulnerable are those that are already in poor condition and would not be able to withstand a large water surge.
- Utilities such as overhead power lines, cable and phone lines in the inundation zone could also be vulnerable. If phone lines were lost, significant communication issues may occur in the planning area due to limited cell phone reception in many areas.
- In addition, emergency response would be hindered due to the loss of transportation routes as well as some protective-function facilities in the safety and security category located in the inundation zone. Recovery time to restore many critical functions after an event may be lengthy.

8.4.4 Environment

The environment would be vulnerable to a number of risks in the event of dam failure. The inundation could introduce foreign elements into local waterways, resulting in destruction of downstream habitat and detrimental effects on many species of animals, especially endangered species such as the tidewater goby.

8.5 SCENARIO

An earthquake in the region could lead to liquefaction of soils around a dam, without warning during any time of the day. A human-caused incident such as a terrorist attack also could trigger a catastrophic failure of a dam that would impact the planning area. Failure of a high hazard dam in the County would likely result in losses of life, roadways, structures, and property, and exert severe impacts on the local economy. While the possibility of failure is remote, results would be devastating.

The worst-case scenario would involve failure of the Santa Felicia Dam. In addition to severe property damage and potential injuries or loss of life, loss of water from Lake Piru could lead to reduction in available water used to replenish underground basins in the County. Coupled with the ongoing drought throughout the state and already low water supply availability, this damage could lead to significant water shortages.

8.6 ISSUES

The most significant issues associated with dam failure involve properties and populations within inundation zones. Flooding as a result of a dam failure would significantly impact these areas. Warning time for dam failure plausibly would be limited. Moreover, dam failure is frequently associated with other natural hazard events such as earthquakes, landslides, or severe weather, which limits predictability of dam failure and compounds the hazard. Important issues associated with dam failure hazards are as follows:

- A significant number of the structures located in the dam failure inundation zone are located outside of special flood hazard areas, meaning that they are not constructed to withstand floodwaters and are less likely to be covered by flood insurance. Even structures that have been

designed with flood hazards in mind may not be able to withstand the height and velocity of flow from a dam failure event.

- Addressing security concerns and the need to inform the public of the risk associated with dam failure is a challenge for public officials.
- California law requires that a property's location in a dam failure inundation be disclosed to a buyer if the seller or the seller's agent has knowledge of the property's location within the hazard area or if the local jurisdiction has compiled a list of parcels that are in the inundation area and has posted at the offices of the county recorder, county assessor, and county planning agency a notice that identifies the location of the list. This information is only available by request from county planning.
- Dam failure inundation areas are often not considered special flood hazard areas under the National Flood Insurance Program, so flood insurance coverage in these areas is not common.
- Dam infrastructure may require repair and improvement to withstand climate change impacts, such as changing in the timing and intensity of rain events.
- Federally regulated dams have an adequate level of oversight and sophistication in the development of emergency action plans for public notification in the unlikely event of failure. However, the protocol for notification of downstream residents of imminent failure needs to be tied to local emergency response planning.
- In the event of a dam failure that interrupted land line phone service, significant issues with communication could occur.
- Limited financial resources for dam maintenance during economic downturns result in decreased attention to dam structure operational integrity, because available funding is often directed to more urgent needs. This could increase potential for maintenance failures.
- Mapping for federally regulated dams is already required and available; however, mapping for non-federally regulated dams that estimates inundation depths is needed to better assess risks associated with failure of these dams.
- Although mapping is required for federally regulated dams, development downstream of dams and upgrades to older dams may have altered inundation areas; however, these inundation maps may not have been updated for significant periods of time. Encouraging property owners of dams to update EAPs and inundation maps will ensure availability of the most accurate data to assist emergency planners and local officials.
- Most dam failure mapping required at federal levels requires determination of the probable maximum flood. While the probable maximum flood represents a worst-case scenario, it is generally the event with the lowest probability of occurrence. Mapping of dam failure scenarios for non-federal-regulated dams that are less extreme than the probable maximum flood, but have a higher probability of occurrence, can be valuable to emergency managers and community officials downstream of these facilities. This type of mapping can illustrate areas potentially impacted by more frequent events to support emergency response and preparedness actions.
- The concept of residual risk associated with structural flood control projects should be considered in the design of capital projects and the application of land use regulations.
- There may be dams located in the planning area that do not meet regulatory thresholds for jurisdiction under State of California or federal programs.

9. DROUGHT

9.1 GENERAL BACKGROUND

Drought is a significant decrease in water supply relative to what is typical in a given location. It is a normal phase in the climate cycle of most regions, originating from a deficiency of precipitation over an extended period of time, usually a season or more. This leads to a water shortage for some activity, group or environmental sector. Drought can be characterized based on various impacts or measurements:

- Meteorological measurements such as rainfall deficit compared to normal or expected rainfall
- Agricultural impacts due to reduced rainfall and water supply (e.g., crop loss, herd culling, etc.)
- Hydrological measurements of stream flows, groundwater, and reservoir levels relative to normal conditions
- Direct and indirect socio-economic impacts on society and the economy (e.g., increased unemployment due to failure of an industry because of drought).

Drought is a normal phase in the climatic cycle of most geographical regions. If the weather pattern that causes a drought lasts a short time (a few weeks or a couple of months), the drought is considered short-term. If the weather pattern becomes entrenched and the precipitation deficits last for several months or years, the drought is considered to be long-term. It is possible for a region to experience a long-term circulation pattern that produces drought, and to have short-term changes in this long-term pattern that result in short-term wet spells. Likewise, it is possible for a long-term wet circulation pattern to be interrupted by short-term weather spells that result in short-term drought.

9.1.1 Monitoring and Categorizing Drought

National Oceanic and Atmospheric Administration Drought Indices

The National Oceanic and Atmospheric Administration (NOAA) has developed several indices to measure drought impacts and severity and to map their extent and locations:

- The **Crop Moisture Index** measures short-term drought weekly to assess impacts on agriculture.
- The **Palmer Z Index** measures short-term drought on a monthly scale.
- The **Palmer Drought Severity Index** is based on long-term weather patterns. The intensity of drought in a given month is dependent on current weather plus the cumulative patterns of

previous months. Weather patterns can change quickly, and the Palmer Drought Severity Index can respond fairly rapidly.

- The **Palmer Hydrological Drought Index** quantifies hydrological effects (reservoir levels, groundwater levels, etc.), which take longer to develop and last longer. This index responds more slowly to changing conditions than the Palmer Drought Index.
- The **Standardized Precipitation Index** considers only precipitation. A value of zero indicates the median precipitation amount; the index is negative for drought and positive for wet conditions. The Standardized Precipitation Index is computed for time scales ranging from one month to 24 months.

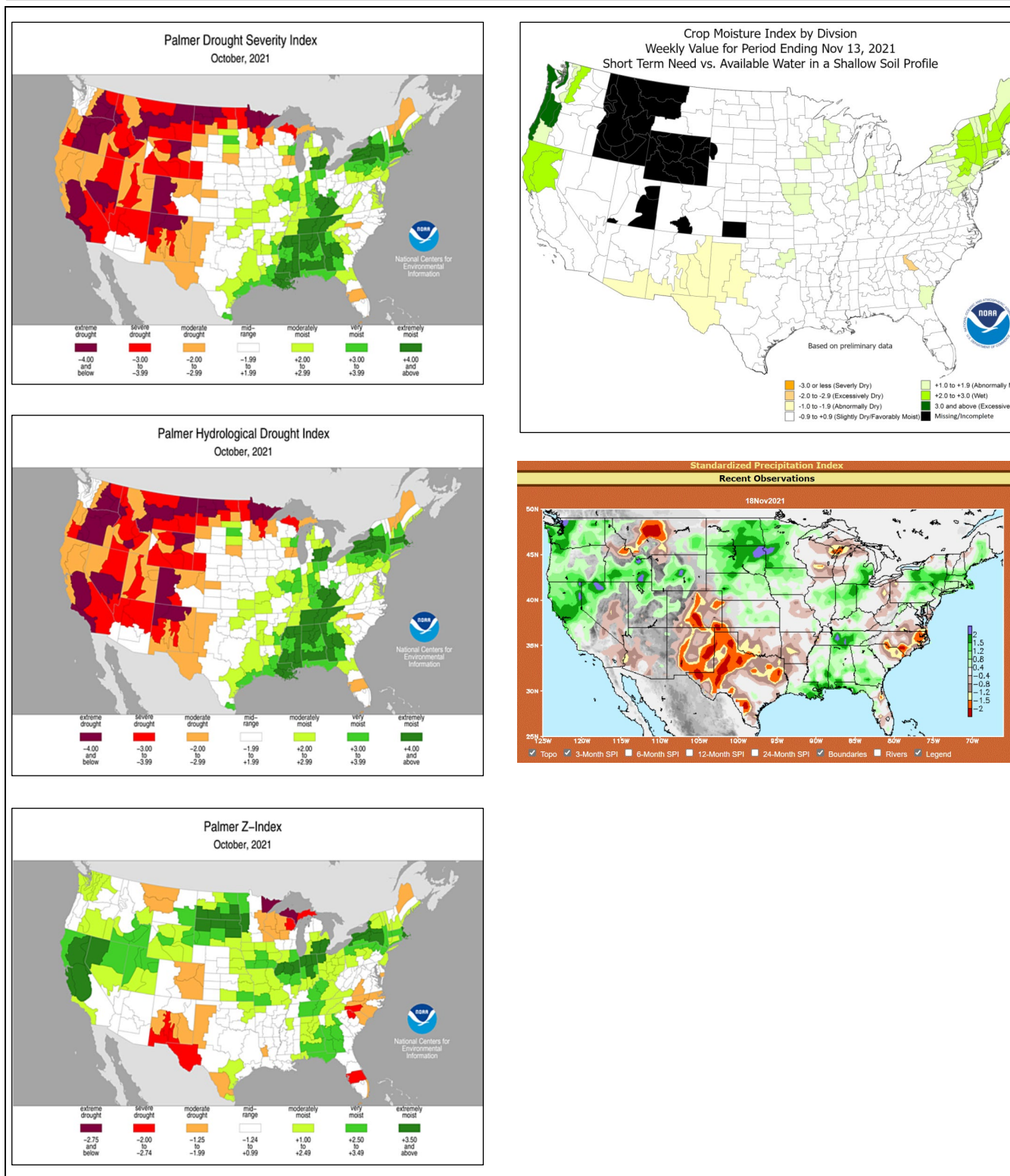
Figure 9-1 shows examples of these indices as of mid-November 2021.

U.S. Drought Monitor

The U.S. Drought Monitor (USDM) is a map that is updated weekly to show the location and intensity of drought across the country. The USDM uses a five-category system (National Integrated Drought Information System 2021):

- D0—Abnormally Dry
 - Short-term dryness slowing planting, growth of crops
 - Some lingering water deficits
 - Pastures or crops not fully recovered
- D1—Moderate Drought
 - Some damage to crops, pastures
 - Some water shortages developing
 - Voluntary water-use restrictions requested
- D2—Severe Drought
 - Crop or pasture loss likely
 - Water shortages common
 - Water restrictions imposed
- D3—Extreme Drought
 - Major crop/pasture losses
 - Widespread water shortages or restrictions
- D4—Exceptional Drought
 - Exceptional and widespread crop/pasture losses
 - Shortages of water creating water emergencies

The USDM categories show experts' assessments of conditions related to drought. These experts check variables including temperature, soil moisture, water levels in streams and lakes, snow cover, and meltwater runoff. They also check whether areas are showing drought impacts such as water shortages and business interruptions. Associated statistics show what proportion of various geographic areas are in each category of dryness or drought, and how many people are affected. U.S. Drought Monitor data go back to 2000.

Figure 9-1. Example Drought Index Maps, Current as of November 18, 2021

9.1.2 Drought Impacts

Drought can have a widespread impact on the environment and the economy, although it typically does not result in loss of life or damage to structures, as do other natural disasters. The National Drought Mitigation Center uses three categories to describe likely drought impacts:

- **Economic Impacts**—These impacts of drought cost people (or businesses) money. Farmers' crops are destroyed; low water supply necessitates spending on irrigation or drilling of new wells; water-related businesses (such as sales of boats and fishing equipment) may experience reduced revenue.
- **Environmental Impacts**—Plants and animals depend on water. When a drought occurs, their food supply can shrink, and their habitat can be damaged.
- **Social Impacts**—Social impacts include public safety, health, conflicts between people when there is not enough water to go around, and changes in lifestyle.

The demand that society places on water systems and supplies—such as expanding populations, irrigation, and environmental needs—contributes to drought impacts. Drought can lead to difficult decisions regarding the allocation of water, as well as stringent water use restrictions, water quality problems, and inadequate water supplies for fire suppression. There are also issues such as growing conflicts between agricultural uses of surface water and in-stream uses, surface water and groundwater interrelationships, and the effects of growing water demand on uses of water.

Vulnerability of an activity to drought depends on its water demand and the water supplies available to meet the demand. The impacts of drought vary between sectors of the community in both timing and severity:

- **Water supply**—The water supply sector encompasses urban and rural drinking water systems that are affected when a drought depletes ground water supplies due to reduced recharge from rainfall.
- **Agriculture and commerce**—The agriculture and commerce sector includes the reduction of crop yield and livestock sizes due to insufficient water supply for crop irrigation and maintenance of ground cover for grazing.
- **Environment, public health, and safety**—The environmental, public health, and safety sector focuses on wildfires that are both detrimental to the forest ecosystem and hazardous to the public. It also includes the impact of desiccating streams, such as the reduction of in-stream habitats for native species.

Drought generally does not affect groundwater sources as quickly as surface water supplies, but groundwater supplies generally take longer to recover. Reduced precipitation during a drought means that groundwater supplies are not replenished at a normal rate. This can lead to a reduction in groundwater levels and problems such as reduced pumping capacity or wells going dry. Droughts can affect groundwater storage as reserves are drawn down in anticipation of drought impacts. Such conjunctive use assists in drought resilience, but it can take years to replenish the water that was stored. Shallow wells are more susceptible than deep wells. Reduced replenishment of groundwater affects streams. Much of the flow in streams comes from groundwater, especially during the summer when there is less precipitation and after snowmelt ends. Reduced groundwater levels mean that even less water will enter streams when stream flows are lowest.

9.1.3 Defined Drought Stages in California

During critically dry years, the California State Water Resources Control Board can mandate water entitlements on water right holders to address statewide water shortages. Table 9-1 shows the state drought management program stages mandated to water right holders.

Table 9-1. State Drought Management Program

Drought Stage	State Mandated Customer Demand Reduction	Rate Impacts
Stage 0 or 1	<10%	Normal rates
Stage 2	10 to 15%	Normal rates; Drought surcharge
Stage 3	15 to 20%	Normal rates; Drought surcharge
Stage 4	>20%	Normal rates, Drought surcharge

9.1.4 Secondary Hazards

The secondary impact most commonly associated with drought is wildfire. A prolonged lack of precipitation dries out vegetation, which becomes increasingly susceptible to ignition as the duration of the drought extends. In addition, lack of sufficient water resources can stress trees and other vegetation, making them more vulnerable to infestation from pests, which in turn, can make them more vulnerable to ignition.

9.2 HAZARD PROFILE

9.2.1 Planning Area Water Supply and Drought Response

Water Supply Strategy

Groundwater provides about 67 percent of the locally utilized water in Ventura County (Ventura County Public Works Agency 2020). Additionally, more than 100,000 acre-feet of potable water is imported annually from the Metropolitan Water District of Southern California. The remainder of local water comes from surface and recycled water sources.

Calleguas Municipal Water District (MWD), Casitas MWD, and United Water Conservation District (UWCD) are the main water providers for much of Ventura County, allowing other jurisdictions, water districts, and private utilities to coordinate in order to ensure continual water supply necessary to maintain health, safety, and economic well being of residents, businesses, and community organizations. These three water districts have developed long-term water supply strategies for customers in Ventura County:

- Calleguas MWD is active in regional water planning, conservation, watershed protection and development of reclaimed water.
- Casitas MWD is actively engaged in managing existing local water resources and planning for water security.
- UWCD offers unique approaches to regional watershed management, responsibly conserving and enhancing resources, and protecting the environment while meeting water demands.

Water supply strategies recognize that drought year shortfalls could be significant. Dry years could result in cutbacks of up to 20 percent, but 10 to 15 percent is the more consistent standard. Calleguas MWD and Casitas MWD maintain Urban Water Management Plans that outline the following:

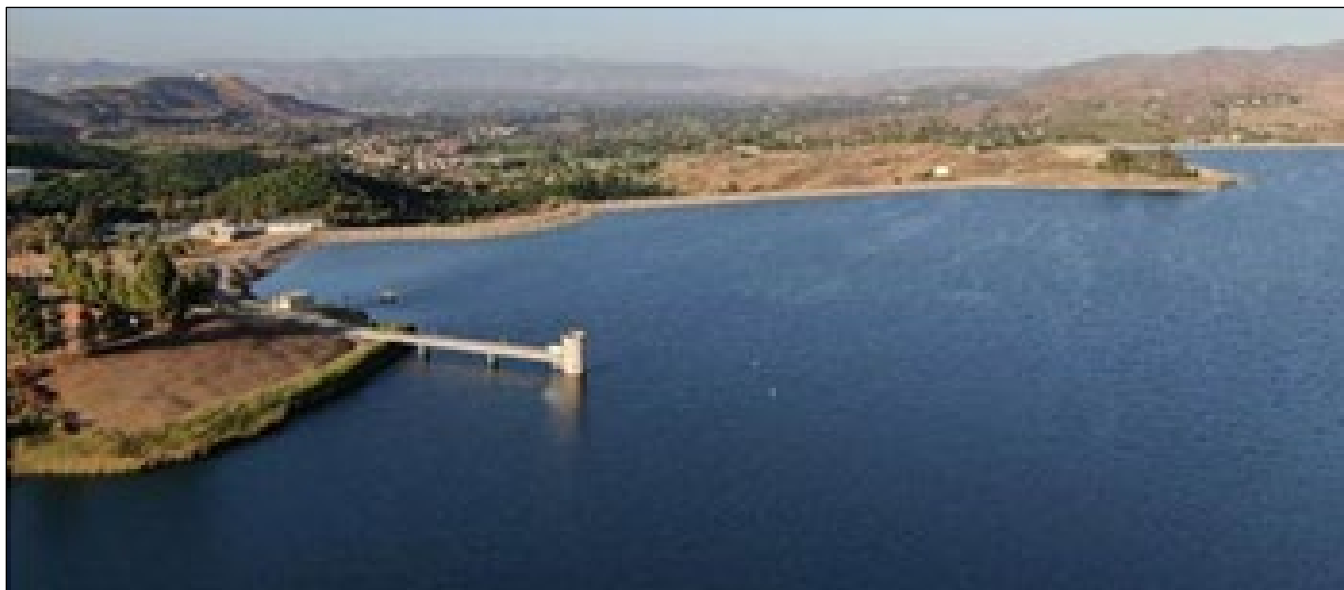
- Water source reliability over a 20-year timeframe
- Water shortage contingency plans
- Drought risk assessment

While the three districts are the primary water service agencies in the County, they are not the only option for residents and businesses. Some water purveyors and residents in the County have wells on their property. The last available report shows 4,016 active water wells in Ventura County (Ventura County Watershed Protection District 2015).

Water Supply Infrastructure

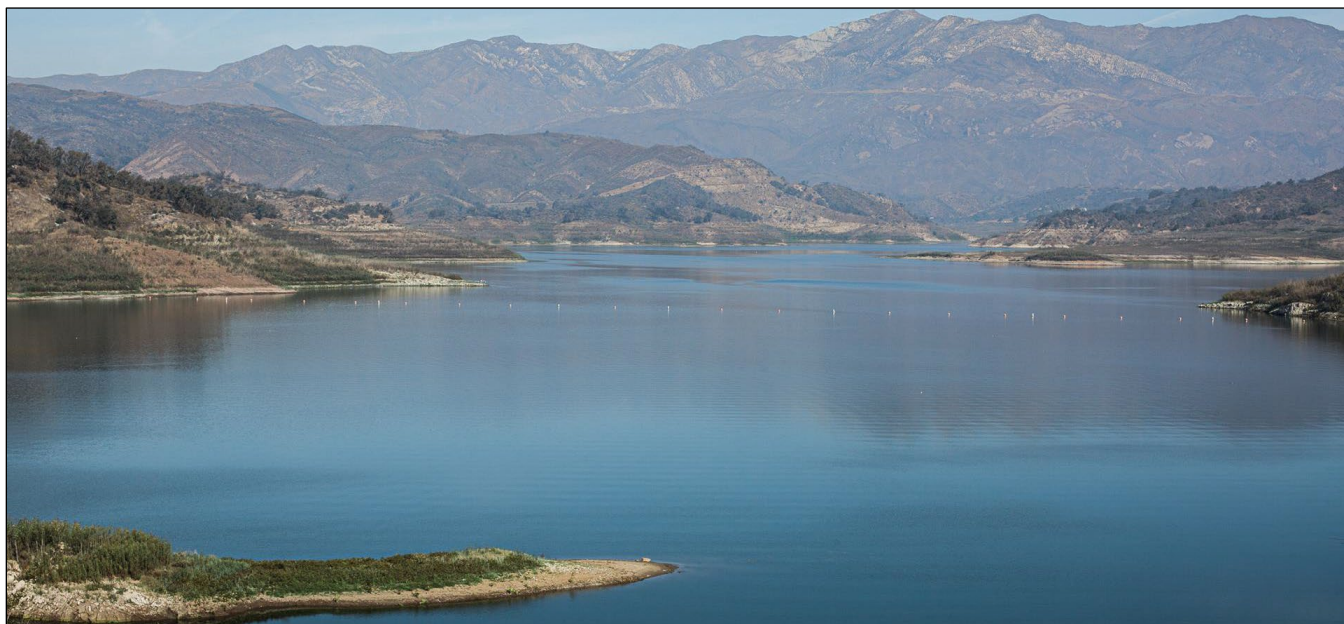
Calleguas MWD receives water from the Metropolitan Water District of Southern California brought south by the State Water Project. Calleguas MWD built a pipeline network to bring water into Ventura County, including the Santa Susana Tunnel that connects to Metropolitan's system in Los Angeles County. Lake Bard reservoir (Figure 9-2) was built to store water for peak summer and emergency demand. Las Posas Aquifer Storage and Recovery Well Field is also used to store water that is not immediately distributed to purveyors. The stored water is treated before entering the Calleguas MWD system.

Figure 9-2. Calleguas MWD's Lake Bard Reservoir



Source: Calleguas MWD

Only 17 percent of the Casitas MWD's water comes from groundwater; 83 percent comes from Lake Casitas (Figure 9-3). The lake fills primarily from the natural flow of local creeks and the Robles Diversion. The diversion is a large canal that brings water about 7 miles from the Ventura River. This diversion accounts for about one-third of the lake's water each year.

Figure 9-3. Casitas MWSD's Lake Casitas

Source: Casitas MWD

UWCD built the Freeman Diversion (Figure 9-4) to redirect water from the Santa Clara River to spreading basins for groundwater recharge. The Santa Felicia Dam and Lake Piru Reservoir recharge downstream groundwater basins through conservation releases when downstream basins are at their seasonal lows. The Pumping Trough Pipeline delivers surface water from the Santa Clara River and deep wells to agricultural users.

Figure 9-4. UWCD's Freeman Diversion

Source: The Fillmore Gazette

Defined Drought Levels

Ventura County does not have a defined drought level. County and regional drought response is determined case by case, and response priorities are typically based on imminence of potential water shortages. Drought stages defined by the California State Water Resources Control Board (see Table 9-1) can serve as a reference for County and stakeholder agencies when determining need for response.

Calleguas MWD adopted a resolution on August 18, 2021, declaring a Stage 2 water shortage and calling for enhanced water use efficiency efforts. For Casitas MWD, drought conditions remain in effect since the Board of Directors declared Stage 3 water supply conditions on April 27, 2016. The primary source of water for UWCD is managed by the Fox Canyon Groundwater Management Authority, which sets allocations for each water pumper and imposes water shortage contingency plan levels. Significant penalties are levied on purveyors if they take delivery of water in excess of their allocations.

9.2.2 Past Events

California Department of Water Resources hydrologic data from the early 1900s shows multi-year droughts from 1912 to 1913, 1918 to 1920, 1922 to 1924, and 1929 to 1934, 1959 to 1961 (California Department of Water Resources 2003). The following sections describe more-recent prolonged droughts that have impacted the planning area.

2020 Ongoing Drought

The 2020-21 water year was the second driest year on record, with a near record low storage in California's largest reservoirs. August 2021 was the driest and hottest August on record since reporting began. The executive proclamation of drought emergency includes Ventura County. Executive orders include water conservation and a ban on wasteful water practices.

2012 to 2017 Drought

The period from 2012 to 2014 ranked as the driest three consecutive years for statewide precipitation. Calendar year 2014 set new records for statewide average temperatures and for record-low water allocations from the State Water Project and the federal Central Valley Project. Calendar year 2013 set minimum annual precipitation records for many communities. Detailed executive orders and regulations addressed water conservation and management. The statewide drought emergency was lifted in April 2017.

2007 to 2009 Drought

The state proclaimed a statewide drought emergency on June 4, 2008 after spring 2008 was the driest spring on record, with low snowmelt runoff. On February 27, 2009, the state proclaimed a state of emergency for the entire state as severe drought continued. The largest court-ordered water restriction in state history (at the time) was imposed.

1987 to 1992 Drought

California received precipitation well below average levels for four consecutive years. While the Central Coast was most affected, Southern California counties were also affected. In 1991, the State Water Project sharply decreased deliveries to water suppliers. By February 1991, all 58 counties in California were experiencing drought. Urban areas as well as agricultural areas were impacted.

1976 to 1977 Drought

California had a severe drought due to lack of rainfall during the winters of 1976 and 1977. 1977 was the driest period on record in California at that time, with the previous winter recorded as the fourth driest in California's hydrological history at that time. The cumulative impact led to widespread water shortages and severe water conservation measures statewide. Over \$2.6 billion in crop damage was recorded in 31 counties. FEMA declared a drought emergency (Declaration 3023-EM) on January 20, 1977.

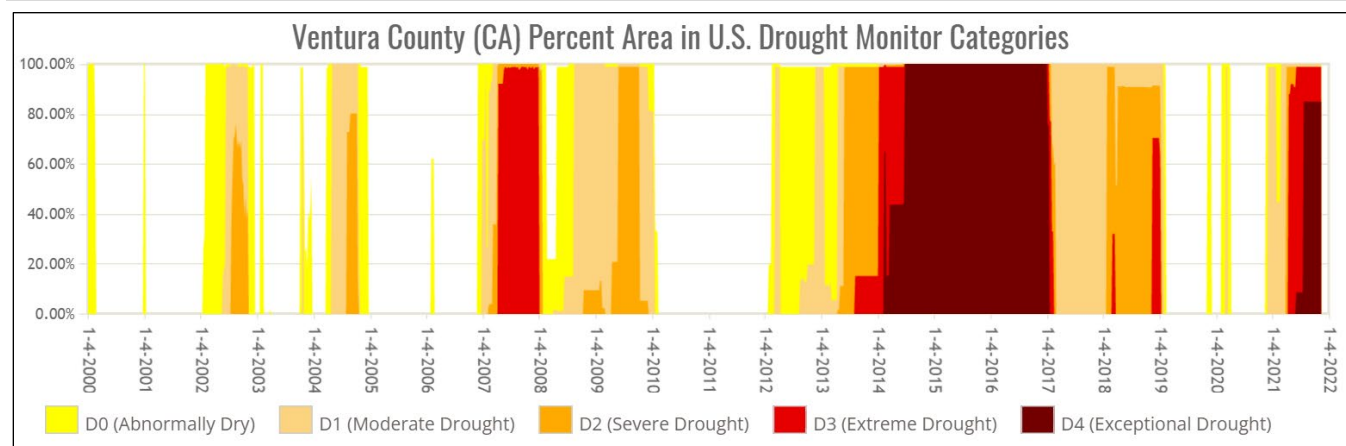
9.2.3 Location

Drought is a regional phenomenon that has the potential to impact the entire planning area. A drought affects all aspects of the environment and the community simultaneously and has the potential to directly or indirectly impact every person in the planning area as well as adversely affect the local economy.

9.2.4 Frequency

Drought has a high probability of occurrence in the planning area. From January 2000 to November 2021, some part of Ventura County experienced a USDM rating of D1 or higher in 604 out of 1,142 weeks—more than half the time (see Figure 9-5). The planning area has also been included in USDA drought disaster declarations in eight of the past nine years (U.S. Department of Agriculture 2021a). Historical drought data for the planning area indicate there have been four significant multi-year droughts in the last 45 years (1976 to 2021), amounting to a severe drought every 10 to 11 years on average.

Figure 9-5. Percent of Ventura County Affected by Each USDM Rating, 2000 – 2021



9.2.5 Severity

The severity of any given drought depends on the degree of moisture deficiency, the duration, and the size and location of the affected area. The longer the duration of the drought and the larger the area impacted, the more severe the potential impacts.

U.S. Drought Monitor Ratings

Ventura County has a history of severe droughts. As shown in Figure 9-5, at least part of the county has experienced extreme (D3) or exceptional (D4) droughts more than once since 2000.

Drought Impact Reporter

The National Drought Mitigation Center developed the Drought Impact Reporter in response to the need for a national drought impact database for the United States. Information comes from a variety of sources: on-line, drought-related news stories and scientific publications, members of the public who visit the website and submit a drought-related impact for their region, members of the media, and staff of government agencies. The database is being populated beginning with the most recent impacts and working backward in time.

The Drought Impact Reporter indicates 1,316 impacts from drought that specifically affected Ventura County from January 2011 through November 15, 2021 (National Drought Mitigation Center 2021). Most (70.2 percent) are based on media reports. The rest are from the Community Collaborative Rain, Hail & Snow Network. The following are the reported numbers of impacts by category (some incidents are assigned to more than one impact category):

- Agriculture—323
- Business and Industry—107
- Energy—15
- Fire—195
- Plants and Wildlife—361
- Relief, Response, and Restrictions—601
- Society and Public Health—340
- Tourism and Recreation—137
- Water Supply and Quality—769

9.2.6 Warning Time

Predicting drought depends on the ability to forecast precipitation and temperature. Scientists at this time do not know how to predict drought more than a month in advance for most locations. Only generalized warning can take place due to the numerous variables that scientists have not pieced together well enough to make accurate and precise predictions.

Determination of when drought begins is based on impacts on water users and assessments of available water supply, including water stored in reservoirs or groundwater basins. Different water agencies have different criteria for defining drought. Some issue drought watch or drought warning announcements.

9.3 EXPOSURE

All people, property and environments in the planning area would be exposed to some degree to the impacts of moderate to extreme drought conditions.

9.4 VULNERABILITY

9.4.1 Population

The entire population of the County is vulnerable to drought events. Drought can affect people's health and safety, including health problems related to low water flows, poor water quality, or dust. Droughts can also lead to loss of human life (National Centers for Environmental Information 2021). Other possible impacts include recreational risks; effects on air quality; diminished living conditions related to energy, air quality, and hygiene; compromised food and nutrition; and increased incidence of illness and disease (Centers for Disease Control and Prevention 2020).

9.4.2 Property

No structures will be directly affected by drought conditions, though some structures may become vulnerable to wildfires, which are more likely following years of drought. Droughts can have significant impacts on other types of property such as landscaped areas and economically important natural resources. Drought causes the most significant economic impacts on industries that use water or depend on water for their business, most notably agriculture and related sectors (forestry, fisheries, and waterborne activities), power plants, and oil refineries. In addition to losses in yields in crop and livestock production, drought is associated with increased insect infestations, plant diseases, and wind erosion. Drought can lead to other losses because so many sectors are affected - losses that include reduced income for farmers and reduced business for retailers and others who provide goods and services to farmers. This leads to unemployment, increased credit risk for financial institutions, capital shortfalls, and loss of tax revenue. Prices for food, energy, and other products may also increase as supplies decrease.

9.4.3 Critical Facilities

Critical facilities as defined for this plan will continue to be operational during a drought. Critical facility features such as landscaping may not be maintained due to limited water resources, but the risk to critical facility core functions is low.

9.4.4 Environment

Groundwater and Streams

Drought generally does not affect groundwater sources as quickly as surface water supplies, but groundwater supplies generally take longer to recover. Reduced precipitation during a drought means that groundwater supplies are not replenished at a normal rate. This can lead to a reduction in groundwater levels and problems such as reduced pumping capacity or wells going dry. Shallow wells are more susceptible than deep wells. Reduced replenishment of groundwater affects streams. Much of the flow in streams comes from groundwater, especially during the summer when there is less precipitation and after snowmelt ends. Reduced groundwater levels mean that even less water will enter streams when stream flows are lowest. Where stream flows are reduced, development that relies on surface water may seek to establish new groundwater wells, which could further increase groundwater depletion.

Other Potential Losses

Environmental losses from drought are associated with damage to plants, animals, wildlife habitat, and air and water quality; forest and range fires; degradation of landscape quality; loss of biodiversity; and soil erosion. Some of the effects are short-term and conditions quickly return to normal following the end of the drought. Other environmental effects linger for some time or may even become permanent. Although environmental losses are difficult to quantify, growing public awareness and concern for environmental quality has forced public officials to focus greater attention and resources on these effects. The following are potential impacts of drought:

- Wildlife habitat may be degraded through the loss of wetlands, lakes and vegetation. The degradation of landscape quality, including increased soil erosion, may lead to a more permanent loss of biological productivity.
- Drought conditions greatly increase the likelihood of wildfires, a major threat to agricultural resources.
- Water shortages and severe drought conditions would have a significant impact on Native American tribes' way of life in fishing and farming subsistence.
- Scenic resources in the County are vulnerable to the increased likelihood of wildfires associated with droughts.
- Drying up of recreational reservoirs could reduce tourist values.
- Any shortage of water supply can have significant economic impacts.

9.5 SCENARIO

A multi-year drought that impacts the entire west or the State of California, similar to the 2012 to 2017 drought, is the worst-case scenario for the planning area. The 2012-2017 drought and the wildfires and floods that followed it caused extensive damage to natural systems. If another severe multi-year drought occurs before these systems have a chance to recover, it could exacerbate the stress already placed on existing planning area water resources.

9.6 ISSUES

The planning team has identified the following drought-related issues:

- Alternative water supplies need to be identified and developed, as well as alternative strategies to allocate and distribute existing water sources.
- Alternative techniques (groundwater recharge, water recycle, local capture and reuse, desalination, and transfer) could stabilize and offset snowpack water supply shortfalls that may affect imported water.
- There is a need for local or regional drought-level indicators to correspond with water conservation measures.
- Drought in the county could increase and expand fire-prone areas and adversely affect the agricultural economy.
- If tension increases over surface water, additional draw-downs to groundwater supplies may occur.
- More studies need to be done regarding overall county water usage and how it relates to the economy to prepare for a worst-case scenario drought.
- Planning must address the degree of future development in drought-prone areas.
- Drought frequencies and durations may increase due to climate change.
- Water conservation should be promoted to a greater extent, even during non-drought periods.
- Frequent or prolonged droughts may limit the County's and residents' ability to successfully recover from or prepare for more occurrences.

10. EARTHQUAKE

10.1 GENERAL BACKGROUND

An earthquake is the vibration of the earth's surface following a release of energy in the earth's crust. This energy can be generated by a sudden dislocation of the crust or by a volcanic eruption. Most destructive quakes are caused by dislocations of the crust. The crust may first bend and then, when the stress exceeds the strength of the rocks, break and snap to a new position. In the process of breaking, vibrations called "seismic waves" are generated. These waves travel outward from the source of the earthquake at varying speeds.

10.1.1 Earthquake Location

The location of an earthquake is commonly described by its focal depth and the geographic position of its epicenter. The focal depth of an earthquake is the depth from the Earth's surface to the region where an earthquake's energy originates (the focus or hypocenter). The epicenter of an earthquake is the point on the Earth's surface directly above the hypocenter.

10.1.2 Earthquake Geology

Tectonic Plates

The Earth's crust, which is the rigid outermost shell of the planet, is broken into seven or eight major tectonic plates (depending on how they are defined) and many minor plates. Where the plates meet, they move in one of three ways along their mutual boundary: convergent (two plates moving together), divergent (two plates moving apart), or transform (two plates moving parallel to one another). Earthquakes, volcanic activity, mountain-building, and oceanic trench formation occur along these plate boundaries. Subduction is a geological process that takes place at convergent boundaries of tectonic plate, in which one plate moves under another. Regions where this process occurs are known as subduction zones, and they have the potential to generate highly damaging earthquakes.

California is seismically active because of movement of the North American Plate, east of the San Andreas Fault, and the Pacific Plate to the west, which includes the state's coastal communities. The transform (parallel) movement of these tectonic plates against one another creates stresses that build as the rocks are gradually deformed. The rock deformation, or strain, is stored in the rocks as elastic strain energy. When the strength of the rock is exceeded, rupture occurs along a fault. The rocks on opposite sides of the fault slide past each other as they spring back into a relaxed position. The strain energy is released partly as heat and partly as elastic waves called seismic waves. The passage of these seismic waves produces the ground shaking in earthquakes.

Faults

Geologists have found that earthquakes reoccur along faults, which are zones of weakness in the earth's crust. When a fault experiences an earthquake, there is no guarantee that all the stress has been relieved. Another earthquake can still occur. In fact, relieving stress along one part of a fault may increase it in another part.

Faults are more likely to have future earthquakes on them if they have more rapid rates of movement, have had recent earthquakes along them, experience greater total displacements, and are aligned so that movement can relieve the accumulating tectonic stresses. Geologists classify faults by their relative hazards. "Active" faults, which represent the highest hazard, are those that have ruptured to the ground surface during the Holocene period (about the last 11,000 years). "Potentially active" faults are those that displaced layers of rock from the Quaternary period (the last 1,800,000 years) (California Department of Conservation 2019a).

Determining if a fault is "active" or "potentially active" depends on geologic evidence, which may not be available for every fault. The majority of the seismic hazards are on well-known active faults. However, inactive faults, where no displacements have been recorded, also have the potential to reactivate or experience displacement along a branch sometime in the future. An example of a fault zone that has been reactivated is the Foothills Fault Zone. The zone was considered inactive until evidence of an earthquake (approximately 1.6 million years ago) was found near Spenceville, California. Then, in 1975, an earthquake occurred on another branch of the zone near Oroville, California (now known as the Cleveland Hills Fault). The State Division of Mines and Geology indicates that increased earthquake activity throughout California may cause tectonic movement along currently inactive fault systems.

10.1.3 Earthquake-Related Hazards

According to the U.S. Geological Survey (USGS) Earthquake Hazards Program, an earthquake hazard is anything associated with an earthquake that may affect resident's normal activities. This includes the following:

- **Surface Faulting**—Displacement that reaches the earth's surface during slip along a fault. Commonly occurs with shallow earthquakes, those with an epicenter less than 20 kilometers.
- **Ground Motion (shaking)**—The movement of the earth's surface from earthquakes or explosions. Ground motion or shaking is produced by waves that are generated by sudden slip on a fault or sudden pressure at the explosive source and travel through the earth and along its surface.
- **Landslide**—A movement of surface material down a slope.
- **Liquefaction**—A process by which water-saturated sediment temporarily loses strength and acts as a fluid. Earthquake shaking can cause this effect.
- **Tectonic Deformation**—A change in the original shape of a material due to stress and strain.
- **Tsunami**—A sea wave of local or distant origin that results from large-scale seafloor displacements associated with large earthquakes, major submarine slides, or violent underwater volcanic eruptions.

10.1.4 Earthquake Classifications

Earthquakes are typically classified in one of two ways: By the amount of energy released, measured as magnitude; or by the impact on people and structures, measured as intensity.

Magnitude

An earthquake's magnitude is a measure of energy released at the earthquake source. It is commonly expressed by ratings on the moment magnitude scale (M_W). Most people have heard about the Richter scale, but the moment magnitude scale is a more accurate measure of magnitude (U.S. Geological Survey 2021c). It is based on the product of the distance a fault moved and the force required to move it. The scale is as follows:

- Great— $M_W > 8$
- Major— $M_W = 7.0 - 7.9$
- Strong— $M_W = 6.0 - 6.9$
- Moderate— $M_W = 5.0 - 5.9$
- Light— $M_W = 4.0 - 4.9$
- Minor— $M_W = 3.0 - 3.9$
- Micro— $M_W < 3$

Intensity

The most commonly used intensity scale is the modified Mercalli intensity scale. Table 10-1 lists perceived shaking and damage potential for structures using this scale. The scale is represented visually using shake maps, which show the expected ground shaking produced by an earthquake with a specified magnitude and epicenter. An earthquake has only one magnitude and one epicenter, but it produces a range of ground shaking at sites throughout the region, depending on the distance from the earthquake, the rock and soil conditions at sites, and variations in the propagation of seismic waves from the earthquake due to complexities in the structure of the earth's crust. A shake map shows the variation of ground shaking in a region immediately following significant earthquakes (for technical information about shake maps see (U.S. Geological Survey 2021e)).

Table 10-1. Mercalli Scale and Peak Ground Acceleration Comparison

Modified Mercalli Scale	Perceived Shaking	Potential Structure Damage		Estimated PGA ^a (%g)
		Resistant Buildings	Vulnerable Buildings	
I	Not Felt	None	None	<0.17%
II-III	Weak	None	None	0.17% - 1.4%
IV	Light	None	None	1.4% - 3.9%
V	Moderate	Very Light	Light	3.9% - 9.2%
VI	Strong	Light	Moderate	9.2% - 18%
VII	Very Strong	Moderate	Moderate/Heavy	18% - 34%
VIII	Severe	Moderate/Heavy	Heavy	34% - 65%
IX	Violent	Heavy	Very Heavy	65% - 124%
X - XII	Extreme	Very Heavy	Very Heavy	>124%

a. PGA = peak ground acceleration. Measured in percent of g, where g is the acceleration of gravity

Sources: (U.S. Geological Survey 2021b); (U.S. Geological Survey 2011)

10.1.5 Ground Motion

Earthquake hazard assessment is based on expected ground motion. During an earthquake when the ground is shaking, it also experiences acceleration. The peak acceleration is the largest increase in velocity recorded by a particular station during an earthquake. Estimates are developed of the annual probability that certain ground motion accelerations will be exceeded; the annual probabilities can then be summed over a time period of interest.

The most commonly mapped ground motion parameters are horizontal and vertical peak ground accelerations (PGA) for a given soil type. PGA is a measure of how hard the earth shakes, or accelerates, in a given geographic area. Instruments called accelerographs record levels of ground motion due to earthquakes at stations throughout a region. PGA is measured in g (the acceleration due to gravity) or expressed as a percent acceleration force of gravity (%g). These readings are recorded by state and federal agencies that monitor and predict seismic activity.

Maps of PGA values form the basis of seismic zone maps that are included in building codes such as the International Building Code. Building codes that include seismic provisions specify the horizontal force due to lateral acceleration that a building should be able to withstand during an earthquake. PGA values are directly related to these lateral forces that could damage “short period structures” (e.g. single-family dwellings). Longer period response components determine the lateral forces that damage larger structures with longer natural periods (apartment buildings, factories, high-rises, bridges). Table 10-1 lists damage potential and perceived shaking by PGA factors, compared to the Mercalli scale.

10.1.6 Earthquake Mapping Programs

ShakeMaps

The USGS Earthquake Hazards Program produces maps called ShakeMaps that map ground motion and shaking intensity following significant earthquakes. ShakeMaps focus on the ground shaking caused by the earthquake, rather than on characteristics of the earthquake source, such as magnitude and epicenter. An earthquake has only one magnitude and one epicenter, but it produces a range of ground shaking at sites throughout the region, depending on the distance from the earthquake, the rock and soil conditions at sites, and variations in the propagation of seismic waves from the earthquake due to complexities in the structure of the earth’s crust.

A ShakeMap shows the extent and variation of ground shaking immediately across the surrounding region following significant earthquakes. Such mapping is derived from peak ground motion amplitudes recorded on seismic sensors, with interpolation where data are lacking based on estimated amplitudes. Color-coded instrumental intensity maps are derived from empirical relations between peak ground motions and Modified Mercalli intensity. In addition to the maps of recorded events, the USGS creates the following:

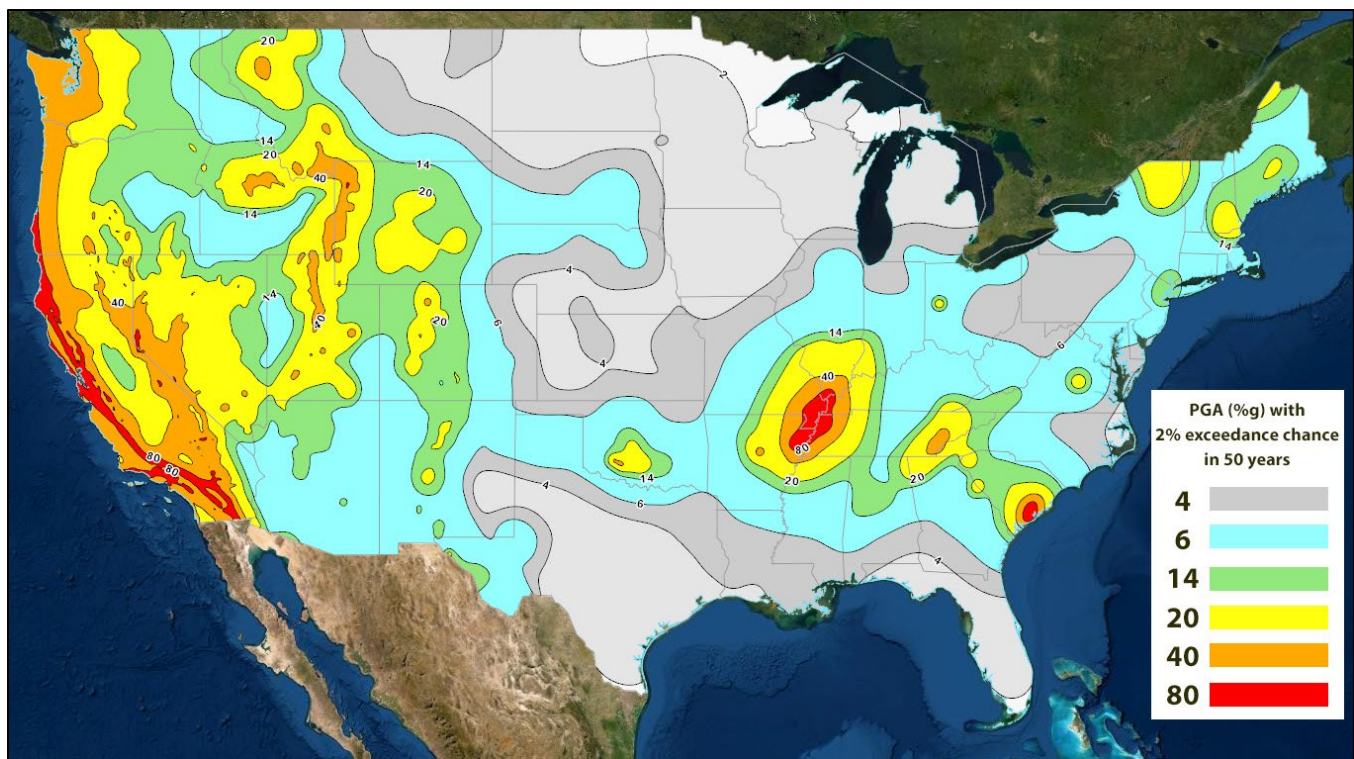
- Scenario ShakeMaps of hypothetical earthquakes of an assumed magnitude on known faults
- Probabilistic ShakeMaps, based on predicted shaking from all possible earthquakes over a 10,000-year period. In a probabilistic map, information from millions of scenario maps are combined to make a forecast for the future. The maps indicate the ground motion at any given

point that has a given probability of being exceeded in a given timeframe, such as a 100-year (1-percent-annual chance) event.

National Seismic Hazard Map

National maps of earthquake shaking hazards provide information for creating and updating seismic design requirements for building codes, insurance rate structures, earthquake loss studies, retrofit priorities and land use planning. After thorough review of the studies, professional organizations of engineers update the seismic-risk maps and seismic design requirements contained in building codes (Brown, et al. 1998). The USGS updated the National Seismic Hazard Maps in 2018. New seismic, geologic, and geodetic information on earthquake rates and associated ground shaking were incorporated into these revised maps. The 2018 map, shown in Figure 10-1, represents the best available data as determined by the USGS.

Figure 10-1. Peak Acceleration (%g) with 2% Probability of Exceedance in 50 Years



Source: USGS, 2018

Alquist-Priolo Zone Maps

Alquist-Priolo zone maps generated by the State of California show regulatory zones for potential surface fault rupture where fault lines intersect with future development and populated areas. The purpose of these maps is to assist in geologic investigation before construction to ensure that new structures are not located on an active fault. Alquist-Priolo maps were referenced, but not specifically used, in the assessment of risk for this plan. They are available online at:

<http://maps.conservation.ca.gov/cgs/informationwarehouse/index.html?map=regulatorymaps>.

10.1.7 Liquefaction and Soil Types

Soil liquefaction occurs when water-saturated sands, silts or gravelly soils are shaken so violently that the individual grains lose contact with one another and float freely in the water, making the ground like a pudding. Building and road foundations lose load-bearing strength and may sink into what was previously solid ground. Unless properly secured, hazardous materials can be released, causing damage to the environment and people.

A program called the National Earthquake Hazard Reduction Program (NEHRP) creates maps based on soil characteristics to help identify locations subject to liquefaction. NEHRP soil types define the locations that will be significantly impacted by an earthquake. Table 10-2 summarizes NEHRP soil classifications. NEHRP Soils B and C typically can sustain ground shaking without much effect, dependent on the earthquake magnitude. The areas that are commonly most affected by ground shaking have NEHRP Soils D, E and F (Southern California Earthquake Center 2018). In general, these areas are also most susceptible to liquefaction. The areas that are most commonly affected by ground shaking have NEHRP Soils D, E and F.

Table 10-2. NEHRP Soil Classification System

NEHRP Soil Type	Description	Mean Shear Velocity to 30 m (m/s)
A	Hard Rock	1,500
B	Firm to Hard Rock	760-1,500
C	Dense Soil/Soft Rock	360-760
D	Stiff Soil	180-360
E	Soft Clays	< 180
F	Special Study Soils (liquefiable soils, sensitive clays, organic soils, soft clays >36 m thick)	

10.1.8 Secondary Hazards

Earthquakes can cause disastrous landslides. River valleys are vulnerable to slope failure, often as a result of loss of cohesion in clay-rich soils. Earthen dams and levees are highly susceptible to seismic events, and the impacts of their eventual failures can be considered secondary risk exposure to earthquakes. Depending on the location, earthquakes can also trigger tsunamis. Additionally, fires can result from gas lines or power lines that are broken or downed during the earthquake. It may be difficult to control a fire, particularly if the water lines feeding fire hydrants are also broken.

10.2 HAZARD PROFILE

10.2.1 Past Events

Although no large (M 5.0+) earthquakes have occurred recently within Ventura County's boundaries, a number of relatively large earthquakes in other areas have caused damage within the county. These earthquakes occurred in 1925 (Santa Barbara), 1927 (Point Arguello), 1933 (Long Beach), 1941 (Santa Barbara), 1952 (Tehachapi), 1971 (San Fernando), and 1994 (Northridge). Additionally, damaging earthquakes occurred in the County in 1950 (north of Ojai), 1957 (Hueneme), 1963 (Camarillo), and 1973 (Point Mugu). The three most recent events are as follows (Ventura County 2015):

- **San Fernando, M 6.5, February 9, 1971**—This event was caused by oblique-slip reverse faulting in the San Fernando fault zone. The earthquake caused the destruction of freeway interchanges, houses, and buildings and severe damage to three hospitals in the San Fernando Valley. The earthquake claimed 65 lives. Although the epicenter was within 25 miles of Ventura County, damage sustained within the County was minor.
- **Point Mugu, M 5.3, February 21, 1973**—The Point Mugu earthquake was responsible for at least five injuries and more than \$1 million damage in the Point Mugu–Oxnard area, though damage was confined mainly to the vicinity of the epicenter. Large boulders fell down onto State Route 1 at Point Mugu, partially blocking the road. More than 7,000 customers lost electricity for several hours. Most reported damage was to windows, ceilings, plaster, chimneys, and shelved goods, though structural damage and broken pipes were also reported. Although much less powerful than the San Fernando earthquake of 1971, the Point Mugu earthquake was similar in focal mechanism.
- **Northridge, M 6.7, January 17, 1994**—This blind thrust earthquake occurred along the Northridge thrust fault. It was the strongest earthquake instrumentally recorded in an urban setting in North America and caused parking structures, apartments, office buildings, and sections of freeways to collapse. Approximately 25,000 dwellings were rendered uninhabitable. Total damage exceeded \$44 billion. The incident resulted in 51 deaths.

Table 10-3 lists recent earthquakes with a magnitude of 5.0 or greater within a 100-mile radius of Ventura County.

Table 10-3. Recent Earthquakes Magnitude 5.0 or Larger Within 100-mile Radius of Planning Area

Date	Magnitude	Epicenter Location
April 5, 2018	5.3	29km SW of Santa Cruz Island
March 29, 2014	5.1	2km NW of Brea Springs
July 29, 2008	5.4	5km S of Chino Hills, California

Source: USGS

10.2.2 Location

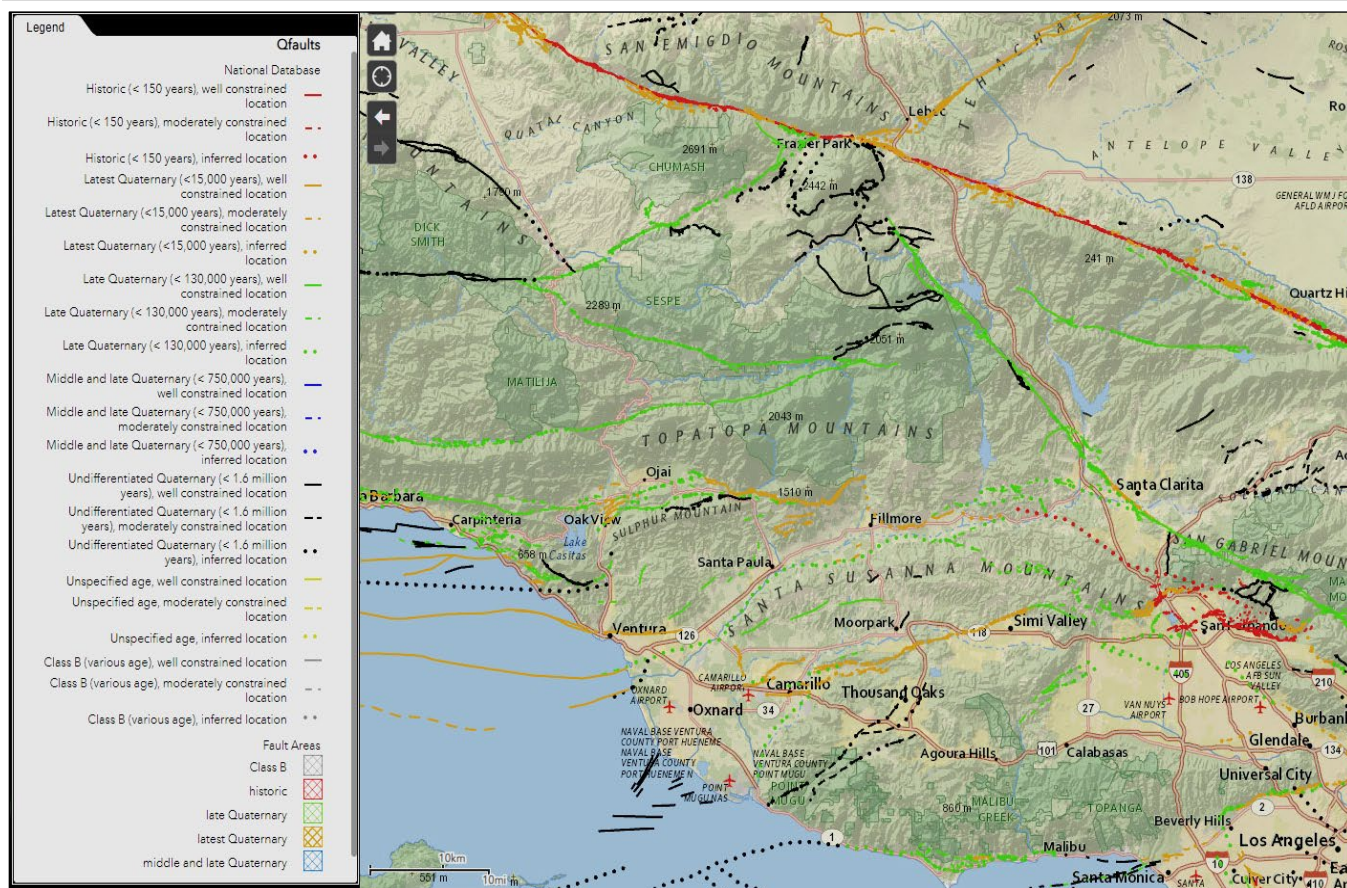
Fault Locations

As in most of southern and coastal California, the potential for earthquake damage exists throughout Ventura County because of the number of active faults within and near the county. These faults are shown on the California Geological Society Fault Activity Map of California. Descriptions of the active faults are provided below. The locations of the active and potentially active faults are shown on Figure 10-2.

Significant faults are as follows (Ventura County 2015):

- **Malibu Coast fault system**—The Malibu Coast fault system includes the Malibu Coast, Santa Monica, and Hollywood faults. The system begins in the Hollywood area, extends along the southern base of the Santa Monica Mountains, and passes offshore a few miles west of Point Dume. The 1973 Point Mugu earthquake, described in the previous section, is believed to have originated on this fault system.

Figure 10-2. Local Fault Locations



Source: (U.S. Geological Survey 2021a)

- Oak Ridge fault system**—The Oak Ridge fault system is a steep (65 degrees) southerly dipping reverse fault that extends from the Santa Susana Mountains westward along the southerly side of the Santa Clara River Valley and into the Oxnard Plain. The system is more than 50 miles long on the mainland and may extend an equal or greater distance offshore. Several recorded earthquake epicenters on land and offshore may have been associated with the Oak Ridge fault system. Portions of the system are zoned by the state as active.
- Pine Mountain thrust fault and Big Pine fault**—These two large faults occur in the mountainous portion of Ventura County north of the Santa Ynez fault; the faults are located 9 and 16 miles north of the City of Ojai, respectively. The Pine Mountain thrust fault is reported to have ruptured the ground surface for a distance of 30 miles along its length during the northern Ventura County earthquakes of November 1852.
- San Andreas fault**—San Andreas is the longest and most significant fault in California. Because of clearly established historical earthquake activity, this fault has been designated as active by the State of California. The last major earthquake on this fault near Ventura County was the Fort Tejon earthquake of 1857, which was estimated at M 8.0 and would have caused considerable damage if there had been structures in the southern part of the county. There is a 59 percent chance that an M 6.7 quake or larger will occur on this fault within the next 30 years.

- **San Cayetano–Red Mountain–Santa Susana fault system**—This fault system consists of a major series of north-dipping reverse faults that extend over 150 miles from Santa Barbara County into Los Angeles County. Within this system, the San Cayetano fault is the greatest hazard to Ventura County; it is a major, north-dipping reverse fault that extends for 25 miles along the northern portion of the Ventura Basin. The San Fernando earthquake of 1971, described in the previous section, was caused by activity along this fault.
- **Simi–Santa Rosa fault system**—This fault system extends from the Santa Susana Mountains westward along the northern margin of the Simi and Tierra Rejada valleys and along the southern slope and crest of the Las Posas Hills to their westerly termination.
- **Ventura-Pitas Point fault**—The western half of this fault is known as the Pitas Point fault, and the eastern half is known as the Ventura fault. The Pitas Point fault extends offshore into the Pacific Ocean and is roughly 14 miles long. The Ventura fault extends into the communities of Ventura and Sea Cliff and runs roughly parallel to portions of U.S. 101 and State Route 126. The fault is roughly 12 miles long. The Ventura-Pitas Point fault is a left-reverse fault.

NEHRP Soil Type and Liquefaction Mapping

Figure 10-3 shows NEHRP soil classifications in Ventura County. Figure 10-4 shows areas in that have moderate, high or very high susceptibility to liquefaction.

10.2.3 Frequency and Severity

The California Department of Conservation probabilistic ground shaking maps, based on current information about fault zones, show the PGA that has a certain probability of being exceeded in a 50-year period. Figure 10-5 shows the expected peak horizontal ground accelerations for a probability of 10 percent. Ventura County is in a high-risk area, with a peak PGA exceeding 60 percent of gravity near the northern border of the County (California Department of Conservation 2019b). Ongoing field and laboratory studies suggest the likely maximum magnitudes and recurrence intervals for the major local faults shown in Table 10-4.

Table 10-4. Likely Maximum Magnitudes and Recurrence Intervals

Fault	Likely Maximum Magnitude	Recurrence Interval
Malibu Coast fault system	M 6.7	2,908 years
Oak Ridge fault system	M 6.9	299 years
Red Mountain fault system	M 6.8	507 years
San Andreas fault	M 8.0	300 years
San Cayetano fault system	M 6.8	150 years
Santa Susana fault system	M 6.6	138 years
Simi–Santa Rosa fault system	M 6.7	933 years
Ventura-Pitas Point fault system	M 6.9	not available

Source: (U.S. Geological Survey 2021a)

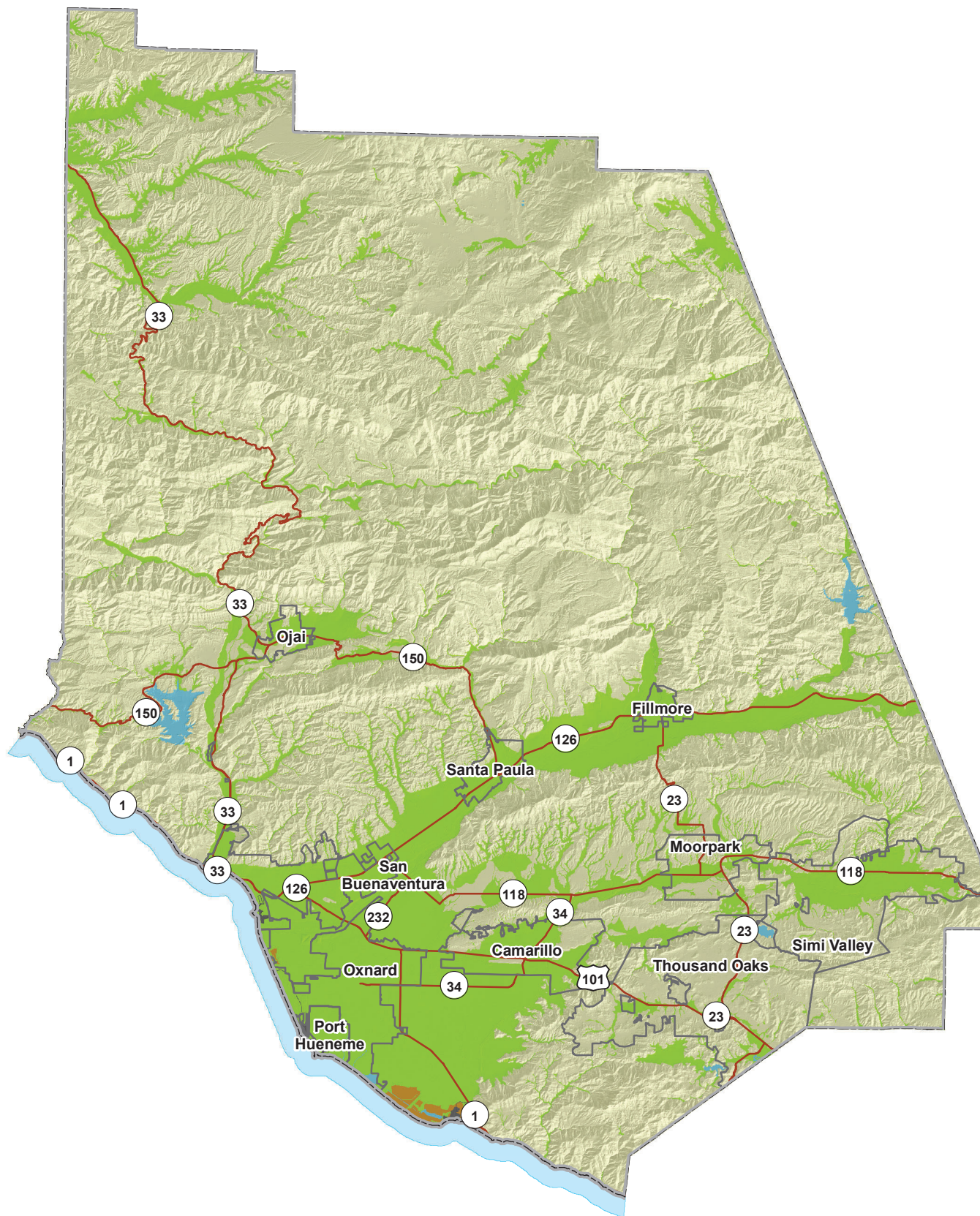
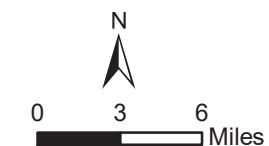
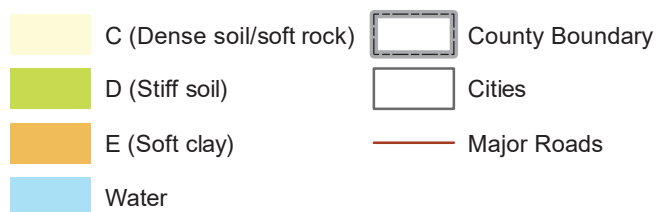


Figure 10-3. NEHRP Soil Class



Data Sources: Ventura Co.,
CGS, Esri

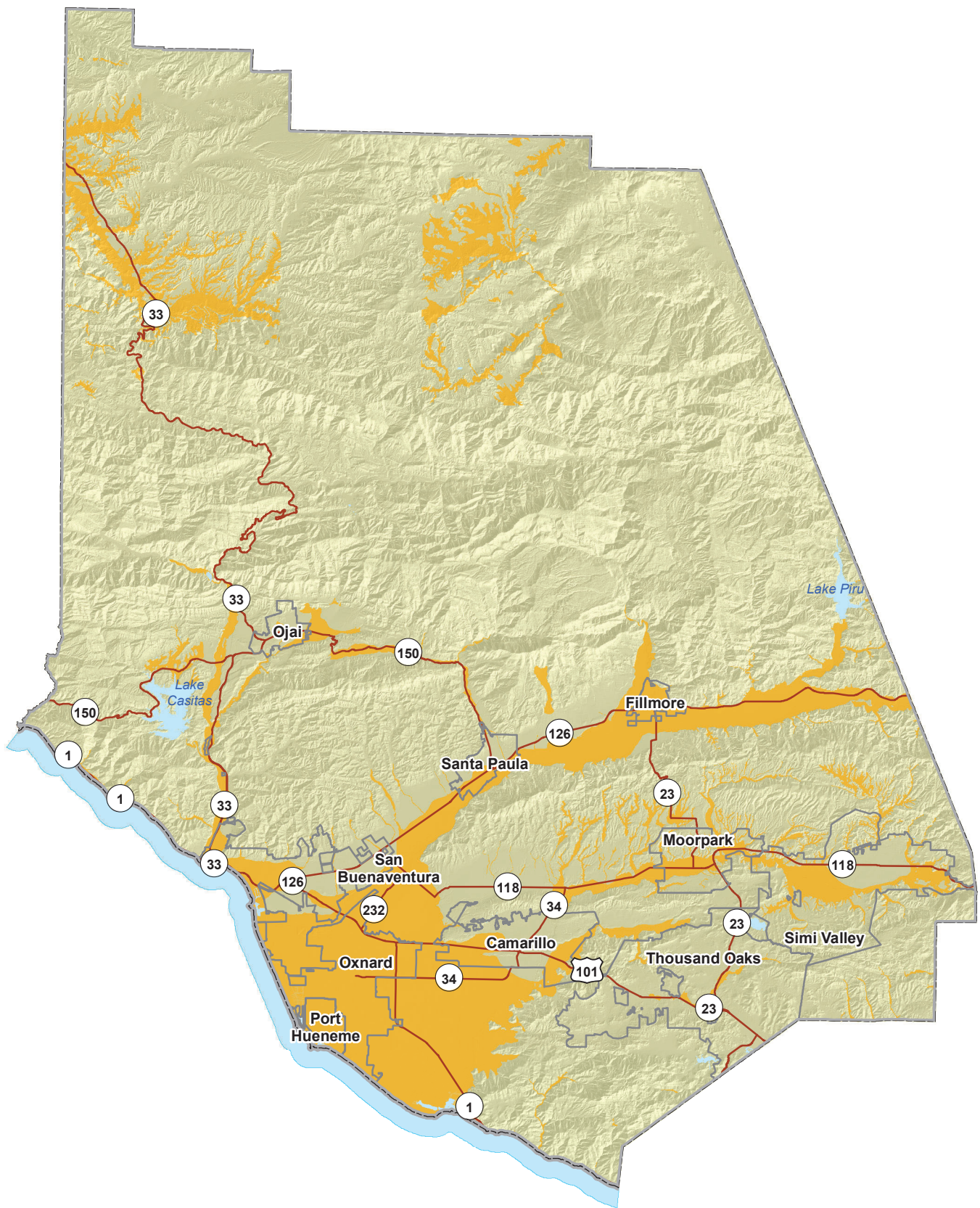


Figure 10-4. Liquefaction Zones

- Liquefaction Zones
- County Boundary
- Cities
- Major Roads

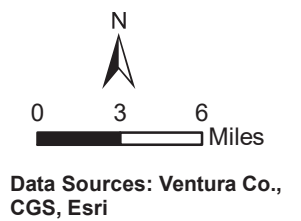
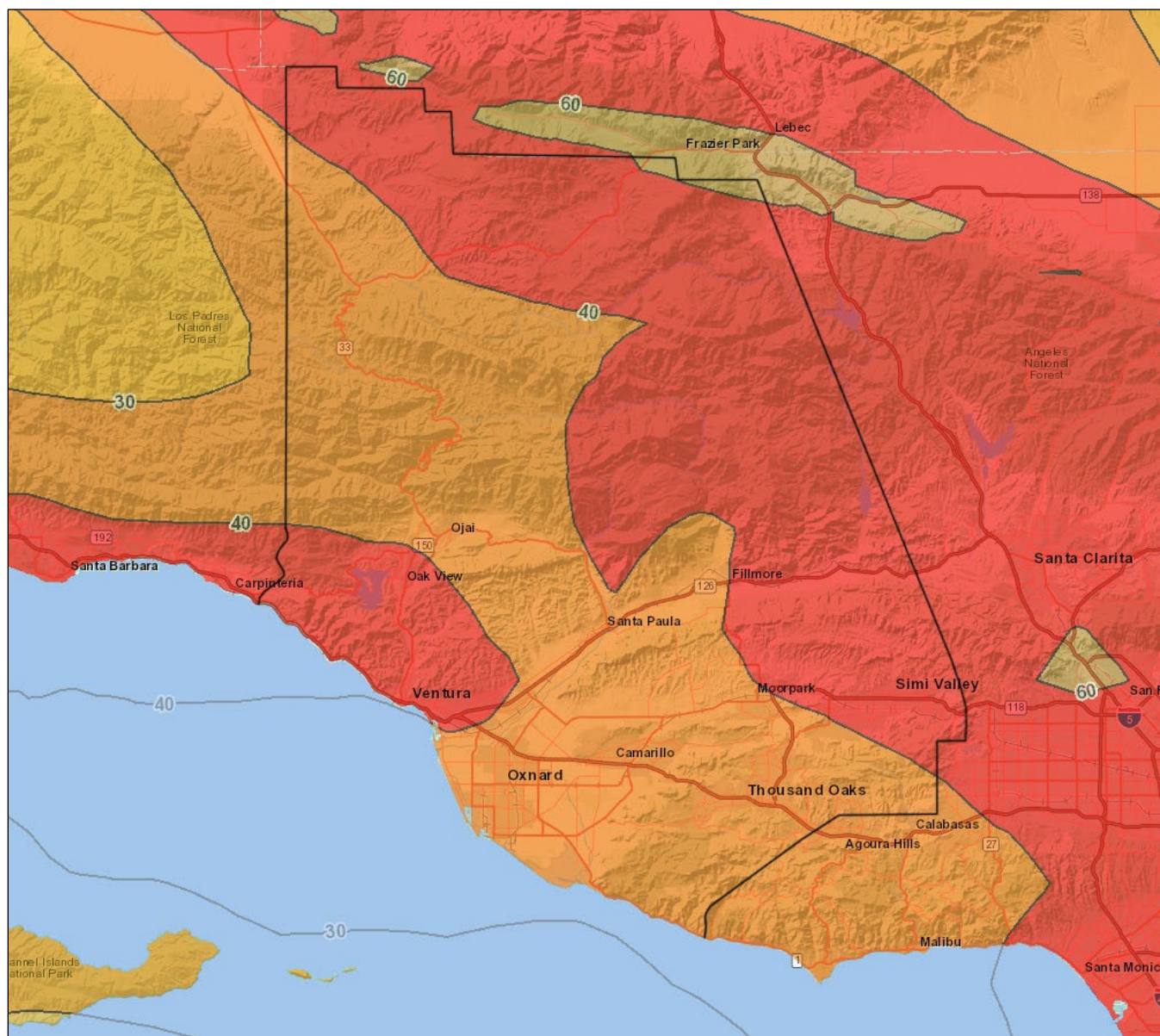


Figure 10-5. Peak Ground Acceleration (%g) with 10% Probability of Exceedance in 50 Years



10.2.4 Warning Time

There is no current reliable way to predict the day or month that an earthquake will occur at any given location. Research is being done with warning systems that detect the lower energy compressional waves (P waves) that precede the secondary waves (S waves) experienced as an earthquake. Earthquake early warning systems may provide a few seconds' or a few minutes' notice that a major earthquake is about to occur. The warning time is very short, but it could allow for someone to get under a desk, pause hazardous or high-risk work, or initiate protective automated systems in structures or critical infrastructure.

New technology is being developed for early warnings. For example, MyShake is a global smartphone seismic network for early warning that can keep users informed about earthquakes. It monitors for earthquakes using data from smartphone sensors. More information about the MyShake technology and the USGS ShakeAlert project is available online at <https://myshake.berkeley.edu/about-us.html>.

10.3 EXPOSURE

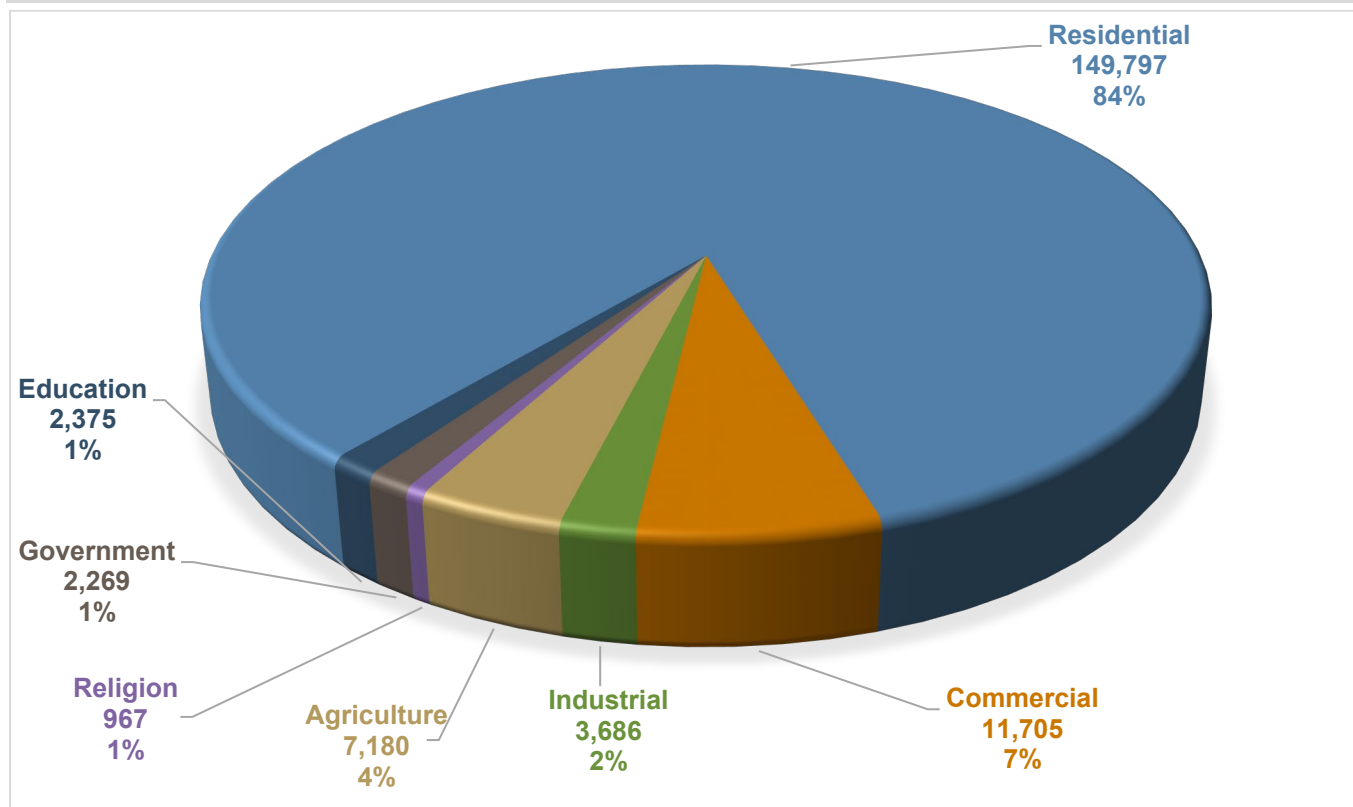
10.3.1 Population

The entire population of the planning area (843,843) is potentially exposed to direct damage from earthquakes or indirect impacts such as business interruption, road closures, and loss of function of utilities. There are estimated to be 588,376 people in the planning area living on NEHRP D or E soils, which make buildings more susceptible to damage from earthquakes. This is about 70 percent of the total population.

10.3.2 Property

According to County Assessor records, there are 262,657 buildings in the planning area. Most of the buildings (86 percent) are residential. All buildings are considered to be exposed to the earthquake hazard. There are estimated to be 178,000 buildings in the planning area (68 percent of the total) on NEHRP D or E soils, which make buildings more susceptible to damage from earthquakes. Figure 10-6 shows the Hazus-defined occupancy class of all buildings on these soil types.

Figure 10-6. Building Count by Occupancy Class on NEHRP D or E soils

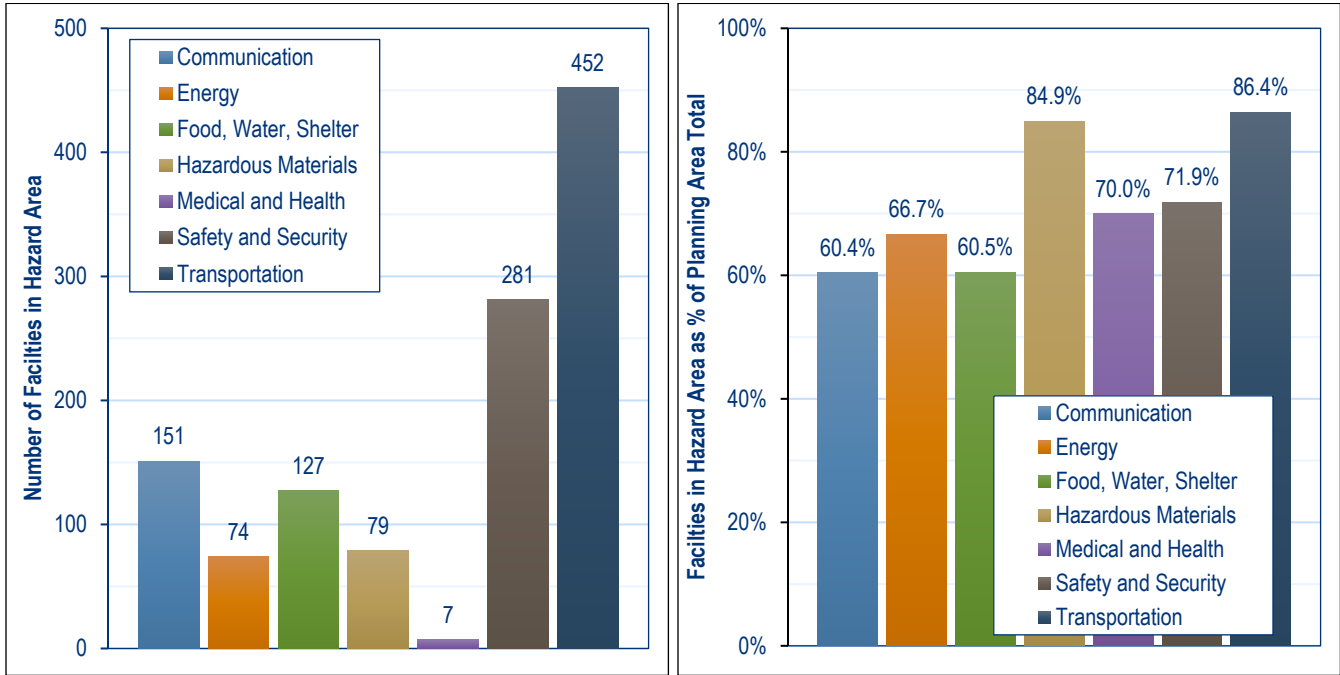


10.3.3 Critical Facilities

Since the entire planning area has exposure to the earthquake hazard, all critical facilities components are considered to be exposed. The breakdown of the numbers and types of facilities is presented in Table 4-4.

Critical facilities constructed on NEHRP Type D and E soils are particularly at risk from seismic events. Figure 10-7 shows the exposure of critical facilities built on these soils in the planning area, by type of facility. The total count of critical facilities on NEHRP Type D and E soils (1,150) represents 74 percent of the planning area total of 1,588. A breakdown by municipality is provided in Appendix D.

Figure 10-7. Critical Facilities on NEHRP D and E Soils



10.3.4 Environment

The entire planning area is exposed to the earthquake hazard, including all natural resources, habitat, and wildlife.

10.4 VULNERABILITY

Earthquake vulnerability data for the risk assessment was generated using a Hazus Level 2 (user-defined) analysis for the for the events listed in Table 10-5. The analysis results are summarized in the sections below. Detailed information, broken down by municipality, can be found in Appendix D.

10.4.1 Population

Hazus estimated impacts on persons and households in the planning area for the evaluated earthquake scenarios as summarized in Table 10-6.

Table 10-5. Earthquakes Modeled for Risk Assessment

Event	Magnitude	Focal Depth	Epicenter Location	PGA
100-Year Probabilistic	N/A	N/A	N/A	Figure 10-8
Oak Ridge Scenario	7.16	8.0 miles	34.314°N 118.960°W	Figure 10-9
San Cayetano Scenario	7.16	6.3 miles	34.539°N 118.953°W	Figure 10-10
S San Andreas Scenario	8.03	4.1 miles	38.399°N 123.110°W	Figure 10-11
Ventura-Pitas Point Scenario	7.12	6.2 miles	34.322°N 119.281°W	Figure 10-12

Table 10-6. Estimated Earthquake Impact on Persons

Scenario	Displaced Households		Persons Requiring Short-Term Shelter	
	Number	% of Total	Number	% of Total
100-Year Probabilistic	205	0.07%	147	0.02%
Oak Ridge Scenario	160	0.06%	127	0.02%
San Cayetano Scenario	14	0.01%	11	0.00%
S San Andreas Scenario	0	0%	0	0%
Ventura-Pitas Point Scenario	112	0.04%	79	0.01%

10.4.2 Property

Loss Potential

Table 10-7 summarizes Hazus estimates of earthquake damage in the planning area for the evaluated scenarios. The debris estimate includes only structural debris; it does not include additional debris that may accumulate, such as from trees. These estimates do not include losses that would occur from any local tsunamis or fires stemming from an earthquake.

Table 10-7. Estimated Impact of Earthquake Scenario Events in the Planning Area

Earthquake Scenario Event	Structure Debris		Structure + Contents Damage	
	x 1,000 Tons	Truckloads	Value	% of Total Value
100-Year Probabilistic Earthquake	503.31	20,132	\$7,983,590,943	4.4%
Oak Ridge Scenario	3,418.21	136,728	\$21,516,138,914	11.9%
San Cayetano Scenario	613.21	24,528	\$7,794,984,008	4.3%
S San Andreas Scenario	153.94	6,158	\$2,004,237,540	1.1%
Ventura-Pitas Point Scenario	2,078.98	83,159	\$14,556,417,724	8.1%

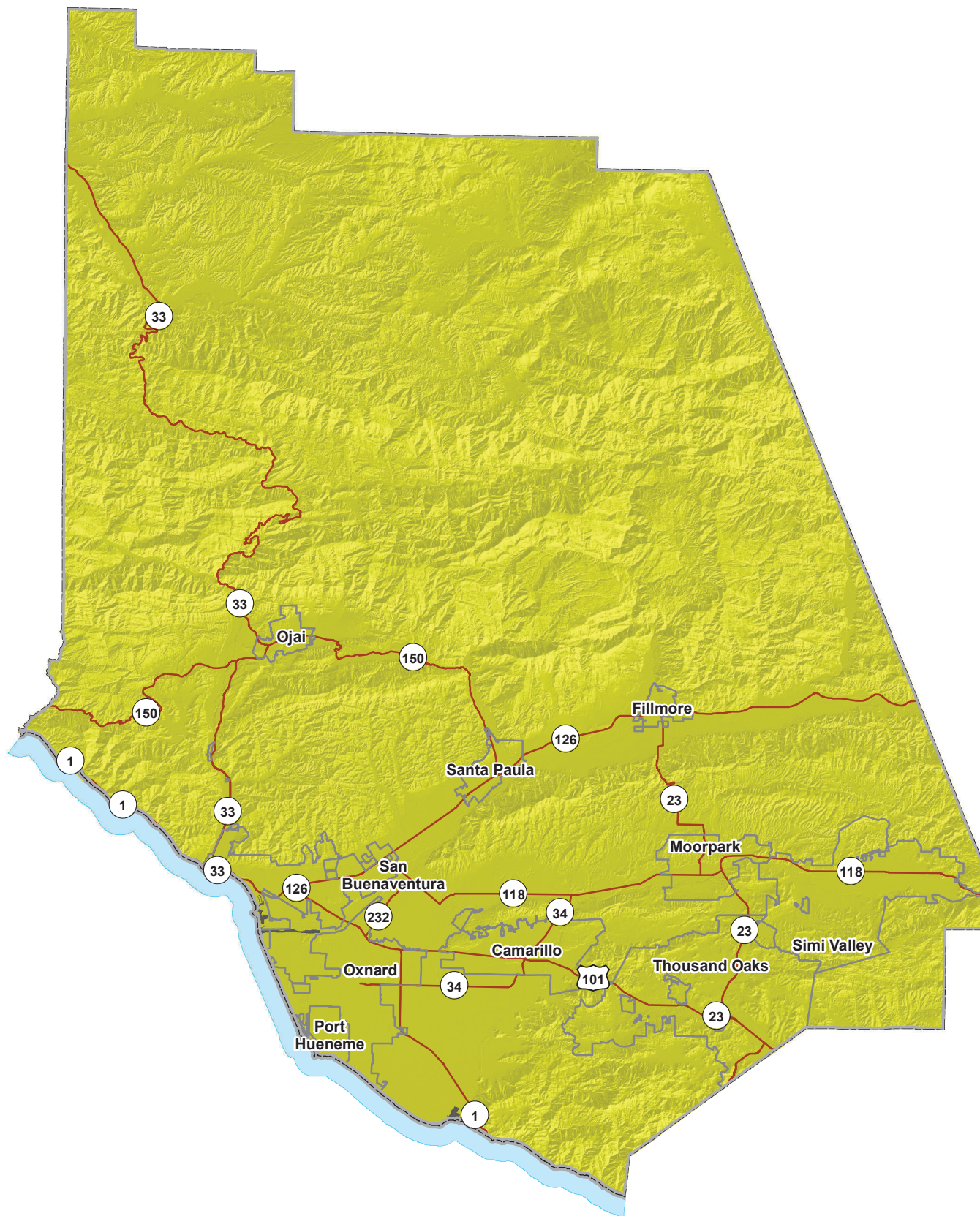


Figure 10-8. Intensity Scale for 100-Year Probabilistic Earthquake Scenario

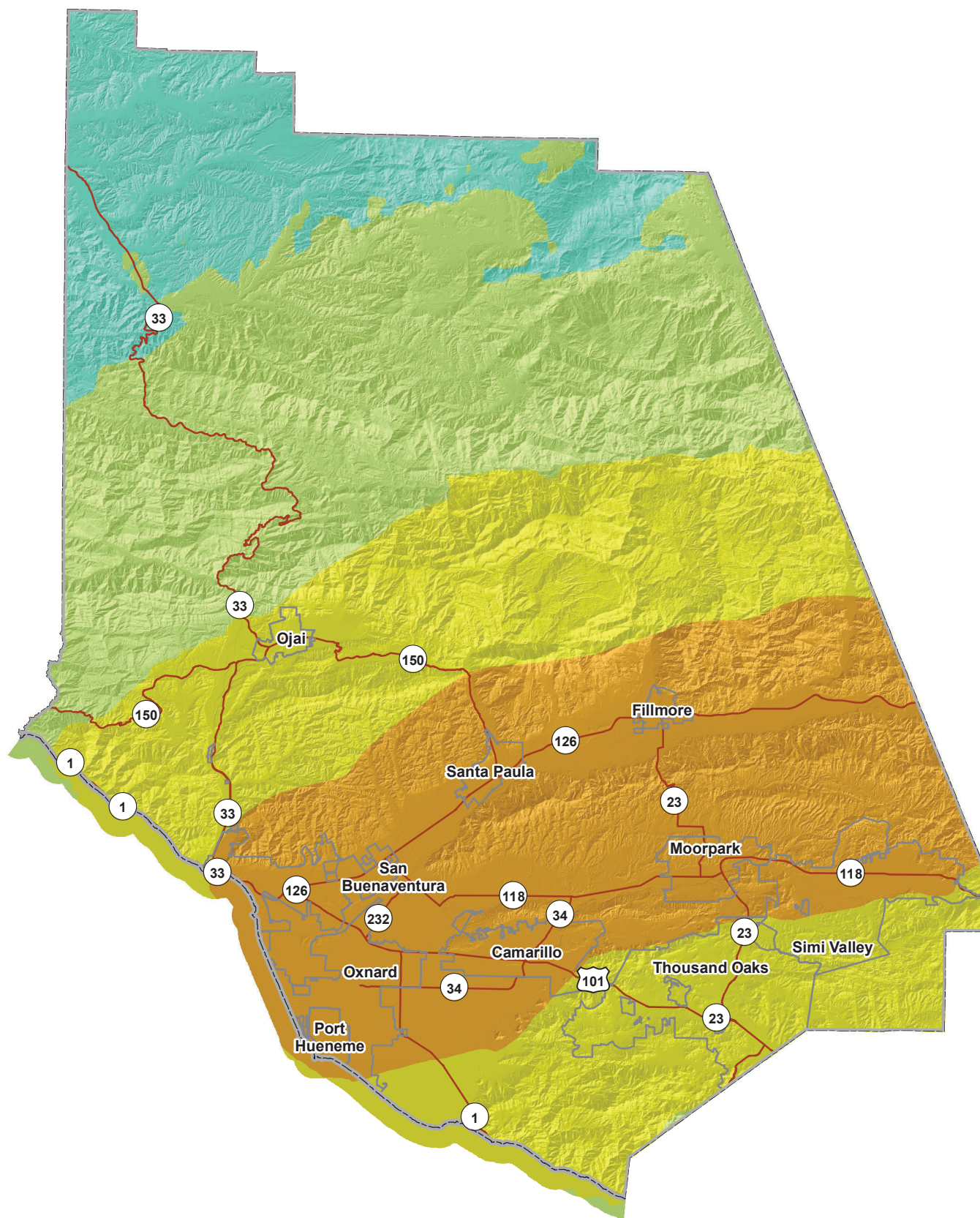


Figure 10-9. Intensity Scale for Oak Ridge M7.16 Earthquake Scenario

Mercalli Intensity Scale

- V (Moderate/Very Light)
- VI (Strong/Light)
- VII (Very Strong/Moderate)
- VIII (Severe/Moderate-Heavy)

County Boundary

Cities

Major Roads

Intensity scale described as:
(perceived shaking / potential damage)



**Data Sources: Ventura Co.,
USGS, Esri**

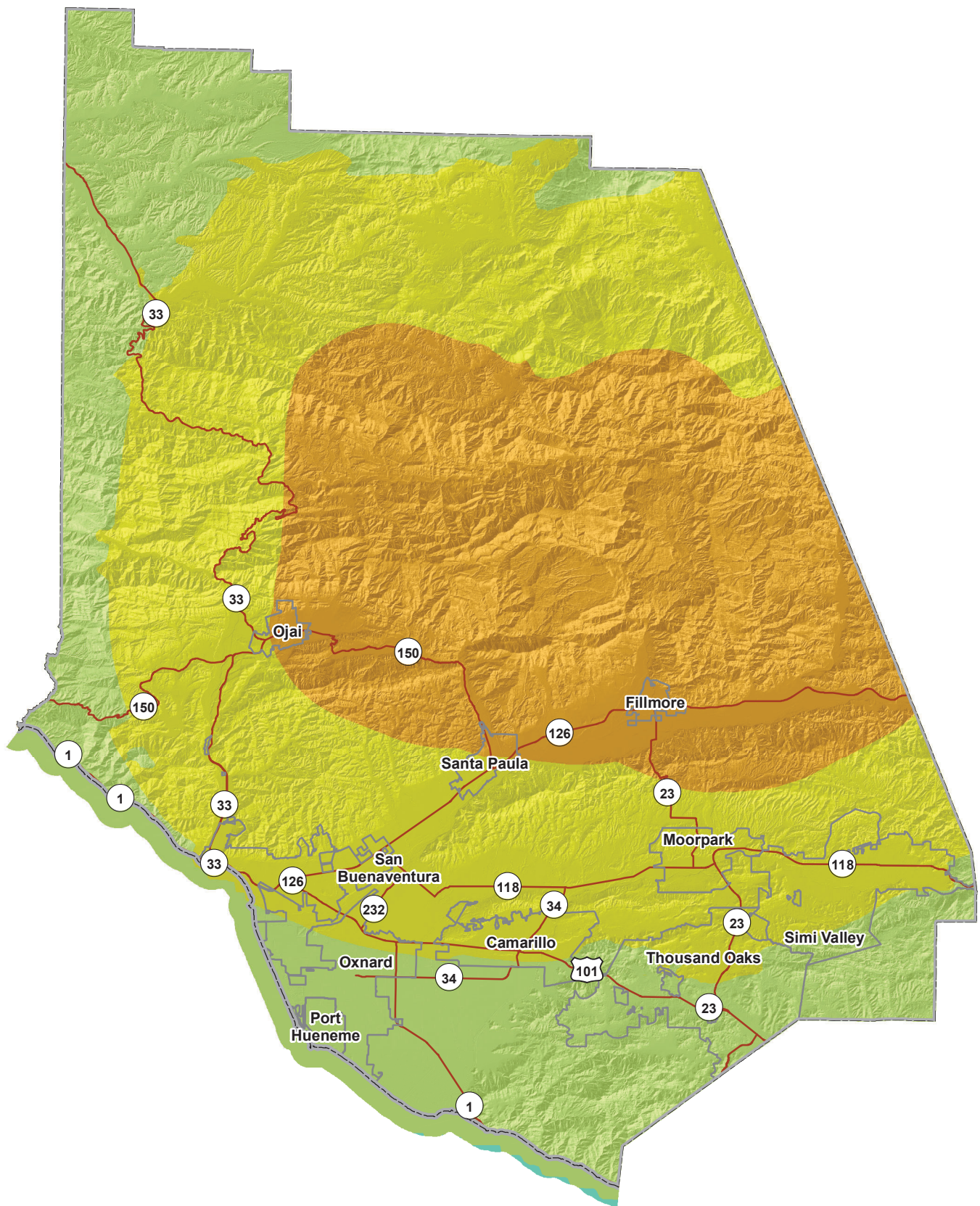


Figure 10-10. Intensity Scale for San Cayetano M7.16 Earthquake Scenario

Mercalli Intensity Scale

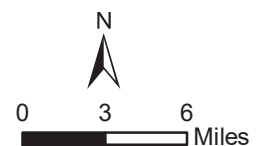
- V (Moderate/Very Light)
- VI (Strong/Light)
- VII (Very Strong/Moderate)
- VIII (Severe/Moderate-Heavy)

County Boundary

Cities

Major Roads

Intensity scale described as:
(perceived shaking / potential damage)



**Data Sources: Ventura Co.,
USGS, Esri**

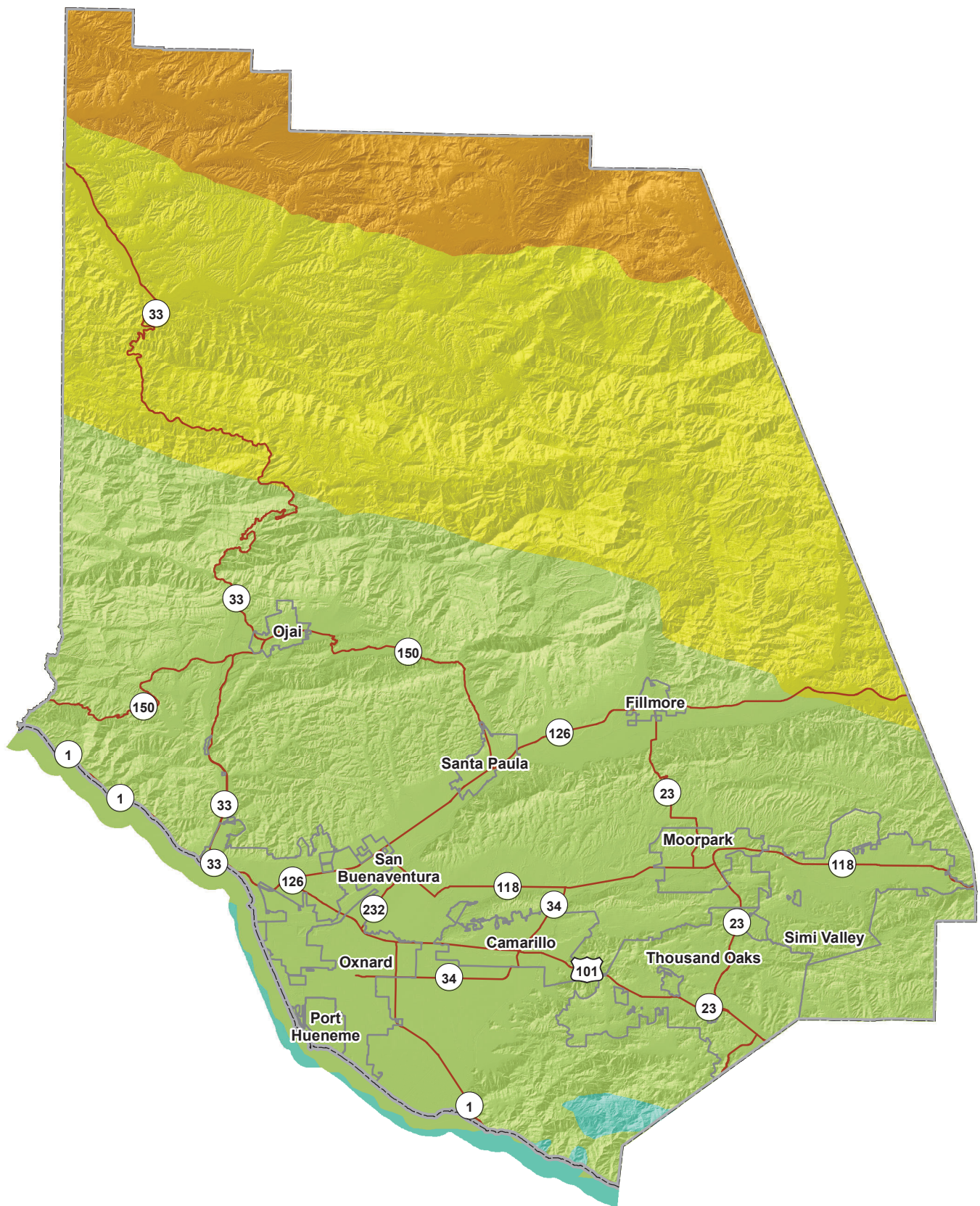


Figure 10-11. Intensity Scale for South San Andreas M8.03 Earthquake Scenario

Mercalli Intensity Scale

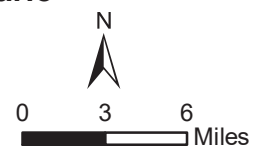
- V (Moderate/Very Light)
- VI (Strong/Light)
- VII (Very Strong/Moderate)
- VIII (Severe/Moderate-Heavy)

County Boundary

Cities

Major Roads

Intensity scale described as:
(perceived shaking / potential damage)



**Data Sources: Ventura Co.,
USGS, Esri**

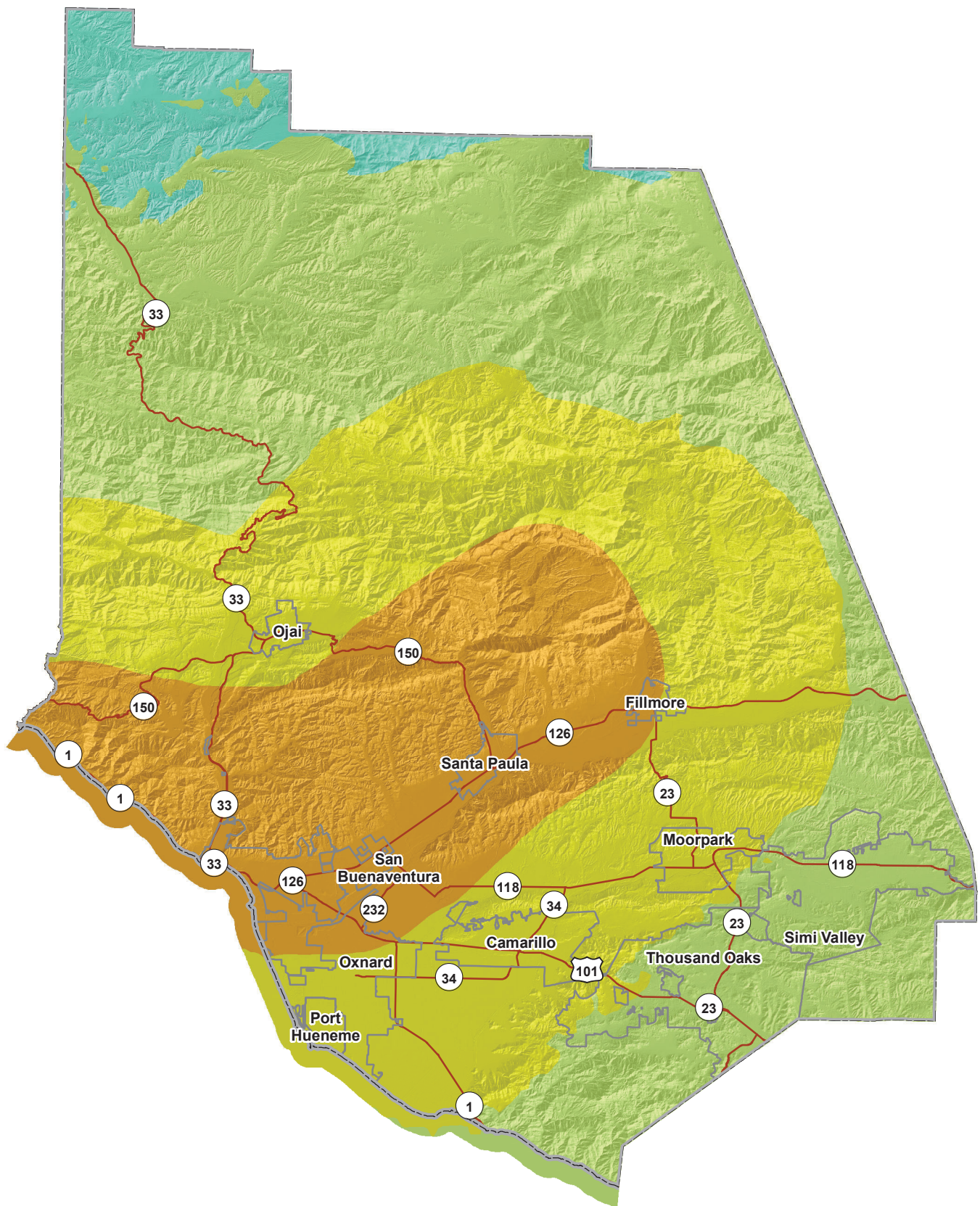


Figure 10-12. Intensity Scale for Ventura-Pitas Point M7.12 Earthquake Scenario

Mercalli Intensity Scale

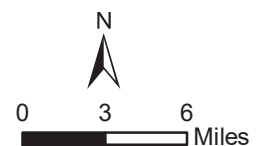
- V (Moderate/Very Light)
- VI (Strong/Light)
- VII (Very Strong/Moderate)
- VIII (Severe/Moderate-Heavy)

County Boundary

Cities

Major Roads

Intensity scale described as:
(perceived shaking / potential damage)



**Data Sources: Ventura Co.,
USGS, Esri**

Building Age

Table 10-8 identifies significant milestones in building and seismic code requirements that directly affect the structural integrity of development. Using U.S. Census estimates of housing stock age, estimates were developed of the number of housing units constructed before each of these dates. Almost 18 percent of the planning area's housing units were constructed after the Uniform Building Code was amended in 1994 to include seismic safety provisions. Housing units built before 1939 when there were no building permits, inspections, or seismic standards, account for 3.6 percent. Many of the housing units in the planning area are detached, single-family residences of wood construction, which generally perform well during earthquake events.

Table 10-8. Age of Housing Units in Planning Area

Time Period	Number of Current Planning Area Housing Units Built in Period	% of Total Housing Units	Significance of Time Frame
Pre-1939	10,455	3.6	Before 1933, there were no explicit earthquake requirements in building codes. State law did not require local governments to have building officials or issue building permits.
1940-1959	36,544	12.7	In 1940, the first strong motion recording was made.
1960-1979	123,979	42.9	In 1960, the Structural Engineers Association of California published guidelines on recommended earthquake provisions. In 1975, significant improvements were made to lateral force requirements.
1980-1999	81,631	28.2	In 1994, the Uniform Building Code was amended to include provisions for seismic safety.
2000-present	36,287	12.6	Seismic code is currently enforced.
Total	288,896	100%	

Note: Number and percent estimates are approximation as housing unit age information does not correspond directly with the time periods indicated. In addition, there are significant margins of error associated with the Census estimates.

Source: 2019 American Community Survey, Ventura County, California

10.4.3 Critical Facilities

The following are significant critical facilities that Hazus predicts would have at least a 50 percent change of at least moderate damage for the Oak Ridge scenario earthquake:

- 1 water reclamation plant
- 18 wastewater treatment facilities
- 92 hazardous material sites
- 7 hospitals
- 65 fire stations or battalion headquarters
- 6 sheriff stations
- 271 schools
- 4 port facilities
- 1 airports

Level of Damage

Hazus classifies the vulnerability of critical facilities to earthquake as no damage, slight damage, moderate damage, extensive damage, or complete damage. Hazus was used to assign a category to each critical facility in the planning area for the assessed earthquake scenarios. Figure 10-13 through Figure 10-17 show the results for the evaluated events as the average estimated probability for all facilities in each category.

Time to Return to Functionality

Hazus estimates the time to restore critical facilities to fully functional use. Results are presented as probability of being functional at specified time increments: 1, 3, 7, 14, 30 and 90 days after the event. For example, Hazus may estimate that a facility has 5 percent chance of being fully functional at Day 3, and a 95-percent chance of being fully functional at Day 90. The analysis of critical facilities in the planning area was performed for the assessed earthquake scenarios. Figure 10-18 through Figure 10-22 show the results as the average estimated probability for all facilities in each category.

Figure 10-13. Critical Facility Damage Potential, 100-Year Probabilistic Earthquake Scenario

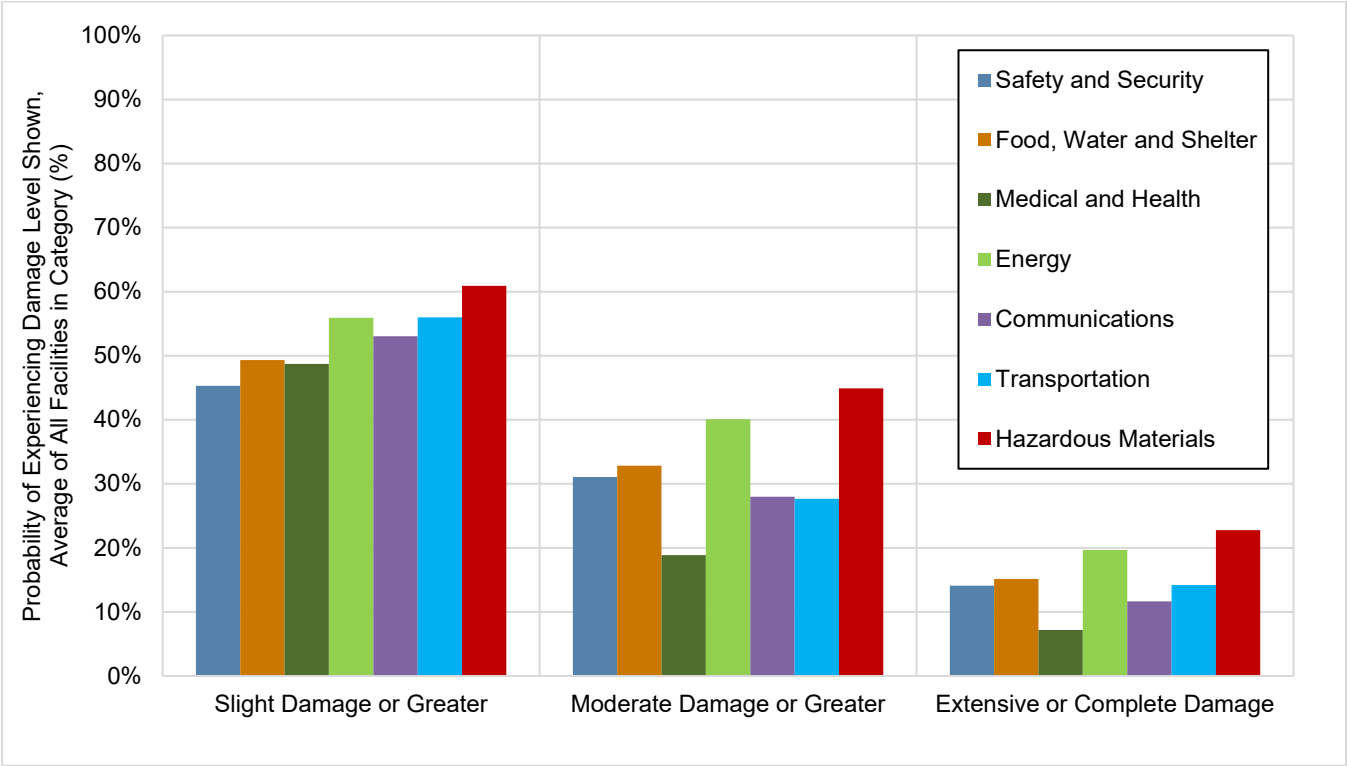


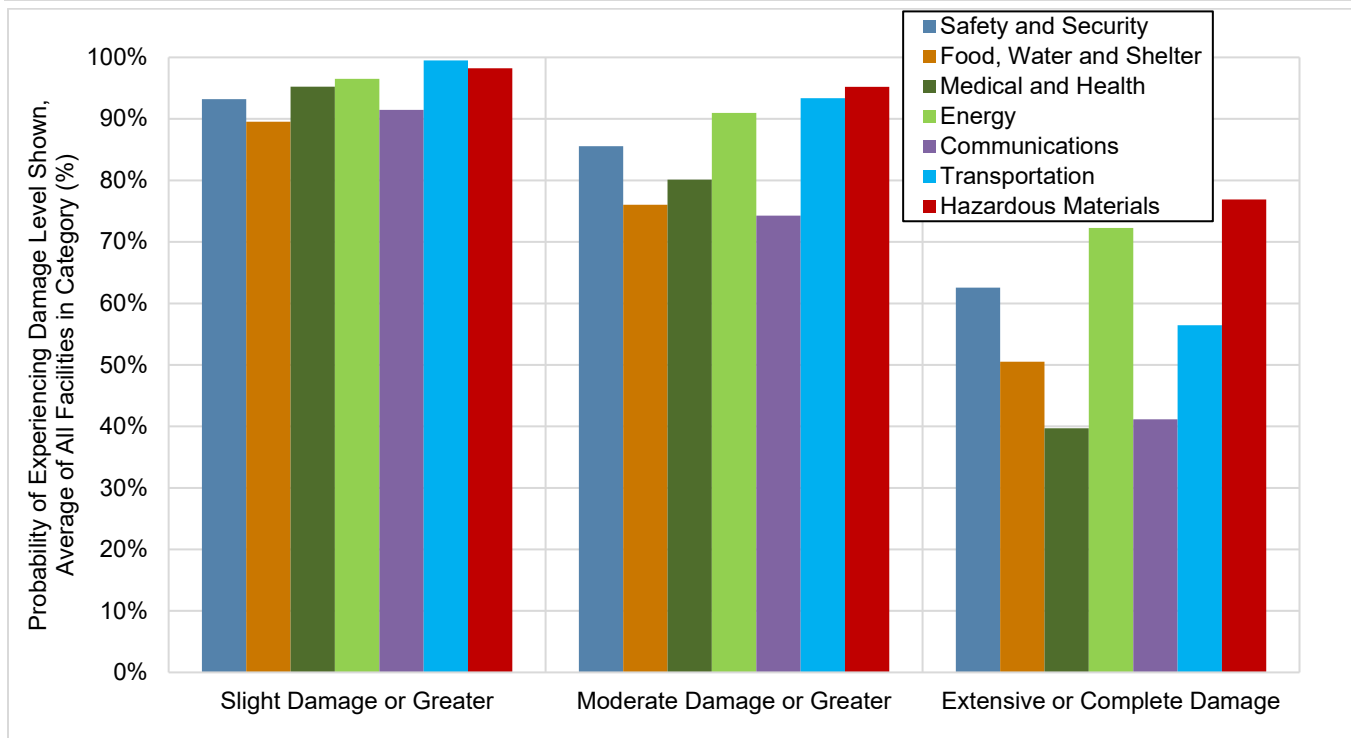
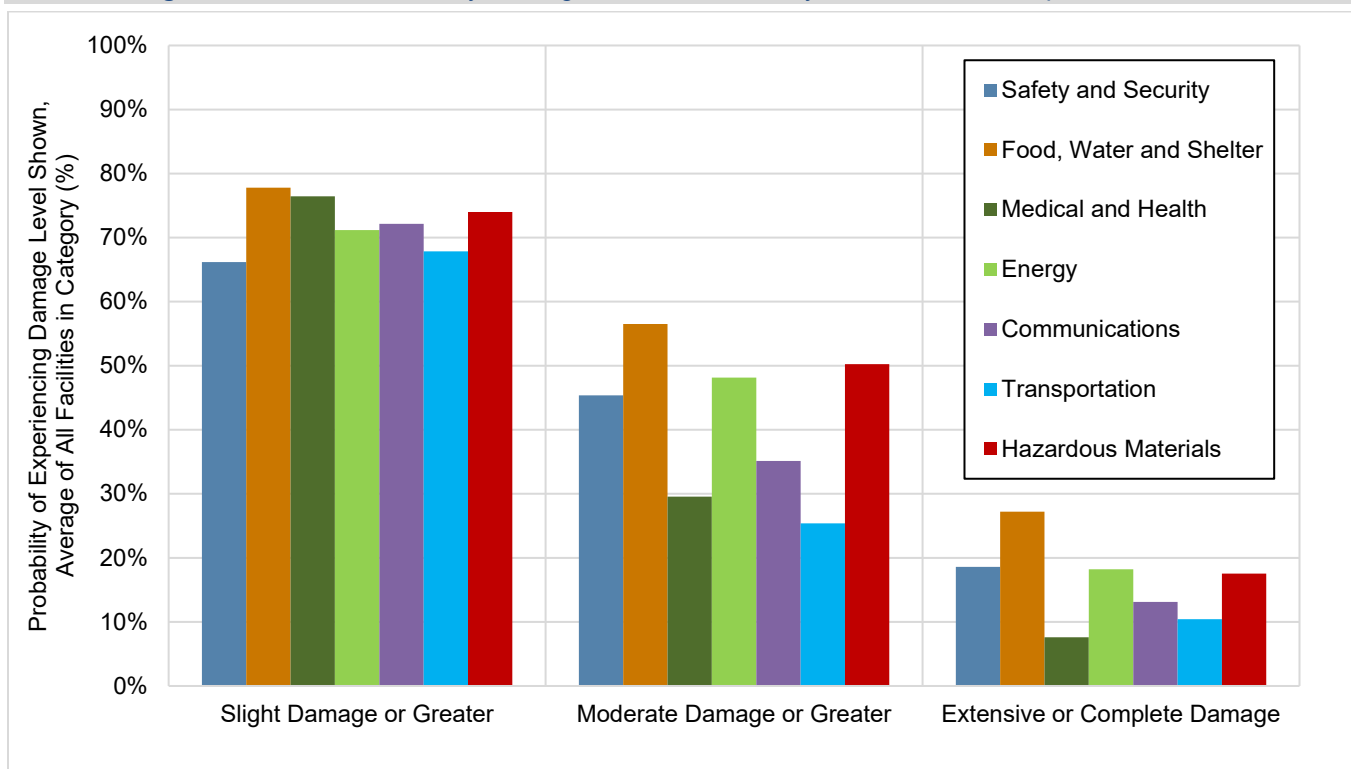
Figure 10-14. Critical Facility Damage Potential, Oak Ridge M7.16 Earthquake Scenario**Figure 10-15. Critical Facility Damage Potential, San Cayetano M7.16 Earthquake Scenario**

Figure 10-16. Critical Facility Damage Potential, S San Andreas M8.03 Earthquake Scenario

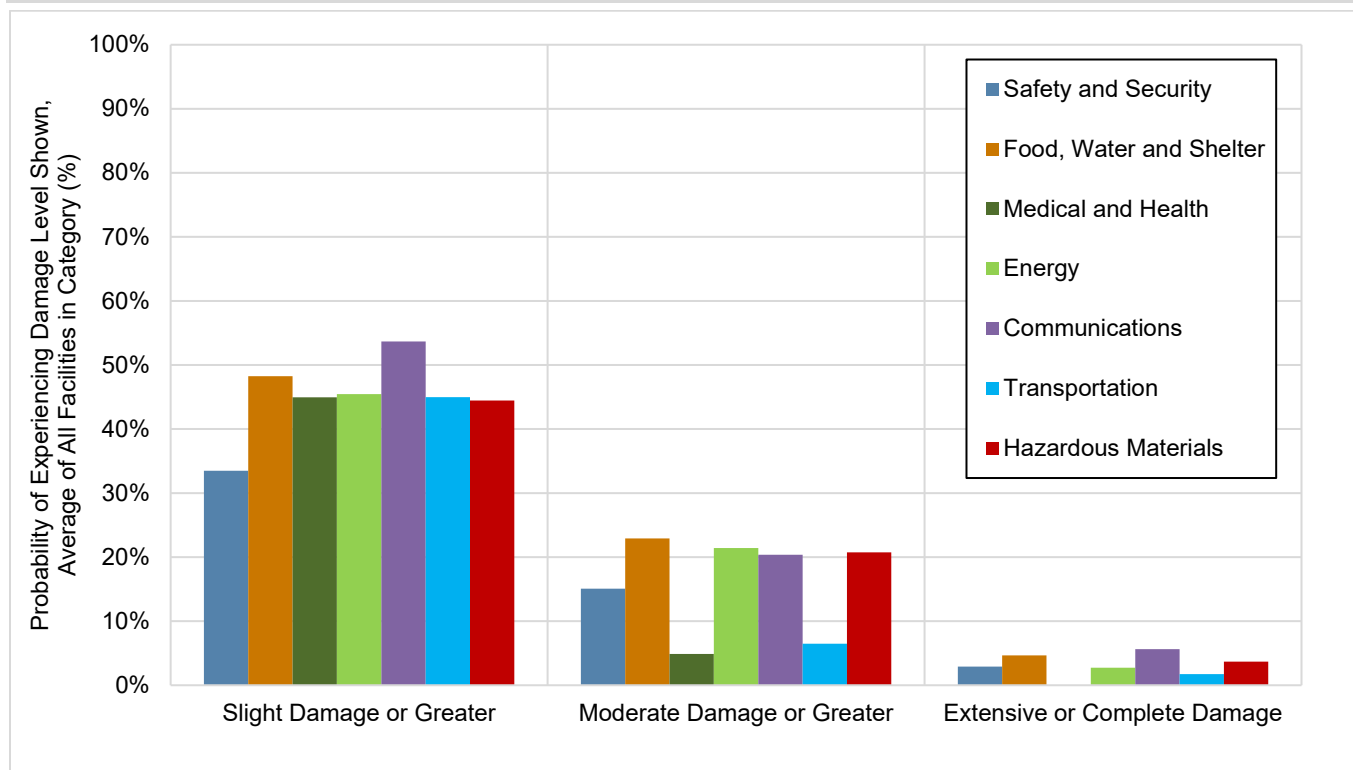


Figure 10-17. Critical Facility Damage Potential, Ventura-Pitas Point M7.12 Earthquake Scenario

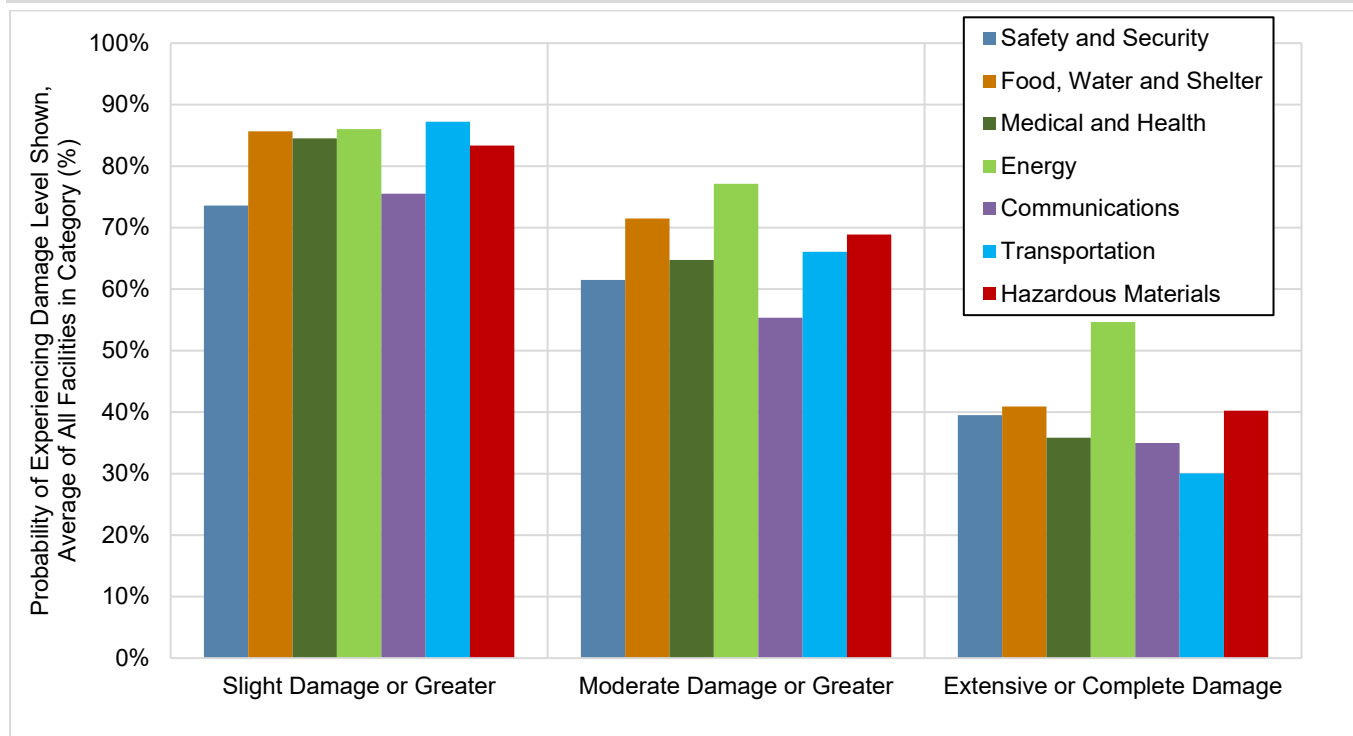


Figure 10-18. Critical Facility Functionality, 100-Year Probabilistic Earthquake Scenario

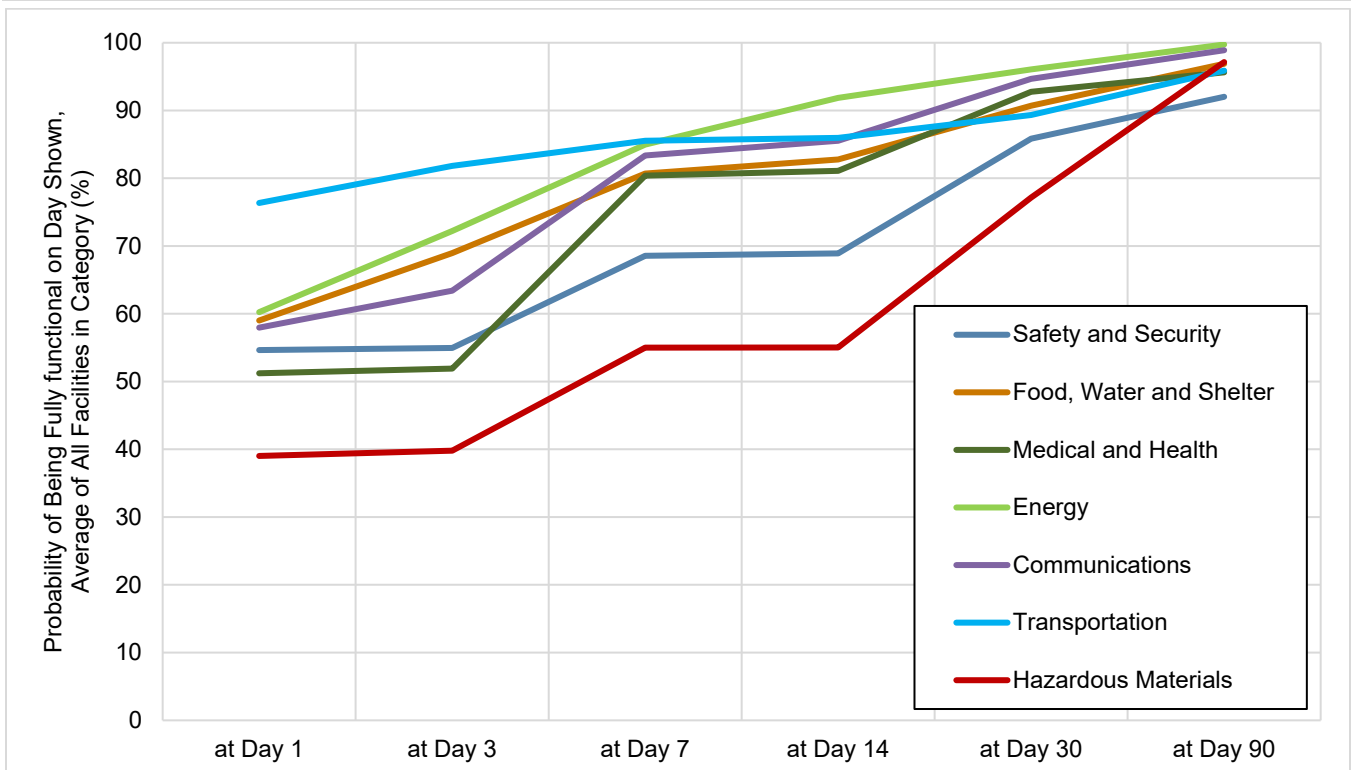


Figure 10-19. Critical Facility Functionality, Oak Ridge M7.16 Earthquake Scenario

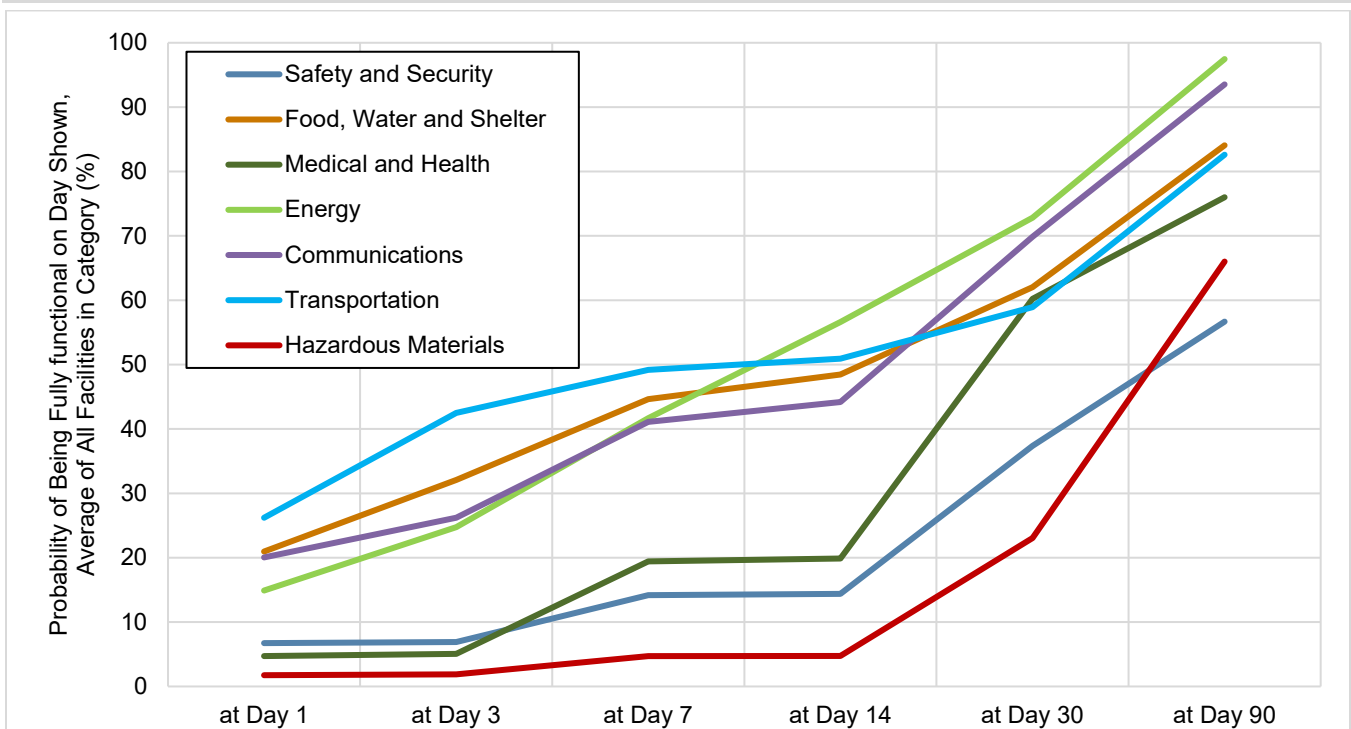


Figure 10-20. Critical Facility Functionality, San Cayetano M7.16 Earthquake Scenario

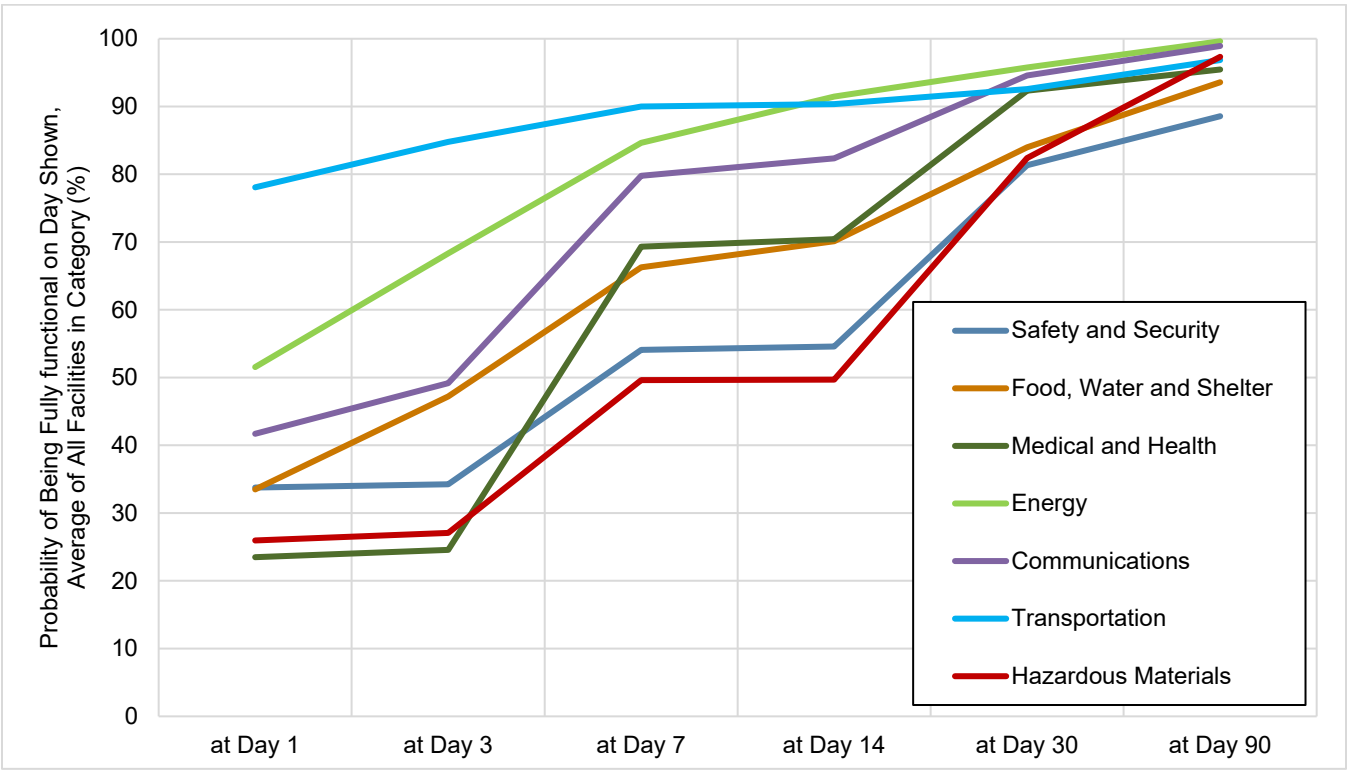


Figure 10-21. Critical Facility Functionality, S San Andreas M8.03 Earthquake Scenario

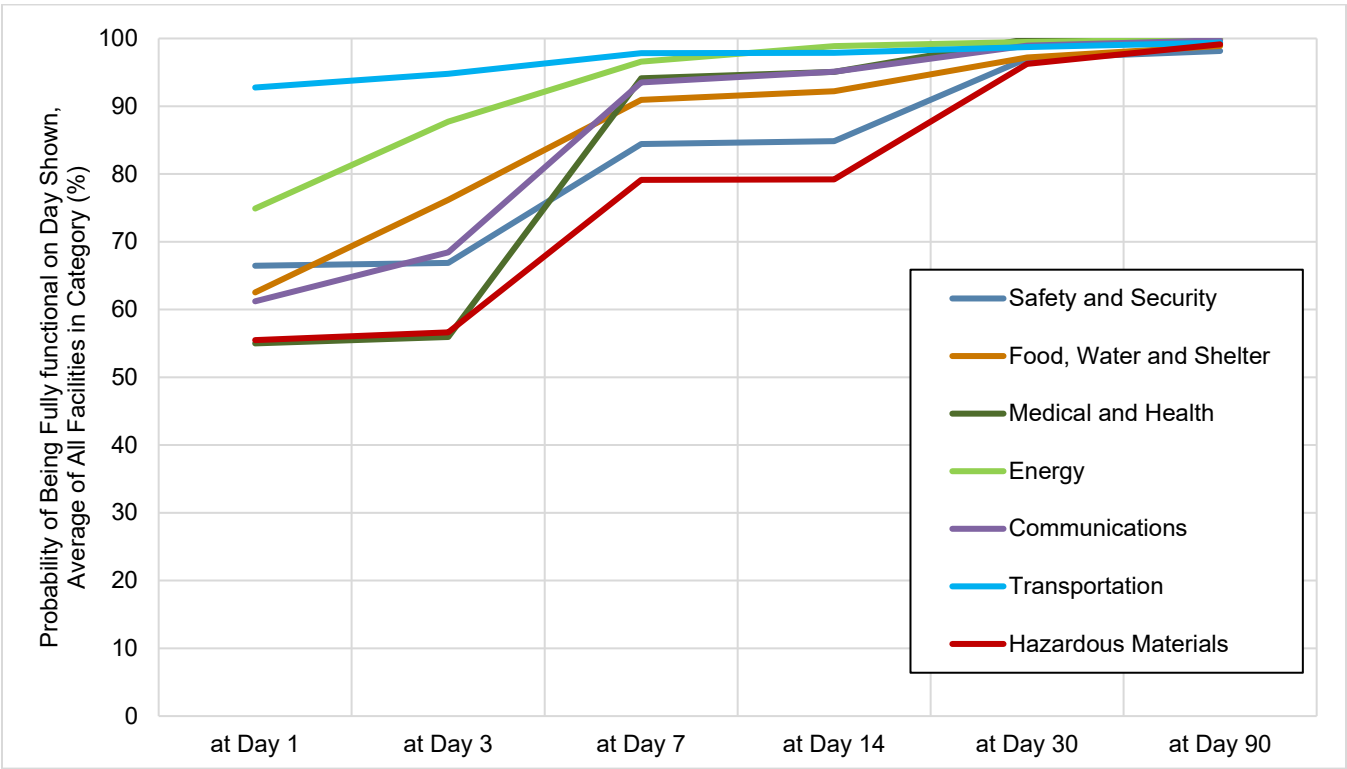
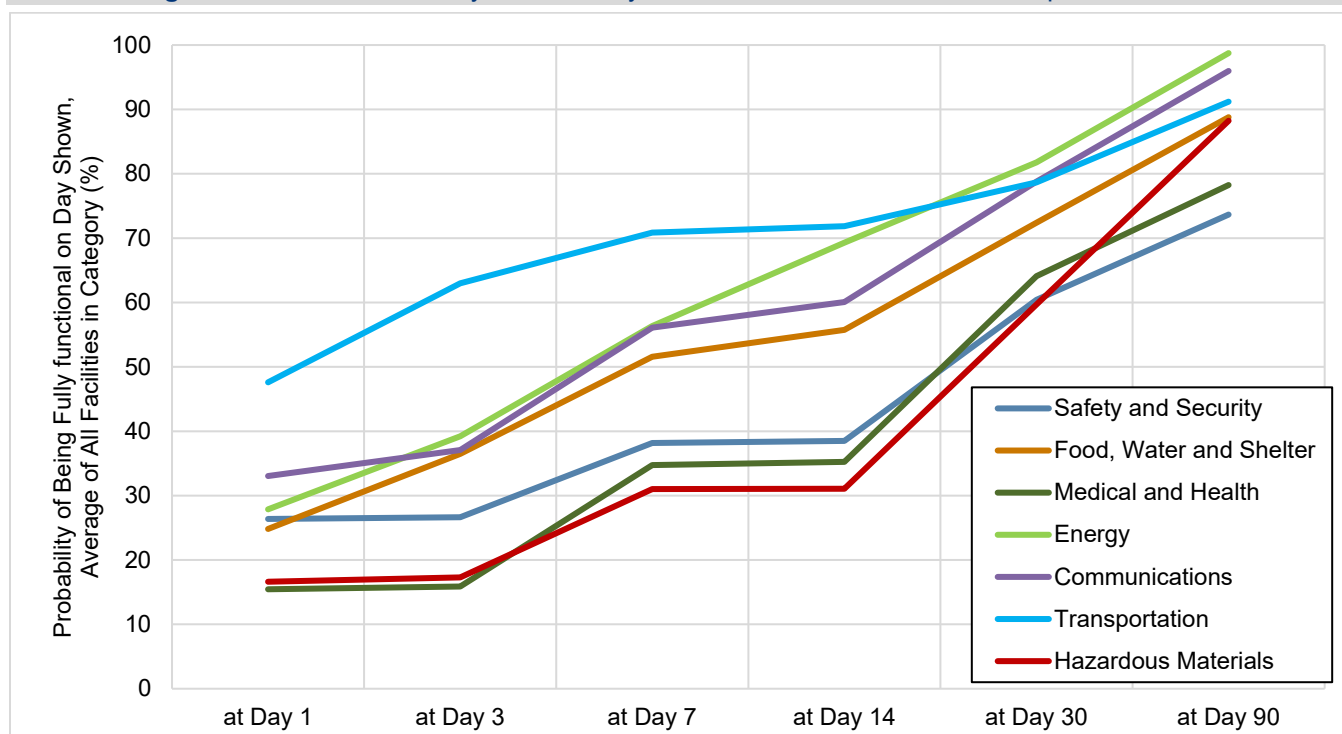


Figure 10-22. Critical Facility Functionality, Ventura-Pitas Point M7.12 Earthquake Scenario

10.4.4 Environment

Environmental problems as a result of an earthquake can be numerous. Secondary hazards will likely have some of the most damaging effects on the environment. Earthquake-induced landslides can significantly damage surrounding habitat. It is also possible for streams to be rerouted after an earthquake. Rerouting can change the water quality, possibly damaging habitat and feeding areas. Streams fed by groundwater wells can dry up because of changes in underlying geology.

10.5 SCENARIO

Based on history and geology, the planning area will be frequently impacted by earthquakes. The worst-case scenario is a higher-magnitude event (7.5 or higher) with an epicenter within 50 miles of the county. Earthquakes of this magnitude or higher could lead to massive structural failure of property on soils prone to liquefaction. Building and road foundations would lose load-bearing strength. Injuries could occur from debris, such as parapets and chimneys that could topple or be shaken loose and fall on those walking or driving below. Levees and revetments built on these poor soils would likely fail, representing a loss of critical infrastructure. An earthquake event of this magnitude located off the coast could cause a significant local tsunami that would further damage structures and jeopardize lives. An earthquake may also cause minor landslides along unstable slopes, which put at risk major roads and highways that act as sole evacuation routes. This would be even more likely if the earthquake occurred during the winter or early spring.

10.6 ISSUES

Important issues associated with an earthquake include the following:

- More information is needed on the exposure and performance of soft-story construction within the planning area.
- Based on the modeling of critical facility performance performed for this plan, a high number of facilities in the planning area are expected to suffer complete or extensive damage from scenario events. These facilities are prime targets for structural retrofits.
- Critical facility owners should be encouraged to create or enhance Continuity of Operations Plans using the information on risk and vulnerability contained in this plan.
- Geotechnical standards should be established that take into account the probable impacts from earthquakes in the design and construction of new or enhanced facilities.
- There are a large number of earthen dams within the planning area. Dam failure warning and evacuation plans and procedures should be reviewed and updated to reflect the dams' risk potential associated with earthquake activity in the region. The County levees should also be included in any assessments for earthquake risk.
- Earthquakes could trigger other natural hazard events such as dam failures, flooding, fire, and landslides, which could severely damage the County.
- A worst-case scenario would be the occurrence of a large seismic event during a flood or high-water event. Levees would fail at multiple locations, increasing the impacts of the individual events.
- Residents are expected to be self-sufficient up to 3 days after a major earthquake without government response agencies, utilities, private-sector services, and infrastructure components. Education programs are currently in place to facilitate development of individual, family, neighborhood, and business earthquake preparedness. Government alone can never make this region fully prepared. It takes individuals, families, and communities working in concert with one another to truly be prepared for disaster.
- After a major seismic event, Ventura County is likely to experience disruptions in the flow of goods and services resulting from the destruction of major transportation infrastructure across the broader region.

11. FLOOD

11.1 GENERAL BACKGROUND

11.1.1 Types of Flooding in the Planning Area

Riverine Floods

Riverine flooding is overbank flooding of rivers and streams. Natural processes of riverine flooding add sediment and nutrients to fertile floodplain areas. Flooding in large river systems typically results from large-scale weather systems that generate prolonged rainfall over a wide geographic area, causing flooding in hundreds of smaller streams, which then drain into the major rivers. Two types of flood hazards are generally associated with riverine flooding:

- **Inundation**—Inundation occurs when floodwater is present and debris flows through an area not normally covered by water. These events cause minor to severe damage, depending on velocity and depth of flows, duration of the flood event, quantity of logs and other debris carried by the flows, and amount and type of development and personal property along the floodwater's path.
- **Channel Migration**—Erosion of banks and soils worn away by flowing water, combined with sediment deposition, causes migration or lateral movement of a river channel across a floodplain. A channel can also abruptly change location (termed "avulsion"); a shift in channel location over a large distance can occur within as short a time as one flood event.

The frequency and severity of flooding for river systems are based on discharge probability. The discharge probability is the probability that a certain river discharge (flow) level will be equaled or exceeded in a given year. Flood studies use historical records to determine the probability of occurrence for different discharge levels and storm surge levels. These measurements reflect statistical averages only; it is possible for multiple floods with a low probability of occurrence (such as a 1-percent-annual-chance flood) to occur in a short time period. For riverine flooding, the same flood event can have flows at different points on a river that correspond to different probabilities of occurrence.

Shallow area flooding is a special type of riverine flooding. FEMA defines shallow flood hazards as areas inundated by the 1-percent-annual-chance flood with flood depths of only 1 to 3 feet. These areas are generally flooded by low-velocity sheet flows of water.

Stormwater Runoff Floods

Stormwater flooding is a result of local drainage issues and high groundwater levels. Locally, heavy rain, especially during high lunar tide events, may induce flooding within areas other than delineated

floodplains or along recognizable channels due to presence of storm system outfalls inadequate to provide gravity drainage into the adjacent body of water. If local conditions cannot accommodate intense precipitation through a combination of infiltration and surface runoff, water may accumulate and cause flooding problems. Flooding issues of this nature generally occur within areas with flat gradients, and generally increase with urbanization, which speeds accumulation of floodwaters because of impervious areas. Shallow street flooding can occur unless channels have been improved to account for increased flows.

Urban drainage flooding is caused by increased water runoff due to urban development and drainage systems. Drainage systems are designed to remove surface water from developed areas as quickly as possible to prevent localized flooding on streets and within other urban areas. These systems utilize a closed conveyance system that channels water away from an urban area to surrounding streams, and bypasses natural processes of water filtration through the ground, containment, and evaporation of excess water. Because drainage systems reduce the amount of time surface water takes to reach surrounding streams, flooding in those streams can occur more quickly and reach greater depths than prior to development within that area.

Flash Floods

The National Weather Service defined a flash flood as follows (National Weather Service 2009a):

“a rapid and extreme flow of high water into a normally dry area, or a rapid water level rise in a stream or creek above a predetermined flood level, beginning within 6 hours of the causative event (e.g., intense rainfall, dam failure). However, the actual time threshold may vary in different parts of the country. Ongoing flooding can intensify to flash flooding in cases where intense rainfall results in a rapid surge of rising flood waters”

Flash floods can tear out trees, undermine buildings and bridges, and scour new channels. In urban areas, flash flooding is an increasingly serious problem due to removal of vegetation and replacement of ground cover with impermeable surfaces such as roads, driveways, and parking lots. The greatest risk from flash floods is occurrence with little to no warning. Major factors in predicting potential damage are intensity and duration of rainfall, and steepness of watershed and streams.

Coastal Floods

Coastal floods are usually caused by coastal storms that, when combined with normal tides, push water toward the shore. This is commonly referred to as storm surge. The result can be waves that extend further inland, causing damage to development that would not normally be subject to wave action. Coastal floodplains are adjacent to the ocean and other tidally influenced areas. The floodplains may be broad or narrow, depending on local topography and natural flood defenses such as dune systems or tidal wetlands.

Levee-Failure Floods

Levees can help reduce the risk of flooding, but they do not eliminate the risk. Levees deteriorate over time and must be maintained to retain their effectiveness. A levee failure can occur when a levee is damaged, experiences surface or foundation erosion, or is overtopped by floodwaters or storm surge

that are higher than the lowest crest of the levee system. When levees fail or are overtopped, the results can be catastrophic. The resulting damage can be greater than if the levee had not been built.

11.1.2 FEMA Regulatory Flood Zones

The extent of flooding associated with a 1-percent annual probability of occurrence (also called the base flood) is used as a regulatory boundary by many agencies. Also referred to as the special flood hazard area (SFHA), this boundary is a convenient tool for assessing vulnerability and risk in flood-prone communities. Many communities have maps that show the extent and likely depth of flooding for the base flood. Corresponding water-surface elevations describe the elevation of water that will result from a given discharge level, which is one of the most important factors used in estimating flood damage.

Mapped Flood Zones

FEMA defines flood hazard areas as areas expected to be inundated by a flood of a given magnitude. These areas are determined via statistical analyses of records of river flow, storm tides, and rainfall; information obtained through consultation with the community; floodplain topographic surveys; and hydrologic and hydraulic analyses. Flood hazard areas are delineated on DFIRMs (Digital Flood Insurance Rate Maps), which provide the following information:

- Locations of specific properties in relation to special flood hazard areas
- Base flood elevations (1-percent-annual-chance) at specific sites
- Magnitudes of flood in specific areas
- Undeveloped coastal barriers where flood insurance is not available
- Regulatory floodways and floodplain boundaries (1-percent and 0.2-percent-annual-chance floodplains).

Land covered by floodwaters of the base flood is the special flood hazard area on a DFIRM—an area where NFIP floodplain management regulations must be enforced, and where mandatory purchase of flood insurance applies. This regulatory boundary is a convenient tool for assessing vulnerability and risk in flood-prone communities, because many communities have maps showing the extent of the base flood and likely depths that will occur.

The base flood elevation (the water elevation of a flood that has a 1-percent chance of occurring in any given year) is one of the most important factors in estimating potential damage from flooding. A structure within a 1-percent-annual-chance floodplain has a 26-percent chance of undergoing flood damage during the term of a 30-year mortgage. The 1-percent-annual-chance flood is used by the NFIP as the basis for insurance requirements nationwide. DFIRMs also depict 0.2-percent-annual-chance flood designations.

DFIRMs and other flood hazard information can be used to identify the expected spatial extent of flooding from a 1 percent and 0.2 percent-annual-chance event. They depict the following SFHAs and other areas:

- **Zone A (Also known as Unnumbered A-zones)**—SFHAs where no base flood elevations or depths are shown because detailed hydraulic analyses have not been performed.

- **Zones A1-30 and AE**—SFHAs that are subject to inundation by the base flood, determined using detailed hydraulic analysis. Base flood elevations are shown within these zones.
- **Zone AH**—SFHAs that are subject to shallow flooding, usually in the form of a pond, with an average depth ranging from 1 to 3 feet. Base flood elevations derived from detailed analyses are shown at selected intervals within these zones.
- **Zone AO**—SFHAs subject to inundation by types of shallow flooding where average depths are between 1 and 3 feet. These are normally areas prone to shallow sheet flow flooding on sloping terrain.
- **Zone AR**—Areas with a temporarily increased flood risk due to the building or restoration of flood control system (such as a levee or a dam). Mandatory flood insurance purchase requirements apply, but rates do not exceed the rates for unnumbered A zones if the structure is built or restored in compliance with Zone AR floodplain management regulations.
- **Zone A99**—Areas with a 1 percent annual chance of flooding that will be protected by a federal flood control system where construction has reached specified legal requirements. No depths or base flood elevations are shown within these zones.
- **Zone B and X (shaded)**—Zones where the land elevation has been determined to be above the base flood elevation, but below the 500-year flood elevation. These zones are not SFHAs.
- **Zones C and X (unshaded)**—Zones where the land elevation has been determined to be above both the base flood elevation and the 500-year flood elevation. These zones are not SFHAs.

Floodways

The FEMA designated floodway is the channel of a water course and portion of the adjacent floodplain that is needed to convey the base flood without increasing flood levels by more than a specified amount (typically, 1 foot). A floodway may be designated within the SFHA where the deepest, highest velocity flow is expected and any infrastructure will be at risk. Floodways should be kept free of obstructions and development to allow floodwaters to move downstream unobstructed. Any development in a floodway is subject to severe damage and high risks for occupants and emergency responders.

Unmapped Flood Areas

Flood damage may occur outside of SFHAs. FEMA typically does not designate SFHAs for areas subject to flooding from local drainage problems, particularly in urban areas; drainage basins of less than 1 square mile in area; or hillside areas subject to runoff, erosion, and mudflow. FEMA does not map flooding along the length of all streams or in areas that are undeveloped.

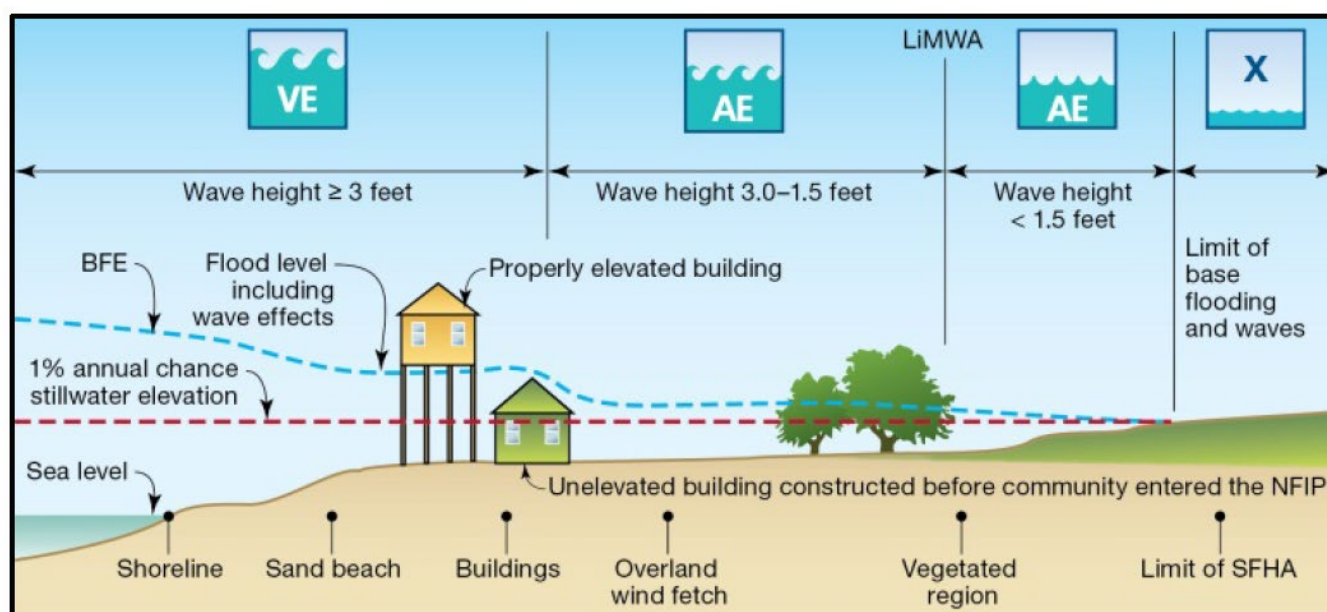
Coastal Flood Hazard Zones

Coastal floods are characterized by inundation of normally dry lands by ocean waters, often caused by storm surge associated with severe storms, tsunamis, or extreme high tide events that result in shallow flooding of low lying coastal areas. Storm surge floods typically result in coastal erosion, salinization of freshwater sources, and contamination of water supplies. These floods are also responsible for significant agricultural losses, loss of life, and damage to public and private structures and infrastructure. DFIRMS depict two coastal flood hazard zones:

- Zone VE, where the flood elevation includes wave heights equal to or greater than 3 feet.
- Zone AE, where flood elevation includes wave heights less than 3 feet.

Wave heights as low as 1.5 feet can cause significant damage to structures built without consideration of coastal hazards. Newer DFIRMs for coastal areas include a line showing the limit of moderate wave action (LiMWA), the inland limit of the area expected to receive 1.5-foot or greater breaking waves during the 1-percent annual-chance flood event (Figure 11-1). The area between Zone VE and the LiMWA is subject to flood hazards associated with floating debris and high-velocity flow that can erode and scour building foundations and, in extreme cases, cause foundation failure. Addition of LiMWA area to DFIRMs alerts property owners that their properties may be affected by 1.5-foot or higher breaking waves, and may therefore be at significant risk during a 1-percent-annual-chance flood event (Federal Emergency Management Agency 2020).

Figure 11-1. Limit of Moderate Wave Action



Source: *Journal of Marine Science and Engineering* 2020

11.1.3 Floodplains

A floodplain is the area adjacent to a river, creek, lake or the ocean that becomes inundated during a flood. Riverine floodplains may be broad, as when a river crosses an extensive flat landscape, or narrow, as when a river is confined in a canyon.

When floodwaters recede after a flood event, they leave behind layers of rock and mud. These gradually build up to create a new floor of the floodplain. Floodplains generally contain unconsolidated sediments (accumulations of sand, gravel, loam, silt, and/or clay), often extending below the bed of the stream. These sediments provide a natural filtering system, with water percolating back into the ground and replenishing groundwater. These are often important aquifers, the water drawn from them being filtered compared to the water in the stream. Fertile, flat reclaimed floodplain lands are commonly used for agriculture, commerce and residential development.

Connections between a river and its floodplain are most apparent during and after major flood events. These areas form a complex physical and biological system that not only supports a variety of natural resources but also provides natural flood and erosion control. When a river is separated from its floodplain with levees and other flood control facilities, natural, built-in benefits can be lost, altered, or significantly reduced.

Floodplain Ecosystems and Beneficial Functions

Floodplains can support ecosystems that are rich in plant and animal species. A floodplain can contain 100 or even 1,000 times as many species as a river. Wetting of the floodplain soil releases an immediate surge of nutrients: those left over from the last flood, and those that result from the rapid decomposition of organic matter that has accumulated since then. Microscopic organisms thrive, and larger species enter a rapid breeding cycle. Opportunistic feeders (particularly birds) move in to take advantage. The production of nutrients peaks and falls away quickly, but the surge of new growth endures for some time. This makes floodplains valuable for agriculture. Species growing in floodplains are markedly different from those that grow outside floodplains. For instance, riparian trees (trees that grow in floodplains) tend to be very tolerant of root disturbance and very quick-growing compared to non-riparian trees.

Floodplains have many natural beneficial functions, and disruption of them can have long-term consequences for entire regions. Some well-known, water-related functions of floodplains (noted by FEMA) include:

- Natural flood and erosion control
- Provide flood storage and conveyance
- Reduce flood velocities
- Reduce flood peaks
- Reduce sedimentation
- Surface water quality maintenance
- Filter nutrients and impurities from runoff
- Process organic wastes
- Moderate temperatures of water
- Provide groundwater recharge
- Promote infiltration and aquifer recharge
- Reduce frequency and duration of low surface flows

Areas in the floodplain that typically provide these natural functions are wetlands, riparian areas, sensitive areas, and habitats for rare and endangered species.

Effects of Human Activities

Because they border water bodies, floodplains have historically been popular sites to establish settlements. Human activities tend to concentrate in floodplains for a number of reasons: water is readily available; riverine floodplain land is fertile and suitable for farming; transportation by water is easily accessible; land is flatter and easier to develop; and there is value placed in ocean views. But human activity in floodplains frequently interferes with the natural function of floodplains. It can affect the distribution and timing of drainage, thereby increasing flood problems. Human development can create local flooding problems by altering or confining drainage channels or causing erosion of natural flood protection systems such as dunes. Flood potential can be increased in several ways: reducing a stream's capacity to contain flows; increasing flow rates or velocities downstream; and allowing waves

to extend further inland. Human activities can interface effectively with a floodplain as long as steps are taken to mitigate the activities' adverse impacts on floodplain functions.

11.1.4 Secondary Hazards

The most problematic secondary hazard for riverine flooding is bank erosion, in some cases more harmful than actual flooding. This is especially true in the upper courses of rivers with steep gradients, where floodwaters may pass quickly and without much damage, but scour banks, edging properties closer to the floodplain or causing them to fall in. Flooding is also responsible for hazards such as landslides when high flows over-saturate soils on steep slopes, causing them to fail. Hazardous materials spills are also a secondary hazard of flooding if storage tanks rupture and spill into streams, rivers, or storm sewers.

11.2 HAZARD PROFILE

11.2.1 Federal Flood Program Participation

National Flood Insurance Program (NFIP)

The first flood maps of the planning area became available in 1974 and 1975. Properties constructed after adoption of a FIRM or DFIRM are considered less vulnerable to flooding because they were constructed after adoption of regulations and codes to decrease vulnerability. Properties built before adoption of a FIRM or DFIRM are more vulnerable to flooding because either they do not meet code or are within hazardous areas.

Table 11-1 lists flood insurance statistics for planning-area municipalities that participate in the NFIP. Nearly 6,300 policies are in force, providing more than \$1.7 million in insurance. According to FEMA statistics, 1,174 flood insurance claims were paid between January 1, 1978, and March 31, 2021, for a total of \$13,243,730, an average of \$11,281 per claim.

Table 11-1. Flood Insurance Statistics

	Date of Entry	# of Flood Insurance Policies, as of 3/31/2021	Insurance in Force	Total Annual Premiums	Claims, 1/1/1978 to 3/31/2021	Value of Claims Paid, 1/1/1978 to 3/31/2021
Camarillo	9/29/1986	664	\$203,471,400	\$534,728	21	\$1,135,612
Fillmore	10/17/1978	74	\$22,517,800	\$34,315	37	\$226,509
Moorpark	9/29/1986	117	\$39,692,000	\$114,239	2	\$33,576
Ojai	10/17/1978	79	\$25,299,000	\$41,007	43	\$223,301
Oxnard	3/1/1979	497	\$166,210,700	\$323,235	71	\$244,574
Port Hueneme	9/24/1984	57	\$17,732,000	\$37,235	7	\$846
Santa Paula	4/15/1980	1,021	\$306,954,400	\$604,233	63	\$134,387
Simi Valley	9/27/1991	1,624	\$425,325,500	\$1,337,947	82	\$116,840
Thousand Oaks	9/29/1978	336	\$109,948,800	\$253,564	62	\$341,390
Ventura	9/29/1986	471	\$161,828,500	\$374,421	62	\$660,191
Unincorporated	10/31/1985	1,346	\$395,320,600	\$1,327,849	724	\$10,126,504
Total		6,286	\$1,712,472,200	\$4,982,773	1,174	\$13,243,730

To be eligible to participate in the NFIP, a local government must possess the authority to adopt codes and standards to regulate development in the Special Flood Hazard Area. The special purpose district planning partners do not possess these authorities and are therefore not listed in this section. Additionally, their jurisdictional annexes in Volume 2 do not address federal hazard mitigation planning requirements related to the NFIP.

Community Rating System

Ventura County and the Cities of Oxnard and Simi Valley currently participate in the CRS program. Table 11-2 summarizes the CRS status of each. Many of the mitigation actions identified in this plan are creditable activities under the CRS program. Therefore, successful implementation of this plan offers potential to enhance the CRS classification.

Table 11-2. CRS Status of Participating Jurisdictions

Jurisdiction	NFIP Community #	CRS Entry Date	Current CRS Classification	Premium Discount	
				SFHA	Non-SFHA
Oxnard	060417	5/1/2013	7	15	5
Simi Valley	060421	10/1/1993	5	25	10
Ventura County	060413	10/1/2011	5	25	10

11.2.2 Ventura County Public Works Agency—Watershed Protection

Ventura County Public Works Agency—Watershed Protection (VCPWA-WP), formerly known as the Ventura County Flood Control District, was formed on September 12, 1944, by an act of the California State Legislature. It is a dependent county special district (governed by a city or county council or board or its appointees). The Ventura County Board of Supervisors governs VCPWA-WP, and it is administratively housed in the Ventura County Public Works Agency. Its mission is to protect life, property, and community infrastructure from flood events, improve water resources management, and enhance the health and natural function of watersheds in Ventura County. The goals of VCPWA-WP include the following:

- Comprehensive, long range watershed planning
- Collaboration with watershed stakeholders
- Administration of adopted regulations, policies, and resolutions
- Responsible and accountable use of public resources
- Excellence in public service

11.2.3 Ventura County Watershed Zones

The sections below describe watershed zones in Ventura County that VCPWA-WP uses for planning.

Zone 1 Ventura River

The watershed of the Ventura River and its tributaries, covering the west-center portion of Ventura County, is the major watershed in Flood Zone 1. Significant tributaries to the Ventura River are Matilija Creek, North Fork Matilija Creek, Coyote Creek, Senior Canyon, Reeves Creek, Thatcher Creek, Lion

Canyon, Coyote Creek, San Antonio Creek, and Cañada Larga. The Ventura River watershed covers 223 square miles—a little less than half of it within the Los Padres National Forest. The Ventura River discharges directly to the Pacific Ocean and serves as the western boundary of the City of San Buenaventura (Ventura).

Zone 2 Santa Clara River

The major river in Flood Zone 2 is the Santa Clara River with a watershed area of 1,634 square miles. Most streams in Zone 2 are tributaries to the Santa Clara River with eventual drainage to the Pacific Ocean. The only exceptions are minor water courses in coastal watershed areas of the Cities of Oxnard, San Buenaventura, and Port Hueneme that drain directly to the Pacific Ocean. The largest of these direct-coastal drainages is the Arundell Barranca, which collects and channels runoff from Lake and Sexton Canyons in the City of San Buenaventura foothill areas before discharging into Ventura Harbor.

Zone 3 Calleguas Creek

The major river in Flood Zone 3 is Calleguas Creek with a watershed area of 341 square miles. All stream flows in Zone 3 eventually end up in Mugu Lagoon before entering the Pacific Ocean. Major tributaries to Calleguas Creek are Revolon Slough (drains a portion of Flood Zone 2), Conejo Creek, Arroyo Santa Rosa, Arroyo Conejo, Arroyo Las Posas/Arroyo Simi, Happy Camp Canyon, Lang Creek, and Tapo Canyon. Virtually the entire watershed is within Ventura County, with dozens of smaller creeks.

Zone 4 South and North

Ventura County Flood Zone 4 covers 225,000 acres in three unconnected areas:

- The southeast area (Zone 4 South) includes 61,000 acres of coastal drainages for tributaries to Malibu Canyon (or Malibu Creek), areas surrounding Lake Sherwood, Potrero Creek, Westlake Village, and the coastal streams of Deer Canyon and Big and Little Sycamore Creeks, draining the northern tip of the Santa Monica Mountains directly into the Pacific Ocean.
- The northwest area (see Zone 4 North) is primarily the watershed of the Cuyama River, which covers about 150,000 acres within Ventura County.
- The remaining 14,000 acres in the relatively undeveloped northeast corner of the county (Zone 4 Northeast) drains outside the County to the north and then to the east. This area includes Frazier Mountain Creek and Mill Canyon Creek, which are tributaries to Cuddy Creek in Kern County. Cuddy Creek follows the San Andreas Fault trace before terminating in the enclosed runoff basin called Castac Lake.

Coastal Creeks

The following areas near the coastline drain directly to the Pacific Ocean (Ventura County Public Works Agency 2020b):

- North Coast—At the Santa Barbara-Ventura County Line and south of it, several coastal creeks drain the face of the Santa Ynez Mountains. This area is referred to as the North Coast of Ventura County (sometimes also called the Rincon coast). It includes the principal stream of

Rincon Creek, as well as Las Sauces Creek, Madranio Canyon, Javon Canyon, Padre Juan Canyon, and Line Canyon. The southern boundary is at the northern banks of the Ventura River.

- Mid Coast—The Mid Coast (sometimes also called the Oxnard Plain Coastal Area) includes minor stream courses between the Ventura River and Calleguas Creek-Mugu Rock. This stretch of coastline is dominated by urban runoff carrying high pollutant concentrations from residential and industrial activities.
- South Coast—Runoff channels and stream courses between Mugu Rock and the Ventura-Los Angeles County Line are referred to as South Coast streams. These include La Jolla Canyon, Big Sycamore Canyon, Little Sycamore Canyon, and Deer Creek Canyon—all of which drain to the western extent of the Santa Monica Mountains. The next drainage to the south—Arroyo Sequit-Triunfo Canyon Creek—is just past the county line and thus under Los Angeles County control.

11.2.4 Principal Flooding Sources and Floodplains

Upland Flooding

The mountainous terrain of northern Ventura County and the hills in the central and eastern parts of the county give rise to numerous annual streams, many draining into steep canyons. These streams are subject to floods of relatively short duration, often following high-intensity rainfall. Such floods may occur with little warning and carry large quantities of sediment and debris. Communities adjacent to the upland areas, such as Fillmore, Ojai, Piru, and Santa Paula, are subject to this hazard. Many of the watersheds in question contain dams or basins designed to attenuate flow and trap debris, reducing the effects on downstream communities.

Broad Floodplains

The watersheds of the Santa Clara River (watershed area of 1,650 square miles), the Ventura River (watershed area of 226 square miles), and Calleguas Creek (watershed area of 325 square miles) drain to the broad coastal plain in the southern part of Ventura County. This plain is subject to inundation during longer intervals of rain, typically as the result of a series of winter storms. These floods typically have longer duration and may be forecast with more warning time. Because of its sediment load, the Santa Clara River has migrated across the valley floor during significant floods. Numerous levees have been built in the Santa Clara River Valley to protect agricultural lands along the river. The levees are typically not sufficient to withstand severe flood events.

Coastal Flooding

The County's 43-mile coastline is subject to tidal flooding, storm surge, and wave action, all of which usually occur during winter storms. Severe wave action is generally confined to narrow areas immediately adjacent to the tidal zone, including Sea Cliff Colony, Oxnard Shores, Silver Strand Beach, and several sections of U.S. 101 from Rincon Point to Emma Wood State Park. The effects of coastal flooding can be severe. In addition to wave action, beach and bluff erosion can cause significant damage to coast-side homes and infrastructure. Coastal flooding may also occur as the result of tsunamis caused by earthquakes or undersea landslides.

Winter coastal storms can cause minor coastal erosion along the shores of Ventura County. Coastal erosion is a natural process that occurs particularly in winter, when coastal storms wear away land by the action of waves and tides. Material deposited on beaches during the mild summer and fall months gets redistributed by the waves. According to City of San Buenaventura engineers, most of the sand is pulled just off coast and then comes back to shore over time. Although most receding sand stays fairly close to shore, some is driven south by currents until it reaches Hueneme Canyon, a large deep-water depression near the Port of Hueneme.

Unmapped Flood Hazard Areas

Unmapped flood hazard areas include numerous small channels. Agricultural drainage ditches and urban drains cover much of the flatter parts and urban areas of Ventura County. Flooding in these areas is due to high-intensity rainfall over a very short period. The flooding is usually shallow and mainly affects roadways and other low-lying areas. The Hollywood Beach and Silver Strand residential coastal communities have historically experienced localized flooding conditions, primarily due to inadequate storm drainage infrastructure and topography. These residential coastal communities (largely built out) are not currently mapped by FEMA in the Zone VE coastal high hazard SFHA. They have historically been mapped by FEMA as a Zone B and most recently under the DFIRMs as a Zone X-Shaded (500-year floodplain).

11.2.5 Natural and Beneficial Floodplain Functions

The county's floodplains drain into five major wetlands as described in the sections below. A wetland is an area of land whose soil is saturated with moisture either permanently or seasonally. Such areas may also be covered partially or completely by shallow pools of water. Wetlands include swamps, marshes, and bogs; the water found in wetlands can be saltwater, freshwater, or a mixture of both.

McGrath Lake Wetlands

Located on the western city limits of Oxnard, the McGrath Lake wetlands extend south from the Santa Clara River. A small lake within the wetlands helps to attract more than 200 species of birds. The Santa Clara Estuary Natural Preserve on the northern boundary of McGrath Lake Park offers a refuge for birds and habitat for burrowing animals. In April 2010, the Nature Conservancy, the State of California, and the U.S. Fish and Wildlife Service purchased 141 acres of prime riparian habitat, agriculture fields, and floodplains within the McGrath Lake Wetlands to become part of the Santa Clara River Parkway. The parkway was established to protect and restore the river's floodplain and functions, and to provide recreational opportunities such as hiking and bird watching.

Mugu Lagoon

The Mugu Lagoon consists of 1,474 acres of wetlands on the Point Mugu Naval Base, 8 miles southeast of the City of Oxnard. Calleguas Creek flows into the lagoon. In addition, there is a tidal connection through an inlet in the barrier beach. High concentrations of banned pesticides are found in lagoon's sediment. The Navy has undertaken several wetland restoration projects since the mid-1990s, restoring several acres of tidal mudflats, sandflats, channels, ponds, salt marsh, and sand islands. A number of special-status species inhabit the lagoon.

Ormond Beach Wetlands

The Ormond Beach wetlands, located in the City of Oxnard between the Port of Hueneme and the Point Mugu Naval Base, support many rare plants and hundreds of species of migratory birds. A secondary metal smelter, operating at Ormond Beach from 1965 to 2004, created such a large amount of toxic pollution that the site is now a U.S. Environmental Protection Agency Superfund site. A once-through-cooling natural gas power plant, scheduled to be decommissioned in 2023, also is located within the wetlands. The California State Coastal Conservancy, the City of Oxnard, and The Nature Conservancy are spearheading efforts to permanently protect habitat and expand and restore the wetlands. As of late 2020, these groups had acquired 650 acres of the wetlands (ESA 2021).

Santa Clara River Estuary

The 49-acre Santa Clara River Estuary is at the mouth of the Santa Clara River and the Pacific Ocean near the City of San Buenaventura. The river drains a 1,600-square-mile watershed. The estuary provides habitat to many listed species such as the southern California steelhead trout. The recovery plan for southern California steelhead identified the Santa Clara River as one of the highest priority sites for recovery actions. In 2015, with funding provided by state and federal wildlife agencies, the Wishtoyo Chumash Foundation drafted a habitat restoration and enhancement feasibility study for the Santa Clara River Estuary. The purpose of the study was to assess the feasibility of expanding and enhancing estuarine habitat for steelhead and other native and protected species by restoring and by providing lagoon, side channel, contiguous wetland, and additional upland riparian habitat, or a combination of each.

Treatment Plant Discharge to the Santa Clara River Estuary

The City of San Buenaventura's sewage treatment plant discharges up to 9 million gallons per day of tertiary treated wastewater into the Santa Clara River Estuary. This discharge—one of the last remaining estuary discharges in California—is in conflict with the State Water Resources Control Board's *Water Quality Control Policy for the Enclosed Bays and Estuaries of California* (Resolution No. 74-43, 1974), which mandates that the discharge of municipal and industrial wastewaters to enclosed bays and estuaries be phased out. Exceptions to this policy are limited to circumstances in which a regional water quality control board finds that the treated wastewater enhances the quality of receiving waters.

The City of San Buenaventura has been granted an exception since 1977 on the basis that the treatment plant's discharge enhanced fish and wildlife habitat and non-contact water recreation. However, more recent information about the relationship of the discharge to the ecological function of the estuary is lacking.

Issues associated with the discharge include impacts of nutrient-rich water in the estuary and the artificial hydrology created by the volume of water. With this discharge, the lagoon fills up and breaches more frequently than it would under natural conditions. In 2008, the Los Angeles Regional Water Quality Control Board required the City of San Buenaventura, as a condition to continue the current discharge practice, to perform three studies to evaluate environmental solutions.

The Santa Clara River Estuary Scientific Review Panel convened in 2017 to determine how much, if any, discharge from the Ventura Water Reclamation Facility is needed to protect and sustain the native and endangered species known to use the Santa Clara River Estuary, and how much discharge could be eliminated to protect these species and sustain additional priority beneficial uses.

The panel recommended a 90 percent diversion from the current discharge volumes (Santa Clara River Estuary Scientific Review Panel 2018). In 2019 Ventura City Council approved a \$200 million wastewater treatment plant to increase drinking water resources and reduce the treated wastewater released into the Santa Clara River estuary. The city plans to reduce its estuary discharge to less than 500,000 gallons per day by 2030 (Tuser 2019).

Ventura River Estuary

The 110-acre Ventura River Estuary, directly west of the City of San Buenaventura, drains a 226-square-mile watershed. The estuary is home to several special-status species. In 1996, the Ventura River Estuary Enhancement Plan was implemented to restore and enhance the estuary. The plan

outlines riparian restoration along the river, its floodplain, and the surrounding dunes; re-creation of habitat types; habitat protective fencing; and trail soil stabilization.

11.2.6 Past Events

Major Historical Floods

Damaging floods in Ventura County were reported as early as the middle of the 1800s. A 1945 report by the Ventura County Flood Control District described floods that caused extensive damage in 1862, 1867, 1884, 1911, 1914, 1938, 1941, 1943, and 1944.

The largest and most damaging natural floods recorded in the Santa Clara and Ventura watersheds occurred in January and February of 1969. The January flood was a result of the highest monthly precipitation total ever recorded in Ventura County at that time. The February flood was a result of intense rainfall similar in magnitude to the rainfall that caused the record-breaking flood in January. The combined effects of the 1969 floods were disastrous: 13 people lost their lives, and property damage was estimated at \$60 million (1969 dollars). Homes in Casitas Springs, Live Oak Acres, and Fillmore were flooded, and 3,000 residents in Santa Paula and several families in Fillmore were evacuated twice. A break in the Santa Clara River levee threatened the City of Oxnard. Agricultural land, primarily citrus groves, was seriously damaged or destroyed. All over the county, transportation facilities, including roads, bridges, and railroad tracks, were damaged. The Fillmore, Oak View, and Ventura sewage treatment plants were severely damaged and dumped raw sewage into the Santa Clara and Ventura Rivers. The untreated sewage polluted the rivers and the beaches at their outlets into the ocean. Sewer trunk lines broke along the Ventura River and San Antonio Creek. Suspended sediment concentrations and discharge in many streams greatly exceeded any previously measured levels in the flood-affected areas (Ventura County 2015).

In 1980, Calleguas Creek breached its levee in the Oxnard Plain, and flooding and sediment deposition caused \$9 million (in 1980 dollars) in damage to the Point Mugu Naval Base. Floodwaters covered about 1,500 acres of farmland. The peak discharge was 9,310 cubic feet per second at the Madera Road Bridge in Simi Valley.

In 1983, a federal disaster was declared because of storm damage. Repairs to flood-control facilities have been estimated to cost \$15 million (in 1983 dollars). Improved channels in Moorpark and Simi Valley suffered severe damage from erosion during this event, and Calleguas Creek experienced record flooding. Damage to other public and private facilities has been estimated at \$39 million, with little more than half of that total due to damage to agricultural lands.

Recent Floods

Table 11-3 lists major flood events to affect Ventura County since 2000.

Table 11-3. History of Flood Events

Date	Event Type	Locations	Deaths or Injuries	Property Damage
June 2, 2019	Flash Flood	Wheeler Springs	0	N/A
May 29, 2019	Flash Flood	Wheeler Springs	0	N/A
March 22-23, 2018	Flash Flood	Seacliff	0	N/A
March 22-23, 2018	Flash Flood	Haines	0	N/A
February 17, 2017	Flash Flood	Dulah	0	N/A
February 17, 2017	Flash Flood	Newbury Park	4	N/A
February 17, 2017	Flash Flood	Somis	0	N/A
March 7, 2016	Flash Flood	Dulah	0	N/A
January 6, 2016	Flash Flood	Dulah	0	N/A
January 6, 2016	Flash Flood	Piru	0	N/A
January 5, 2016	Flash Flood	Dulah	0	N/A
July 30, 2015	Flash Flood	Wheeler Springs	0	N/A
June 12, 2015	Flash Flood	Wheeler Springs	0	N/A
March 1, 2015	Flash Flood	Point Mugu	0	N/A
December 12, 2014	Flash Flood	Santa Susana	0	N/A
December 12, 2014	Flash Flood	Camarillo	0	Ten homes severely damaged
July 22, 2013	Flash Flood	Gorman	0	N/A
September 13, 2011	Flash Flood	Wheeler Springs	0	N/A
July 5, 2011	Flash Flood	Wheeler Springs	0	N/A
July 4, 2011	Flash Flood	Lockwood Valley	0	N/A
October 2, 2010	Flash Flood	Wheeler Springs	0	Vehicle damaged
January 20, 2010	Flash Flood	Moorpark	1	N/A
July 13-14, 2008	Flash Flood	Wheeler Springs	0	N/A
January 25, 2008	Flash Flood	Moorpark	0	N/A
January 4, 2008	Flash Flood	Santa Paula	0	N/A
January 4, 2008	Flash Flood	Fillmore	0	N/A
October 14, 2006	Flash Flood	Piru	0	N/A
July 24, 2006	Flash Flood	Ventura County ^a	0	N/A
July 23, 2005	Flash Flood	Ventura County ^a	0	N/A
February 20-21, 2005	Flood, Flash Flood	Ventura County ^a	0	\$8 million
February 18, 2005	Flash Flood	Ventura County ^a	0	N/A
January 9-10, 2005	Flash Flood	Ventura County ^a	0	N/A
January 21, 2005	Coastal Flood	Ventura County ^a	0	N/A
January 3, 2005	Flash Flood	Ventura County ^a	0	N/A
February 25-26, 2004	Flash Flood	Simi Valley	0	N/A
March 15, 2003	Flood	Ventura County ^a	0	N/A
December 17, 2002	Flood	Ventura County Coast ^a	0	N/A
November 30, 2002	Flash Flood	Santa Paula	0	N/A
December 20, 2001	Flood	City of San Buenaventura ^b	0	N/A
November 24, 2001	Flood	City of San Buenaventura ^b	0	N/A
November 12, 2001	Flood	City of San Buenaventura ^b	0	N/A
November 12, 2001	Flood	El Rio	0	N/A
November 12, 2001	Flood	Newbury Park	0	N/A
September 3, 2001	Flash Flood	Ventura County ^a	0	N/A
July 7, 2001	Flash Flood	Ventura County ^a	0	N/A
March 5, 2001	Flood	Ventura County ^a	0	N/A

Date	Event Type	Locations	Deaths or Injuries	Property Damage
January 11-12, 2001	Flood	Ventura County Coast ^a	0	N/A
August 1, 2000	Flash Flood	Ventura County ^a	0	N/A
April 17, 2000	Flood	Ventura County ^a	0	N/A
February 20-21, 2000	Flood	Ventura County ^a	0	N/A
February 20, 2000	Flash Flood	Ojai	0	N/A

a. Multiple locations are associated with this event.

b. The City of San Buenaventura is commonly called the City of Ventura.

Source: NCEI Storm Events Database 2021

11.2.7 Location

Levee-Protected Areas

Sixty-eight miles of levees are located throughout Ventura County. Two of these levees have undergone detailed economic analysis studies: the 2.65-mile-long Ventura River Levee (VR-1) and the 4.72-mile-long Santa Clara River Levee (SCR-1). Figure 11-2 and Figure 11-3 show the flood hazard areas defined in the levee studies, which were used in the risk assessment scenario of this plan. For consistency with the FEMA data, the 1 percent-annual chance and 0.2 percent-annual chance flood hazard areas of the levee studies were used (indicated on the figures as 100-year and 500-year floods).

Mapped Flood Zones

Flooding in Ventura County has been documented by gage records, high water marks, damage surveys, and personal accounts. This documentation was the basis for the January 2021 Flood Insurance Study that is incorporated in the current effective DFIRMs. The DFIRMs are the most detailed and consistent data source available for determining flood extent. Data from the January 2021 Flood Insurance Study was used in this risk assessment to map extents and locations of the 1 percent-annual chance and 0.2 percent-annual chance flood hazard areas, as shown on Figure 11-4.

Repetitive Loss

A repetitive loss property is an NFIP-insured property that has experienced repeated flood damage. A repetitive loss area is the portion of a floodplain holding structures that FEMA has identified as repetitive loss properties. Identifying repetitive loss areas helps to identify structures that are at risk but are not on FEMA's list of repetitive loss structures. FEMA-sponsored programs, such as the CRS, require participating communities to identify repetitive loss areas. Repetitive loss properties in Ventura County are listed in Table 11-4.

Figure 11-2. Floodplains Mapped in the Ventura River Levee Study

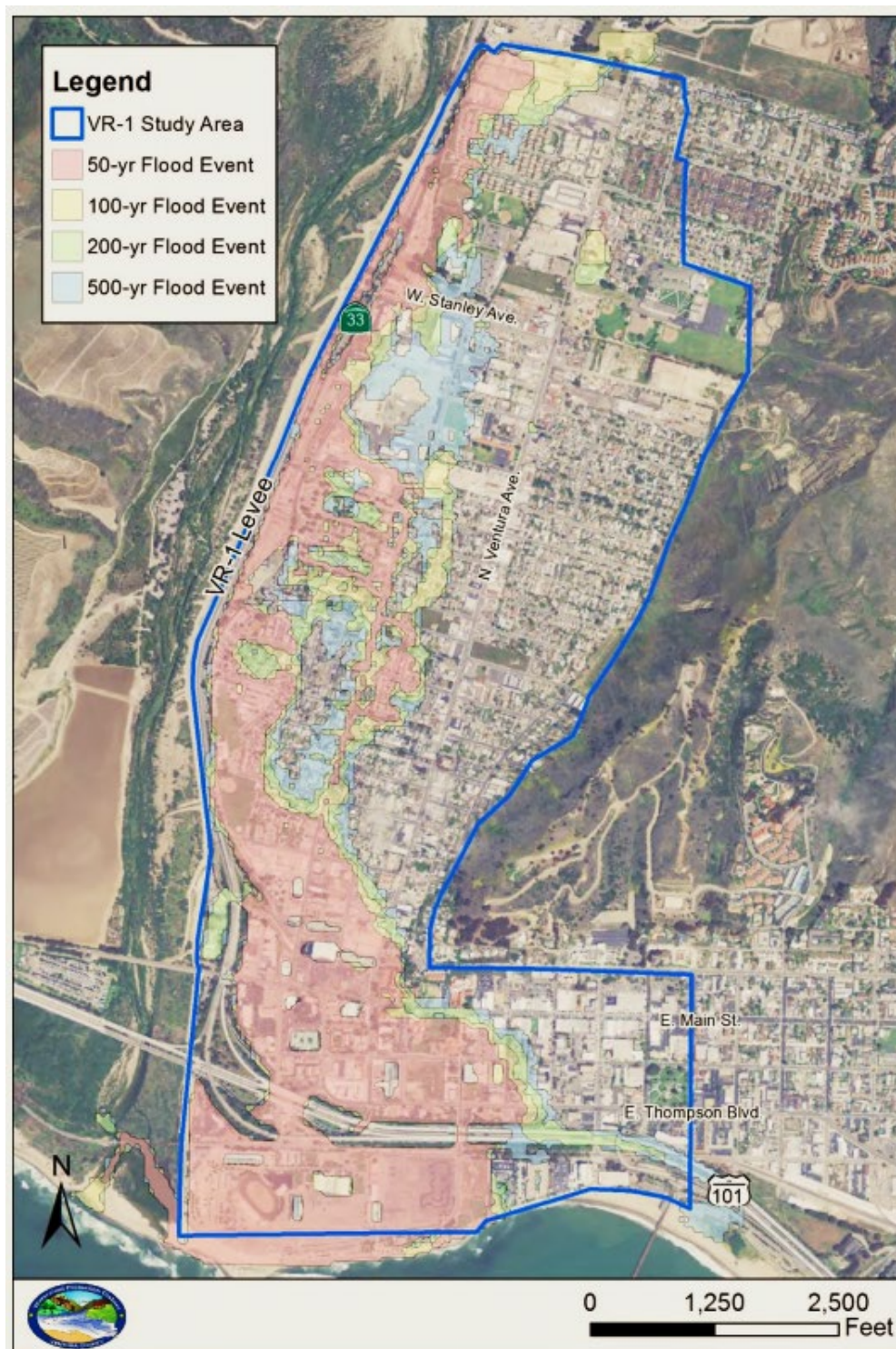


Figure 11-3. Floodplains Mapped in the Santa Clara River Levee Study**Table 11-4. Repetitive Loss Properties in Ventura County**

Jurisdiction ^a	Repetitive Loss Properties	Properties That Have Been Mitigated	Number of Corrections	Corrected Number of Repetitive Loss Properties
City of Camarillo	0	*	*	*
City of Fillmore	0	*	*	*
City of Moorpark	0	*	*	*
City of Ojai	0	*	*	*
City of Oxnard	7	*	*	*
City of Port Hueneme	0	*	*	*
City of San Buenaventura	4	*	*	*
City of Santa Paula	3	*	*	*
City of Simi Valley	0	*	*	*
City of Thousand Oaks	5	*	*	*
Ventura County Unincorporated Areas	63	*	*	*
Totals	82	*	*	*

a. Special purpose district planning partners to this plan have no identified repetitive loss properties because districts are not eligible participants in the NFIP.

* Data not available to support this planning effort due to FEMA's Privacy Act policies and the time associated with processing the requisite Information Sharing Access Agreement (ISAA).

Source: September 9, 2021, FEMA Report of Repetitive Losses

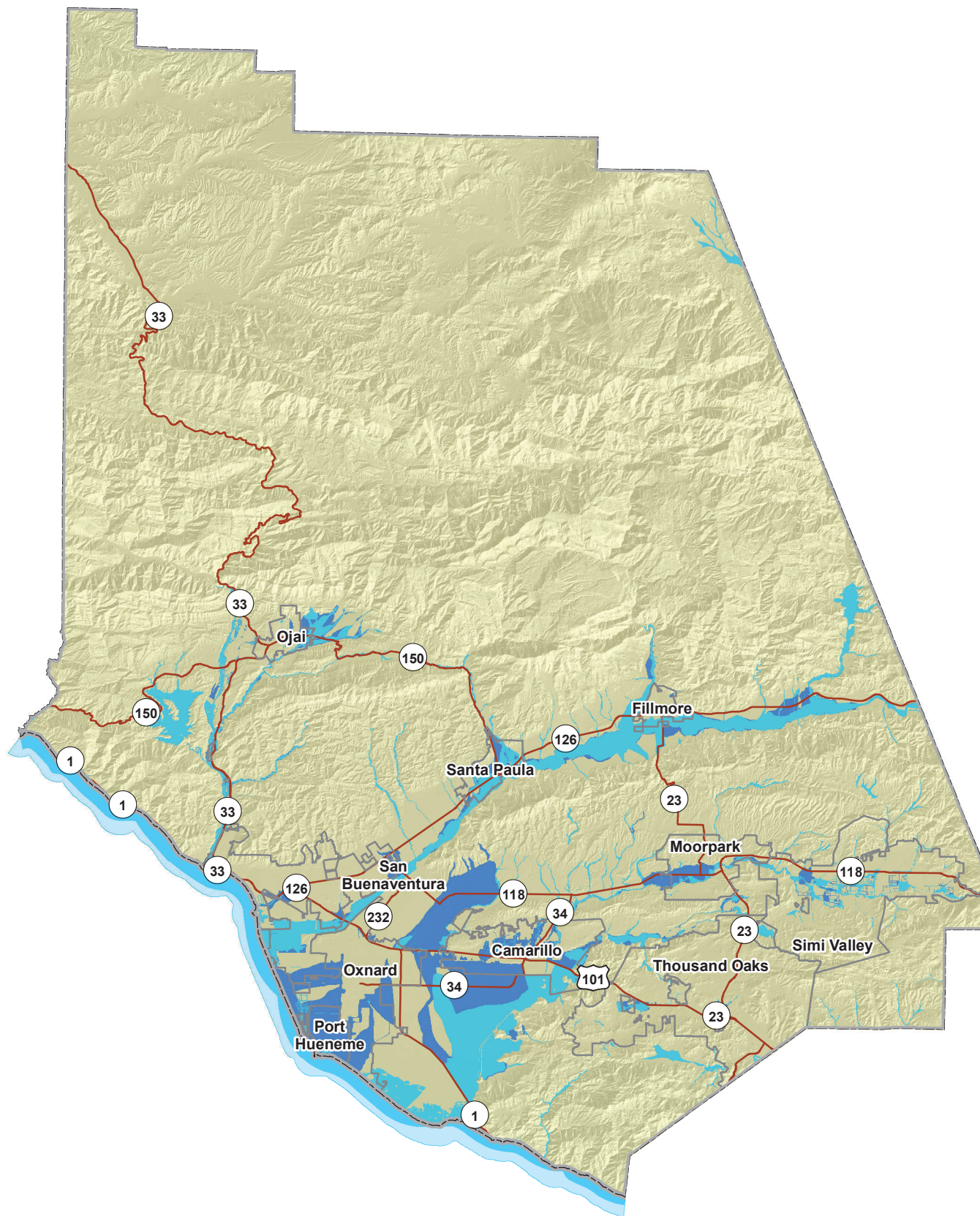
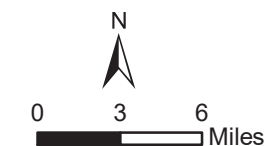


Figure 11-4. FEMA Flood Hazard Areas

- 1% Annual Chance Flood (100-Year)
- 0.2% Annual Chance Flood (500-Year)
- County Boundary
- Cities
- Major Roads



Data Sources: Ventura Co.,
FEMA, Esri

11.2.8 Frequency

Recurrence intervals and average annual numbers of flood events in Ventura County were calculated as follows based on events from 2000 to 2021 recorded in the NCEI Storm Events Database:

- Coastal floods have a 4.6 percent chance of occurring in any given year
- Flash floods have a 173 percent chance
- Other floods have a 54.6 percent chance of occurrence
- Total estimated percent chance of occurrence for any type of flood in a given year is 232 percent, meaning that flooding will likely continue to be an annual hazard.

The NCEI database lists 51 significant flooding events in Ventura County from 2000 to 2021, most of which have been flash floods. Smaller floods may occur more frequently and be categorized in the database under a different hazard event type, typically severe weather or severe storms.

11.2.9 Severity

The principal factors affecting flood damage are flood depth and velocity. The deeper and faster flood flows become, the more damage they can cause. Shallow flooding with high velocities can cause as much damage as deep flooding with slow velocity—especially when a channel migrates over a broad floodplain, redirecting high velocity flows and transporting debris and sediment. Flood severity is often evaluated by examining peak discharges. Peak flows used by FEMA to map floodplains within the planning area are listed in Appendix E. A summary list of only the sources with drainage areas of 20 square miles or greater is provided in Table 11-5.

Table 11-5. Summary of Peak Discharges in Large Ventura County Drainages

Source/Location	Drainage Area (square miles)	Discharge (cubic feet/second)			
		10-Percent	2-Percent	1-Percent	0.2- Percent
Arroyo Las Posas					
Upstream of confluence of Peach Hill Wash	117.4	8,260	17,120	22,090	36,520
Downstream of confluence of Long Canyon Creek	143.4	9,390	19,460	25,100	41,500
Arroyo Simi					
Downstream of confluence with Happy Camp Canyon Creek	113.20	8,300	17,200	22,190	36,670
Downstream of Alamos Canyon	88.70	5,670	13,060	17,460	31,200
Downstream of North Simi Canyon	69.50	5,600	12,890	17,240	30,810
Upstream of Bus Canyon Drain	61.50	5,110	11,950	15,900	28,580
Upstream of Tapo Canyon Channel	32.30	4,440	10,220	13,670	24,420
Downstream of Meier Canyon	30.90	4,460	10,270	13,730	24,540
Calleguas Creek					
At Highway 1 ^b	262.00	12,230	28,140	37,630	67,240
Downstream of confluence of Conejo Creek	248.30	16,000	30,610	38,460	61,030
Upstream of Conejo Creek & Lewis Drain	168.70	10,390	21,520	27,770	45,900
At Seminary Road	164.90	10,350	21,450	27,680	45,760

	Drainage Area	Discharge (cubic feet/second)			
Source/Location	(square miles)	10-Percent	2-Percent	1-Percent	0.2- Percent
Conejo Creek					
At confluence with Calleguas Creek	77.60	9,300	17,800	22,300	35,500
At Highway 101 bridge	71.90	9,560	18,300	22,000	36,500
Downstream of confluence of Arroyo Conejo	60.00	9,660	18,500	23,200	36,900
Coyote Creek					
Upstream of confluence with Ventura River	41.10	680	1,980	3,410	4,830
Approximately 570 feet downstream of Casitas Dam Spillway	40.10	671	1,953	3,363	4,766
At Casitas Dam Spillway	38.50	120	370	2,590	3,750
Piru Creek					
At confluence with Santa Clara River	441	2,500	33,000	41,000	60,000
Revolon Slough					
Downstream of Camarillo Hills Drain	38.70	2,500	7,100	10,000	20,000
At Highway 101	30.00	2,200	6,200	8,700	16,500
San Antonio Creek					
At confluence with Ventura River ^a	51.1	9,960	24,715	32,679	51,450
Approximately 410 feet upstream of North Ventura Avenue	49.7	9,930	26,946	37,893	73,689
Upstream of confluence of San Antonio Creek Tributary	46.5	10,430	28,300	39,800	77,690
Upstream of confluence with Lion Canyon Creek	33.8	7,760	21,050	29,600	57,780
Downstream of Stewart Canyon Creek	31.3	8,590	23,320	32,800	64,030
Upstream of confluence of Steward Canyon Creek	26.5	7,620	20,690	29,100	56,800
Downstream of confluence of Thatcher Creek	25.4	7,490	20,330	28,600	55,830
Santa Clara River					
At mouth	1,625	41,000	116,000	161,000	270,000
At Willard Bridge	1,534	41,000	116,000	161,000	270,000
Upstream of confluence of Santa Paula Creek	1,505	40,000	113,000	157,000	265,000
Downstream of confluence of Sespe Creek	1,500	40,000	113,000	157,000	265,000
Upstream of confluence of Sespe Creek	1,182	23,000	66,000	92,000	160,000
Downstream of confluence of Hopper Creek	1,174	40,000	113,000	157,000	265,000
Downstream of confluence of Piru Creek	1,100	40,000	113,000	157,000	265,000
At Ventura County/Los Angeles County boundary	644	15,000	43,000	60,000	104,000
Santa Paula Creek					
At stream gauging station	40	6,800	18,000	26,000	48,000
Sespe Creek					
Approximately 4,000 feet downstream of Highway 126	263	33,000	72,000	92,000	145,000
Approximately 5,000 feet upstream of Southern Pacific Railroad	259	29,000	62,000	80,000	131,000
Tapo Canyon Channel					
At confluence with Arroyo Simi	20.70	*	*	8,500	*
Ventura River					
At Pacific Ocean ^b	226	34,000	67,000	78,000	103,000
At Shell Chemical Plant	223	41,300	67,900	78,900	105,500
Approximately 0.6 mile upstream of confluence of Canada Larga	191	36,583	59,999	70,055	93,593

Source/Location	Drainage Area (square miles)	Discharge (cubic feet/second)			
		10-Percent	2-Percent	1-Percent	0.2- Percent
At Casitas Vista Road	188	36,400	59,700	69,700	93,100
Approximately 1,400 feet upstream of Casitas Vista Road	148	35,529	57,135	67,239	90,127
Approximately 1,000 feet downstream of confluence of San Antonio Creek	144	35,000	56,600	66,600	89,000
Approximately 300 feet upstream of confluence of San Antonio Creek	92.8	16,449	25,493	29,104	37,856
At Baldwin Road	83.0	16,000	24,800	28,300	36,700
Approximately 1,120 feet upstream of Camino Cielo	72.4	15,000	24,000	27,100	35,200
Upstream of confluence of North Fork Matilija Creek	56.4	12,500	18,800	21,600	27,900

Note: All locations are at mouth unless otherwise noted. Locations do not include jurisdictional boundaries.

* Data not available

a. Decrease due to overbank losses upstream

b. Discharges are larger than those downstream due to updated hydrology (San Antonio Creek & Ventura River)

Source: Ventura County FIS 06111CV002E, FEMA January 29, 2021

11.2.10 Warning Time

Potential warning time available to a community for response to a flooding threat depends on the time between the first measurable rainfall and the first occurrence of flooding. The time needed to recognize a flood threat reduces potential warning time for a community. Because of the sequential pattern of weather conditions needed to cause serious flooding, occurrence of a flood without warning is unusual. Warning times for floods can be between 24 and 48 hours. Flash flooding can be less predictable, but populations in potential hazard areas can be warned in advance of flash flooding danger.

National Weather Service Watches and Warnings

The National Weather Service (NWS) issues watches and warnings when forecasts indicate rivers may approach bank-full levels. Flood extent or severity categories used by NWS include minor flooding, moderate flooding, and major flooding, based on property damage and public threat:

- **Minor Flooding**—Minimal or no property damage, but possibly some public threat or inconvenience.
- **Moderate Flooding**—Some inundation of structures and roads near streams. Some necessary evacuations of people and/or transfer of property to higher elevations.
- **Major Flooding**—Extensive inundation of structures and roads. Significant evacuations of people and/or transfer of property to higher elevations (National Weather Service 2009b).

When a watch is issued, the public should prepare for the possibility of a flood. When a warning is issued, the public is advised to stay tuned to a local radio station for further information and be prepared to take quick action if needed. A warning means a flood is imminent, generally within 12 hours, or is occurring. Local media broadcast NWS warnings. Alerts are also sent via Twitter, Everbridge, and email and posted to the VCPWA-WP website.

Ventura County ALERT System

VCPWA-WP operates 90 self-reporting rain gages and 30 self-reporting stream gages. VCPWA-WP also receives telemetered data from 65 additional rain gages and 23 stream gages operated by other agencies. The real-time rain gage data are fed into watershed hydrologic models to predict flow hydrographs and stream levels at stream gage stations installed at strategic locations throughout the County.

The Automated Local Evaluation in Real-Time (ALERT) network is the essential component of the flood warning system. Ventura County implemented a flood warning system for Sespe Creek after a flood in 1978 that caused significant damage in Fillmore. Six rain gages were installed in 1979 in the Sespe Creek and Santa Paula Creek watersheds. All six of these gages remain in operation today.

In response to the 1980 Calleguas Creek flood and with some funding provided by the US Navy, a nine-gage system was installed in the Calleguas Creek watershed. Three are still in their original locations.

The 1980s saw improvement in the technology which included both hardware and software. ALERT transmitters were connected to stream gages so water levels could be monitored in real-time, just like rainfall. Computer software also improved, allowing for display of rainfall and stream flow in graphs and maps. The ALERT network continued to grow with the addition of gages in the Ventura River watershed in response to the 1985 Wheeler Fire. This was the first time that all three of Ventura County watersheds were covered by the ALERT system (Ventura County Public Works Agency 2020a). Figure 11-5 shows an example of the local flood warning system.

11.3 EXPOSURE

A quantitative assessment of exposure to the flood hazard was conducted using the flood mapping shown in Figure 11-4 and the asset inventory developed for this plan. Detailed results by municipality are provided in Appendix D; results for the total planning area are presented below.

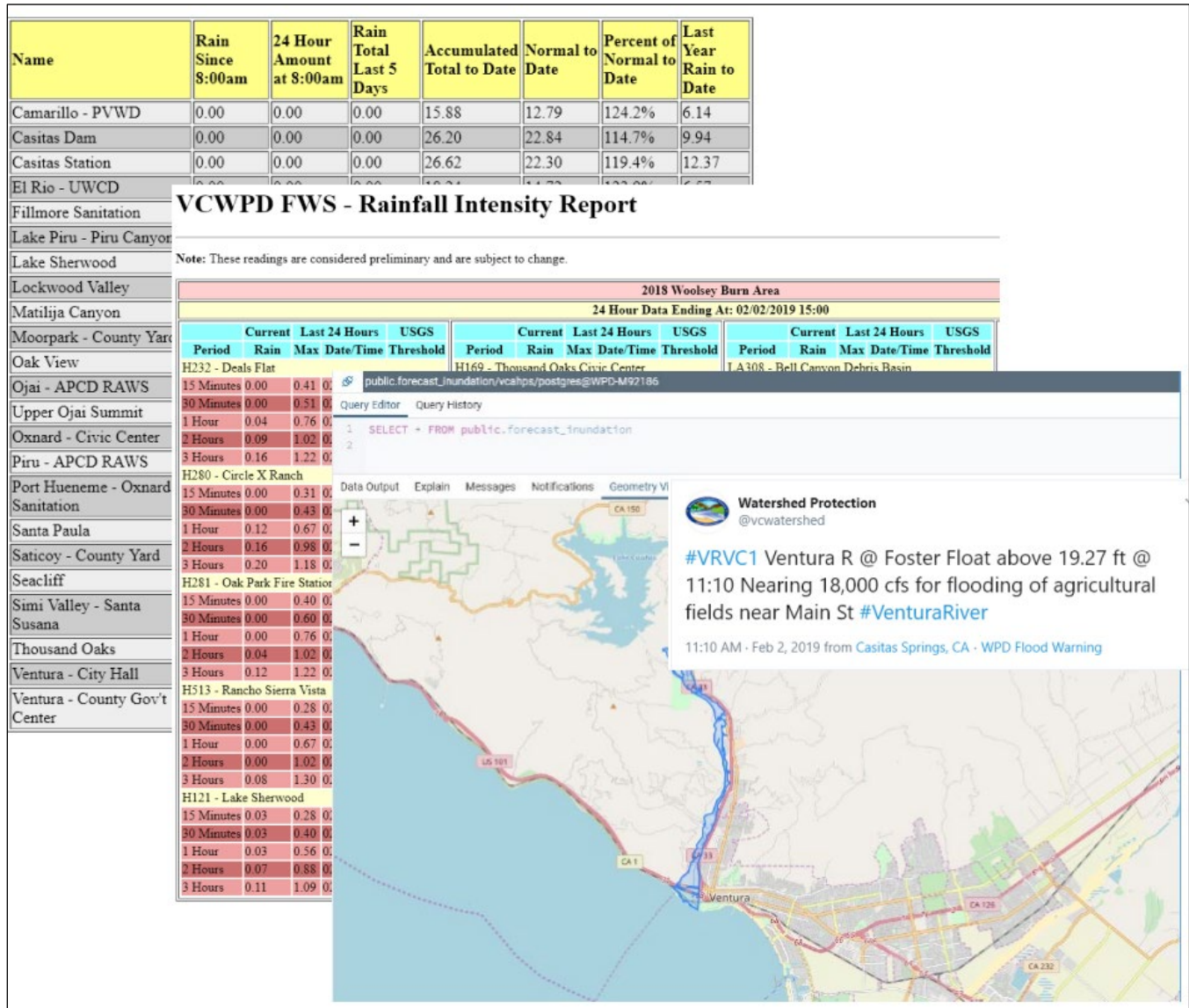
11.3.1 Population

Table 11-6 summarizes the estimated population living in the evaluated flood hazard areas.

Table 11-6. Exposed Population in Evaluated Flood Hazard Zones		
	1% Annual Chance Flood Zone	0.2% Annual Chance Flood Zone
Population Exposed	33,202	180,772
% of Total Planning Area Population	3.9%	21.4%

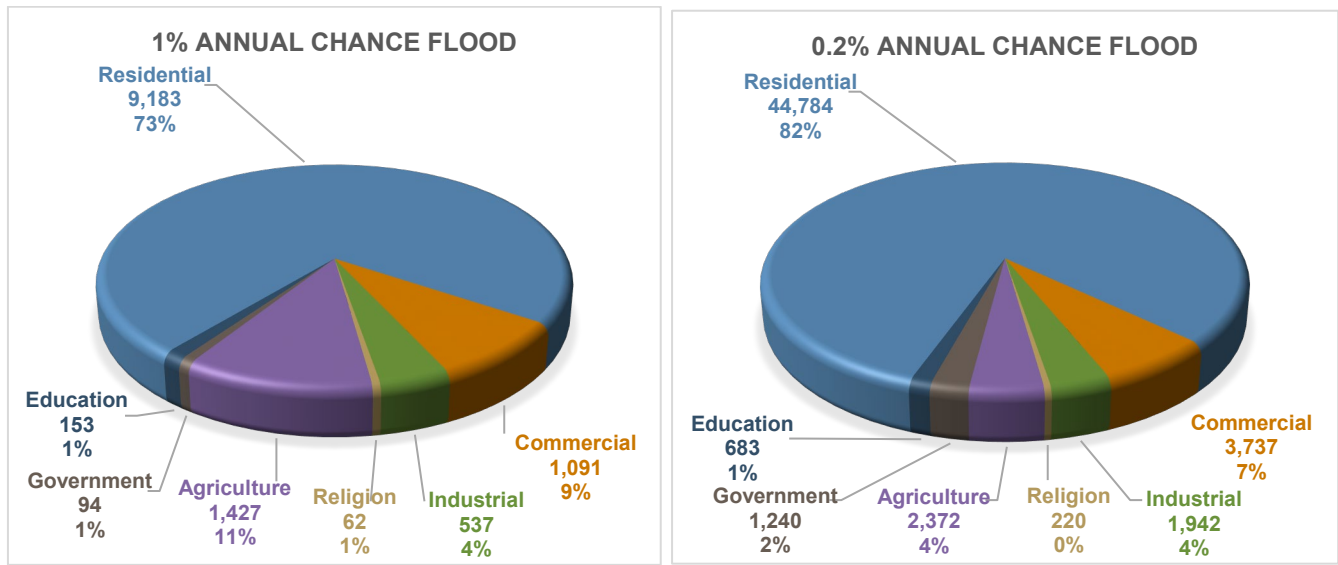
11.3.2 Property

Table 11-7 summarizes the estimated property exposure in the evaluated flood hazard areas. Figure 11-6 shows the occupancy class defined by Hazus for all buildings in the mapped floodplains. These occupancy classes provide an indication of land use within the mapped hazard area. Some land uses are more vulnerable to flood risks, such as single-family homes, while others are less vulnerable, such as agricultural land or parks.

Figure 11-5. Ventura County Flood Warning System Example**Table 11-7. Exposed Property in Evaluated Flood Hazard Zones**

	1% Annual Chance Flood Zone	0.2% Annual Chance Flood Zone
Acres of inundation area	68,046	102,019
Number of Buildings Exposed	12,547	54,978
Value of Exposed Structures	\$5,265,874,679	\$23,232,737,392
Value of Exposed Contents	\$4,681,379,253	\$19,502,977,592
Total Exposed Property Value	\$9,947,253,933	\$42,735,714,984
Total Exposed Value as % of Planning Area Total	5.5%	23.6%

Figure 11-6. Building Occupancy Classes in the Mapped Flood Zones



11.3.3 Critical Facilities

Figure 11-7 and Figure 11-8 show critical facilities located in the 1 percent-annual-chance and 0.2 percent-annual-chance floodplains, respectively, by facility type.

Figure 11-7. Critical Facilities in 1% Annual Chance Floodplain

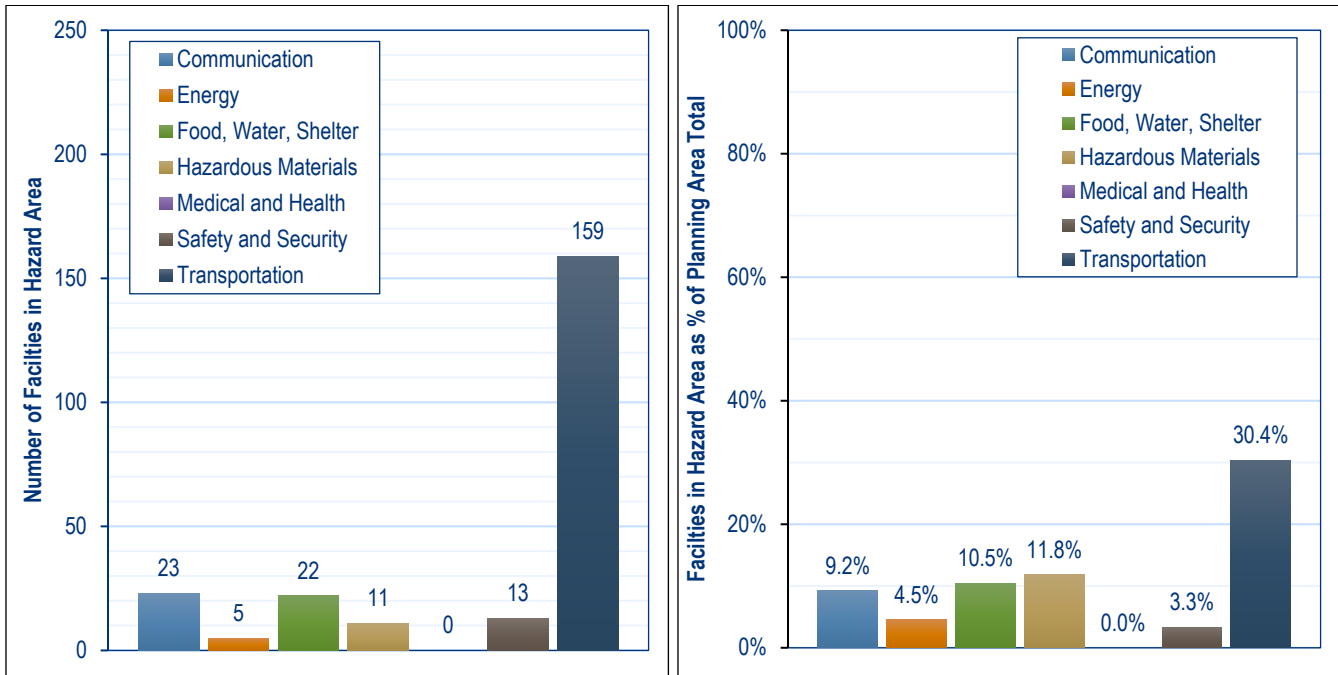
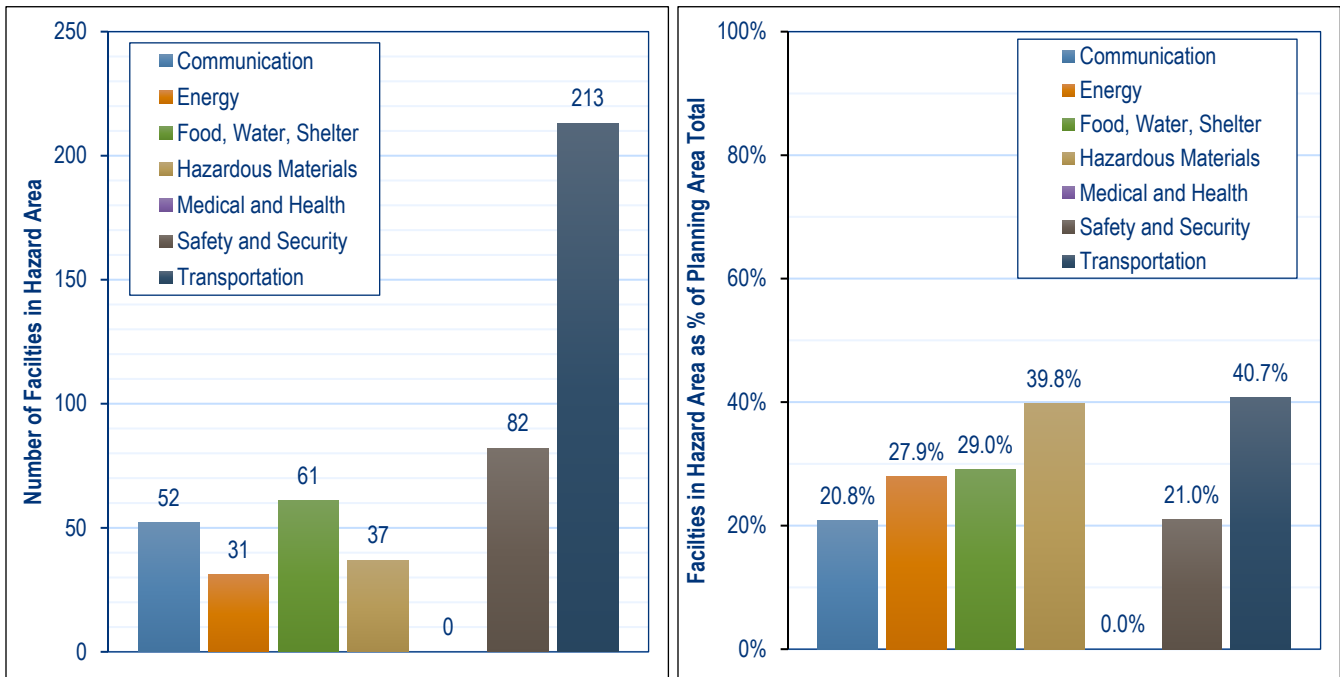


Figure 11-8. Critical Facilities in 0.2% Annual Chance Floodplain



A breakdown by municipality is provided in Appendix D. Critical facilities exposed to the flood hazard represent the following percentages of all critical facilities in the planning area:

- 15 percent (233 facilities) of all critical facilities are in the 1 percent-annual-chance flood hazard area.
- 30 percent (466 facilities) of all critical facilities are in the 0.2 percent-annual-chance flood hazard area.

11.3.4 Environment

Because floodplain management measures place restrictions on development in areas affected by flooding, floodplains often have a higher portion of area that is undeveloped open space or natural area. These undeveloped areas represent environment exposed to the flood hazard.

11.4 VULNERABILITY

The results of the vulnerability assessment indicate estimated damage for the 1-percent, and 0.2-percent-annual-chance flood hazards. Detailed results by jurisdiction are included in Appendix D; countywide summaries are provided below.

11.4.1 Population

Flood impacts on persons and households were estimated for each event through the Level 2 Hazus analysis. Table 11-8 summarizes the results.

Table 11-8. Estimated Flood Impacts on Persons and Households

	Number of Persons Displaced	Number of Persons Requiring Short-Term Shelter
1% Annual Chance Flood Zone	10,829	785
0.2% Annual Chance Flood Zone	117,102	8,221

11.4.2 Property

Table 11-9 summarizes Hazus estimates of flood damage in the planning area. The debris estimate includes only structural debris and building finishes; it does not include additional debris that may result from a flood event, such as from trees, sediment, building contents, bridges, or utility lines.

Table 11-9. Estimated Impact of a Flood Event in the Planning Area

Damage Type	1% Annual Chance Flood Zone	0.2% Annual Chance Flood Zone
Structure Debris (Tons)	96,710	396,325
Buildings Impacted	7,885	27,662
Total Value (Structure + Contents) Damaged	\$743,893,665	\$5,725,626,424
Damage as % of Total Replacement Value	0.4%	3.2%

11.4.3 Critical Facilities

Significant facilities predicted by Hazus to be affected by the 1 percent-annual-chance flood include the following:

- 1 water reclamation plant
- 11 schools
- 11 hazardous material sites
- 2 fire stations
- 1 airport
- 105 road bridges

Estimated Damage

Hazus was used to estimate the number of critical facilities affected by flooding and the resulting percent of damage to the building and contents. Figure 11-9 compares the predicted number of affected facilities to the number of exposed facilities, for the 1 percent and 0.2 percent-annual chance flood events. Results for the 1 percent-annual-chance-event are as follows:

- All exposed facilities in the hazardous materials and safety/security categories are predicted to experience some damage
- For all other categories with exposure, between 30 and 70 percent of exposed facilities are predicted to experience some damage

Figure 11-10 shows the estimated damage to critical facilities for both modeled flood events. For the 1 percent-annual-chance-event, the average amount of damage to structures, measured as a percentage of total value, ranges from 1.4 to 17.1 percent of total value and average damage to contents ranges from 11.6 to 47.1 percent, depending on critical facility category.

Figure 11-9. Facilities Exposed to and Affected by the 1% and 0.2% Annual Chance Floods

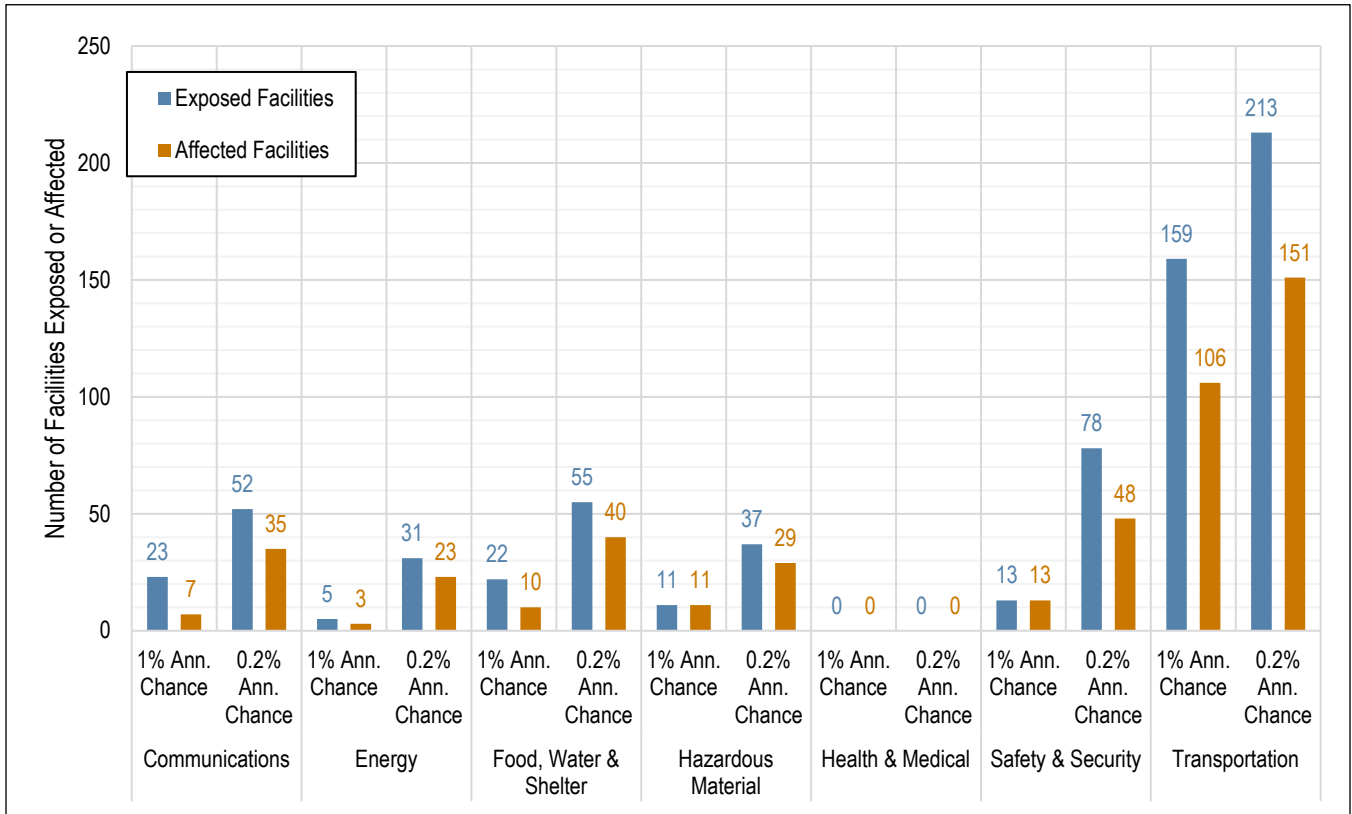
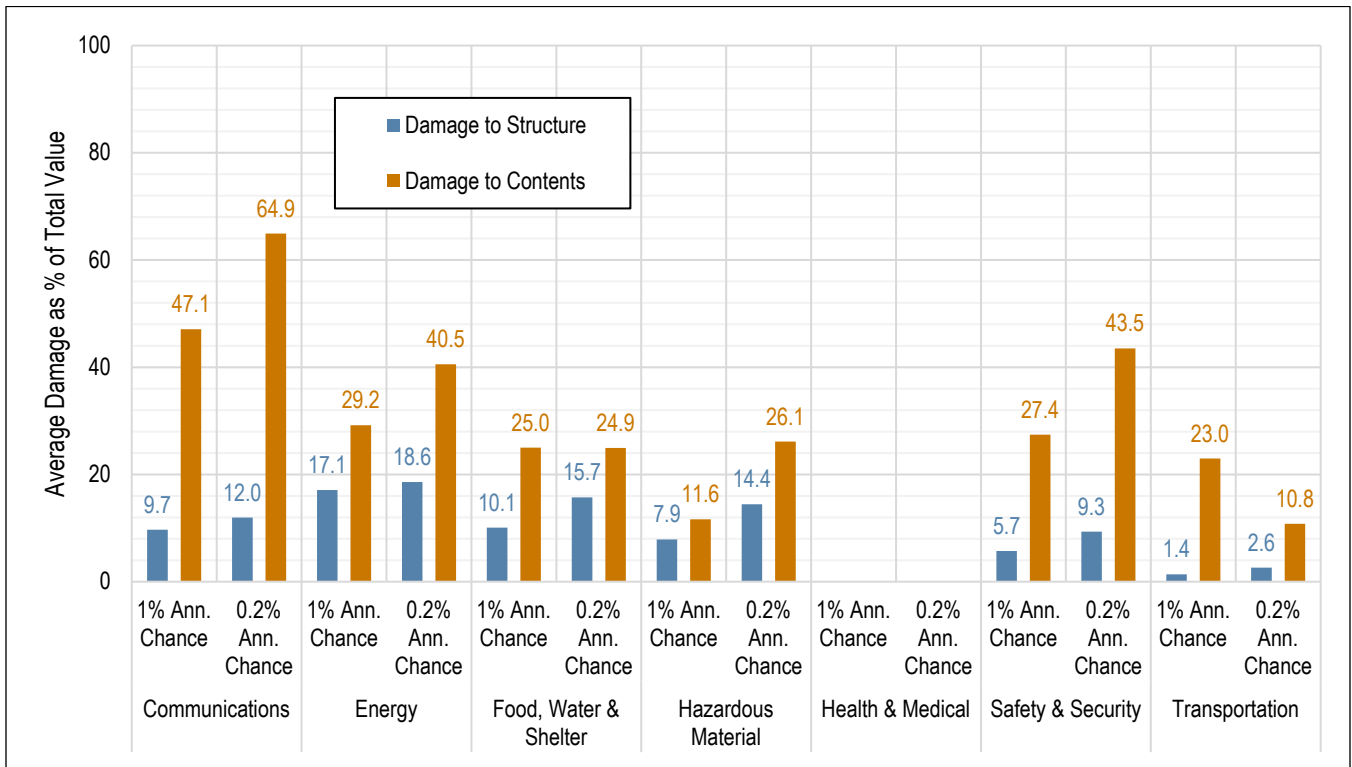


Figure 11-10. Average Damage to Critical Facilities from 1% and 0.2% Annual Chance Floods



Impacts on Hazardous Materials

During a flood event, containers holding hazardous materials can rupture and leak into the surrounding area. These facilities could release chemicals that cause cancer or other human health effects, significant adverse acute human health effects, or significant adverse environmental effects.

Impacts on Utilities and Infrastructure

Roads that are blocked or damaged can isolate residents and can prevent access throughout the planning area, including for emergency service providers needing to get to vulnerable populations or to make repairs. Bridges washed out or blocked by floods or debris also can cause isolation. Underground utilities can be damaged. Levees can fail or be overtopped, inundating the land that they protect. Floodwaters can back up drainage systems, causing localized flooding. Culverts can be blocked by debris from flood events, also causing localized urban flooding. Floodwaters can get into drinking water supplies, causing contamination. Sewer systems can be backed up, causing wastewater to spill into homes, neighborhoods, rivers, and streams.

11.4.4 Environment

Flooding can impact the environment in negative ways. Migrating fish can wash into roads or over dikes into flooded fields, with no possibility of escape. Pollution from roads, such as oil, and hazardous materials can wash into rivers and streams. During floods, these can settle onto normally dry soils, polluting them for agricultural uses. Human development, such as bridge abutments, levees, or logjams from timber harvesting, can increase stream bank erosion, causing rivers and streams to migrate into non-natural courses.

Many species of mammals, birds, reptiles, amphibians, and fish live in the planning area in plant communities that are dependent upon streams, wetlands, and floodplains. Wildlife and fish are impacted when plant communities are eliminated or fundamentally altered to reduce habitat. Since water supply is a major limiting factor for many animals, riparian communities are of special importance.

Loss estimation platforms such as Hazus are not currently equipped to measure environmental impacts of flood hazards. The best gauge of vulnerability of the environment would be a review of damage from past flood events. Loss data that segregates damage to the environment was not available at the time of this plan. Capturing this data from future events could be beneficial in measuring the vulnerability of the environment for future updates.

11.5 SCENARIO

The major river systems in Ventura County flood at irregular intervals, but generally in response to a succession of intense winter rainstorms. Storm patterns of warm, moist air usually occur between early November and late March. A series of such storms can cause severe flooding in Ventura County. The worst-case scenario is a series of storms that flood numerous drainage basins in a short time. This would overwhelm local response and floodplain management departments. Major roads would be blocked, preventing access for many residents and critical functions. High river flows could cause rivers to scour, possibly washing out roads and creating more isolation problems. In the case of multi-basin flooding, the county would not be able to make repairs quickly enough to restore critical facilities.

11.6 ISSUES

The planning team has identified the following flood-related issues relevant to the planning area:

- Accuracy of existing flood hazard mapping by FEMA regarding true flood risk within the planning area is questionable. This is most prevalent within areas protected by levees not accredited by the FEMA mapping process.
- Extent of flood protection currently provided by flood control facilities (dams, dikes, and levees) is not known due to lack of established national policy on flood protection standards.
- The levee system within the planning area is not consistently adequate to mitigate effects of a 1 percent-annual-chance flood.
- Risk associated with the flood hazard overlaps risks associated with other hazards such as earthquakes, landslides, and coastal erosion. This provides opportunity to seek mitigation alternatives with multiple objectives that can reduce risks from multiple hazards.
- Land-use practices are not consistent with the scope of regulatory floodplain management within the planning area.
- How climate change will affect flood conditions in Ventura County is uncertain.
- More information is needed regarding flood risk to support the concept of risk-based analysis of capital projects.
- To determine cost-effectiveness of future mitigation projects, sustained effort is necessary to gather damage reports and historical damage data such as high-water marks on structures.
- Ongoing flood hazard mitigation will require funding from multiple sources.
- A coordinated hazard mitigation effort is necessary among jurisdictions affected by flood hazards within the County.
- Floodplain residents must continue to seek and receive information about flood preparedness and resources available during and after floods.
- The concept of residual risk should be considered in design of future capital flood control projects and should be communicated to residents living in the floodplain.
- Promotion of flood insurance as a means of protecting private property owners from economic impacts of frequent flood events should continue.
- Existing floodplain-compatible uses such as agricultural and open space must be maintained. Pressure is constant to convert these existing uses to more intense uses within the planning area during times of moderate to high growth.
- The economy affects a jurisdiction's ability to manage its floodplains. Budget cuts and personnel losses can strain resources needed to support floodplain management.

12. LANDSLIDE

12.1 GENERAL BACKGROUND

A landslide is a mass of rock, earth or debris moving down a slope. Landslides may be minor or large and can move at slow to very high speeds. Mudslides are rivers of rock, earth, organic matter, and other soil materials saturated with water. They develop in the soil overlying bedrock on sloping surfaces when water rapidly accumulates in the ground, such as during heavy rainfall or rapid snowmelt.

Landslides in hillside terrain can pose serious hazard to downslope property and structures. They can disrupt roadways and other infrastructure lifelines, destroy private property, and cause flooding, bank erosion, and rapid channel migration. A slide can move rapidly down slopes or through channels and can strike with little or no warning. It can travel miles from its source, growing as it descends, picking up trees, boulders, cars, and anything else in its path. Although slides behave as fluids, they convey many times the hydraulic force of water due to the mass of material they carry.

In spite of their destructive potential, landslides can serve beneficial functions to the natural environment. They supply sediment and large wood to the channel network and can contribute to complexity and dynamic channel behavior critical for aquatic and riparian ecological diversity.

12.1.1 Landslide Causes

Slides are caused by a combination of geological and climate conditions and the influence of urbanization. They can be initiated by storms, earthquakes, fires, volcanic eruptions, or human modification of the land. Vulnerable natural conditions are affected by human development and the infrastructure that supports it. In some cases, irrigation increases the landslide potential. The following factors can contribute to slide formation:

- Change in slope of the terrain
- Increased load on the land
- Shocks and vibrations
- Change in water content
- Groundwater movement
- Frost action
- Weathering of rocks
- Removing or changing the type of vegetation covering slopes.

While small landslides are frequently a result of human activity, the largest landslides are often naturally occurring phenomena with little or no human contribution. The sites of large landslides are typically areas of previous landslide movement that are periodically reactivated by significant precipitation or seismic events.

12.1.2 Landslide Risk Areas

Landslides are typically a function of soil type and steepness of slope. Soil type is a key indicator for landslide potential and is used by geologist and geotechnical engineers to determine soil stability for construction standards. In general, landslide hazard areas are where the land has characteristics that contribute to the risk of the downhill movement of material, such as the following:

- A slope greater than 33 percent
- Post-wildfire areas
- A history of landslide activity or movement during the last 10,000 years
- Stream or wave activity, which has caused erosion, undercut a bank or cut into a bank to cause the surrounding land to be unstable
- The presence or potential for snow avalanches
- The presence of an alluvial fan, indicating vulnerability to the flow of debris or sediments
- The presence of impermeable soils, such as silt or clay, mixed with granular soils, such as sand or gravel.

The best predictor of where slides might occur is the location of past movements. Past landslides can be recognized by their distinctive topographic shapes, which can remain in place for thousands of years. Most landslides recognizable in this fashion range from a few acres to several square miles. Most show no evidence of recent movement and are not currently active. A small proportion of them may become active in any given year, with movements concentrated within all or part of the landslide masses or around their edges. The recognition of ancient dormant landslide sites is important in the identification of areas susceptible to flows and slides because they can be reactivated by earthquakes or by exceptionally wet weather. Also, because they consist of broken materials and frequently involve disruption of groundwater flow, these dormant sites are vulnerable to construction-triggered sliding.

12.1.3 Secondary Hazards

Landslides that block rivers or streams can contribute to flooding.

12.2 HAZARD PROFILE

12.2.1 Past Events

Table 12-1 lists known landslide events that affected Ventura County between 1995 and 2021.

Table 12-1. Landslide Events in the Planning Area

Date	Event Type	FEMA Declaration Number	Location
March 8, 2016	Mudslide	N/A	Solimar
Losses/Impacts: Near the Solimar burn area, heavy rain produced a mud and debris flow across Highway 101.			
December 2014	Landslide, Mudslide	N/A	Camarillo Springs
Losses/Impacts: Heavy rains destabilized the wildfire char area above Camarillo Springs. 13 homes were damaged and considered uninhabitable.			
February 16 – 23, 2005	Severe Storms, Flooding, Landslides, and Mud and Debris Flows	DR-1585	Ventura County
Losses/Impacts: Seven Southern California counties were included in the declaration.			
Winter 2005	Landslide, Debris Flow, Severe Storm	N/A	West of Santa Paula
Losses/Impacts: A large landslide that transformed into a debris flow and smaller landslides was triggered by strong winter storms			
January 10, 2005	Landslide	N/A	La Conchita
Losses/Impacts: The landslide occurred at the end of a 15-day period that produced record and near-record amounts of rainfall in many areas of southern California. It consisted of a remobilization of a portion of the 1995 landslide deposit. It destroyed 13 homes and severely damaged 23 others. Ten people died.			
Dec. 27, 2004 – Jan. 11, 2005	Severe Storms, Flooding, Debris Flows, and Mudslides	DR-1577	Ventura County
Losses/Impacts: Eight Southern California counties were included in the declaration.			
March 4, 1995	Landslides, Debris Flow, Severe Storm	N/A	La Conchita
Losses/Impacts: After seasonal rainfall approximately twice the normal amount, the hill behind La Conchita failed, destroying or severely damaging nine homes. Several days later, debris flows from a canyon to the northwest damaged five additional homes.			
February 13 – April 19, 1995	Severe Winter Storms, Flooding, Landslides, Mud Flows	DR-1046	Ventura County
Losses/Impacts: All California counties except Del Norte were included in this declaration. More than 100 stations recorded their greatest ever 1-day rainfall total.			
Jan. 3 – Feb. 10, 1995	Severe Winter Storms, Flooding, Landslides, Mud Flows	DR-1044	Ventura County
Losses/Impacts: 42 California counties were included in this declaration.			

Source: USGS 2005, TWC 2015, FEMA 2021

The bluff above La Conchita, which is underlain by two rock formations separated by the Red Mountain fault, has been associated with a variety of landslide activity. Historical accounts date back to 1865. More recently, two small slides occurred in 1988 and 1991, followed by large movements in 1995 and 2005. The 1995 landslide, which occurred one month after the heaviest rainfall of an extraordinarily wet year, was considered to be a deep, slow-moving landslide. This landslide destroyed nine houses. The January 2005 event was a shallow and highly fluid remobilization of the same material that carried a thick layer of dry, viscous material. This landslide, which occurred at the peak of an extremely wet two-week period, killed 10 people and destroyed 13 homes. Approximately 400,000 tons of debris cascaded down the slope behind the La Conchita housing development.

12.2.2 Location

In 2011, the California Geological Survey conducted a statewide analysis using a combination of regional rock strength and slope data to create classes of susceptibility to deep-seated landslides. The analysis assumed, in general, that susceptibility to deep-seated landslides is low on very low slopes in all rock materials and increases with slope and in weak rocks. The analysis also factored in locations of past landslides. Figure 12-1 shows deep-seated landslide susceptibility classes (none, low, moderate, high, and very high).

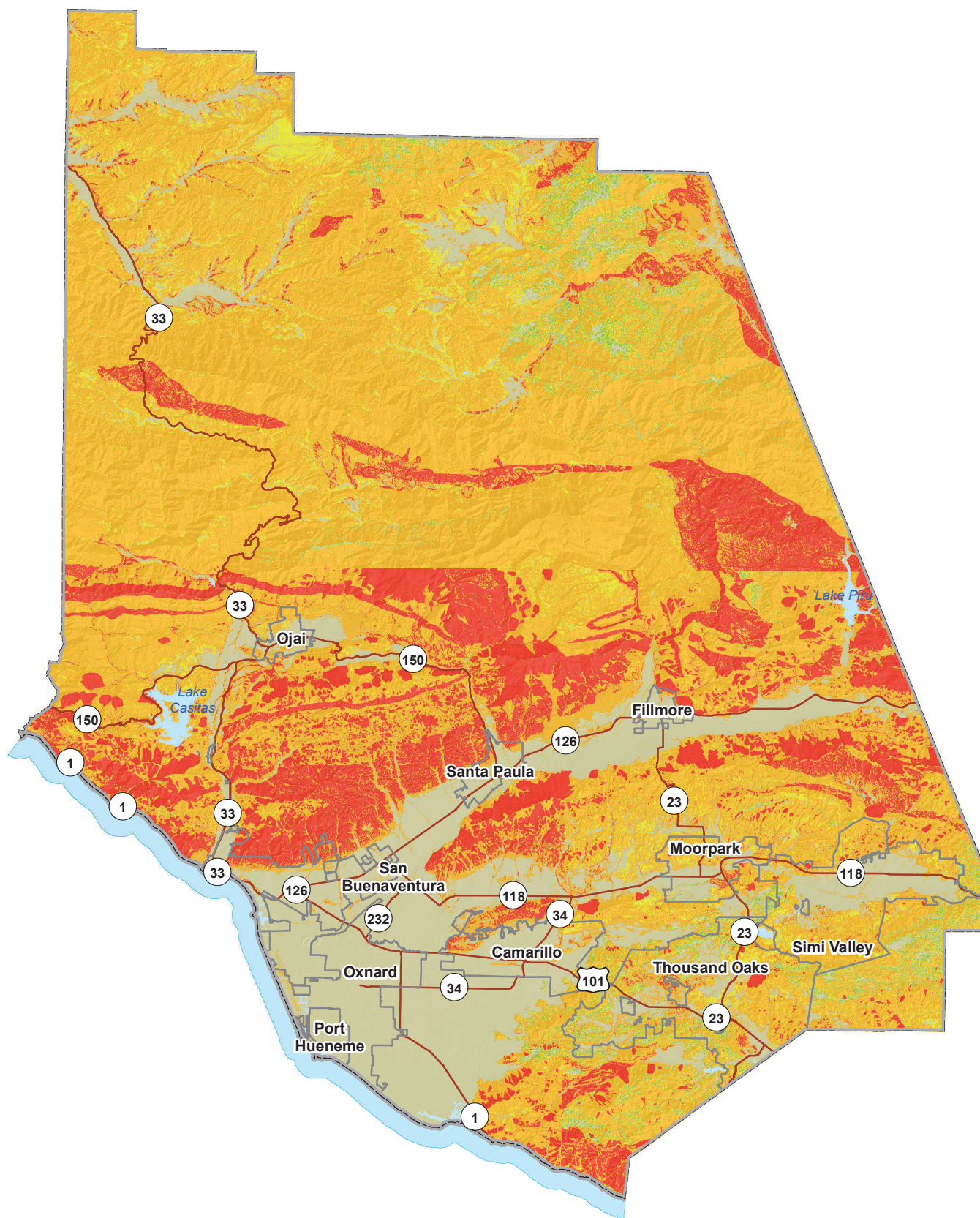
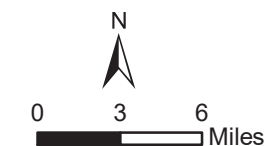
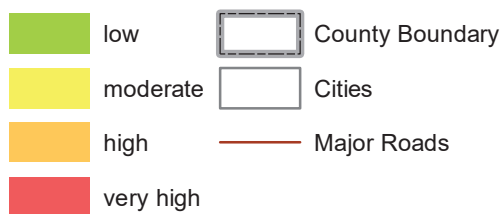


Figure 12-1. Susceptibility to Deep-Seated Landslides



Data Sources: Ventura Co.,
CGS, Esri

Landslides have occurred in areas along the Rincon Fault and on hillsides south of the Santa Clara River and east of the Ventura River. The most damaging recent landslides in Ventura County occurred in the coastal community of La Conchita, just southeast of the Santa Barbara county line. La Conchita has been the site of multiple non-earthquake-induced landslides. The community was built on ground that had been graded by the Southern Pacific Railroad after a 1909 landslide slid into the railroad tracks. The land was intended to be a buffer zone between the retreating and eroding cliff and the Pacific Ocean, but it was subdivided into residential lots in 1924.

12.2.3 Frequency

Mass movements are often triggered by other natural hazards such as earthquakes, heavy rain, floods or wildfires, so their frequency is often related to the frequency of the precipitating hazards. In Ventura County, landslides typically occur during and after severe storms, so the potential for landslides largely coincides with the potential for sequential severe storms that saturate steep, vulnerable soils. Most weather-induced landslides in the county occur in the winter after the water table has risen. Landslides that result from earthquakes can occur at any time.

The probability of a landslide event occurring in the County in any given year is high. Table 12-1 lists nine landslide events in the County between 1995 and 2021. Federal disaster declarations were issued for four of these—an average of one such major event every six years.

12.2.4 Severity

Landslides destroy property and infrastructure and can claim human lives. They have the potential of destabilizing the foundation of structures, which may result in monetary loss for residents. Slope failures in the United States result in an average of 25 to 50 lives lost per year (U.S. Geological Survey 2020). Over the past 26 years, 10 lives have been lost in Ventura County from slope failures. Slides can pose a serious hazard to properties on or below hillsides. They can block access to roads, which can isolate residents and businesses and delay commercial, public, and private transportation. This can result in economic losses for businesses. Trees or utility poles on slopes can be knocked over, resulting in possible losses to power and communication lines. Landslides also can damage rivers or streams, potentially harming water quality, fisheries, and spawning habitat.

12.2.5 Warning Time

Landslides can occur suddenly or slowly. The velocity of slide may range from a slow creep of inches per year to many feet per second, depending on slope angle, material, and water content. Generally accepted warning signs for landslide activity include the following:

- Springs, seeps, or saturated ground in areas that have not typically been wet before
- New cracks or unusual bulges in the ground, street pavements, or sidewalks
- Soil moving away from foundations
- Ancillary structures such as decks and patios tilting or moving relative to the main house
- Tilting or cracking of concrete floors and foundations
- Broken water lines and other underground utilities

- Leaning telephone poles, trees, retaining walls or fences
- Offset fence lines
- Sunken or down-dropped road beds
- Rapid increase in creek water levels, possibly accompanied by increased turbidity (soil content)
- Sudden decrease in creek water levels though rain is still falling or just recently stopped
- Sticking doors and windows and visible open spaces indicating frames out of plumb
- A faint rumbling sound that increases in volume as the landslide nears
- Unusual sounds, such as trees cracking or boulders knocking together.

Some methods used to monitor landslides can provide an idea of the type of slide and the amount of time prior to failure. Assessing the geology, vegetation, and amount of predicted precipitation for an area can help in predictions of what areas are at risk during general time periods. Currently, there is no practical warning system for individual landslides, however. The standard operating procedure is to monitor situations on a case-by-case basis and respond after an event has occurred.

12.3 EXPOSURE

A quantitative assessment of exposure to the mass movement/landslide hazard was conducted using the landslide hazard mapping and the asset inventory developed for this plan, with an emphasis on the zones with the highest degree of susceptibility (Zones V through X). Detailed results by jurisdiction are provided in Appendix D. Results for the whole planning area are presented in the sections below.

12.3.1 Population

Population exposure was estimated by calculating the number of buildings in each hazard area as a percent of total planning area buildings, and then applying this percentage to the estimated planning area population. Table 12-2 summarizes the estimated countywide population living in the mapped landslide risk areas.

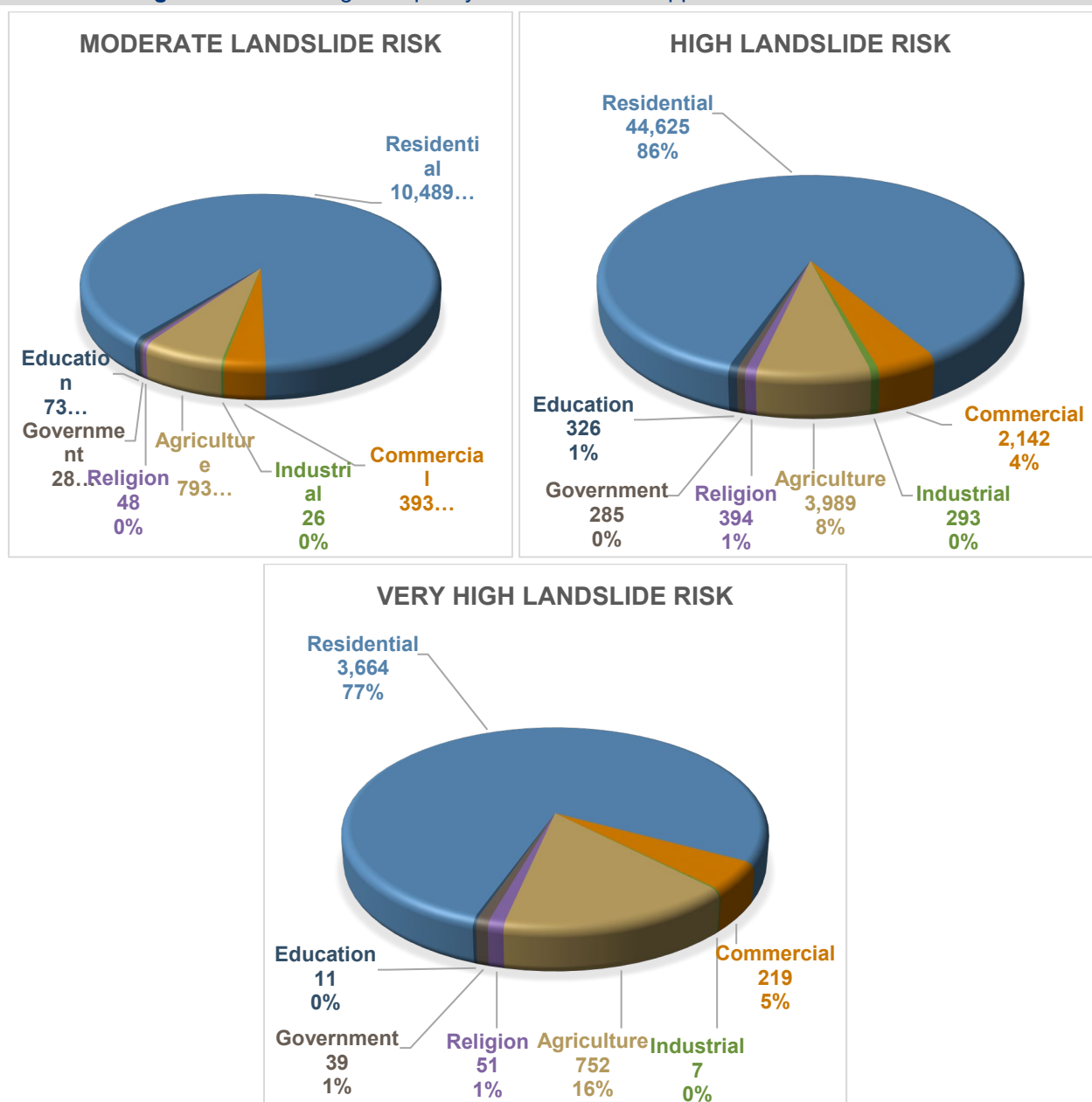
Table 12-2. Exposed Population in Mapped Landslide Hazard Zones			
	Moderate Landslide Risk (Susceptibility Categories V and VI)	High Landslide Risk (Susceptibility Categories VII, VIII, IX)	Very High Landslide Risk (Susceptibility Category X; Includes existing landslides)
Population Exposed	35,958	151,866	12,500
% of Total Planning Area Population	4.3%	18.0%	1.5%

12.3.2 Property

Table 12-3 summarizes the estimated property exposure in the evaluated landslide hazard areas. Figure 12-2 shows the occupancy class defined by Hazus for all buildings in the mapped landslide hazard areas. These occupancy classes provide an indication of land use within the mapped hazard area. Some land uses are more vulnerable to landslides, such as single-family homes, while others are less vulnerable, such as agricultural land or parks.

Table 12-3. Exposed Property in Mapped Landslide Hazard Zones

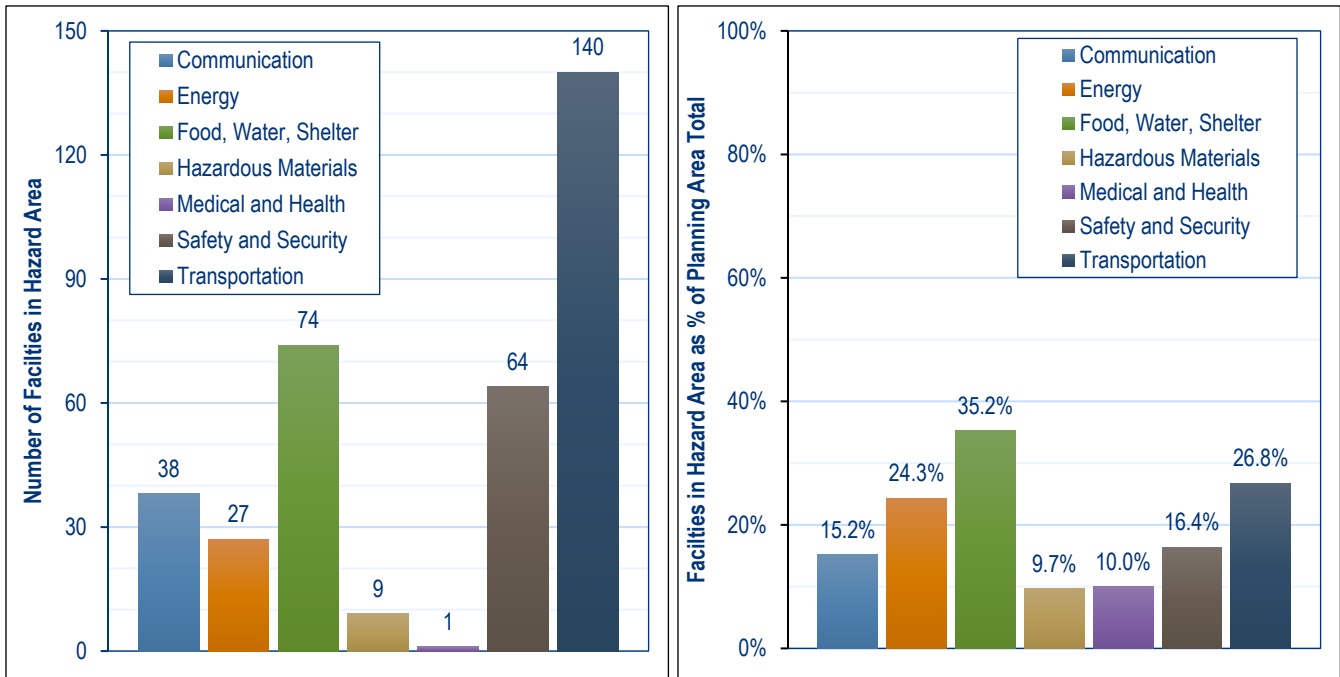
	Moderate Landslide Risk (Susceptibility Categories V and VI)	High Landslide Risk (Susceptibility Categories VII, VIII, IX)	Very High Landslide Risk (Susceptibility Category X; Includes existing landslides)
Number of Buildings Exposed	11,850	52,054	4,743
Value of Exposed Structures	\$4,978,606,389	\$20,201,170,128	\$1,802,233,448
Value of Exposed Contents	\$2,924,877,062	\$12,899,948,351	\$1,122,397,897
Total Exposed Property Value	\$7,903,483,451	\$33,101,118,479	\$2,924,631,346
Total Exposed Value as % of Planning Area Total	4.4%	18.3%	1.6%

Figure 12-2. Building Occupancy Classes in the Mapped Landslide Hazard Zones

12.3.3 Critical Facilities

Figure 12-3 shows critical facilities located in the high or very high landslide risk areas, by facility type. The total count of critical facilities in these risk areas (341) represents 22 percent of the planning area total of 1,588. A breakdown by municipality is provided in Appendix D.

Figure 12-3. Critical Facilities in High or Very High Landslide Risk Areas



12.3.4 Environment

All natural areas within the high susceptibility zones for landslide are considered to be exposed to the hazard.

12.4 VULNERABILITY

Vulnerability estimates for the landslide hazard are described qualitatively. No loss estimation of these facilities was performed because damage functions have not been established for the landslide hazard.

12.4.1 Population

All people exposed the landslide hazard are potentially vulnerable to landslide impacts. Populations with access and functional needs as well as elderly populations and the very young are more vulnerable to the landslide hazards as they may not be able to evacuate quickly enough to avoid the impacts of a landslide.

12.4.2 Property

Estimates of potential losses associated with landslides were developed representing 10 percent, 30 percent, and 50 percent of the replacement value of structures exposed to the landslide hazard. This allows emergency managers to assess potential economic impact based on assumptions about the percent of damage to the general building stock. Damage in excess of 50 percent is considered to be substantial by most building codes and typically requires total reconstruction of the structure.

Table 12-4 shows potential losses in the areas with the highest degree of landslide susceptibility.

Table 12-4. Loss Estimation for Landslide

	Exposed Value (Structure Only)	Loss Value	Loss as % of Total Planning Area Replacement Value
Moderate Landslide Susceptibility Zone			
Loss = 1% of Exposed Value	\$4,978,606,389	\$49,786,064	0.03%
Loss = 10% of Exposed Value		\$497,860,639	0.28%
Loss = 30% of Exposed Value		\$1,493,581,917	0.83%
Loss = 50% of Exposed Value		\$2,489,303,195	1.38%
High Landslide Susceptibility Zone			
Loss = 1% of Exposed Value	\$20,201,170,128	\$202,011,701	0.11%
Loss = 10% of Exposed Value		\$2,020,117,013	1.12%
Loss = 30% of Exposed Value		\$6,060,351,038	3.35%
Loss = 50% of Exposed Value		\$10,100,585,064	5.59%
Very High Landslide Susceptibility Zone			
Loss = 1% of Exposed Value	\$1,802,233,448	\$18,022,334	0.01%
Loss = 10% of Exposed Value		\$180,223,345	0.10%
Loss = 30% of Exposed Value		\$540,670,034	0.30%
Loss = 50% of Exposed Value		\$901,116,724	0.50%

12.4.3 Critical Facilities

There are 341 critical facilities exposed to the landslide hazard to some degree. An in-depth analysis of mitigation measures taken by these facilities should be completed to evaluate whether they could withstand impacts of a landslide. No loss estimates were developed as a result of the lack of established damage functions for the landslide hazard.

12.4.4 Environment

Environmental problems as a result of landslides can be numerous. A landslide alters the landscape. In addition to changes in topography, vegetation and wildlife habitats may be damaged or destroyed, and soil and sediment runoff will accumulate downslope, potentially blocking waterways and roadways and impairing the quality of streams and other water bodies. Landslides that fall into streams may significantly impact fish and wildlife habitat, as well as affecting water quality. Hillsides that provide wildlife habitat can be lost for prolonged periods of time due to landslides.

12.5 SCENARIO

Major landslides in Ventura County typically occur as a result of soil conditions affected by severe storms, wildfires, groundwater, or human development. The worst-case scenario for landslide hazards in the planning area would generally correspond to a severe storm with heavy rain that caused flooding in an area that had been burned by wildfire. Landslides are more likely during the late winter when the water table is high. After heavy rains from November to December, soils become saturated with water. As water seeps downward through upper soils that may consist of permeable sands and gravels and as it accumulates on impermeable silt, it will weaken and destabilize the slope. A short intense storm could cause saturated soil to move, resulting in landslides. As rains continue, the groundwater table rises, adding to the weakening of the slope. Gravity, poor drainage, a rising groundwater table, and poor soil exacerbate hazardous conditions.

Landslides are becoming a greater concern as development moves outside of city centers and into areas with less developed infrastructure. Most landslides would be isolated events affecting specific areas. It is probable that private and public property, including infrastructure, would be affected. Landslides could affect bridges that pass over landslide-prone ravines and knock out rail service through the County. Road obstructions caused by landslides would create isolation problems for residents and businesses in sparsely developed areas. Property owners exposed to steep slopes may suffer damage to property or structures. Landslides carrying vegetation such as shrubs and trees may cause a break in utility lines, cutting off power and communications to residents.

Continued heavy rains and flooding would complicate the problem further. As emergency response resources are applied to problems with flooding, it is possible they will be unavailable to assist with landslides across Ventura County.

12.6 ISSUES

Important issues associated with landslides in the planning area include the following:

- The data and science regarding mapping and assessing landslide hazards are constantly evolving. As new data and science become available, assessments of landslide risk should be re-evaluated.
- The impact of climate change on landslides is uncertain. If climate change affects atmospheric conditions, the exposure to landslide risks in Ventura County could increase.
- There are existing homes in landslide risk areas throughout the County. The degree of vulnerability of these structures depends on the codes and standards applied in constructing the structures.
- Future development could lead to more homes in landslide risk areas.
- Landslides may cause negative environmental consequences, including water quality degradation.
- The risk associated with the landslide hazard overlaps the risk associated with other hazards, including earthquake, flooding, and wildfire. The County has an opportunity to seek mitigation alternatives with multiple objectives that can reduce risk for multiple hazards.

13. SEA-LEVEL RISE AND COASTAL EROSION

13.1 GENERAL BACKGROUND

13.1.1 Coastal Erosion

Coastal erosion occurs when strong wave action, coastal floods, and local sea-level rise wear away rocks, soil, and sand along a coastline. This is compounded during severe storm events. In the United States, coastal erosion causes roughly \$500 million in property loss each year. Coastal erosion affects all shorelines, but erosion rates and potential impacts are highly localized (U.S. Climate Resilience Toolkit 2021). Coastal erosion can exacerbate high surf or tsunami/run-up incidents along coast flood zones subject to wave action. Coastal erosion includes:

- Beach erosion, when sand is carried away from a beach and deposited farther from shore
- Dune erosion, when sand or sediment not normally affected by wave action is carried away from land and deposited farther from shore

Low air pressure during a storm causes an immediate rise in sea level above predicted tides, referred to as storm surge. It also increases wind activity, generating erosive waves on top of the already high sea level. This combination of factors can cause widespread damage in coastal areas. Sandy beaches and dunes are at risk from inundation and erosion related to sea-level rise and climate change-induced storms (The Nature Conservancy 2021a).

The following human activities may increase coastal erosion:

- Shoreline hardening such as building seawalls, which may protect land directly behind the structure but can accelerate coastal erosion on the waterward side of the structure due to scouring.
- Dune leveling for development, which removes the natural protection from high waves and sea-level rise.
- Canalization to control flash flooding, which may trap sand in coastal channel mouths. Accumulated sand may be removed offsite, leaving a deficiency in the immediate beach area.
- Salt mining

13.1.2 Sea-Level Rise

Sea-level rise will increase the risk of erosion and the adverse impacts of storm surge and high waves. Short-term variations in sea level occur daily as a result of waves, tides, or specific flood events. Long-term variations in sea level occur over various time scales, from monthly to yearly, and may be

repeatable cycles, gradual trends, or intermittent differences. Seasonal weather patterns, changes in coastal and ocean circulation, anthropogenic influences, vertical land motion, and other factors may influence changes in the sea level over time. When sea level trends are estimated, a minimum of 30 years of data are used to account for long-term sea level variations and reduce errors in computing sea level trends based on the monthly mean sea level (National Oceanic and Atmospheric Administration 2021).

The two major causes of sea-level rise are thermal expansion caused by the warming of the oceans and loss of land-based ice (glaciers and polar ice caps) through increased melting. A steady increase in global atmospheric temperature creates an expansion of saltwater molecules, increasing ocean volume. The melting of glaciers and continental ice masses contributes significant amounts of freshwater to the earth's oceans. Ice-mass loss has caused twice as much sea-level rise since 1900 as has thermal expansion. The acceleration in sea-level rise since the 1970s has resulted from the combination of thermal ocean expansion and increased ice-mass loss from Greenland (Frederikse, et al. 2020).

There are two types of sea level: global and relative. Global sea level refers to the average sea level worldwide. Global sea level has been rising over the past century, and the rate has increased in recent decades. In 2014, global sea level was 2.6 inches above the 1993 average—the highest annual average change in the satellite record (1993 to present). Sea level continues to rise at a rate of about one-eighth of an inch per year (National Oceanic and Atmospheric Administration 2021).

Local sea level refers to the height of water measured along the coast relative to a specific point on land. The heights of both the land and water are changing, so the land-water interface can vary spatially and temporally and must be defined over time. Measurements at any given tide station include the effects of both global sea-level rise and vertical land motion (subsidence, glacial rebound, or large-scale tectonic motion). Water level measurements at tide stations are referenced to stable vertical points on the land, and a known relationship is established. Changes in local sea level over time are typically the most critical sea level trend for coastal applications such as coastal mapping, marine boundary delineation, coastal zone management, coastal engineering, and sustainable habitat restoration (National Oceanic and Atmospheric Administration 2021).

13.1.3 Secondary Hazards

Loss of beaches due to erosion and sea-level rise can have negative impacts on ecosystems, native species, cultural and historical sites, recreation, subsistence practices, and tourism.

13.2 HAZARD PROFILE

13.2.1 Past Events

Coastal Erosion

Known coastal erosion events affecting Ventura County between 1980 and 2021 are identified in Table 13-1.

Table 13-1. History of Coastal Erosion Events

Date	Event Type	FEMA Declaration Number	Location
January 2021 Losses/Impacts:	Coastal Erosion	N/A	Surfer's Point, City of San Buenaventura
The 2021 damage was more than anticipated, as relatively calm conditions were predicted with "La Niña" conditions dominating the Pacific Ocean. However, an anomalous storm track developed producing a series of large swell events during the entire month of January, some coinciding with the year's highest tides. Erosion undermined the bike path and several parking spaces.			
February 2014 Losses/Impacts:	Coastal Erosion	N/A	Port Hueneme
14 feet of sand washed away during the month of February			
February 27, 2010 Losses/Impacts:	Tsunami, Coastal Erosion	N/A	Ventura Harbor
Tsunami waves in excess of 3 feet affected the coastal areas of Ventura County. At Ventura Harbor, the tsunami damaged at least 21 docks, displaced several buoys, and produced some significant beach erosion.			

Sources: KABC 2014, venturariver.org 2021, NOAA 2021

The beaches south of Channel Islands Harbor are subject to continual erosion. Every two years, the harbor is dredged to remove sand that has accumulated from beach erosion and sand migration. The sand is used to replenish eroded sand at Port Hueneme Beach (U.S. Army Corps of Engineers 2021).

The City of San Buenaventura has had ongoing erosion at Surfer's Point, a popular surfing spot adjacent to the mouth of the Ventura River. A California State Park bike path along the shoreline and an adjacent county fairground parking lot have also experienced frequent damage from erosion. To protect the point, the City placed boulders in the 1980s above the mean high tide line. The project ended up exacerbating erosion further down the coast and the fairground parking lot and bike path have continued to erode into the ocean; in some places more than 60 feet of land have been lost (Georgetown Climate Center 2011). The Surfers' Point Managed Shoreline Retreat Project has since pulled existing structures inland to make room for natural beach processes. Though the situation has improved, rising sea levels will continue to threaten the beach (U.S. Climate Resilience Toolkit 2021).

Sea-Level Rise

The average annual mean sea level recorded by NOAA at the Los Angeles station for 1950 was 2.5955 feet. By 2020, the elevation had risen to 2.9724 feet. This represents a sea-level rise of more than 4.5 inches in 70 years (National Oceanic and Atmospheric Administration 2021).

13.2.2 Location

Ninety-three percent of Ventura County's shoreline consists of sandy beaches. Sea-level rise and coastal erosion are likely to affect all coastal areas of the county. The North Coast beaches are highly vulnerable to erosion and wave damage. Dredging operations in Santa Barbara Harbor alter sand transport down coast. Without adequate replacement sand, high tides and waves erode the beaches. The Central Coast is subject to erosion during periods of high tides and wave action. Major erosion occurs on the South Coast during winter, including nearly 2 feet of annual erosion at Sycamore Beach (Ventura County 2020). The Our Coast Our Future sea-level rise data was used in the risk assessment for this hazard mitigation plan. The data indicate sea-level rise inundation areas for a sea-level rise of 25 centimeters and 100 centimeters. The mapped inundation areas for these two scenarios (25-cm SLR and 100-cm SLR) are shown on Figure 13-1 and Figure 13-2.



Figure 13-1. Estimated Inundation Area for 25-Centimeter Sea Level Rise

- Inundation Area
- County Boundary
- Cities
- Major Roads

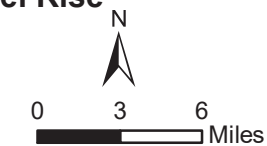


Data Sources: Ventura Co.,
OCOF, Esri



Figure 13-2. Estimated Inundation Area for 100-Centimeter Sea Level Rise

-  Inundation Area
-  County Boundary
-  Cities
-  Major Roads



Data Sources: Ventura Co.,
OCOF, Esri

13.2.3 Frequency

Coastal erosion results from storms and flooding, which typically occur in California in winter (November to April). Storm severity and frequency are influenced by climate patterns, most prominently the El Niño Southern Oscillation. Every two to seven years, the Southern Oscillation alternates between two phases—La Niña and El Niño. El Niño years generally result in persistently low air pressure, greater rainfall, and high winds. The water levels reached during these large, short-term events have exceeded mean sea levels projected for 2100, so understanding their additive effects is crucial for coastal planning. Individual erosion events are not regularly reported; however, according to the Ventura County General Plan 2040, many coastal areas experience annual beach erosion including:

- Faria Beach Park: 1.3 feet per year
- Emma Wood State Beach: 0.6 feet per year
- Point Mugu State Park, Sycamore Beach: 1.9 feet per year
- Point Mugu State Park, Solromar Beach: 0.9 feet per year

Sea-level rise is an ongoing phenomenon that will likely impact the frequency and severity of coastal storms. As sea-level rises, flooding from storms will become more frequent and potentially more hazardous.

13.2.4 Severity

Coastal erosion can destroy property and infrastructure and cause loss of human life. Erosion has the potential to destabilize the foundation of structures, which may result in monetary loss for residents. The collapse of coastal cliffs can be deadly, although it is unknown if any deaths have occurred in Ventura County as a result of coastal erosion.

The severity of sea-level rise to Ventura County will become greater over the next 30 to 80 years. The severity could be exacerbated by the following conditions:

- Daily tidal inundation—As sea-level rises, the amount of land and infrastructure subjected to daily inundation by high tides—also known as increases in mean higher high water—will increase. This would result in increased permanent future inundation of low-lying areas.
- Annual high tide inundation (King Tides)—King Tides are abnormally high, predictable astronomical tides that occur about twice per year. They are the highest tides that occur each year during the winter and summer when the Earth, moon and sun are aligned. Winter King Tides may be amplified by stormy weather, making them even more significant. King Tides result in temporary inundation associated with nuisance flooding, such as inundation of low-lying roads, boardwalks, and waterfront promenades.
- Extreme high tide inundation (storm surge)—When Pacific Ocean storms coincide with high tides, storm surge can elevate ocean levels and produce extreme high tides. Extreme high tides can cause severe inundation of low-lying roads, boardwalks, and promenades. They can exacerbate coastal and riverine flooding, cause upstream flooding, and interfere with stormwater outfalls.

13.2.5 Warning Time

Sea-level rise is not a hazard that requires near-term advance warning to support response and recovery operations. Programs such as the NOAA sea-level rise program are keeping an active watch on the sea-level rise phenomena to keep communities informed of its progression. This stream of information will feed programs to help the County to be prepared for and mitigate the long-term impacts from sea-level rise.

The timing of individual erosion events cannot be predicted, however general forecasting can be made about high surf conditions, which often result in advanced beach erosion. High surf warnings and high surf advisories are issued by the National Weather Service.

13.3 EXPOSURE

An analysis was performed using the 25-cm SLR and 100-cm SLR sea-level rise scenarios to estimate the potential exposure of resources within the planning area. Appendix D presents detailed exposure results for each coastal city in the planning area. County-wide summary results are presented in the sections below. Exposure analysis is not available for coastal erosion due to a lack of data, and storm events were not combined with the sea-level rise analysis. If erosion, large wave events, and storms were included, the exposure metrics and vulnerability results for population, property, and critical facilities would be substantially higher.

13.3.1 Population

The planning team overlaid the sea-level rise projection data on the population and asset data developed for the hazard risk assessment for this plan. Results for the total planning area are presented in Table 13-2.

Table 13-2. Estimated Population Exposure for Sea-Level Rise

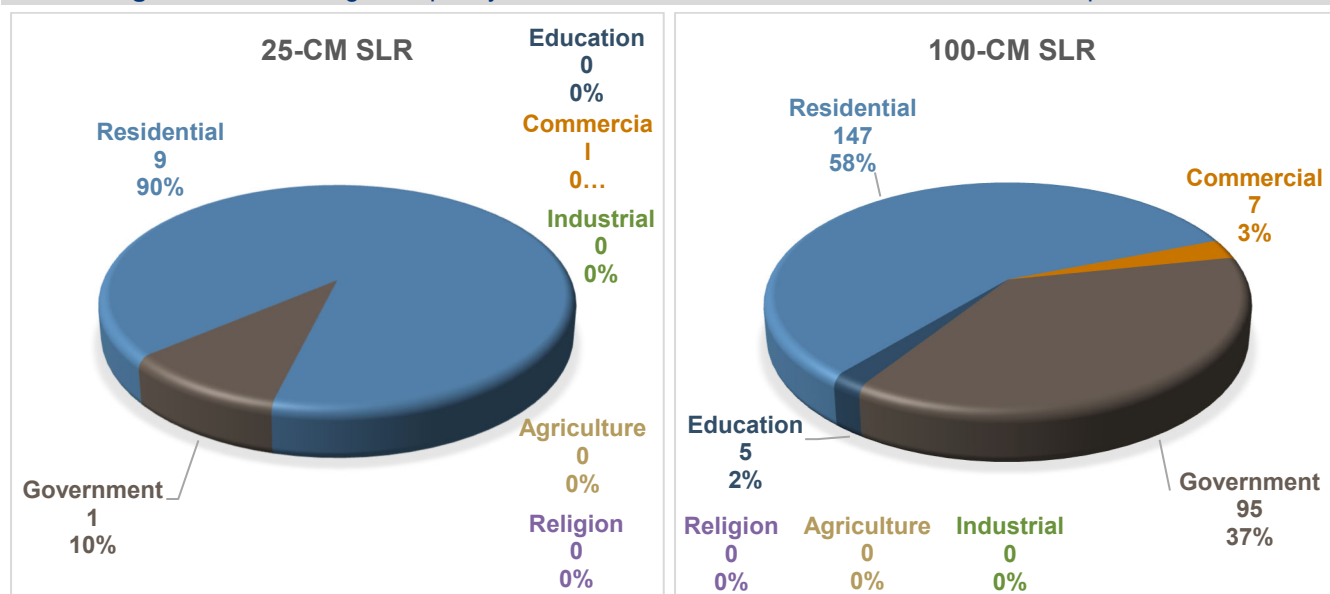
	25-cm SLR Scenario	100-cm SLR Scenario
Population Exposed	39	563
% of Total Planning Area Population	0.002%	0.07%

13.3.2 Property

Results for property exposed to the sea-level rise hazard for the total planning area are presented in Table 13-3. Current land use distribution in the areas affected by sea-level rise, as represented by building occupancy class, is shown in Figure 13-3.

Table 13-3. Estimated Property Exposure for Sea-Level Rise

	25-cm SLR Scenario	100-cm SLR Scenario
Number of Buildings Exposed	10	249
Value of Exposed Structures	\$15,774,103	\$140,841,021
Value of Exposed Contents	\$14,460,807	\$121,450,187
Total Exposed Property Value	\$30,234,909	\$262,291,208
Total Exposed Value as % of Planning Area Total	0.02%	0.15%

Figure 13-3. Building Occupancy Classes in 25-cm and 100-cm Sea-Level Rise Exposure Areas

13.3.3 Critical Facilities

Hazus analysis identified only one critical facility within the mapped 25-cm sea-level rise inundation zone (a transportation facility) and only six within the mapped 100-cm sea-level rise inundation zone (four transportation facilities, one hazardous materials facility, and one food/water/shelter facility). A breakdown by municipality is provided in Appendix D.

13.3.4 Environment

All county beaches and other critical coastal habitats, including wetlands, are vulnerable to the effects of sea-level rise and coastal erosion. A study by the State Coastal Conservancy and The Nature Conservancy found that 44 percent of estuarine marsh in Ventura County is vulnerable to loss with 5 feet of sea-level rise (Heady, et al. 2018).

13.4 VULNERABILITY

No quantitative vulnerability analysis was performed for the sea-level rise and coastal erosion hazard. The following potential impacts were identified:

- Storm drainage systems may experience backups as a result of higher level of daily tidal flooding, especially if outfalls are located within sea-level rise inundation areas.
- Important coastal habitat may be lost as sea-level rise permanently inundates areas, or it may be damaged due to extreme tide and storm surge events.
- Saltwater intrusion into freshwater resources may occur, further altering habitat and ecosystems. Protective ecosystem services may be lost as land area and wetlands are permanently inundated.
- Residents of homes exposed to coastal erosion are vulnerable to this hazard.

Sea-level rise will have an impact on Ventura County's coastal ecosystems. Aquatic ecosystems located in creeks, streams, and estuaries along the coast, many containing a range of sensitive species of plants and animals, will need to adapt to changes in water quality from saltwater intrusion/incursion further upstream. The beneficial services that coastal ecosystems provide, such as flood protection, water filtration, and support for fisheries, will be threatened as rising sea levels expose beach, dune, estuarine, and freshwater habitats. Natural resources, such as cobble, sand, and dunes that have been overlooked for coastal planning will be increasingly necessary to hold and maintain the County's beaches for sea-level rise adaptation (Ventura County 2020).

Erosion and associated secondary hazards will likely have some of the most damaging effects on the environment. Coastal habitats are critical to the natural environment, society, and economy, and their loss has compounding effects on the vulnerability of the community at large.

13.5 SCENARIO

The worst-case scenario would be high wave events from winter storms coinciding with high tide. During a scenario of this magnitude, individuals and properties alike are potentially impacted by high surf, coastal flooding and erosion. The impacts of such an event will become greater with time if sea-level rise continues.

13.6 ISSUES

The following issues have been identified related to the sea-level rise and coastal erosion hazard:

- **Potential Impacts from Sea-Level Rise**—Rising sea levels are very likely to have significant impacts on the frequency and severity of coastal erosion. Areas not typically exposed to erosion events may become exposed, increasing vulnerability to this hazard of concern.
- **Future Development Impact Studies**—Erosion events are particularly destructive when natural processes are unable to replenish beaches due to development, causing erosion to impact infrastructure. Building on eroding coasts increases vulnerability to shoreline hazards. Local jurisdictions need to ensure that future development does not contribute to coastal erosion.

14. SEVERE STORMS

14.1 GENERAL BACKGROUND

The severe storms hazard for this plan refers specifically to winter storms and thunderstorms with the potential to cause damage, serious social disruption, or loss of human life. Other severe weather hazards are addressed in Chapter 15.

14.1.1 Winter Storms

California's southern coast features a Mediterranean climate, in which summers are hot and dry and winters are cool and damp. A dominating factor in the weather of California is the semi-permanent high-pressure area of the North Pacific Ocean, sometimes called the Pacific High. This pressure center moves northward in summer, holding storm tracks well to the north. As a result, California receives little or no precipitation during that period. The intensity of the Pacific High decreases in winter and it moves farther south, permitting storms to move into and across the state and producing high winds, widespread rain at low elevations, and snow at high elevations.

Occasionally the state's circulation pattern permits a series of storm centers to move into California from the southwest. This type of storm pattern is responsible for occasional heavy rains that can cause serious winter flooding. Winter storms may occur during the rainy season from mid-autumn to mid-spring. In addition to high winds and flooding, winter storms may bring extended periods of freezing temperatures to the county.

14.1.2 Thunderstorms

NOAA classifies a thunderstorm as a storm with lightning and thunder produced by cumulonimbus clouds, usually producing gusty winds, heavy rain, and sometimes hail. Thunderstorms are usually short in duration (seldom more than two hours), but they may deliver enough rainfall to cause urban or flash flooding. In addition to the hazards associated with heavy rainfall, thunderstorms present hazards associated with lightning and hail:

- Lightning is an electrical discharge that results from the buildup of positive and negative charges within a thunderstorm. When the buildup becomes strong enough, lightning appears as a bolt. This flash of light usually occurs within the clouds or between the clouds and the ground. A bolt of lightning instantaneously reaches temperatures approaching 50,000 °F. The rapid heating and cooling of air near the lightning causes thunder.

- Hail occurs when updrafts in thunderstorms carry raindrops up into cold areas where they freeze. Eventually, the hailstones encounter downdraft air and fall to the ground. Hailstones can begin to melt and then re-freeze together, forming large and irregularly shaped hail.

14.1.3 El Niño Effects on Severe Storms

El Niño is a natural climatic event that impacts the frequency and intensity of severe storms. It is characterized by a warming of the ocean surface in the central and eastern tropical Pacific Ocean. Low-level surface winds, which normally blow from east to west along the equator, instead weaken or, in some cases, start blowing the other direction. El Niño recurs irregularly, from once every two years to once a decade. El Niño events can disrupt normal weather patterns in the United States and globally (U.S. Geological Survey 2021d). The most recent strong El Niño events were as follows:

- The 1997–1998 El Niño event gained national recognition for its contribution to hurricanes, floods, landslides, droughts, and fires that killed substantial numbers of people and caused billions of dollars in damage. Australia, Indonesia, and the Americas were particularly impacted.
- The 2015–2016 El Niño event affected California, since the state was already dealing at that time with the impacts of a long-term drought (Lee, et al. 2017).

14.1.4 Secondary Hazards

Major flooding can result from heavy rain (see Chapter 11 for more information on flooding). Rain falling on saturated soils on slopes or on areas recently burned by wildfire may lead to landslides (see Chapter 12 for more information on landslides). Lightning during thunderstorms presents a risk of starting a wildfire (see Chapter 17 for more information on wildfires). Storms can also increase the frequency of erosion along coastal cliffs (see Chapter 13 for more information on coastal erosion).

14.2 HAZARD PROFILE

14.2.1 Past Events

Ventura County was included in the federal disaster declarations for freezing/severe winter storms that occurred in December 1990-January 1991, December 1998, and January 2007. The 1998 freeze was particularly damaging to citrus crops. According to the NCEI Storm Events Database, 26 winter storms and thunderstorms causing snow and ice have occurred in Ventura County over the last 10 years. Some of the thunderstorms also caused hail. Two hailstorms were recorded in Ventura County in 2010, with hail of up to 1.5 inches in diameter reported. Table 14-1 summarizes recent severe storm events in Ventura County as recorded in the Storm Events Database.

Table 14-1. Recent Severe Storm Events in the Planning Area

Date	Type	Deaths or Injuries	Property Damage
January 27-29, 2021	Winter Storm	0	0
Snowfall totals around 12 inches were reported at 5,000 feet. The snow combined with southerly winds, gusting to 70 mph, to generate hazardous winter weather conditions.			
January 25, 2021	Winter Storm	0	0
Winter storm conditions impacted the mountains of Ventura County. Snowfall totals between 3 and 6 inches and southerly wind, gusting up to 65 mph, combined to produce hazardous winter weather conditions.			

Date	Type	Deaths or Injuries	Property Damage
December 28, 2020	Winter Storm	0	0
Above 5,000 feet, 6 to 12 inches of snowfall was reported. Additionally, southerly winds, gusting up to 45 mph, were reported.			
March 16, 2020	Winter Storm	0	0
At around 5,000 feet, snowfall totals of 4 to 8 inches were reported with likely heavier amounts above 7,000 feet. Additionally, southerly winds, gusting to 50 mph, were observed.			
December 26, 2019	Winter Storm/Thunderstorm	0	0
Snowfall totals ranged from 18 to 24 inches above 5,000 feet to 6 to 18 inches between 3,500 and 5,000 feet. Strong winds with gusts to 55 mph were reported. The winter storm conditions resulted in road closures, including Highway 33. Thunderstorms generated a waterspout over the coastal waters and a very weak tornado over Ventura Harbor.			
November 28-29, 2019	Winter Storm	0	0
Snow levels dropped to between 2,000 and 3,000 feet. Snowfall totals ranged between 12 and 24 inches above 5,000 feet with 6 to 12 inches down to around 3,000 feet. Additionally, gusty winds in excess of 50 mph were reported. These winter storm conditions resulted in significant travel issues, including closure of parts of Highway 33.			
January 9, 2018	Winter Storm	0	0
At around 7,000-foot elevation, 6 to 8 inches of snowfall was reported along with southerly winds, gusting to 50 mph.			
February 18, 2017	Winter Storm	0	0
In the mountains, 8 to 16 inches of snow accumulated. Additionally, southerly winds gusting to 70 mph were reported.			
March 7-8, 2016	Winter Storm/Thunderstorm	0	0
In the mountains, 5 to 10 inches of snow accumulated while winds gusted to 67 mph. Near the Solimar burn area, heavy rain produced a mud and debris flow across Highway 101. Elsewhere, strong thunderstorm gusts knocked down several trees.			
January 31, 2016	Winter Storm/Thunderstorm	0	0
Above 6,000 feet, between 6 and 12 inches of snow was reported. Some severe thunderstorms developed with strong thunderstorm winds (in excess of 60 mph) reported.			
January 6, 2016	Thunderstorm	0	0
A severe thunderstorm moved across the community of Fillmore, generating damaging wind gusts up to 60 mph. The thunderstorm winds knocked down a large tree across Highway 126.			
January 5-6, 2016	Winter Storm	0	0
Above 7,000 feet, Mount Pinos reported 12 to 18 inches of snowfall while locations around 5,000 feet reported 4 to 8 inches of snowfall. Along with the snow, south winds gusting between 45 and 60 mph were reported.			
March 1, 2014	Winter Storm/Thunderstorm	0	0
Snowfall amounts between 6 and 12 inches were reported above 6,000 feet along with southerly winds gusting to near 90 mph. This winter storm generated intense showers that produced flash flooding and debris flows as well as severe thunderstorms.			
February 20, 2013	Winter Storm	0	0
Along with northwest winds gusting in excess of 50 mph, snowfall amounts between 6 and 12 inches were observed, with the highest totals reported at Mount Pinos.			
January 10, 2013	Winter Storm	0	0
A band of heavy snowfall, combined with gusty north winds, brought critical winter storm conditions to the mountains of Ventura County. In 30 minutes, 2 to 3 inches of snowfall was reported across the Interstate 5 corridor near the Grapevine. This snowfall, combined with winds gusting in excess of 50 mph, shut down Interstate 5 for several hours, stranding hundreds of vehicles.			
March 25-26, 2012	Winter Storm	0	0
Above 5,000 feet, significant snowfall occurred. Some reports include: Mount Pinos (12 inches), Pine Mountain Club (8 inches), and Frazier Park (10 inches). The heavy snowfall combined with gusty south winds in excess of 60 mph to produce dangerous winter storm conditions.			
March 17-18, 2012	Winter Storm	0	0
Above 6,000 feet, significant snowfall (12 to 20 inches) was reported. Along with the heavy snowfall, gusty south winds in excess of 65 mph were reported.			

Date	Type	Deaths or Injuries	Property Damage
September 13, 2011	Lightning/Thunderstorm	3	0
At the Lockwood Valley Fire Station, three firefighters were injured when lightning struck within 50 feet of the station. All three firefighters reported disorientation and ringing in the ears.			
March 20-21, 2011	Winter Storm	0	0
Elevations above 4,500 feet received 1 to 4 feet of snow that, combined with gusty southerly winds, produced hazardous conditions.			
February 26, 2011	Winter Storm	0	0
Above 6,000 feet, snowfall totals ranged between 12 and 24 inches. Below 6,000 feet, snowfall amounts ranged between 3 and 8 inches. Along with the heavy snowfall, southerly winds gusting between 40 and 50 mph produced very hazardous winter storm conditions.			
February 19-20, 2011	Winter Storm/Thunderstorm	0	0
Snowfall between 12 and 24 inches was reported above 6,000 feet; 3 to 8 inches was reported between 3,500 and 6,000 feet. Strong winds with gusts between 60 and 70 mph were reported. Cold and unstable air generated some strong thunderstorms across the area.			
January 3, 2011	Winter Storm	0	0
Snowfall totals generally ranged between 4 and 8 inches. Southeast winds gusting between 45 and 55 mph accompanied the snowfall, producing reduced visibilities in blowing snow.			
December 30, 2010	Winter Storm	0	0
Significant winter storm conditions developed across the mountains of Ventura County. Dangerous winter storm conditions were reported across the Interstate 5 corridor with a snow and gusty winds. Snowfall totals ranged between 3 and 7 inches. Northerly winds gusting in excess of 60 mph generated near zero visibilities in blowing snow and wind chills below 0 °F. Interstate 5 was shut down.			
December 22, 2010	Winter Storm	0	0
High elevation areas received over 12 inches of snowfall. Along with the snowfall, southeasterly winds gusted between 45 and 55 mph and produced dangerous winter storm conditions.			
October 19, 2010	Thunderstorm/Hail	0	0
A trained weather spotter reported one-inch hail in association with a severe thunderstorm.			
April 12, 2010	Winter Storm	0	0
Cuddy Valley reported 4 to 8 inches of snowfall. Along with the snowfall, strong southerly winds developed with gusts to 61 mph reported.			
February 9-10, 2010	Winter Storm	0	0
Over 10 inches of snowfall was reported above 6,000 feet with southerly winds gusting as high as 60 mph.			
January 21, 2010	Thunderstorm/Hail	0	0
A trained spotter in the Agoura Hills area reported large hail with a diameter of 1.50 inches.			
January 20-21, 2010	Winter Storm	0	0
Cuddy Valley received 15 inches of snowfall while Mount Pinos reported between 12 and 18 inches of snowfall. Along with the heavy snowfall, strong and gusty southerly winds were reported across the mountains.			

Source: NOAA 2021

14.2.2 Location

The entire county is susceptible to severe storms. Only higher elevation areas (typically at or above 4,000 feet) experience snowfall; lower elevation areas experience heavy rains. Thunderstorms affect relatively small, localized areas, rather than large regions like severe winter storms.

14.2.3 Frequency

Predicting the frequency of severe storm events in a constantly changing climate is a difficult task. Based on reports of past occurrences since 2010, Ventura County experiences at least two winter storms and one thunderstorm annually (Table 14-1). The planning area can expect to experience exposure to and adverse impacts from both winter storms and thunderstorms at least annually.

14.2.4 Severity

The most common problems associated with severe storms are immobility and loss of utilities. Fatalities are uncommon, but can occur. Roads may become impassable due to snowfall, flooding, downed trees, or mudflows and landslides. Power lines may be downed due to high winds, and services such as water or phone may not be able to operate without power. Lightning can cause severe damage and injury. Physical damage to homes and facilities can be caused by wind or flooding.

Heavy rain can have significant impacts, including crop damage, soil erosion, and increased risk of flood. Stormwater runoff from heavy rains can also impair water quality by washing pollutants into local waterways (U.S. Environmental Protection Agency 2021). Soil erosion, particularly in areas affected by wildfire and along the coast, is a significant concern.

Lightning severity is typically based on both property damage and life safety (injuries and fatalities). The relationship of lightning to wildfire ignitions increases the significance of this hazard. There are no recorded instances of lightning appearing alone (without a storm) in Ventura County, and any lightning damage is likely to be compounded by other storm damage.

14.2.5 Warning Time

Meteorologists can often predict the likelihood of a severe storm event. This can give several days of warning time. However, meteorologists cannot predict the exact time of onset or severity of the storm. Some storms may come on more quickly and have only a few hours of warning time. The Los Angeles/Oxnard Weather Forecast Office of the NWS monitors weather stations and issues watches and warnings to alert government agencies and the public of possible or impending weather events when appropriate. The watches and warnings are broadcast over NOAA weather radio, posted on the NWS website, and forwarded to the local media for retransmission using the Emergency Alert System.

14.3 EXPOSURE AND VULNERABILITY

All people and property and the entire environment of the planning area are exposed to some degree to the severe storm hazard.

14.3.1 Population

Thunderstorm-related deaths and injuries in the planning area are most likely to result from accompanying wind and flood events. There are no recorded fatalities from lightning within the planning area. Winter storm-related deaths and injuries are most likely to result from dangerous road conditions and accompanying wind, landslide and flood events.

The most common impacts on people associated with severe storm events are immobility and loss of utilities. All populations in the planning area are exposed to severe storm events, and some are especially vulnerable. The most vulnerable populations are generally those who lack adequate shelter during severe weather events, who are reliant on sustained sources of power in order to survive, and who live in isolated areas with limited ingress and egress options. Power outages can be life threatening to those dependent on electricity for life support. Populations living at higher elevations with

large stands of trees or power lines may be more susceptible to wind damage and black out, while populations in low-lying areas are at risk for possible flooding.

14.3.2 Property

All property is vulnerable during severe weather events, but properties in poor condition or in particularly vulnerable locations may risk the most damage. The most common impacts of specific weather event types on property are as follows:

- **Thunderstorms**—Damage from thunderstorms in the planning area is most likely to be related to secondary hazards accompanying the event, such as flooding, landslides, or damaging winds. If lightning directly strikes a building, it may cause substantial damage and may even set the structure on fire.
- **Winter storms**—Damage from winter storms in the planning area is most likely to be related to secondary hazards accompanying the event, such as freezing, flooding, landslides or damaging winds. Freezing events can also cause pipes to burst in buildings leading to structural flooding.

No modeling is available for quantitative loss estimations for the severe weather hazard. Instead, loss estimates were developed representing 10 percent, 30 percent, and 50 percent of the replacement value of exposed structures:

- Loss of 10 percent of planning area replacement value—\$18,075,696,763
- Loss of 30 percent of planning area replacement value—\$54,227,090,289
- Loss of 50 percent of planning area replacement value—\$90,378,483,815

14.3.3 Critical Facilities

All critical facilities are vulnerable during severe weather events, especially those that lack backup power generation capabilities. When facilities supplying power to planning area land-line telephone systems are frequently disrupted, significant issues arise with communication in the planning area. In addition, some facilities are particularly vulnerable to specific types of severe weather events:

- **Thunderstorm**—Facilities located in areas prone to localized or major flooding are vulnerable. Transportation systems are vulnerable to disruption from secondary hazards such as flooding or landslides.
- **Winter storms**—Facilities located in areas prone to freezing and snow accumulation are vulnerable. Transportation systems are vulnerable to disruption from secondary hazards such as road closures, flooding, or landslides.

14.3.4 Environment

The environment is highly vulnerable to severe storm events. Natural habitats such as streams and trees exposed to the elements during a severe storm risk major damage. Prolonged rains can saturate soils and lead to slope failure. Flood events caused by severe storms can produce river channel migration or damage riparian habitat. Storm surges can erode beachfront bluffs and redistribute sediment loads.

14.4 SCENARIO

Impacts of severe storms can be significant, particularly when secondary hazards of flood and landslide occur. A worst-case event would involve thunderstorms with prolonged high winds. Such an event would have both short-term and longer-term effects. Initially, schools and roads would be closed due to power outages caused by high winds and downed tree obstructions. In more rural areas, some subdivisions could experience limited ingress and egress. Prolonged rain could produce flooding, overtopped culverts with ponded water on roads, and landslides on steep slopes. Significant erosion and landslides along the coast may occur, further increasing the vulnerability of residents living right on the edge of coastal cliffs. Flooding and landslides could obstruct roads and bridges, isolating residents. Fog after the storm, resulting from the heavy moisture still in the area, could increase traffic accidents as visibility worsens.

14.5 ISSUES

Severe local storms are probably the most common widespread hazard. They affect large numbers of people in the planning area when they occur. Severe storms can quickly overwhelm city and county resources. Residents should be prepared for these types of storms: family plans should be developed, disaster kits should be put in homes, workplaces, schools, and cars, and every family member should be taught how to shut off household utilities. Initiating early dismissal from schools and business is an effective mitigation measure and should be encouraged.

Severe storms cannot be prevented, but measures can be taken to mitigate the effects. Critical infrastructure and utilities can be hardened to prevent damage during an event. The secondary effect of flooding can be addressed through decreasing runoff and water velocity. Important issues associated with severe storms in the Ventura County planning area include the following:

- Redundancy of power supply throughout the planning area must be evaluated to better understand what areas may be vulnerable.
- Although primarily thought of as an urban area, the County has a larger physical land mass containing rural communities and must also consider the needs of these residents (as well as their possible isolation during storm events).
- Public education on dealing with the impacts of severe storms needs to continue to be provided so that residents can be better informed and prepared for severe storm events.
- Debris management (downed trees, etc.) must be addressed, because debris can impact the severity of severe storm events, it requires coordination efforts, and may require additional funding.
- The effects of climate change may result in an increase of heavy rain or more intense storm events and will likely lead to changes in overall precipitation amounts.
- Older building stock in the planning area is built to low code standards or none at all. These structures could be highly vulnerable to severe winter weather effects.
- Urban forest management programs should be evaluated to help reduce impacts from tree-related damage.

15. SEVERE WEATHER

15.1 GENERAL BACKGROUND

Severe weather refers to any dangerous meteorological phenomena with the potential to cause damage, serious social disruption, or loss of human life. It includes thunderstorms, downbursts, tornadoes, waterspouts, snowstorms, ice storms, and dust storms, among other events. The most common severe weather events that impact the planning area are severe storms (as described in Chapter 14), damaging winds (including straight-line winds and tornadoes), and extreme temperatures (heat and cold). The frequency and intensity of severe weather events can be affected by El Niño conditions, as described in Section 14.1.3.

15.1.1 Damaging Winds

Straight-Line Winds

Straight-line wind is a general term used to describe winds that have no rotation (i.e., are not tornadoes). Damaging straight-line winds are those that exceed 50 to 60 mph. The Beaufort wind chart (Table 15-1) provides terminology and a description of potential impacts at different levels.

Table 15-1. Beaufort Wind Chart

Beaufort Number	Range (mph)	Terminology	Description
0	0	Calm	Calm. Smoke rises vertically.
1	1-3	Light air	Wind motion visible in smoke.
2	4-7	Light breeze	Wind felt on exposed skin. Leaves rustle.
3	8-12	Gentle breeze	Leaves and smaller twigs in constant motion.
4	13-18	Moderate breeze	Dust and loose paper are raised. Small branches begin to move.
5	19-24	Fresh breeze	Smaller trees sway
6	25-31	Strong breeze	Large branches in motion. Whistling heard in overhead wires. Umbrella use is difficult.
7	32-38	Near gale	Whole trees in motion. Some difficulty when walking into the wind.
8	39-46	Gale	Twigs broken from trees. Cars veer on road.
9	47-54	Sever gale	Light structure damage.
10	55-63	Storm	Trees uprooted. Considerable structural damage.
11	64-73	Violent storm	Widespread structural damage.
12	74-95	Hurricane	Considerable and widespread damage to structures.

Source: NWS, n.d.

Santa Ana Winds

In Southern California, strong, dry, gusty downslope winds known as Santa Ana winds form when air from a region of high pressure over the desert region of the southwestern U.S. flows westward toward low pressure areas off the California coast. As the wind flows over the Sierra Nevada and Santa Ana mountains, it drops from high elevation to sea level. The air becomes compressed and heats up as it sinks, and its relative humidity drops. Gaps in mountains form wind tunnels that strengthen these winds as they pour warm air east to west through the canyons (Figure 15-1). These winds play a major role in increasing wildfire risk in the Ventura region because of the dryness of the winds and the speed with which they can cause a fire to spread, complicating containment efforts.

Figure 15-1. Santa Ana Winds



Santa Ana winds may occur year-round, but are most common during the cooler months, typically from September through March. A Santa Ana wind event can yield sustained winds of 40 miles per hour; isolated wind gusts of over 80 miles per hour have been recorded. Most Santa Ana wind events peak for a 12- to 24-hour period but can persist for a few days.

Public Safety Power Shutoff Events

High winds can uproot trees, blow branches onto power lines or create sparks if power lines contact one another. When this occurs in combination with extreme heat and low humidity that dry out vegetation, it poses increased risks of wildfire. In 2012, the California Public Utilities Commission ruled that California Public Utilities Code gives electric utilities authority to shut off electric power to protect public safety by reducing the potential to ignite wildfires (California Public Utilities Commission 2021). Such shutoffs are referred to as public safety power shutoff events. Given the long, connected nature of power supply systems, a shutoff event targeted to a small at-risk area can affect a larger area outside the risk zone. The duration of a shutoff is tied directly to the severe weather that triggers it; the shutoff typically ends within 24 hours after the severe weather has passed (Pacific Gas & Electric n.d.).

Tornadoes

Although uncommon in the Ventura County area, a tornado is potentially the most dangerous of storms on a local scale (National Weather Service 2009b). Tornadoes are formed by the turbulent mixing of layers of air with contrasting temperature, moisture, density, and wind flow. Most of California's documented tornadoes have taken place primarily in winter or spring. Since 1950, NOAA has tracked six tornadoes touching down in Ventura County. All six were classified as F0, using the Fujita Tornado Damage Scale shown in Table 15-2.

Table 15-2. Operational Enhanced Fujita Scale

Enhanced Fujita Number	Wind, Damage
F0 (weak)	40-72 mph, light damage
F1 (weak)	73-112 mph, moderate damage
F2 (strong)	113-157 mph, considerable damage
F3 (strong)	158-206 mph, severe damage
F4 (violent)	207-260 mph, devastating damage
F5 (violent)	261-318 mph (rare), incredible damage

Source: (National Weather Service 2009b)

15.1.2 Extreme Temperatures

Extreme Heat

Extreme heat is defined as temperatures that hover 10 °F or more above the average high temperatures for a region for several days or weeks. Extreme heat events can lead to an increase in heat-related illnesses and deaths, cause drought, and impact water supplies. Such events do not typically impact buildings; however, losses may be associated with the urban heat island effect and overheating of heating, ventilation, and air conditioning systems.

Extreme heat is the primary weather-related cause of death in the United States. Excessive heat claims over 100 lives each year in this country. In a 30-year record of weather fatalities across the nation (1990-2019), excessive heat claimed more lives each year than floods, lightning, tornadoes, and hurricanes (Erdman 2021). According to the *California Climate Adaptation Strategy*, heat waves have claimed more lives in California than all other declared disaster events combined. Despite this history, in a span of 60 years, only four heat emergencies (August 14, 2020; September 2, 2020; June 16, 2021; July 9, 2021) were proclaimed in California at the state level and none were proclaimed at a federal level. Heat waves do not strike victims immediately, but their cumulative effects slowly cause harm to vulnerable populations. Older adults, children, and sick or overweight individuals are at greater risk from extreme heat.

Extreme Cold

In areas that typically have mild winter weather, extreme cold is defined as near freezing temperatures. Frost or freeze warnings are issued when temperatures below freezing are expected. Whenever temperatures drop below normal and as wind speed increases, heat can leave the body more rapidly. These conditions are dangerous to those without shelter, those who are stranded, and those who live in

homes that have no heat or are poorly insulated. Extreme cold can cause hypothermia and frostbite if a person is exposed for a long period of time.

In addition to direct risks to people, extreme cold can cause freezing rain, which can leave a coating of ice on roads and walkways. Rain that turns to ice pellets before reaching the ground, referred to as sleet, may become slippery.

15.1.3 Secondary Hazards

Strong Santa Ana winds can quickly cause or spread wildfires (see Chapter 17 for more information on wildfires). Erosion along coastal cliffs can be affected when high winds associated with winter storms increase the intensity of the surf (see Chapter 13 for more information on coastal erosion). Extreme heat can exacerbate drought conditions (see Chapter 9 for more information on drought).

15.2 HAZARD PROFILE

15.2.1 Past Events

Table 15-3 summarizes recent severe weather events in Ventura County as recorded in the NCEI Storm Events Database. Of 136 high wind events recorded, only those recorded at 70 knots or greater or that had a death, injury, or reported property damage are listed in this table. Ventura County was included in federal disaster declarations for extreme cold/freezing events that occurred in December 1990-January 1991, December 1998, and January 2007. The 1998 freeze was particularly damaging to citrus crops.

Table 15-3. Recent Severe Weather Events in the Planning Area

Date	Event Type ^a	Deaths or Injuries	Property Damage
January 19, 2021	High Wind	0	Gusty winds produced numerous reports of downed small trees and branches.
Very strong and gusty Santa Ana winds impacted many areas of Ventura and Los Angeles counties. Winds gusting up to 99 mph were reported across many areas.			
November 26, 2020	High Wind	0	0
Strong Santa Ana winds impacted the mountains of Ventura County. Sycamore Canyon reported wind gusts between 67 and 86 mph.			
December 25, 2019	Tornado	0	Only very minor damage was reported.
A strong thunderstorm generated a weak tornado over Ventura Harbor (in Ventura County).			
December 6, 2017	High Wind	0	0
Across the interior valleys of Ventura County, northeast wind gusts up to 85 mph were reported. This event coincided with Thomas Fire.			
December 25, 2014	High Wind	0	0
Strong north winds developed near the Interstate 5 corridor. Wind gusts in excess of 80 mph were reported at the higher elevations.			
April 7, 2013	High Wind	0	0
Strong northerly winds developed across the mountains of Ventura County. Gusts between 65 and 85 mph were reported in some areas.			
February 24, 2013	High Wind	0	0
Strong Santa Ana winds developed across Ventura County. Wind gusts in excess of 70 mph were reported.			
October 25, 2012	High Wind	0	0
Strong and gusty north to northeast winds were reported across the mountains of Ventura County. The strongest wind gusts occurred near the Interstate 5 corridor with gusts near 80 mph reported.			

Date	Event Type ^a	Deaths or Injuries	Property Damage
May 29, 2010	High Wind	0	0
Gusty northwest to north winds developed across the mountains of Ventura County through the Interstate 5 corridor. Sustained winds between 40 and 48 mph were reported along with wind gusts between 66 and 87 mph.			
January 21, 2010	Tornado	0	Several homes, a car and a farm outbuilding were damaged.
A small EF-0 tornado touched down in the City of San Buenaventura.			
January 13, 2010	High Wind	0	0
Strong and gusty north winds affected the mountains of Ventura County especially near the Interstate 5 corridor. Wind gusts between 60 and 83 mph affected the area.			
October 27, 2009	High Wind	0	0
Very strong and gusty winds were reported across the mountains of Ventura County through the Interstate 5 corridor. Wind gusts between 60 and 80 mph were reported.			
May 6, 2009	High Wind	0	0
Strong north winds were reported through the Interstate 5 corridor. Sustained winds between 40 and 50 mph with gusts as high as 85 mph were reported.			
October 13, 2008	High Wind	0	0
Gusty northeast winds to 84 mph were reported across eastern sections of the Ventura County mountains.			
June 20-21, 2008	Excessive Heat	0	0
An automated sensor at Newbury Park reported a high temperature of 108 °F with a heat index of 106 °F.			
January 24, 2008	Tornado	0	Tore the roof off a building, knocked over several trash cans.
A weak tornado moved onshore across Point Mugu Naval Air Station.			
August 31-September 1, 2007	Excessive Heat	0	0
The combination of above normal temperatures and relative humidity produced excessive heat across the interior valleys of Ventura County. Heat index values between 105 and 112 °F were reported.			
April 12, 2007	High Wind	0	0
RAWS observations across the mountains measured very strong and gusty winds. At Whitaker Peak RAWS a peak northwest wind gust of 86 mph was reported. Other sensors, including Sandberg and Warm Springs, indicated sustained winds and gust that met warning criteria.			
January 13-15, 2007	Frost/Freeze	0	0
Widespread freezing conditions were reported across agricultural areas of Ventura County. Total crop damage in Ventura County was estimated to be around \$280 million.			
July 22-26, 2006	Heat	0	0
The combination of high pressure aloft and above-normal relative humidity resulted in an extended period of excessive heat across San Luis Obispo, Santa Barbara, Ventura and Los Angeles counties. At times, heat index values ranged from 100 to 119 °F.			
July 15, 2006	Heat	0	0
The combination of strong high pressure aloft and high relative humidity produced excessive heat conditions across the mountains of Ventura County. Heat index values ranged from 100 to 105 °F in the mountains.			
January 10, 2005	Tornado	0	0
A California Highway Patrol officer reported a weak tornado in the community of El Rio.			
October 27, 2004	Funnel Cloud	0	0
An early-season storm brought rain, snow, and funnel clouds to Central and Southern California. Across Ventura and Santa Barbara counties, two funnel clouds were reported.			
February 24, 2003	Funnel Cloud	0	0
A weather observer at the Point Mugu Naval Base reported a funnel cloud offshore of the base.			
February 9, 2002	High Wind	1	Strong winds knocked down power lines and overturned a wooden bus stop structure in Moorpark.
Strong and gusty Santa Ana winds developed across the interior valleys of Ventura County. Reports from spotters indicated northeast winds gusting between 50 and 70 mph. In Simi Valley, a man was killed when a 45-foot tree was knocked down and pinned him.			

Sources: NOAA 2021

a. This list represents only high wind events recorded at 70 knots or greater, or that had a death, injury, or reported property damage.

The NCEI Storm Events Database lists 19 wildfire events in Ventura County from 2000 through 2021, and all but two of those events are directly attributed to wind events or occurred within one or two days of high wind events recorded in the database (National Centers for Environmental Information 2022).

15.2.2 Location

The entire county is susceptible to damage from wind. Wind events are most damaging to areas that are heavily wooded. The State of California has a low risk for serious tornados compared to other parts of the country (Croswell 1995). Tornadoes are usually localized and have historically formed in the southwest portion of Ventura County during the winter.

All of Ventura County is subject to extreme temperatures. The mountains are more likely to experience extreme cold. Extreme heat impacts may be exacerbated in inland areas more prone to urban heat island effects, such as Thousand Oaks and Simi Valley, than coastal regions (Oakley, et al. 2019).

15.2.3 Frequency

Based on reports since 2000, Ventura County experiences an average of two damaging wind events each year and an extreme temperature event every two years (Table 15-3). The planning area can expect to experience exposure to and adverse impacts from severe weather events at least annually, including damaging wind events every year and extreme temperature events biennially.

15.2.4 Severity

Damaging Winds

Windstorms can be a frequent problem in the planning area and have been known to cause damage to utilities. The predicted wind speed given in wind warnings issued by the National Weather Service is for a one-minute average; gusts may be 25 to 30 percent higher. Lower wind speeds typical in the lower valleys are still high enough to knock down trees and power lines and cause other property damage. Higher elevations in the County can experience much higher winds under more varied conditions.

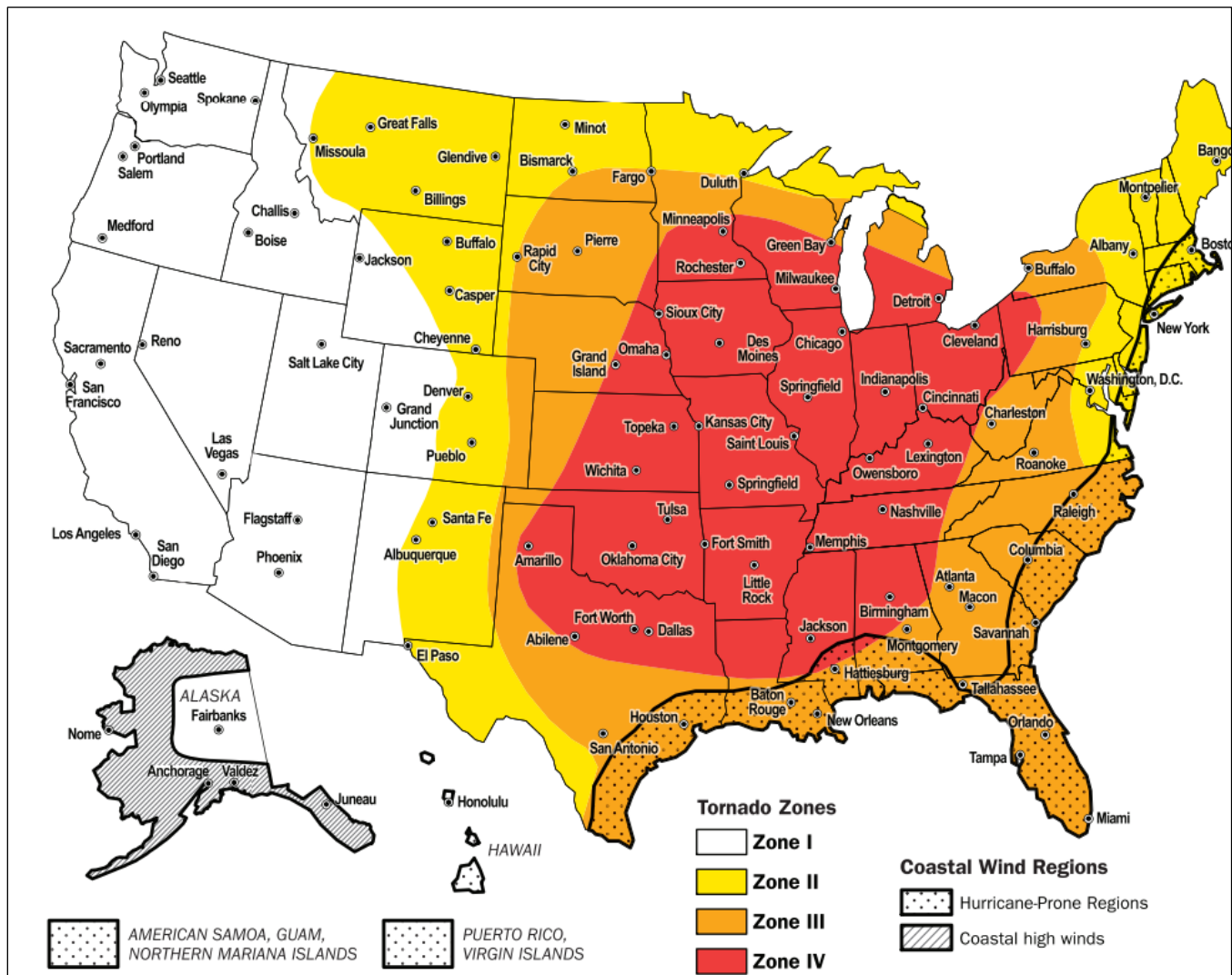
According to the FEMA Winds Zones of the United States map (Figure 15-2), Ventura County is in Wind Zone I, where wind speeds can reach up to 130 mph. The map indicates the strength of windstorms in the United States, and the general location of the most wind activity (Federal Emergency Management Agency 2021).

Tornadoes are potentially highly dangerous. If a major tornado were to strike within the populated areas of the County, damage could be widespread. Because the County has never experienced a tornado more severe than an F0, however, such severity is unlikely.

Extreme Temperatures

The record high temperature in the county (120 °F) was set in Fillmore and Oak View in September 2020. The record low (25 °F) was set in December 1998.

Figure 15-2. Wind Zones in the United States



Source: FEMA 2021

15.2.5 Warning Time

Meteorologists can often predict the likelihood of a severe weather event. This can give several days of warning time. However, meteorologists cannot predict the exact time of onset or severity of the storm. Some weather events may come on more quickly and have only a few hours of warning time. The Los Angeles/Oxnard Weather Forecast Office of the NWS monitors weather stations and issues watches and warnings when appropriate to alert government agencies and the public of possible or impending weather events. The watches and warnings are broadcast over NOAA weather radio, posted on the NWS website, and are forwarded to the local media for retransmission using the Emergency Alert System.

15.3 EXPOSURE AND VULNERABILITY

15.3.1 Population

All people in the planning area are exposed to some degree to the severe weather hazard. The most common problems associated with severe weather events are immobility and loss of utilities. Vulnerable populations are the elderly, low income or linguistically isolated populations, people with life-threatening illnesses, and residents living in areas that are isolated from major roads. Power outages can be life threatening to those dependent on electricity for life support. Populations living at higher elevations with large stands of trees or power lines may be more susceptible to wind damage and black out. The most common impacts of specific weather event types on people are as follows:

- **Windstorms**—Damaging winds can cause injuries and fatalities in a number of ways. Downed trees may fall on homes or cars, killing or injuring those inside. Objects that are not secured can be picked up in wind events and become projectiles.
- **Tornado**—Structures that collapse or blow over during tornadoes may kill or injure those inside.
- **Excessive heat**—Heat exhaustion or heat stroke can cause illness or death. Toddlers are especially vulnerable if left or trapped in a parked vehicle. Seniors in residences without air conditioning are at more risk of heat illness and death during excessive heat waves.
- **Extreme cold**—Extreme cold can cause hypothermia and frostbite, especially among the population that does not have adequate shelter.

15.3.2 Property

All property in the planning area is exposed to some degree to the severe weather hazard. Properties in poor condition or in particularly vulnerable locations may risk the most damage. The most common impacts of specific weather event types on property are as follows:

- **Windstorm**—Mobile homes can be seriously damaged by wind gusts over 80 mph, even if they are anchored (National Severe Storms Laboratory 2018). Properties at higher elevations or on ridges may be more prone to wind damage. Falling trees can result in significant damage to structures.
- **Tornado**—A major tornado could cause widespread damage to property in the planning area, but such an event is unlikely.
- **Excessive heat**—Periods of high heat do not typically pose risks to structures, but when power fails during high heat events, air conditioning systems also fail and result in secondary shutdowns of heat-sensitive electronic or networking systems housed in those structures.
- **Extreme cold**—Infrastructure and building systems can be damaged by extreme cold when pipes freeze. Roofs can be damaged by ice buildup.

No modeling is available for quantitative loss estimations for the severe weather hazard. Instead, loss estimates were developed representing 1 percent, 3 percent, and 5 percent of the replacement value of exposed structures:

- Loss of 10 percent of planning area replacement value—\$18,075,696,763
- Loss of 30 percent of planning area replacement value—\$54,227,090,289

- Loss of 50 percent of planning area replacement value—\$90,378,483,815

15.3.3 Critical Facilities

All critical facilities are exposed to some degree to the severe weather hazard. Those that lack backup power generation capabilities are especially vulnerable. When facilities supplying power to planning area land line telephone systems are disrupted, significant issues arise with communication. Some facilities are particularly vulnerable to specific types of severe weather events:

- **Windstorms**—Facilities located near trees or power lines that are likely to fall are vulnerable. Roads and other transportation infrastructure could be blocked by downed trees or other debris.
- **Tornado**—Critical facilities in the direct path of a tornado are particularly vulnerable.
- **Excessive heat**—Transportation systems can be impacted if extreme heat causes roads or railways to buckle.
- **Extreme cold**—Facilities that lack backup power are more likely to be impacted during extreme cold events. Pipes freeze more quickly in unheated buildings.

15.3.4 Environment

The entire environment of the planning area is exposed to some degree to the severe weather hazard. High winds can cause extensive damage to forested areas. Storm surges increased by high winds can erode beachfront bluffs and redistribute sediment loads. Periods of prolonged heat can increase pest and disease pressure on crops and increase the effects of drought.

15.4 SCENARIO

A worst-case severe weather event would involve prolonged high winds accompanied by thunderstorms. Initially, schools and roads would be closed due to power outages caused by high winds and downed tree obstructions. In more rural areas, some subdivisions could experience limited ingress and egress. If these events coincided with extreme heat or cold, the impacts on the population would be even greater.

15.5 ISSUES

Severe weather cannot be prevented, but measures can be taken to mitigate the effects. Critical infrastructure and utilities can be hardened to prevent damage during an event. Important issues associated with severe weather in the Ventura County planning area include the following:

- Redundancy of power supply throughout the planning area must be evaluated to better understand what areas may be vulnerable.
- Public education on dealing with the impacts of severe weather needs to continue to be provided so that residents can be better informed and prepared for severe weather events.
- Debris management (downed trees, etc.) must be addressed, because debris can impact the severity of severe weather events, requires coordination efforts, and may require additional funding.

- Climate change may result in more intense weather events and will likely lead to increased temperatures.
- Older building stock in the planning area is built to low code standards or none at all. These structures could be highly vulnerable to severe wind.
- Urban forest management programs should be evaluated to help reduce impacts from forest-related wind damages.

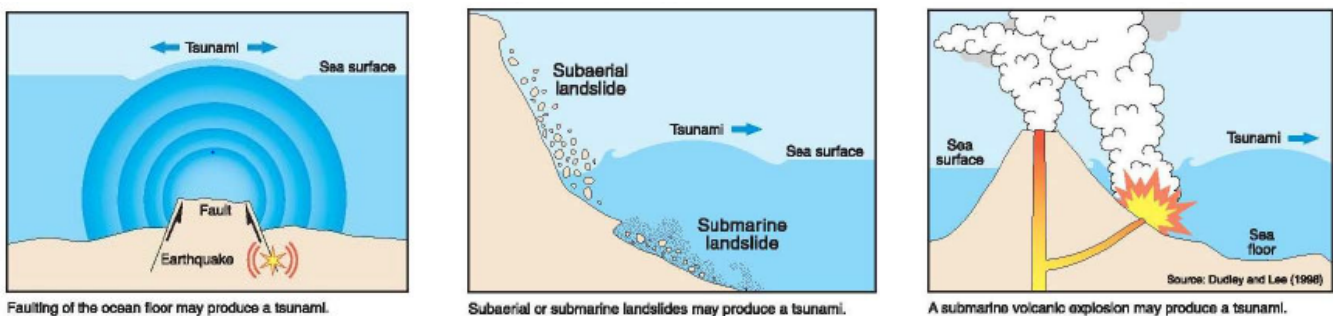
16. TSUNAMI

16.1 GENERAL BACKGROUND

A tsunami is a series of high-energy waves that radiate outward like pond ripples from an area where a generating event occurs, arriving at shorelines over an extended period. Tsunamis can be induced by earthquakes, landslides, and submarine volcanic explosions (see Figure 16-1). Tsunamis are typically classified as local or distant, depending on the location of their source in comparison to where waves occur:

- The waves nearest to the generating source represent a local tsunami. Such events have minimal warning time, leaving few options except to run to high ground after a strong, prolonged local earthquake. Damage from the tsunami adds to damage from the triggering earthquake due to ground shaking, surface faulting, liquefaction, and landslides.
- The waves far from the generating source represent a distant tsunami. Distant tsunamis may travel for hours before striking a coastline, giving a community a chance to implement evacuation plans if a warning is received.

Figure 16-1. Common Sources of Tsunamis

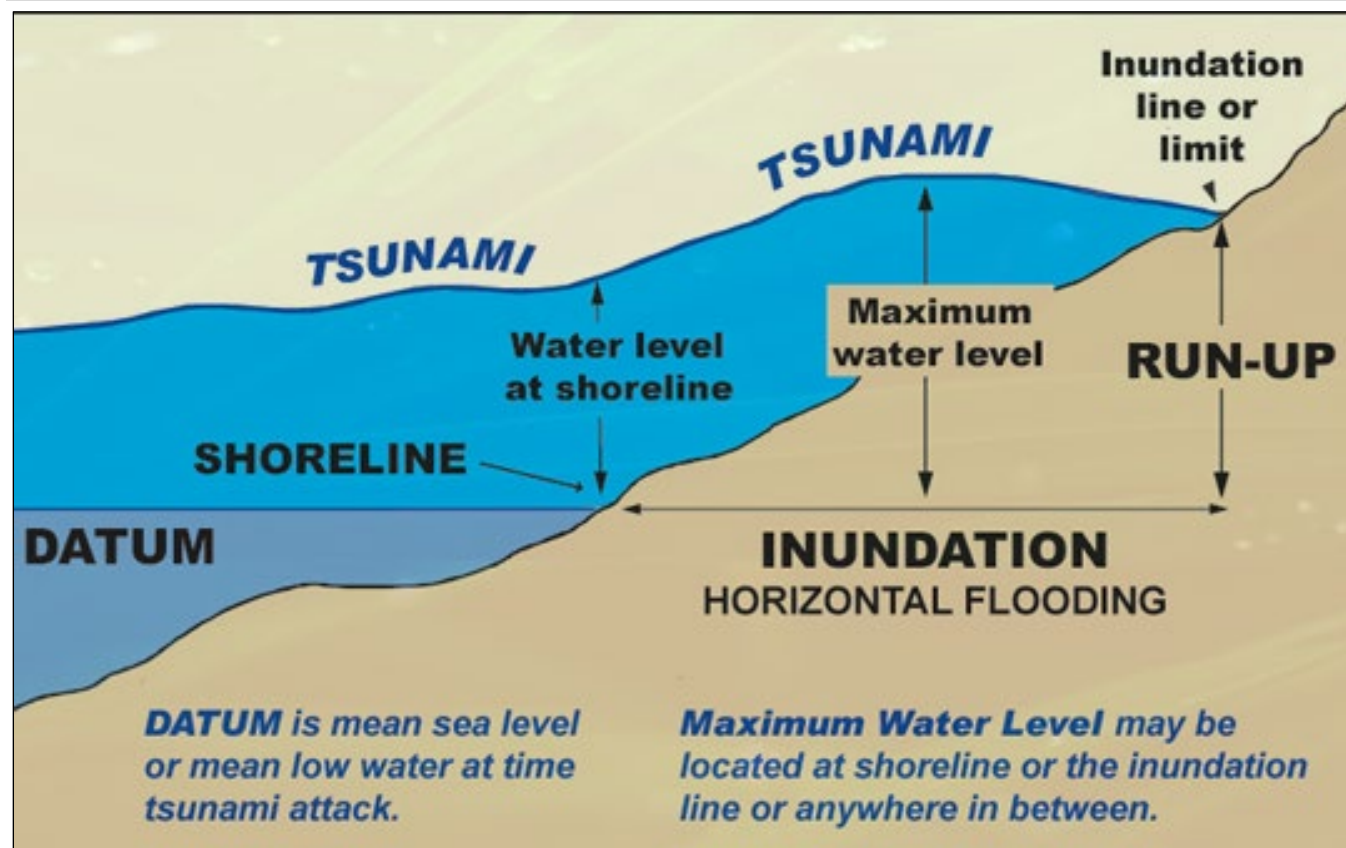


In the open ocean, a tsunami may be only a few inches or feet high, but it can travel with speeds approaching 600 miles per hour. As a tsunami enters the shoaling waters near a coastline, its speed diminishes, its wavelength decreases, and its height increases greatly. At the shoreline, tsunamis may take the form of a fast-rising tide, a cresting wave, or a bore (a large, turbulent wall-like wave). The bore phenomenon resembles a step-like change in the water level that advances rapidly (from 10 to 60 miles per hour). The first wave is usually followed by several larger and more destructive waves.

16.1.1 Factors Affecting Tsunami Impact

The configuration of the coastline, the shape of the ocean floor, and the characteristics of advancing waves play important roles in the destructiveness of the waves. Bays, sounds, inlets, rivers, streams, offshore canyons, islands, and flood control channels may alter the level of damage. Offshore canyons can focus tsunami wave energy, and islands can filter the energy. A tsunami wave entering a flood control channel could reach a mile or more inland, especially if it enters at high tide. The orientation of the coastline determines whether the waves strike head-on or are refracted from other parts of the coastline. A wave may be small at one point and much larger at others. The inundation area for a tsunami event is often described as runup as illustrated in Figure 16-2.

Figure 16-2. Runup Distance and Height in Relation to the Datum and Shoreline



Source: UNESCO, Retrieved from *Different Directions: Tsunami*, n.d.

16.1.2 Secondary Hazards

The secondary hazards most directly associated with tsunamis are flooding and coastal erosion, which are likely results of tsunami events.

16.2 HAZARD PROFILE

16.2.1 Past Events

More than 80 tsunamis have been recorded or observed in California, according to state records; however, many of these events were small and led to little or no damage. All tsunamis from the past century have been distant, not local. That is, they have all resulted from earthquakes far across the Pacific basin (as opposed to earthquakes near the American coastline). Ventura County has been affected by major statewide tsunamis as well as more local minor tsunamis. Table 16-1 lists known tsunami events that have struck the County or one of its jurisdictions since 1812.

Table 16-1. Tsunami Events in Ventura County

Date	Description
March 11, 2011	A 7.1 magnitude earthquake in Japan caused a run-up within Ventura Harbor. A federal disaster declaration was issued (DR-1968).
February 27, 2010	An 8.8 magnitude earthquake in Chile caused a 3-foot run-up in Ventura, as well as damage to 21 docks in Ventura Harbor.
September 29, 2009	An 8.2 magnitude earthquake in Samoa moved buoys within Ventura Harbor.
March 28, 1964	A 9.2 magnitude earthquake in Alaska caused the tide in Ventura to drop 8 feet and large swells were reported in Oxnard.
May 24, 1960	A 9.5 magnitude earthquake in Chile created a 4.4-foot run-up in Port Hueneme causing damage to docks and ships.
March 9, 1957	An 8.3 magnitude earthquake along the Aleutian Islands caused an approximate 2-foot run-up 6 hours after the first wave hit in Port Hueneme.
November 4, 1952	An 8.2 magnitude earthquake in Kamchatka caused a 2.3-foot run-up in Port Hueneme.
April 1, 1946	An 8.8 magnitude earthquake along the Aleutian Islands caused sand to sweep over the railroad tracks near Ormond Beach and minor ship berthing problems in Port Hueneme.
December 21, 1812	A 7.1 magnitude earthquake centered in the Santa Barbara or Ventura area caused a 6.5-foot run-up and damage to San Miguelito Chapel.

Source: Ventura County 2021

16.2.2 Location

The California Department of Conservation maintains detailed tsunami inundation maps for Ventura County and other parts of the state. These maps are generated through computer modeling of the areas most likely to be affected by a tsunami event and serve as an important preparedness tool. The tsunami hazard areas identified in the mapping are based on a suite of tsunami sources, both local and distant, and do not, therefore, represent risk from a single-source event. Tsunami risk areas are shown in Figure 16-3.

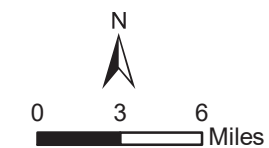
16.2.3 Frequency

Generally, four or five tsunamis occur every year in the Pacific Basin, and those that are most damaging are generated in the Pacific waters off South America rather than in the northern Pacific. Based on risk factors for the County and past occurrences, it is highly likely that tsunamis will continue to strike the coastline in Ventura County. Tsunami probabilities are tied to earthquake and other geologic events; however, not all earthquakes or submarine landslides will trigger a tsunami.



Figure 16-3. Tsunami Risk Areas for Ventura County

- Tsunami Inundation Zones
- County Boundary
- Cities
- Major Roads



Data Sources: Ventura Co.,
CGS, Esri

16.2.4 Severity

A tsunami's size and speed, as well as the coastal area's form and depth, affect the impact of the tsunami. At some locations, the advancing turbulent wave front will be the most destructive part of the tsunami wave. In other situations, the greatest damage will be caused by the outflow of water back to the sea between crests, sweeping away items on the surface and undermining roads, buildings, bulkheads, and other structures. This outflow action can carry enormous amounts of highly damaging debris, resulting in further destruction. Ships and boats, unless moved away from shore, may be forced against breakwaters, wharves, and other craft, or be washed ashore and left grounded after the withdrawal of the seawater (National Tsunami Warning Center 2021).

16.2.5 Warning Time

Visible Indications

Tsunamis are difficult to detect in the open ocean; with waves generally less than 3 feet high. The first visible indication of an approaching tsunami may be either a rise or drop in water surface levels (National Tsunami Warning Center 2021):

- A drop in water level (draw down) can be caused by the trough preceding the advancing, large inbound wave crest. Rapid draw down can create strong currents in harbor inlets and channels that can severely damage coastal structures due to erosive scour around piers and pilings. As the water's surface drops, piers can be damaged by boats or ships straining at or breaking their mooring lines. The vessels can overturn or sink due to strong currents, collisions with other objects, or impact with the harbor bottom.
- The advancing tsunami may initially arrive as a strong surge increasing the sea level. This can be similar to the rising tide, but the tsunami surge rises faster and does not stop at the shoreline. Even if the wave height appears to be small, 3 to 6 feet for example, the strength of the accompanying surge can be deadly. Waist-high surges can cause strong currents that float cars, small structures, other debris, and hazardous materials. Boats and debris are often carried inland by the surge and left stranded when the water recedes.

Warning System

The tsunami warning system for the Pacific Ocean evolved from a program initiated in 1946. It is a cooperative effort involving 26 countries along with numerous seismic stations, water level stations and information distribution centers. The National Weather Service operates two regional information distribution centers: The Pacific Tsunami Warning Center in Ewa Beach, Hawaii; and the National Tsunami Warning Center covering the California coast in Palmer, Alaska. The warning centers issue tsunami watches, warnings, and advisories. A watch is issued when a large earthquake has occurred far away from the region and the threat is still being determined.

A warning is issued when damaging tsunami waves inundating dry land are expected. An advisory is issued when tsunami waves less than 1 meter high and dangerous strong currents will occur in harbors. The warning system is activated when a Pacific basin earthquake of magnitude 6.5 occurs or an earthquake is widely felt along the North American coast. When this occurs, the following sequence of actions occurs:

- Data is interpolated to determine epicenter and magnitude of the event.

- If the earthquake is of the right type, depth, magnitude, and is far away from California coast, a TSUNAMI WATCH is typically issued for the California coastline.
- A TSUNAMI WATCH is upgraded to a TSUNAMI WARNING if tsunami wave heights are forecast to be 1 meter or larger. A TSUNAMI ADVISORY is issued if tsunami wave heights are forecast to be 0.3 meters to less than 1 meter.
- Tsunami travel times are calculated, and the warning is transmitted to disseminating agencies who relay it to the public.
- The National Tsunami Warning Center will cancel/expire watches, warnings, or advisories if tide gauges and buoys indicate no significant tsunami was generated or if tsunami waves no longer meet the criteria for at least 3 hours.

This system is not considered to be effective for communities close to the tsunami source, because the first wave would arrive before the data can be processed and analyzed, and communications systems may be impacted by the precipitating event. In this case, strong ground shaking would provide the first warning of a potential tsunami and evacuations should begin immediately.

Estimated Travel Times

The NOAA National Center for Environmental Information website provides maps that show estimated travel times to coastal locations for various tsunami-generating events. Figure 16-4 shows one example of the travel time for a tsunami generated in Aburatsu, Japan to reach the planning area—approximately 13 hours.

16.3 EXPOSURE

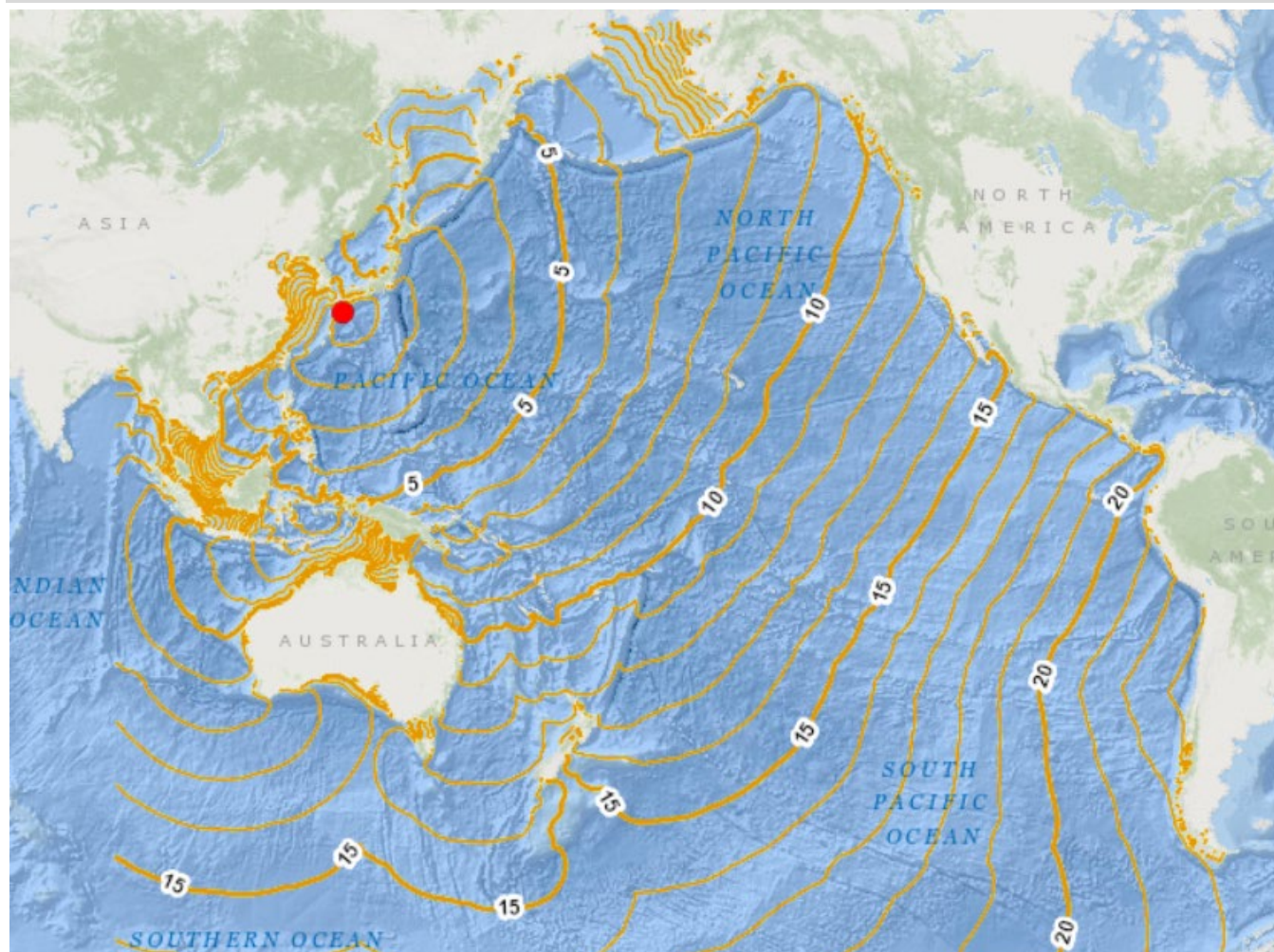
Exposure and vulnerability estimates are based on tsunami inundation maps. The value of exposed buildings in the tsunami inundation zone was generated by overlaying the inundation areas on the general building stock. The population living in tsunami hazard zones was estimated using the percent of buildings within the tsunami inundation areas and applying this percent to the estimated planning area population. Detailed results by jurisdiction are included in Appendix D; results for the total planning area are presented below.

16.3.1 Population

The estimated total population living in the evaluated tsunami inundation zone is 27,626 (3.3 percent of the total planning area population). People recreating along beaches, low-lying coastal areas, tidal flats, and stream deltas that empty into ocean-going waters also would be exposed.

16.3.2 Property

Table 16-2 summarizes the estimated property exposure in the evaluated tsunami inundation areas. Figure 16-5 shows the Hazus-defined occupancy class of all buildings in the tsunami inundation areas. These occupancy classes provide an indication of land use within the mapped hazard area. Some land uses are more vulnerable to inundation, such as single-family homes, while others are less vulnerable, such as agricultural land or parks.

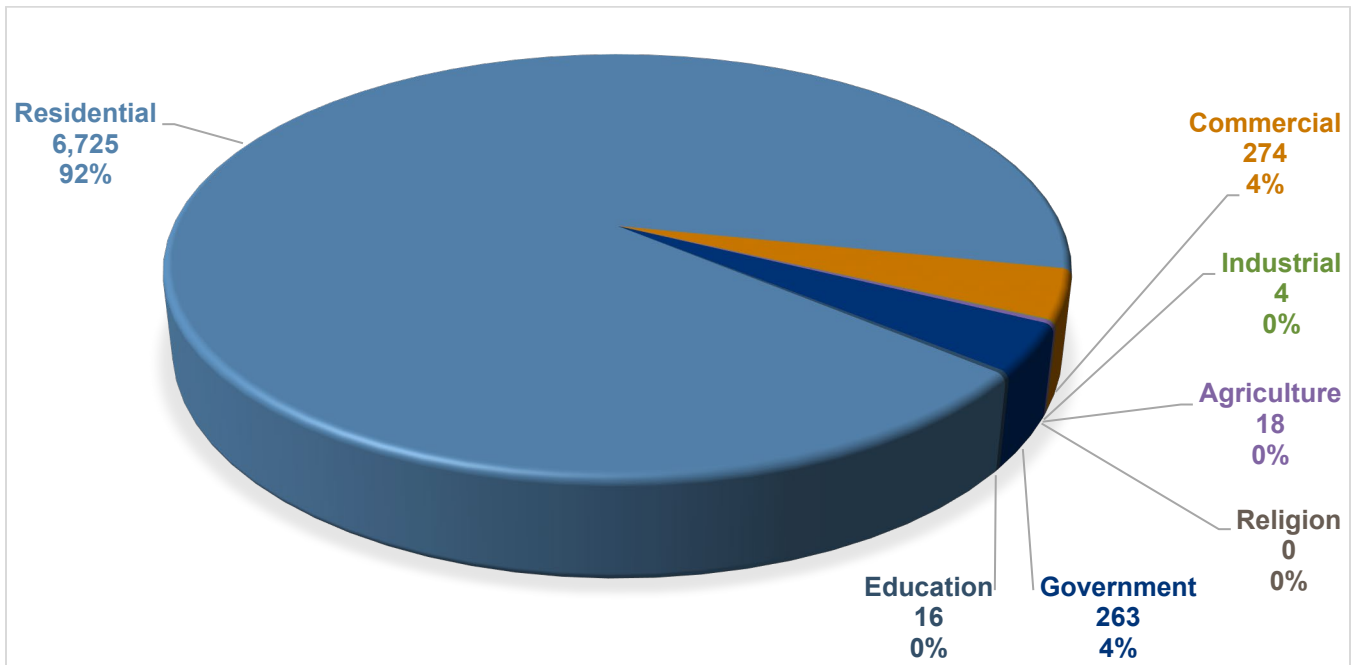
Figure 16-4. Potential Tsunami Travel Times in the Pacific Ocean, in Hours

Source: National Centers for Environmental Information, 2021

Table 16-2. Exposed Property in the Tsunami Inundation Zone

Acres of Inundation Area	4,690
Number of Buildings Exposed	7,300
Value of Exposed Structures	\$2,703,527,102
Value of Exposed Contents	\$1,659,832,511
Total Exposed Property Value	\$4,363,359,613
Total Exposed Value as % of Planning Area Total	2.4%

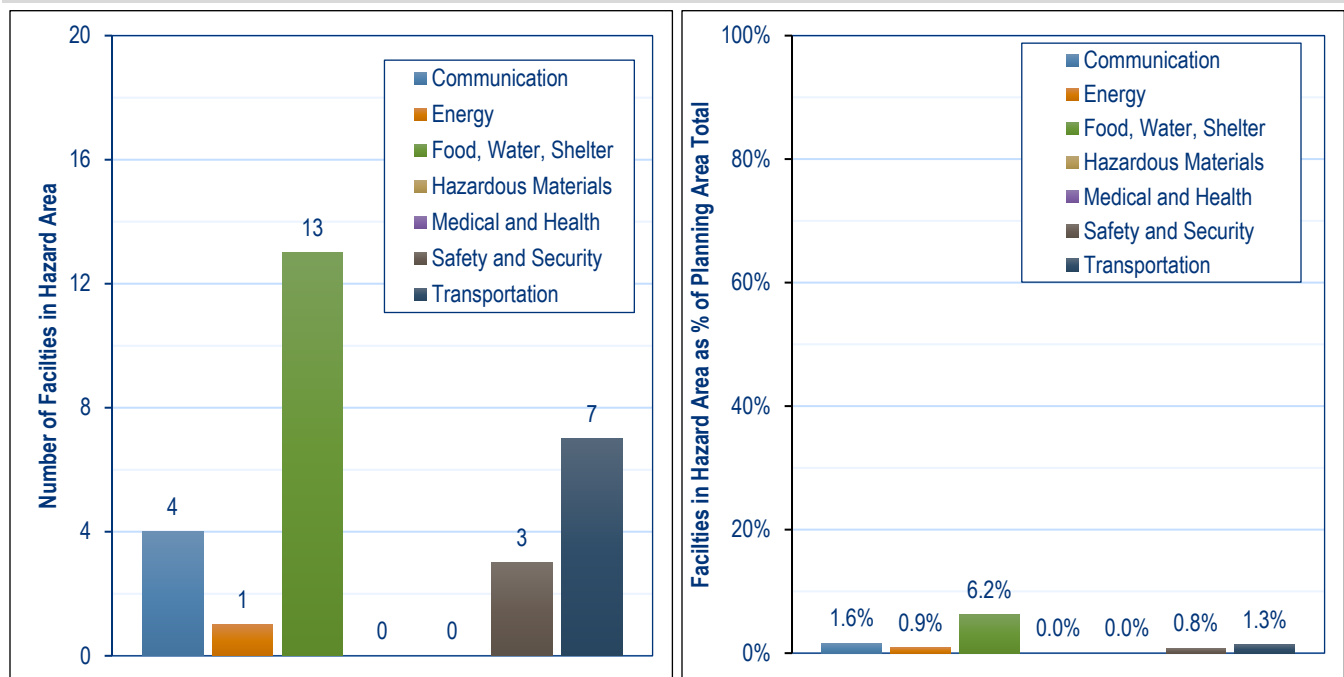
Figure 16-5. Structures in the Tsunami Inundation Zone, by Building Occupancy Class



16.3.3 Critical Facilities

Figure 16-6 shows critical facilities located in the tsunami inundation zone by facility type. The total count of critical facilities in the tsunami inundation zone (22) represents 1.4 percent of the planning area total of 1,588.

Figure 16-6. Critical Facilities in Tsunami Inundation Area



16.3.4 Environment

All waterways and beaches would be exposed to the effects of a tsunami; inundation of water and introduction of foreign debris could be hazardous to the environment. All wildlife inhabiting the area also is exposed.

16.4 VULNERABILITY

The vulnerability of people, property, and critical facilities was evaluated for the mapped tsunami inundation areas. Appendix D shows results by jurisdiction; countywide summaries are provided below.

16.4.1 Population

The populations most vulnerable to the tsunami hazard are the elderly, disabled, and very young who reside or recreate near beaches, low-lying coastal areas, tidal flats, and stream or river deltas that empty into ocean-going waters. Visitors recreating in or around inundation areas also would be vulnerable, as they may not be as familiar as residents with appropriate responses to a tsunami or ways to reach higher ground.

Impacts on persons and households in the mapped tsunami inundation area were estimated through the Level 2 Hazus analysis. Countywide results are as follows:

- Number of Displaced Population = 21,957
- Number of Residents Requiring Short-Term Shelter= 1,584

16.4.2 Property

Property Impacted

The impact of tsunami waves and the scouring associated with debris that may be carried in the water could be damaging to all structures along beaches, low-lying coastal areas, tidal flats, and river deltas. The most vulnerable are those in the front line of tsunami impact and those that are structurally unsound. The Hazus analysis indicated that 17.8 percent of the exposed structures (1,297 structures) would be impacted by the modeled scenario event.

Damage Estimates

Table 16-3 summarizes Hazus estimates of tsunami damage in the planning area. The estimated damage value is associated with the tsunami wave only; it does not include additional damage that may occur as a result of debris battering structures as the tsunami wave rushes in and out of the inundation area or fires caused by an earthquake and tsunami event. The debris estimate includes only structural debris and building finishes; it does not include additional debris that may result from a tsunami event, such as from boats, trees, sediment, building contents, bridges, or utility lines. Structures that were built to current floodplain regulations in the tsunami inundation area may have some level of protection, particularly if they were built to withstand wave action.

Table 16-3. Estimated Impact of a Tsunami Event in the Planning Area

Structure Debris (tons)	1,755,480
Buildings Impacted	1,297
Structure Value Damaged	\$125,195,566
Content Value Damaged	\$198,643,647
Total Value Damaged	4323,839,203
Damage as % of Total Value	0.2%

16.4.3 Critical Facilities

Significant facilities predicted by Hazus to be affected by the modeled tsunami event include one fire station, one school, and five road bridges

Damage Estimates

Hazus was used to estimate the number of critical facilities affected by tsunami and the resulting percent of damage to the building and contents. Figure 16-7 compares the predicted number of affected facilities to the number of exposed facilities. Figure 16-8 shows the estimated damage to critical facilities from a tsunami event. Depending on critical facility category, the average amount of damage to structures, measured as a percentage of total value, ranges from 1.3 to 13.0 percent of total value, and average damage to contents ranges from 0 to 47.4 percent.

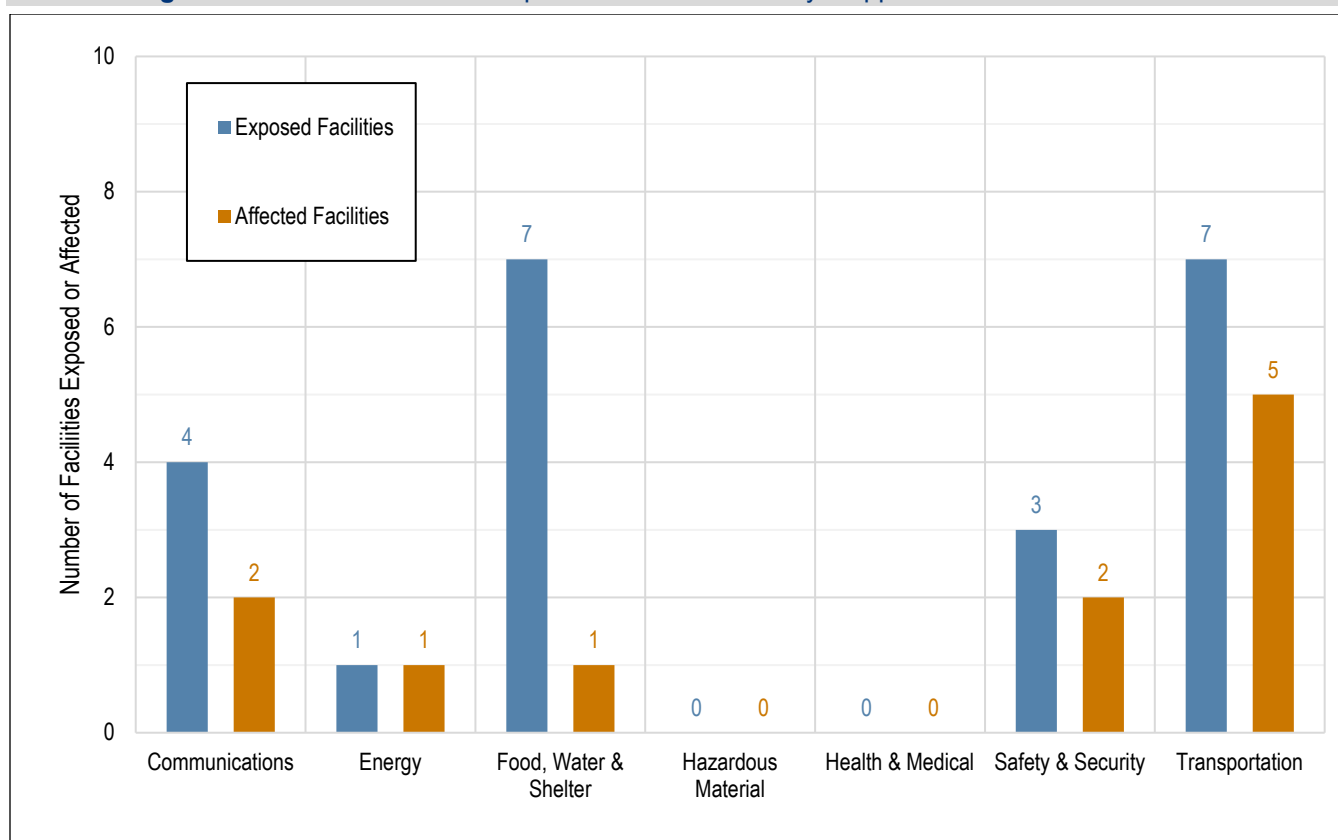
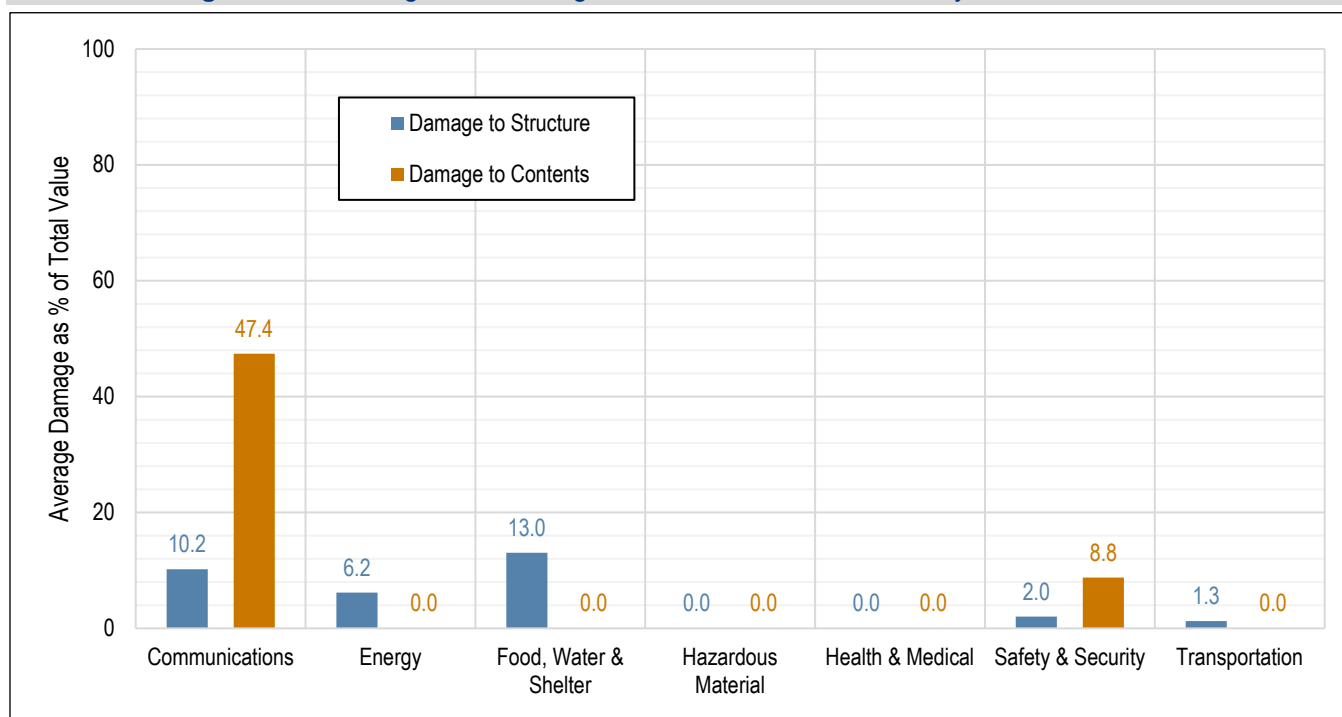
Figure 16-7. Critical Facilities Exposed to and Affected by Mapped Tsunami Inundation Area

Figure 16-8. Average % of Damage to Critical Facilities Caused by Modeled Tsunami

Vulnerable Infrastructure

In addition to the vulnerable critical facilities identified by the Hazus analysis, the following infrastructure is also generally vulnerable to damage:

- **Water Proximate Infrastructure**—Breakwaters and piers collapse, sometimes because of scouring actions that sweep away their foundation material and sometimes because of the sheer impact of the tsunami waves.
- **Flood Control Systems**—Floodwaters can back up drainage systems, causing localized flooding. Culverts can be blocked by debris from tsunami events, also causing localized urban flooding.
- **Utility Systems**—Floodwaters can get into drinking water supplies, causing contamination. Sewer systems can be backed up, causing waste to spill into homes, neighborhoods, rivers, and streams. Tsunami waves can knock down power lines and radio/cellular communication towers. Power generation facilities can be severely impacted by wave action and by inundation from floodwater.

16.4.4 Environment

Environmental impacts on local waterways and wildlife would be most significant in areas closest to the point of impact. Areas near gas stations, industrial areas and facilities storing hazardous materials are vulnerable. The vulnerability of aquatic habit and associated ecosystems in low-lying areas close to the coastline is high. Tsunami waves can carry destructive debris and pollutants that can have devastating impacts on all facets of the environment. A tsunami event has the potential to alter the shoreline, depending on the force of the run-up.

Most environmental and ecological impacts from tsunamis derive from direct damage from the waves, which can physically remove vegetation and wildlife, increase sediment load, and smother vegetation that is not physically carried away. Other environmental impacts from tsunamis include chemical changes from saltwater intruding into freshwater sources; eutrophication (enrichment) of water from increased runoff; and decomposition of vegetation, wildlife, rotting property (boats or buildings) and unrecovered remains. Non-biodegradable waste, such as plastics, can lead to a buildup in marine debris, and toxic wastes, if inadequately stored, may be released into the environment. Lastly, exotic wildlife may be introduced or may escape into the local ecosystem.

16.5 SCENARIO

The presentation *Tsunami Hazards and Preparedness in Ventura County* shows that local tsunamis may cause serious impact. A worst-case-scenario for the Ventura coastline would be a nearshore tsunami caused by a significant off-shore seismic event. While history has shown that these type events are not likely, should one occur, damage for this type of event would exceed what is estimated in the risk assessment for this hazard mitigation plan.

16.6 ISSUES

The planning team has identified the following issues related to the tsunami hazard for the planning area:

- **Hazard Identification**—To truly measure and evaluate the probable impacts of tsunamis on planning, hazard mapping based on probabilistic scenarios must continue to be updated regularly. The science and technology in this field are emerging. Accurate probabilistic tsunami mapping will need to be a key component for tsunami hazard mitigation programs to be effective.
- **Building Code Revisions**—Present building codes and guidelines may not adequately address the impacts of tsunamis on structures. Planning partners, in the cities of Ventura, Oxnard, and Port Hueneme, should review their building code for requirements for tsunami-resistant construction standards in vulnerable areas.
- **Enhancement of Current Capabilities**—As tsunami warning technologies evolve, the tsunami warning capability within the planning area will need to be enhanced to provide the highest degree of warning.
- **Vulnerable Populations Planning**—Special attention will need to be focused on the vulnerable communities in the tsunami zone and on hazard mitigation through public education, outreach, and warning capabilities. This issue may be especially important for visitors to Ventura County.

17. WILDFIRE

17.1 GENERAL BACKGROUND

A wildfire is any uncontrolled fire on undeveloped land that requires fire suppression. Although wildfires can occur naturally and are important to many ecosystem processes, most are started by human activity.

17.1.1 CAL FIRE Wildfire Mapping

Fire Hazard Severity Zones

CAL FIRE has modeled and mapped wildfire hazard zones using a computer model that designates moderate, high or very high fire hazard severity zones (FHSZ). FHSZ ratings are derived from a combination of fire frequency (how often an area burns) and expected fire behavior under severe weather conditions. CAL FIRE's model derives fire frequency from 50 years of fire history data. Fire behavior is based on factors such as the following (CAL FIRE 2021):

- **Fuel**—Fuel may include living and dead vegetation on the ground, along the surface as brush and small trees, and above the ground in tree canopies. Lighter fuels such as *Arundo donax* and other grasses, leaves, and needles quickly expel moisture and burn rapidly, while heavier fuels such as tree branches, logs and trunks take longer to warm and ignite. Trees killed or defoliated by forest insects and diseases are more susceptible to wildfire.
- **Weather**—Relevant weather conditions include temperature, relative humidity, wind speed and direction, cloud cover, precipitation amount and duration, and the stability of the atmosphere. When the temperature is high, relative humidity is low, wind speed is increasing and coming from the east (offshore flow), and there has been little or no precipitation, so vegetation is dry, conditions are very favorable for extensive and severe wildfires. These conditions occur more frequently inland where temperatures are higher and fog is less prevalent.
- **Terrain**—Topography includes slope and elevation. The topography of a region influences the amount and moisture of fuel; the impact of weather conditions such as temperature and wind;

FIRE HAZARD SEVERITY AS DETERMINED BY CAL FIRE

CAL FIRE classifies areas of the state as having a moderate, high, or very high fire hazard, based on how a fire would behave in a given area and the probability of flames and embers threatening buildings.

For wildland areas, the FHSZ model uses burn probability and expected fire behavior based on weather, fuel (the vegetation in the area), and terrain. For urban areas, hazard levels are based on vegetation density, distance from wildlands, and the levels assigned to surrounding zones.

Each area gets a score for flame length, embers, and the likelihood of the area burning. Scores of smaller areas are then averaged over larger zones that encompass them.

potential barriers to fire spread, such as highways and lakes; and elevation and slope of landforms (fire spreads more easily uphill than downhill).

The model also is based on frequency of fire weather, ignition patterns, and expected rate-of spread. It accounts for flying ember production, which is the principal driver of the wildfire hazard in densely developed areas. A related concern in built-out areas is the relative density of vegetative fuels that can serve as sites for new spot fires within the urban core and spread to adjacent structures. The model refines the zones to characterize fire exposure mechanisms that cause ignitions to structures. Significant land-use changes need to be accounted for through periodic model updates.

Wildfire Protection Responsibility Areas

Hundreds of agencies have fire protection responsibility for wildland and wildland/urban interface fires in California. Local, state, tribal, and federal organizations have primary legal (and financial) responsibility for wildfire protection. In many instances, two fire organizations have dual primary responsibility on the same parcel of land—one for wildfire protection, and the other for structural or “improvement” fire protection. According to the *2018 California State Hazard Mitigation Plan*, this layering of responsibility and resulting dual policies, rules, practices, and legal ordinances can cause conflict or confusion. To address wildfire jurisdictional responsibilities, the California state legislature in 1981 adopted Public Resource Code Section 4291.5 and Health and Safety Code Section 13108.5 establishing the following responsibility areas:

- **Federal Responsibility Areas (FRAs)**—FRAs are fire-prone wildland areas that are owned or managed by a federal agency such as the U.S. Forest Service, National Park Service, Bureau of Land Management, U.S. Fish and Wildlife Service, or U.S. Department of Defense. Primary financial and rule-making jurisdictional authority rests with the federal land agency. In many instances, FRAs are interspersed with private land ownership or leases. Fire protection for developed private property is usually not the responsibility of the federal land management agency; structural protection responsibility is that of a local government agency.
- **State Responsibility Areas (SRAs)**—SRAs are lands in California where CAL FIRE has legal and financial responsibility for wildfire protection and where CAL FIRE administers fire hazard classifications and building standard regulations. SRAs are defined as lands that meet the following criteria:
 - Are county unincorporated areas
 - Are not federally owned
 - Have wildland vegetation cover rather than agricultural or ornamental plants
 - Have watershed or range/forage value
 - Have housing densities not exceeding three units per acre.
 - Where SRAs contain built environment or development, the responsibility for fire protection of those improvements (non-wildland) is that of a local government agency.
- **Local Responsibility Areas (LRAs)**—LRAs include land in cities, cultivated agriculture lands, and non-flammable areas in unincorporated areas, and lands that do not meet the criteria for SRA or FRA. LRA fire protection is typically provided by city fire departments, fire protection districts, and counties, or by CAL FIRE under contract to local governments. LRAs may include flammable vegetation and wildland/urban interface areas where the financial and jurisdictional responsibility for improvement and wildfire protection is that of a local government agency.

17.1.2 State Codes and Policies for Mitigating the Fire Hazard

Urbanization tends to alter the natural fire regime and can lead to expansion of urbanized areas into wildland areas. State and local policies and regulations require landowners to carry out activities such as maintaining defensible space and reducing vulnerability to damage or loss from wildfire. The most important policies and regulations related to residential wildfire safety in California are as follows:

- **General Plan Safety Element Review: Government Code 65302.5**—The Board of Forestry and Fire Protection (BOF) must provide recommendations to a local jurisdiction's general plan safety element at the time that the general plan is being amended. BOF recommendations include goals and policies that provide for contemporary fire-prevention standards for the jurisdiction. This is not a direct and binding fire-prevention requirement for individuals.
- **Sprinkler Systems: California Residential Code, Chapter 3, Section R313**—All new dwellings, dwelling units, and one- and two-family townhomes must be equipped with an automatic fire-sprinkler system that can protect the entirety of the dwelling. Dwellings and homes constructed prior to January 1, 2011, that do not have a sprinkler system may be retrofitted, but it is not required.
- **Fire Safety Standards: California Public Resources Code 4290 and 14 California Code of Regulations (CCR) 1270**—These regulations govern roads, driveway width, clearance, turnarounds, signing, and water related to fire safety throughout California. Public Resources Code 4290 is typically enacted through regulation at the county level, as described below.
- **Wildland-Urban Interface Building Standards: California Government Code 51189**—The Office of the State Fire Marshal is required to create building standards for wildfire resistance. Construction of buildings in the wildland-urban interface must use fire-resistant materials to save life and property. As of 2011, the standards relevant to fire-safe construction for all new structures in the SRA are the California Building Code, Chapter 7A (for commercial construction) and the California Residential Code, Chapter 3, Section R327 (for residential construction).
- **State Responsibility Area: Public Resources Code 4102, 4125-4229 and 14 CCR 1220**—These statutes and regulations establish the locations where CAL FIRE has the financial responsibility for preventing and suppressing fires. These designations define financial arrangements for fire protection services and establish the locations where fire safe and defensible space laws or regulations apply.
- **Hazardous Fire Areas: Public Resources Code 4251-4255 and 14 CCR 1200**—These laws and regulations allow petitioners to the BOF or CAL FIRE to establish hazardous fire areas, providing for area closures and other restrictions for fire prevention.
- **Defensible Vegetation Clearing Around Structures: Public Resources Code 4291/14 CCR 1299**—Public Resources Code 4291 regulates fuel management around a property. It states that a person who owns or controls a building or structure in or adjoining to forest, brush, or grass covered lands shall follow certain guidelines outlined in the code. At least 100 feet of defensible space is required. The owner of the property is liable for making these changes to protect habitable structures. The 100 feet is separated into two zones, with the closer zone, 30 feet out from the structure, being managed more intensively.

17.1.3 Secondary Hazards

Wildfires can generate a range of secondary effects, which in some cases may cause more widespread and prolonged damage than the fire itself. Wildfires strip slopes of vegetation, exposing them to greater amounts of runoff. This in turn can weaken soils and cause failures on slopes. Major landslides can occur several years after a wildfire. Most wildfires burn hot and for long durations that can bake soils, especially those high in clay content, thus increasing the imperviousness of the ground. This increases the runoff generated by storm events, thus increasing the chance of flooding.

17.2 HAZARD PROFILE

17.2.1 Past Events

Ventura County has a prolific fire history, including 11 events since 2000 that have triggered federal disaster declarations, as listed in Table 17-1. Most of these fires coincided with strong Santa Ana wind events.

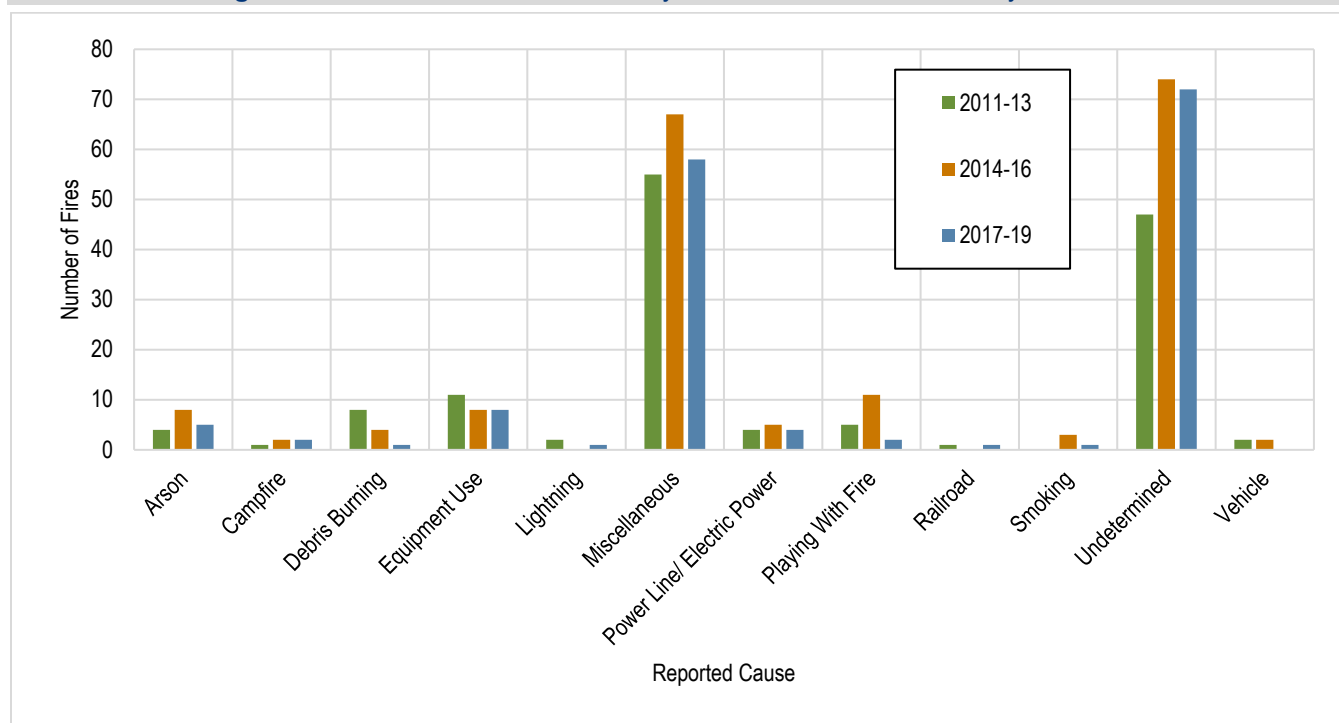
Table 17-1. Federally Declared Wildfire Events in Ventura County

Date Started	FEMA Declaration #	Description
October 31, 2019	FM-5302	Maria Fire 9,999 acres burned, 4 structures destroyed
October 30, 2019	FM-5298	Easy Fire 2,375 acres burned, 1 structure damaged, 1 structure destroyed
November 8, 2018	DR-4407	Woolsey Fire 96,949 acres, 1,643 structures destroyed, 3 fatalities
December 4, 2017	FM-5224 DR-4353	Thomas Fire ^a 281,893 acres burned, 280 structures damaged, 1,063 structures destroyed, 2 fatalities
May 2, 2013	FM-5024	Springs Fire 24,251 acres burned, 12 structures damaged, 10 structures destroyed
September 22, 2009	FM-2839	Guiberson Fire 17,500 acres burned
December 3, 2006	FM-2681	Shekell Fire 13,600 acres burned, 7 structures burned
September 4, 2006	FM-2677	Day Fire 162,702 acres burned
November 17, 2005	FM-2586	School Fire 3,891 acres burned
September 28, 2005	FM-2583	Topanga Fire 24,175 acres burned, 6 structures burned
October 25, 2003	DR-1498	Simi Fire 107,560 acres burned, 48 structures lost

Source: FEMA 2021, CAL FIRE 2021

a. Statistics include Ventura and Santa Barbara Counties

CAL FIRE maintains statistics on historical wildfire activity through its annual reporting (Redbooks). Wildfire statistics include state and county information, cause and size, acres burned, and dollar damage, among other details. Figure 17-1 shows the wildfire activity for Ventura County between 2011 and 2019, the most recent annual report available. CAL FIRE has Redbooks available for every year back through 1942.

Figure 17-1. CAL FIRE Wildfire Activity Statistics for Ventura County 2011-2019

17.2.2 Location

Figure 17-2 shows the moderate, high, and very high FHSZs for Ventura County. These maps are the basis for the wildfire risk assessment.

17.2.3 Frequency

The wildfire season in coastal Southern California displays a distinct seasonality. Unlike the rest of western North America, which is mainly susceptible to wildfires during the summer, Southern California's fire season historically peaks in the fall. This is the result of two factors: the long dry summer defining the local Mediterranean climate regime; and the dry, gusty downslope Santa Ana winds, whose season starts in the fall when vegetation is at its driest.

Based on its history of past events, Ventura County has a high chance of a wildfire in any given year. The most common causes of wildfires, based on recent past events, will be "undetermined," miscellaneous, equipment use, playing with fire, and arson.

17.2.4 Severity

The Thomas Fire in 2017 had greater impact on Ventura County than any other wildfire to date. This fire started near Santa Paula and spread quickly, aided by strong Santa Ana winds. It burned for 38 days, covering 282,000 acres in Ventura and Santa Barbara counties and destroying or damaging more than 1,300 structures. Two people lost their lives. The agriculture industry in Ventura County suffered losses of at least \$171 million.

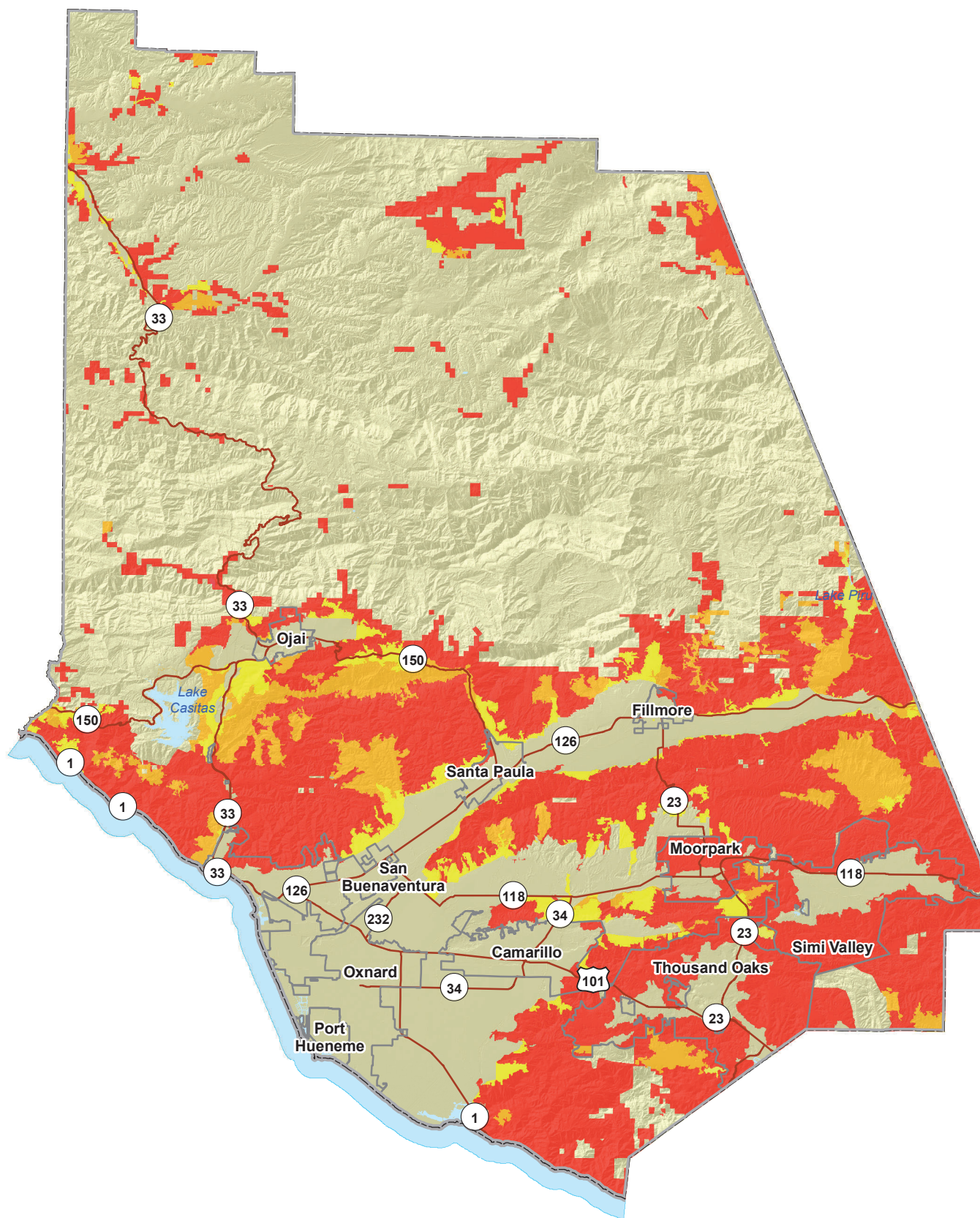
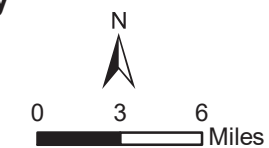
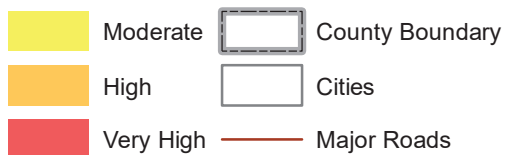


Figure 17-2. Wildfire Hazard Severity Zones in Ventura County



Data Sources: Ventura Co.,
CAL FIRE, Esri

In CAL FIRE's July 2021 list of the deadliest, largest, and most destructive wildfires that have occurred in the state, the Thomas Fire ranks as the 8th largest and 15th most destructive. The 2018 Woolsey Fire ranks as the 8th most destructive. Both these fires were exacerbated by strong Santa Ana wind conditions. Although no Ventura County fires are listed among the top 20 deadliest events, four of the deadliest fires recorded were in neighboring Los Angeles County.

17.2.5 Warning Time

Whether intentionally or accidentally, most wildfires are caused by humans. There is no way to predict when one might break out. Dry seasons, prolonged droughts, and Santa Ana wind events are factors that greatly increase fire likelihood. Severe weather can be predicted, so special attention can be paid during weather events that may increase wildfire risk. Since fireworks often cause brush fires, extra diligence also is warranted around holidays, such as Fourth of July, when the use of fireworks is highest.

If a fire does break out and spread rapidly, residents may need to evacuate within days or hours. According to the U.S. Forest Service, a fire's peak burning period generally is between 10 a.m. and sundown. Once a fire has started, fire alerting is reasonably rapid in most cases. The rapid spread of cellular and two-way radio communications in recent years has further contributed to significant improvements in warning time.

17.3 EXPOSURE

A quantitative assessment of exposure to the wildfire hazard was conducted using the hazard mapping shown in Figure 17-2 and the asset inventory developed for this plan. Detailed results by municipality are provided in Appendix D; results for the total planning area are presented below.

17.3.1 Population

Population exposure was estimated by calculating the number of buildings in each hazard area as a percent of total planning area buildings and applying this percentage to the planning area population. Table 17-2 summarizes the estimated countywide population living in the mapped risk areas. In addition to populations who reside in risk areas where fires may occur, visitors, hikers and campers may be exposed to wildfires. The entire population of the planning area has the potential to be exposed to smoke from nearby wildfires.

Table 17-2. Exposed Population in Mapped Relative Fire Hazard Zones

	Moderate FHSZ	High FHSZ	Very High FHSZ
Population Exposed	6,101	4,188	175,759
% of Total Planning Area Population	0.7%	0.5%	20.8%

17.3.2 Property

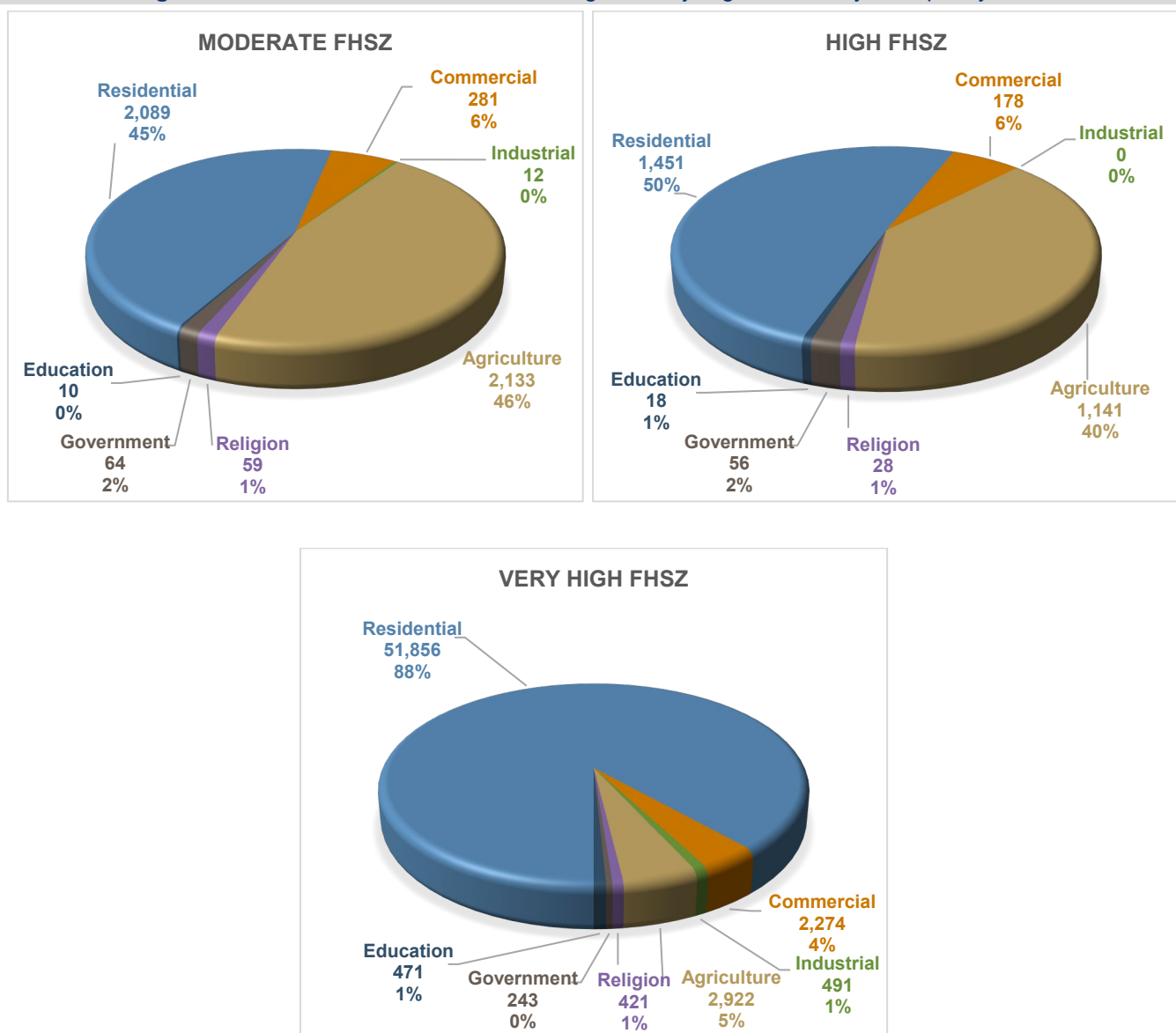
Table 17-3 summarizes the estimated countywide property exposure in the mapped wildfire risk areas. Figure 17-3 shows the occupancy class for all buildings in the mapped fire hazard areas. These

occupancy classes provide an indication of land use within the mapped hazard area. Some land uses are more vulnerable to fire, such as single-family homes, while others are less vulnerable, such as agricultural land or parks.

Table 17-3. Exposed Property in Mapped Relative Fire Hazard Zones

	Moderate FHSZ	High FHSZ	Very High FHSZ
Number of Buildings Exposed	4,648	2,872	58,678
Value of Exposed Structures	\$1,444,900,462	\$955,204,682	\$24,250,894,229
Value of Exposed Contents	\$1,099,162,715	\$725,563,443	\$15,324,915,299
Total Exposed Property Value	\$2,544,063,177	\$1,680,768,126	\$39,575,809,528
Total Exposed Value as % of Planning Area Total	1.4%	0.9%	21.9%

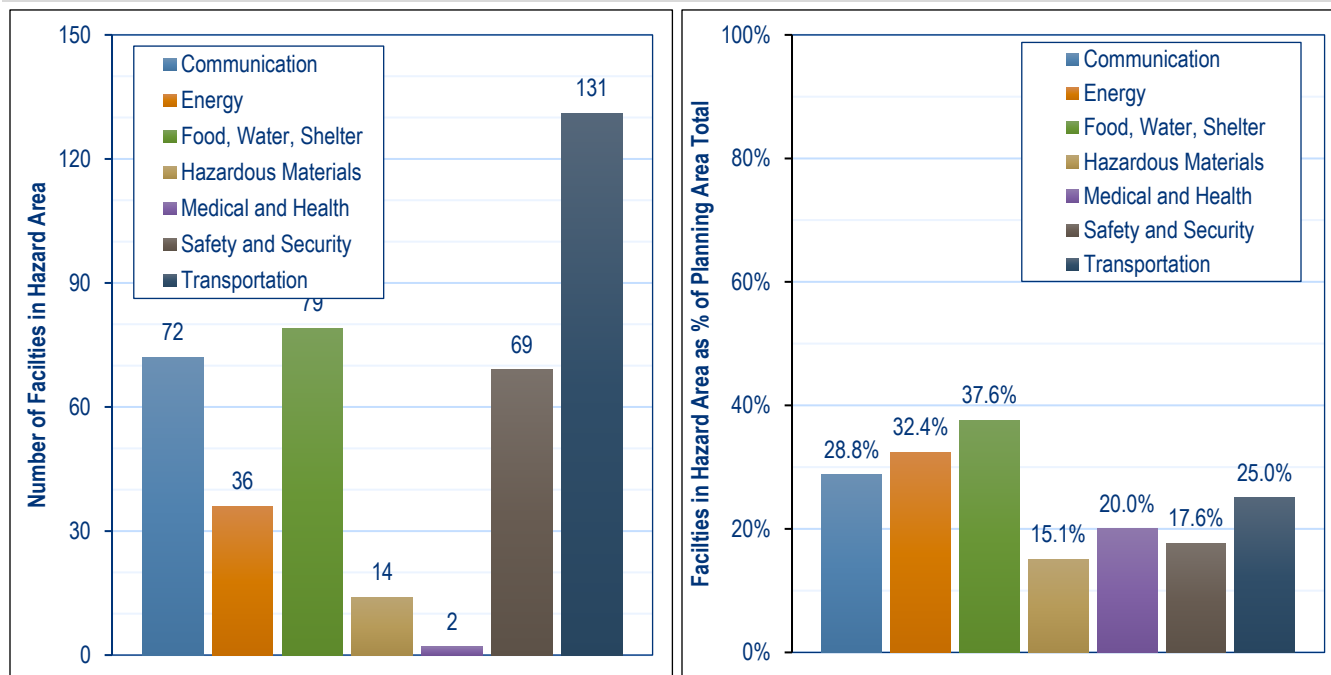
Figure 17-3. Structures in the Moderate, High or Very High FHSZs, by Occupancy Class



17.3.3 Critical Facilities

Figure 17-4 shows critical facilities located in the high or very high fire hazard severity zones, by facility type. The total count of critical facilities in these risk areas (386) represents 25 percent of the planning area total of 1,588. A breakdown by municipality is provided in Appendix D.

Figure 17-4. Critical Facilities in High or Very High Severity Zones



17.3.4 Environment

All natural resources and habitats in mapped fire hazard severity zones are exposed to the risk of wildfire.

17.4 VULNERABILITY

17.4.1 Population

All people exposed to the wildfire hazard are potentially vulnerable to wildfire impacts. Persons with access and functional needs, the elderly and very young may be especially vulnerable to a wildfire if there is not adequate warning time for them to evacuate if needed. In addition, people outside the mapped risk areas are susceptible to health hazards associated with smoke and air pollution from wildfires, especially sensitive populations including children, the elderly, and those with respiratory and cardiovascular diseases. In addition, wildfires threaten the health and safety of those fighting the fires.

17.4.2 Property

All property exposed to the wildfire hazard is vulnerable. Structures that were not constructed to standards designed to protect a building from a wildfire may be especially vulnerable. As of 2008,

California State Building code requires minimum standards be met for new buildings in fire hazard severity zones. According the 2019 American Community Survey estimates, most of the housing in the planning area—96.8 percent—was built prior to this code requirement. It is unknown how many of these structures are located in fire hazard zones.

Estimates were developed to indicate the loss that would occur if wildfire damage were equal to 1, 10, 30 or 50 percent of the exposed property value, as summarized in Table 17-4. Damage in excess of 50 percent is considered to be substantial by most building codes and typically requires total reconstruction of the structure.

Table 17-4. Loss Estimates for Fire Hazard Severity Zones

	Exposed Value	Loss Value	Loss as % of Total Planning Area Replacement Value
Moderate FHSZ			
Loss = 1% of Exposed Value	\$2,544,063,177	\$25,440,632	0.01%
Loss = 10% of Exposed Value		\$254,406,318	0.14%
Loss = 30% of Exposed Value		\$763,218,953	0.42%
Loss = 50% of Exposed Value		\$1,272,031,589	0.70%
High FHSZ			
Loss = 1% of Exposed Value	\$1,680,768,126	\$16,807,681	0.01%
Loss = 10% of Exposed Value		\$168,076,813	0.09%
Loss = 30% of Exposed Value		\$504,230,438	0.27%
Loss = 50% of Exposed Value		\$840,384,063	0.45%
Very FHSZ			
Loss = 1% of Exposed Value	\$39,575,809,528	\$395,758,095	0.22%
Loss = 10% of Exposed Value		\$3,957,580,953	2.19%
Loss = 30% of Exposed Value		\$11,872,742,858	6.57%
Loss = 50% of Exposed Value		\$19,787,904,764	10.95%

17.4.3 Critical Facilities

Currently there are 14 hazardous material containment sites identified in wildfire risk zones. During a wildfire event, containers with these materials could rupture because of the excessive heat and act as fuel for the fire, causing rapid spreading and escalating the fire to unmanageable levels. In addition, they could leak into surrounding areas, saturating soils and seeping into surface waters, and have a disastrous effect on the environment.

In the event of wildfire, there would likely be little damage to most infrastructure. Most roads would not be damaged except in the worst scenarios, although roads and bridges can be blocked by debris or fire-related conditions and become impassable. Power poles are the most at risk to wildfire because most are made of wood and susceptible to burning. In the event of a wildfire, pipelines could provide a source of fuel and lead to a catastrophic explosion.

17.4.4 Environment

Fire is a natural and critical ecosystem process in most terrestrial ecosystems, affecting the types, structure, and spatial extent of native vegetation. However, in some circumstances it can also cause severe environmental impacts, such as the following:

- **Soil Erosion**—The protective covering provided by foliage and dead organic matter is removed, leaving the soil fully exposed to wind and water erosion. Accelerated soil erosion occurs, causing landslides and threatening aquatic habitats.
- **Reduced Agricultural Resources**—Wildfire can have disastrous consequences on agricultural resources, removing them from production and necessitating lengthy restoration programs.
- **Spread of Invasive Plant Species**—Non-native plant species, such as *Arundo donax*, frequently invade burned areas. When weeds become established, they can dominate the plant cover over broad landscapes, and become difficult and costly to control.
- **Disease and Insect Infestations**—Unless diseased or insect-infested trees are swiftly removed, infestations and disease can spread to healthy forests and private lands. Timely active management actions are needed to remove diseased or infested trees.
- **Destroyed Endangered Species Habitat**—Wildfire can have negative consequences for endangered species by degrading their habitat.
- **Soil Sterilization**—Some wildfires burn so hot that they can sterilize the soil. Topsoil exposed to extreme heat can become water repellant, and soil nutrients may be lost.
- **Damaged Fisheries**—Fisheries can suffer from increased water temperatures, sedimentation, and changes in water quality.
- **Damaged Cultural and Historical Resources**—The destruction of cultural and historic resources may occur, scenic vistas can be damaged, and access to recreational areas can be reduced.

17.5 SCENARIO

With Ventura County's Mediterranean climate, high moisture levels during the winter rainy season can significantly increase the growth of plants, followed by that vegetation becoming dried during the long, hot summers, decreasing plant moisture content and increasing the ratio of dead fuel to living fuel. As a result, fire susceptibility increases dramatically, particularly in late summer and early autumn.

The worst conditions for local wildfires also depend on how long it has been since the last fire. For several years after a fire has occurred, easily flammable herbaceous species predominate and increase the likelihood of new fires. When woody species become re-established, they contribute to a lower overall level of fire susceptibility for approximately 10 years. However, after this period, the slow aging plant community becomes ever more likely to burn because of increased levels of dead plant material and lowered plant moisture levels.

Santa Ana winds contribute to the likeliness of wildfires in Ventura County, bringing extremely dry air and high wind speeds that further desiccate plant communities during the period of the year when the constituent species have very low moisture content. The effect of these winds on existing fires is particularly dangerous; the winds can greatly increase the rate at which fires spread.

A worst-case scenario would include an active fire season throughout the American west, spreading resources thin. Firefighting teams would be exhausted or unavailable. Many federal assets would be responding to other fires that started earlier in the season.

To further complicate the problem, heavy rains could follow, causing flooding and landslides in areas where vegetation has been removed by the fire.

17.6 ISSUES

The major issues for wildfire are the following:

- Public education and outreach to people living in or near the fire hazard zones should include information about and assistance with mitigation actions such as defensible space and advance identification of evacuation routes and safe zones.
- Wildfires could cause landslides as a secondary natural hazard.
- Wildfire preparedness and response planning should emphasize being alert to any predictions of Santa Ana winds, which are significant contributors to wildfire in Ventura County.
- Climate change could exacerbate the wildfire hazard.
- Future growth into interface areas should continue to be managed.
- Area fire districts need to continue to train on wildland-urban interface events.
- Vegetation management activities—This issue would include enhancement through expansion of the target areas as well as additional resources.
- Regional consistency of higher building code standards such as residential sprinkler requirements and prohibitive combustible roof standards.
- Firefighters in remote and rural areas are faced with limited water supply and lack of hydrant taps.
- Expand certifications and qualifications for fire department personnel.
- Ensure that all firefighters are trained in basic wildfire behavior, basic fire weather, and that all company officers and chief level officers are trained to the wildland command and strike team leader level.

18. CLIMATE CHANGE

18.1 GENERAL BACKGROUND

18.1.1 What is Climate Change?

“Climate change” refers to alterations in the long-term patterns of temperature, precipitation, humidity, wind and seasons that play a fundamental role in shaping natural ecosystems and the human economies and cultures that depend on them. These shifts may result from natural processes (e.g., cyclical ocean patterns like El Niño, La Niña and the Pacific Decadal Oscillation, volcanic activity, changes in the sun’s energy output, variations in Earth’s orbit), but they can also be driven by human activity. Many of the changes observed in Earth’s climate since the early 20th century have been attributed to human activity.

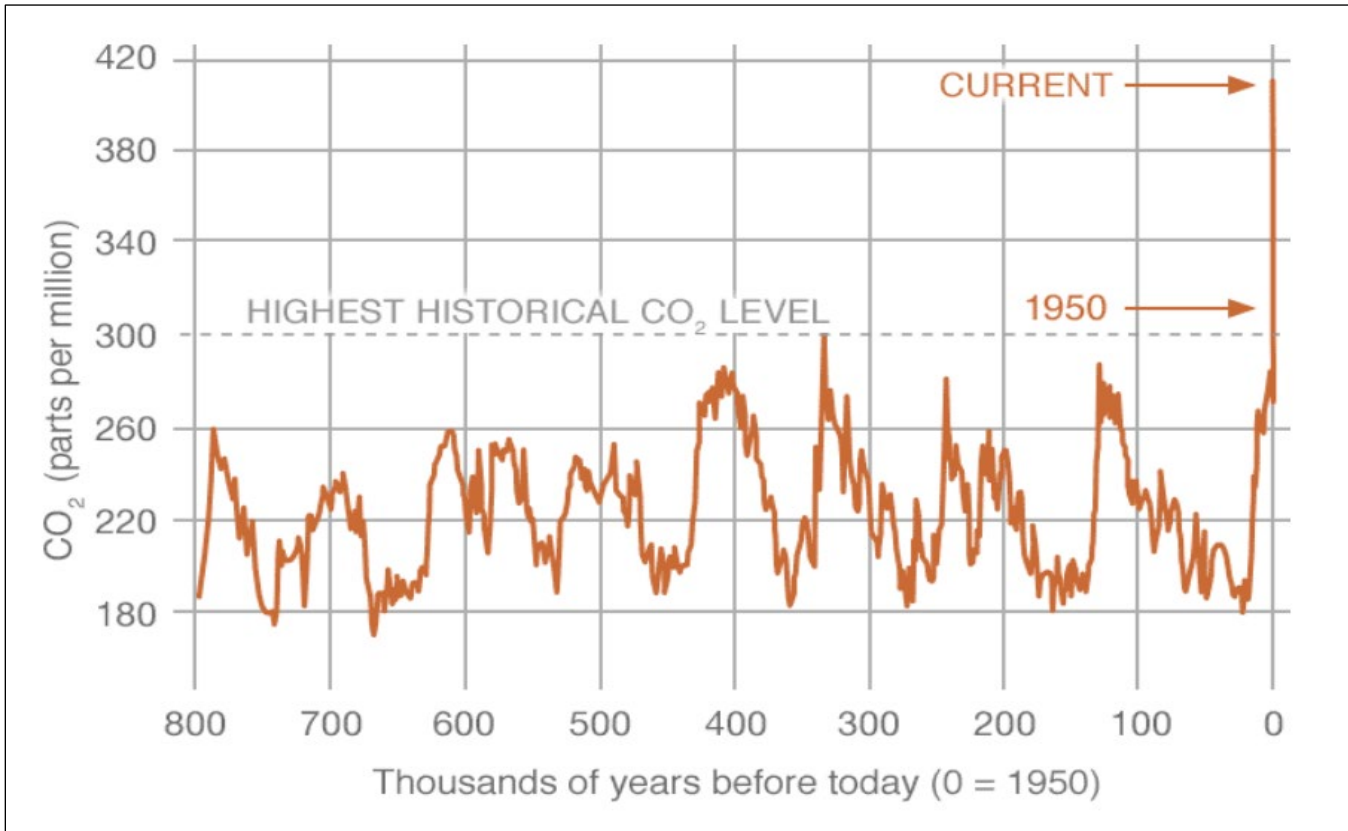
The well-established worldwide warming trend of recent decades and its related impacts are caused by increasing concentrations of carbon dioxide and other greenhouse gases in the earth’s atmosphere. Greenhouse gases are gases that trap heat in the atmosphere, resulting in a warming effect. Carbon dioxide is the most commonly known greenhouse gas; however, methane, nitrous oxide and fluorinated gases also contribute to warming. Emissions of these gases come from a variety of sources, such as the combustion of fossil fuels, agricultural production, and changes in land use. According to the National Aeronautics and Space Administration (NASA), carbon dioxide concentrations measured about 280 parts per million (ppm) before the industrial era began in the late 1700s and have risen dramatically since then, surpassing 400 ppm in 2013 for the first time in recorded history (see Figure 18-1).

18.1.2 How Climate Change Affects Hazard Mitigation

Climate change will affect the people, property, economy, and ecosystems of the planning area in a variety of ways. Consequences of climate change include increased periods of prolonged drought, potential for heat-related illnesses, detrimental impacts on agricultural productivity, and increased flood vulnerability. The most important effect for the development of this hazard mitigation plan is that climate change will have a measurable impact on the occurrence and severity of many natural hazards.

An essential aspect of hazard mitigation is predicting the likelihood of future hazard events. Typically, predictions are based on statistical projections from records of past events. This approach assumes that the likelihood of hazard events remains essentially unchanged over time. Thus, averages based on the past frequencies of, for example, floods are used to estimate future frequencies: if a river has flooded an average of once every 5 years for the past 100 years, then it can be expected to continue to flood an average of once every 5 years.

Figure 18-1. Global Carbon Dioxide Concentrations Over Time



Source: NASA 2021

For hazards that are affected by climate conditions though, the assumption that future behavior will be equivalent to past behavior is not valid. For example, flooding is generally associated with precipitation frequency and quantity. However, the frequency of flooding will not remain constant if broad precipitation patterns change over time. Specifically, as hydrology changes, storms currently considered to be the 100-year flood might strike more often, leaving many communities at greater risk.

The risks of landslide, severe storms, severe weather, and wildfire are all affected by climate patterns as well. For this reason, an understanding of climate change is pertinent to efforts to mitigate natural hazards. Information about how climate patterns are changing provides insight on the reliability of future hazard projections used in mitigation analysis.

18.1.3 Current Indicators of Climate Change

Global Indicators

The major scientific agencies of the United States—including NASA and the National Oceanic and Atmospheric Administration (NOAA)—have presented evidence that climate change is occurring. NASA summarizes key evidence as follows (National Aeronautics and Space Administration 2021):

- **Global Temperature Rise**—The planet’s average surface temperature has risen about 2.12 °F since the late 19th century, a change driven largely by increased carbon dioxide emissions into

the atmosphere and other human activities. Most of the warming occurred in the past 40 years, with the seven most recent years being the warmest. The years 2016 and 2020 are tied for the warmest year on record. The ocean has absorbed much of this increased heat, with the top 100 meters (about 328 feet) of ocean showing warming of more than 0.6 °F since 1969. Earth stores 90 percent of its extra energy in the ocean.

- **Shrinking Ice Sheets**—The Greenland and Antarctic ice sheets have decreased in mass. Data from NASA’s Gravity Recovery and Climate Experiment show Greenland lost an average of 279 billion tons of ice per year between 1993 and 2019, while Antarctica lost about 148 billion tons of ice per year.
- **Glacial Retreat**—Glaciers are retreating almost everywhere around the world—including in the Alps, Himalayas, Andes, Rockies, Alaska and Africa.
- **Decreased Snow Cover**—Satellite observations reveal that the amount of spring snow cover in the Northern Hemisphere has decreased over the past five decades and that the snow is melting earlier
- **Sea-Level Rise**—Global sea levels rose about 8 inches in the last century. The rate in the last two decades is nearly double that of the last century and is accelerating slightly every year.
- **Declining Arctic Sea Ice**—Both the extent and thickness of Arctic sea ice has declined rapidly over the last several decades
- **Extreme Events**—The number of record high temperature events in the United States has been increasing, while the number of record low temperature events has been decreasing, since 1950. The U.S. has also witnessed an increasing number of intense rainfall events.
- **Ocean Acidification**—Since the beginning of the Industrial Revolution, the acidity of surface ocean waters has increased by about 30 percent. The amount of carbon dioxide absorbed by the upper layer of the oceans is increasing to about 7 to 10 billion metric tons per year.

California Indicators

Monitoring and research efforts across California have generated data that describe changes already underway in the state. Notable examples across the state include the following (California Office of Environmental Health Hazard Assessment 2018):

- Dissolved oxygen in coastal waters is declining throughout the south coast survey region
- Since 1950, the northern Sierra Nevada showed an overall snowpack decline of 7.4 inches.
- Unusually warm waters occurred in the Pacific Ocean in 2014-2015, leading to widespread impacts on marine life. This marine heat wave first appeared as a large area of exceptionally high sea surface temperatures in the Gulf of Alaska in November 2013 and later extended along the entire west coast of North America.
- The surface area of seven Sierra Nevada glaciers has decreased dramatically since the beginning of the 20th century. In 2014, the size of these glaciers ranged from 14 to 52 percent of their 1903 area.
- Sea level has risen by about 7 inches since 1900 at San Francisco and by about 6 inches since 1924 at La Jolla.
- Since 1906, the fraction of annual snowmelt runoff that flows into the Sacramento River between April and July has decreased by about 9 percent.

- Compared to the 1930s, forests across much of California today have lower densities of large trees, and higher densities of small trees. Water stress, which increases in a warming climate, poses a greater risk to large trees than to small trees.
- Annual tree mortality in California forests increased in 2014, and steep increases in mortality followed in subsequent years; the highest number, 62 million tree deaths, was recorded in 2016.
- Future droughts may be hotter, as warm temperatures coincide with periodic dry years; 2016 and 2020 were the warmest years on record.
- Heat-related deaths and illnesses in California increased dramatically in 2006 following a record-breaking heat wave. At least 140 deaths occurred between July 15 and August 1. Deaths related to this heat wave were largely attributed to elevated nighttime temperatures.
- The number of acres burned by wildfires statewide has been increasing since 1950. Large fires affecting 1,000 acres or more account for most of the area burned each year.

18.1.4 Projected Future Impacts

Climate change projections contain inherent uncertainty, largely derived from the fact that they depend on future greenhouse gas emission scenarios. Generally, the uncertainty in greenhouse gas emissions is addressed by the presentation of differing scenarios: low-emissions or high-emissions scenarios. In low-emissions scenarios, greenhouse gas emissions are reduced substantially from current levels. In high-emissions scenarios, greenhouse gas emissions generally increase or continue at current levels. Uncertainty in outcomes is generally addressed by averaging a variety of model outcomes. Despite this uncertainty, climate change projections present valuable information to help guide decision-making for possible future conditions.

Global and National Projections

The Intergovernmental Panel on Climate Change, which includes more than 1,300 scientists from the United States and other countries, project that Earth's average temperatures will raise 2.5 to 10 °F over the next century (National Aeronautics and Space Administration 2021). The Third and Fourth *National Climate Assessment Reports* indicate the following:

- **Change Will Continue Through This Century and Beyond**—Global climate is projected to continue to change over this century and beyond. The magnitude of climate change beyond the next few decades depends primarily on the amount of heat-trapping gases emitted globally, and how sensitive the Earth's climate is to those emissions.
- **Temperatures Will Continue to Rise**—Because human-induced warming is superimposed on a naturally varying climate, the temperature rise has not been, and will not be, uniform or smooth across the country or over time.
- **Frost-Free Season and Growing Season will Lengthen**—The length of the frost-free season and the corresponding growing season has been increasing nationally since the 1980s, with the largest increases occurring in the western United States, affecting ecosystems and agriculture. Across the United States, the growing season is projected to continue to lengthen.

In a future in which heat-trapping gas emissions continue to grow, increases of a month or more in the lengths of the frost-free and growing seasons are projected across most of the United States by the end of the century, with slightly smaller increases in the northern Great Plains. The largest increases in the frost-free season (more than eight weeks) are projected for the

western United States, particularly in high elevation and coastal areas. The increases will be smaller if heat-trapping gas emissions are reduced.

- **Changes in Precipitation Patterns**—Average U.S. precipitation has increased since 1900, but some areas have had increases greater than the national average, and some areas have had decreases. More winter and spring precipitation is projected for the northern United States, and less for the Southwest, over this century.

Projections of future climate over the United States suggest that the recent trend toward increased heavy precipitation events will continue. This trend is projected to occur even in regions where total precipitation is expected to decrease, such as the Southwest.

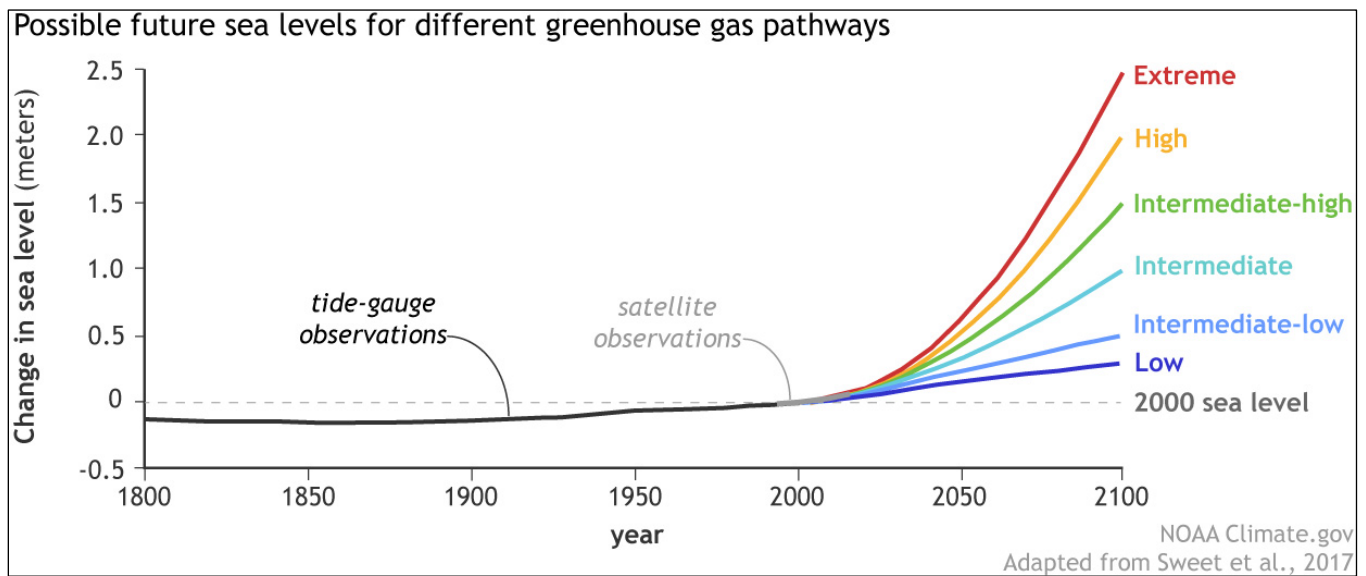
- **More Droughts and Heat Waves**—Droughts in the Southwest and heat waves everywhere are projected to become more intense, and cold waves less intense everywhere. Summer temperatures are projected to continue rising, and a reduction of soil moisture, which exacerbates heat waves, is projected for much of the western and central United States in summer. By the end of this century, what have been once-in-20-year extreme heat days (one-day events) are projected to occur every two or three years over most of the nation.
- **Hurricanes Will Become Stronger and More Intense**—The intensity, frequency, and duration of North Atlantic hurricanes, as well as the frequency of the strongest (Category 4 and 5) hurricanes, have all increased since the early 1980s. The relative contributions of human and natural causes to these increases are still uncertain. Hurricane-associated storm intensity and rainfall rates are projected to increase as the climate continues to warm.
- **Arctic Likely to Become Ice-Free in Summer**—The Arctic Ocean is currently expected to become essentially ice free in summer before 2050.
- **Sea Level Will Rise 1 to 8 feet by 2100**—Global sea level has risen by about 8 inches since reliable record keeping began in 1880. It is projected to rise another 1 to 8 feet by 2100. This is the result of added water from melting land ice and the expansion of seawater as it warms.

In the next several decades, storm surges and high tides could combine with sea-level rise and land subsidence, resulting in increased flooding in many regions. Sea-level rise will continue past 2100 because the oceans take a very long time to respond to warmer conditions at the Earth's surface. Ocean waters will therefore continue to warm and sea level will continue to rise for many centuries at rates equal to or higher than those of the current century. Figure 18-2 shows the projected rate of global sea-level rise under different greenhouse gas scenarios (National Oceanic and Atmospheric Administration 2021).

Projections for California

According to *California's Fourth Climate Change Assessment*, the state can expect the following climate change impacts (State of California 2021):

- By 2100, the average annual maximum daily temperature is projected to increase by 5.6 to 8.8 °F
- By 2100, the water supply from snowpack is projected to decline by two-thirds
- By 2050, a study estimates California's agricultural production could face climate-related water shortages of up to 16 percent in certain regions
- By 2100, the frequency of extreme wildfires will increase, and the average area burned statewide would increase by 77 percent

Figure 18-2. Possible Future Sea Levels for Different Greenhouse Gas Pathways

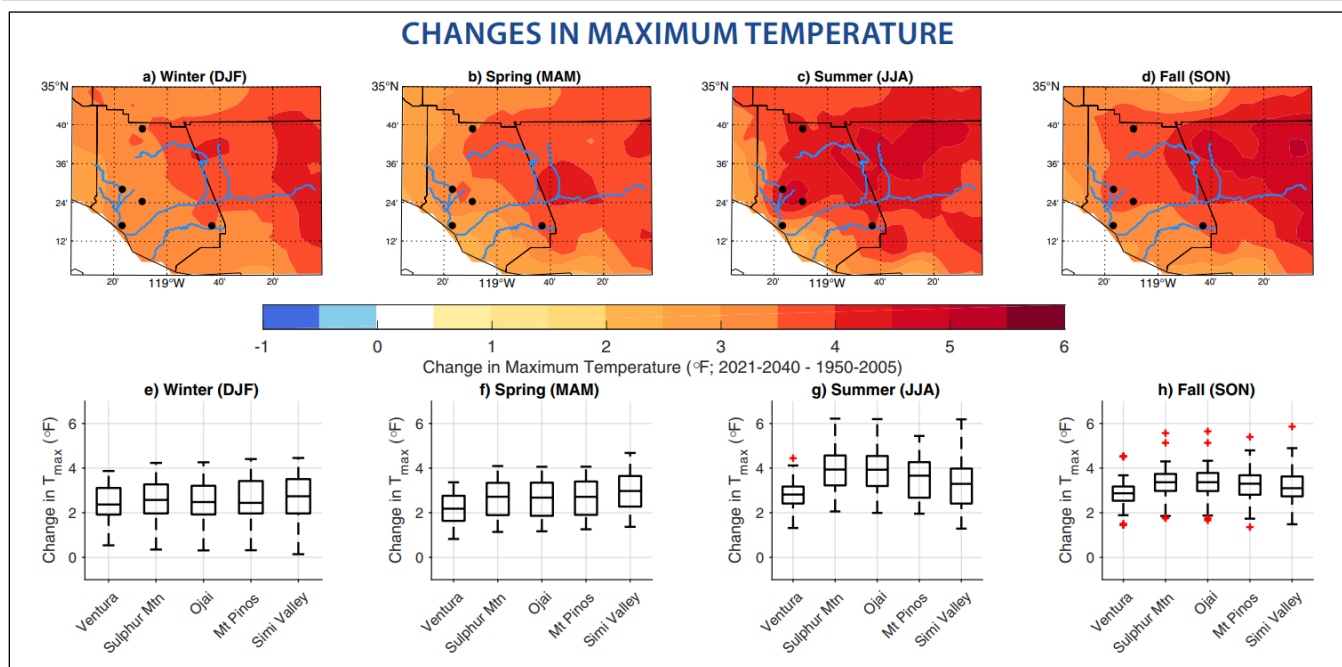
Source: NOAA, 2021

- By 2100, 13 to 67 percent of Southern California beaches may completely erode due to sea-level rise
- By 2100, the miles of highways susceptible to coastal flooding in a 100-year storm event will triple
- By 2050, heat waves in cities could cause 2 to 3 times more heat-related deaths

Projections for Ventura County

The 2019 report, *Projected Changes in Ventura County Climate*, lists the following local projections (Oakley, et al. 2019):

- **Changes in temperature**—Both annual average temperatures and the frequency of extreme temperatures will increase across Ventura County. Inland areas are likely to see an increase of at least 3 to 5 °F. Coastal areas are likely to see an increase of at least 2 to 3 °F. Figure 18-3 shows the projected maximum temperature changes from the average temperature for 1950 – 2005, to the average temperature for 2021 – 2040. Increases in maximum temperatures and overnight minimum temperatures as well as frequency of extreme temperatures will likely have negative impacts on human health and ecosystems, disproportionately affecting disadvantaged communities and impacting species extent and abundance.
- **Changes in Precipitation**—Precipitation is likely to intensify, meaning that the same amount of precipitation will fall in fewer days. Projections suggest a 7 percent decrease in winter precipitation days, an 11 percent decrease in spring precipitation days, and a 20 percent decrease in fall precipitation days with little overall projected change in seasonal precipitation totals. Changes in precipitation characteristics (intensification and concentration into winter season) may have implications for groundwater recharge and how surface water is conveyed, captured, and stored. There may be increased potential for post-fire flash flooding and/or debris flows due to more frequent short-duration, high intensity rainfall.

Figure 18-3. Changes in Projected Maximum Temperatures in Ventura County

- Changes in evaporative demand**—The greatest changes are likely in inland terrain, particularly in the headwaters of the Santa Clara River (Los Angeles County). Seasonally, the greatest total evaporation changes in demand will be in the spring, followed by summer and fall, with modest changes during the winter. The fall season demonstrates the largest percentage increases in evaporative demand over the largest area while the greatest percentage increases during spring and summer occur in the Topatopa Mountains. Increased evaporative demand may affect what crops can be grown economically, alter ecosystem function, and increase drought susceptibility.

18.1.5 Responses to Climate Change

Communities and governments worldwide are working to address, evaluate and prepare for climate changes that are likely to impact communities in coming decades. Generally, climate change discussions encompass two separate but inter-related considerations: mitigation and adaptation.

The term “mitigation” has multiple meanings across disciplines. Mitigation in emergency management, as generally addressed in this hazard mitigation plan, is typically defined as the effort to reduce loss of life and property by lessening the impact of disasters. Mitigation in climate change discussions is defined as a human intervention to reduce impacts on the climate system. It includes strategies to reduce greenhouse gas sources and emissions and enhance greenhouse gas sinks. In this chapter, mitigation is used as defined by the climate change community. In the other chapters of this plan, mitigation is primarily used in an emergency management context.

Adaptation refers to adjustments in natural or human systems in response to the actual or anticipated effects of climate change and associated impacts. These adjustments may moderate harm or exploit beneficial opportunities. Mitigation and adaptation are related, as the world’s ability to reduce greenhouse gas emissions will affect the degree of adaptation that will be necessary. Some initiatives

and actions can both reduce greenhouse gas emissions and support adaptation to likely future conditions.

Societies across the world are facing the need to adapt to changing conditions associated with natural disasters and climate change. Farmers are altering crops and agricultural methods to deal with changing rainfall and rising temperature; architects and engineers are redesigning buildings; planners are looking at managing water supplies to deal with droughts or flooding.

Adaptive capacity goes beyond human systems, as some ecosystems are able to adapt to change and to buffer surrounding areas from the impacts of change. Forests can bind soils and hold large volumes of water during times of plenty, releasing it through the year; floodplains can absorb vast volumes of water during peak flows; coastal ecosystems can hold out against storms, attenuating waves and reducing erosion. Other ecosystem services—such as food provision, timber, materials, medicines, and recreation—can provide a buffer to societies in the face of changing conditions. Ecosystem-based adaptation is the use of biodiversity and ecosystem services as part of an overall strategy to help people adapt to the adverse effects of climate change. This includes the sustainable management, conservation and restoration of specific ecosystems that provide key services.

Assessment of the current efforts and adaptive capacity of the planning partners participating in this hazard mitigation plan are included in the jurisdiction-specific annexes in Volume 2.

18.2 IMPACT OF CLIMATE CHANGE ON HAZARDS OF CONCERN

18.2.1 Dam Failure

On average, changes in California's annual precipitation levels are not expected to be dramatic; however, small changes may have significant impacts for water resource systems, including dams. Dams are designed partly based on assumptions about a river's flow behavior, expressed as hydrographs. Changes in weather patterns can have significant effects on the hydrograph used for the design of a dam. If the hydrograph changes, it is conceivable that the dam can lose some or all of its designed margin of safety, also known as freeboard.

If freeboard is reduced, dam operators may be forced to release increased volumes earlier in a storm cycle in order to maintain the required margins of safety. Such early releases of increased volumes can increase flood potential downstream. According to the California Department of Water Resources, flood flows on many California rivers have been record-setting since the 1950s. This means that water infrastructure, such as dams, have been forced to manage flows for which they were not designed. The California Division of Dam Safety has indicated that climate change may result in the need for increased safety precautions to address higher winter runoff, frequent fluctuations of water levels, and increased potential for sedimentation and debris accumulation from changing erosion patterns and increases in wildfires. According to the Division, climate change also will impact the ability of dam operators to estimate extreme flood events (California Department of Water Resources 2021b).

A strategy called Forecast Informed Reservoir Operations (FIRO) is being developed and tested in California as a way to inform decisions to retain or release water by allowing flexibility in operation policies and rules with enhanced monitoring and improved weather and water forecasts (Center for Western Weather and Water Extremes 2021).

Dams are constructed with safety features known as “spillways.” Spillways are put in place on dams as a safety measure in the event of the reservoir filling too quickly. Spillway overflow events, often referred to as “design failures,” result in increased discharges downstream and increased flooding potential. Although climate change will not increase the probability of catastrophic dam failure, it may increase the probability of design failures.

The following summarizes changes in exposure and vulnerability to the dam failure hazard resulting from climate change:

- **Population**—Population exposure and vulnerability to the dam failure hazard are unlikely to change as a result of climate change.
- **Property**—Property exposure and vulnerability to the dam failure hazard are unlikely to change as a result of climate change.
- **Critical facilities**—The exposure and vulnerability of critical facilities are unlikely to change as result of climate change. Dam owners and operators are sensitive to the risk and may need to alter maintenance and operations to account for changes in the hydrograph and increased sedimentation.
- **Environment**—The exposure and vulnerability of the environment to dam and levee failure are unlikely to change as a result of climate change. Ecosystem services may be used to mitigate some factors that could increase the risk of design failures, such as increasing the natural water storage capacity in watersheds above dams.

18.2.2 Drought

The long-term effects of climate change on regional water resources are unknown, but global water resources are already experiencing the following stresses without climate change:

- Growing populations
- Increased competition for available water
- Poor water quality
- Environmental claims
- Uncertain reserved water rights
- Groundwater overdraft
- Aging urban water infrastructure.

With a warmer climate, droughts could become more frequent, more severe, and longer-lasting. According to the National Climate Assessment, “higher surface temperatures brought about by global warming increase the potential for drought. Evaporation and the higher rate at which plants lose moisture through their leaves both increase with temperature. Unless higher evapotranspiration rates are matched by increases in precipitation, environments will tend to dry, promoting drought conditions” (U.S. Climate Resilience Toolkit 2021).

Because changes in precipitation patterns are still uncertain, the potential impacts and likelihood of drought are uncertain. DWR has noted impacts of climate change on statewide water resources by charting changes in snowpack, sea level, and river flow. As temperatures rise and more precipitation

comes in the form of rain instead of snow, these changes will likely continue or grow even more significant. DWR estimates that the Sierra Nevada snowpack, which provides a large amount of the water supply for other parts of the state, will experience a 48- to 65-percent loss by the end of the century compared to the historical April 1 average (California Department of Water Resources 2021a). Projections for the planning area show a significant decline in projected snow water equivalent in April snowpack. Increasing temperatures may also increase net evaporation from reservoirs, which would reduce water availability for ecosystems and human use (Mount, Escrivá-Bou and Sencan 2021).

By addressing current stresses on water supplies and by building a flexible, robust program, the County will be able to more adeptly respond to changing conditions and to survive dry years.

The following summarizes changes in exposure and vulnerability to the drought hazard resulting from climate change:

- **Population**—Population exposure and vulnerability to drought are unlikely to increase as a result of climate change. While greater numbers of people may need to engage in behavior change, such as water saving efforts, significant life or health impacts are unlikely.
- **Property**—Property exposure and vulnerability may increase as a result of increased drought resulting from climate change, although this would most likely occur in non-structural property such as crops and landscaping. It is unlikely that structure exposure and vulnerability would increase as a direct result of drought, although secondary impacts of drought, such as wildfire, may increase and threaten structures.
- **Critical facilities**—Critical facility exposure and vulnerability are unlikely to increase as a result of increased drought resulting from climate change; however, critical facility operators may be sensitive to changes and need to alter standard management practices and actively manage resources, particularly in water-related service sectors
- **Environment**—The vulnerability of the environment may increase as a result of increased drought resulting from climate change. Prolonged or more frequent drought resulting from climate change may stress ecosystems in the region, which include many special-status species.

18.2.3 Earthquake

The impacts of global climate change on earthquake probability are unknown, although scientists have identified tiny earthquakes triggered by the change of fault stress loads from rain and snow. Similarly, long-term drought can result in a significant change in the stress load on earth's crust.

Pumping of groundwater from underground aquifers by humans, which is exacerbated during times of drought, has also been shown to impact patterns of stress loads by “unweighting” Earth's crust. A 2014 study looked at the effects of groundwater extraction in California's Central Valley on seismicity on the adjacent San Andreas Fault. The researchers found that such extractions can promote lateral changes in stress to the two sides of the San Andreas, which move horizontally against each other along the boundary of two major tectonic plates. This could potentially cause them to unclamp and slip, resulting in an earthquake (National Aeronautics and Space Administration 2019).

Because impacts on the earthquake hazard are not well understood, increases in exposure and vulnerability of local resources are not able to be determined.

18.2.4 Flood

Use of historical hydrologic data has long been the standard of practice for designing and operating water supply and flood protection projects. For example, historical data are used for flood forecasting models and to forecast snowmelt runoff for water supply. This method of forecasting assumes that the climate of the future will be similar to that of the period of historical record. However, the hydrologic record cannot be used to predict changes in frequency and severity of extreme climate events such as floods. Scientists project greater storm intensity with climate change, resulting in more direct runoff and flooding. High frequency flood events in particular will likely increase with a changing climate. What is currently considered a 1-percent-annual-chance also may strike more often, leaving many communities at greater risk. Going forward, model calibration must happen more frequently, new forecast-based tools must be developed, and a standard of practice that explicitly considers climate change must be adopted.

Climate change is already impacting water resources, and resource managers have observed the following:

- Historical hydrologic patterns can no longer be solely relied upon to forecast the water future.
- Precipitation and runoff patterns are changing, increasing the uncertainty for water supply and quality, flood management and ecosystem functions.
- Extreme climatic events will become more frequent, necessitating improvement in flood protection, drought preparedness and emergency response.

The amount of snow is critical for water supply and environmental needs, but so is the timing of snowmelt runoff into rivers and streams. Rising snowlines caused by climate change will allow more mountain areas to contribute to peak storm runoff. Changes in watershed vegetation and soil moisture conditions will likewise change runoff and recharge patterns. As stream flows and velocities change, erosion patterns will also change, altering channel shapes and depths, possibly increasing sedimentation behind dams, and affecting habitat and water quality. With potential increases in the frequency and intensity of wildfires due to climate change, there is potential for more floods following fire, which increase sediment loads and water quality impacts.

The following summarizes changes in exposure and vulnerability to the flood hazard resulting from climate change:

- **Population and Property**—Population and property exposure and vulnerability may increase as a result of climate change impacts on the flood hazard. Runoff patterns may change, resulting in flooding in areas where it has not previously occurred.
- **Critical facilities**—Critical facility exposure and vulnerability may increase as a result of climate change impacts on the flood hazard. Runoff patterns may change, resulting in risk to facilities that have not historically been at risk from flooding. Changes in the management and design of flood protection critical facilities may be needed as additional stress is placed on these systems. Planners will need to factor a new level of safety into the design, operation, and regulation of flood protection facilities such as dams, bypass channels and levees, as well as the design of local sewers and storm drains.
- **Environment**—The exposure and vulnerability of the environment may increase as a result of climate change impacts on the flood hazard. Changes in the timing and frequency of flood

events may have broader ecosystem impacts that alter the ability of already stressed species to survive.

18.2.5 Landslide

Climate change may impact storm patterns, increasing the probability of more frequent, intense storms with varying duration. Increase in global temperature is likely to affect the snowpack and its ability to hold and store water. Warming temperatures also could increase the occurrence and duration of droughts, which would increase the probability of wildfire, reducing the vegetation that helps to support steep slopes. Each these factors would increase the probability of landslides.

The following summarizes changes in exposure and vulnerability to the landslide hazard resulting from climate change:

- **Population and Property**—Population and property exposure and vulnerability would be unlikely to increase because of climate change impacts on the landslide hazard. These events may occur more frequently, but the extent and location should be contained within mapped hazard areas or recently burned areas.
- **Critical facilities**—Critical facility exposure and vulnerability would be unlikely to increase due to climate change impacts on the landslide hazard; however, critical facility owners and operators may experience more frequent disruption to service provision resulting from landslide hazards. For example, transportation systems may experience more frequent delays if movements blocking these systems occur more frequently.
- **Environment**—Exposure and vulnerability of the environment would be unlikely to increase because of climate change, but more frequent movements in river systems may impact water quality and have negative impacts on stressed species.

18.2.6 Sea-Level Rise and Coastal Erosion

Coastal areas are sensitive to sea-level rise, changes in precipitation and the frequency and intensity of storms, and warmer ocean temperatures. According to NASA, warmer temperatures may lead to an increase in the intensity of storms, leading to weather events that can have increase impacts on coastal erosion. A study on increased storm wave heights from climate change indicated that coastal erosion and flooding may occur twice as fast from sea-level rise alone and up to four times as fast as a doubling of the frequency of major El Niño events. Should all these potential events from climate change occur simultaneously, there could be up to an order of magnitude increase in coastal erosion compared to current rates (National Aeronautics and Space Administration 2010).

Climate change-related sea-level rise could exacerbate sea water intrusion issues under the agricultural lands of the Oxnard coastal plain, which were first observed in the 1930s and became a serious problem in the 1950s. This could result in diminishing returns or even render existing, valuable crop lands completely unusable.

18.2.7 Severe Storms

Climate change presents a challenge for risk management associated with severe storms. The science for linking the severity of specific severe storm events to climate change is still evolving; however, a

number or trends provide some indication of how climate change may be impacting these events. According to the *Fourth National Climate Change Assessment*, heavy rainfall events are becoming more severe (U.S. Global Change Research Program 2018). Climate change impacts on other severe storm events such as thunderstorms are still not well understood. The following summarizes changes in exposure and vulnerability to the severe weather hazard resulting from climate change:

- **Population and Property**—Population and property exposure and vulnerability would be unlikely to increase as a direct result of climate change impacts on the severe storm hazard. Severe winter storms and thunderstorms may occur more frequently, but exposure and vulnerability will remain the same. Secondary impacts, such as the extent of localized flooding, may increase, impacting greater numbers of people and structures.
- **Critical facilities**—Critical facility exposure and vulnerability would be unlikely to increase as a result of climate change impacts on the severe storm hazard; however, critical facility owners and operators may experience more frequent disruption to service provision. For example, more frequent and intense storms may cause more frequent disruptions in power service.
- **Environment**—Exposure and vulnerability of the environment would be unlikely to increase; however, more frequent storms and more intense rainfall may place additional stress on already stressed systems.

18.2.8 Severe Weather

According to the *Fourth National Climate Change Assessment*, over the past two decades, the number of high temperature records in the United States far exceed the number of low temperature records (U.S. Global Change Research Program 2018). The increase in average surface temperatures can lead to more intense heat waves. Evidence suggests that heat waves are already increasing, especially in western states.

Climate change impacts on winds are still not well understood. Until recently, scientists had predicted rapid inland warming would weaken one of the primary drivers for Santa Ana winds and reduce their frequency. But a 2021 study found that bouts of hot Santa Ana winds are not declining and could even be increasing (Science 2021).

The following summarizes changes in exposure and vulnerability to the severe weather hazard resulting from climate change:

- **Population and Property**—Population and property exposure and vulnerability would be unlikely to increase as a direct result of climate change impacts on the severe weather hazard. Severe weather events may occur more frequently, but exposure and vulnerability will remain the same.
- **Critical facilities**—Critical facility exposure and vulnerability would be unlikely to increase as a result of climate change impacts on the severe weather hazard; however, critical facility owners and operators may experience more frequent disruption to service provision. For example, more frequent and intense windstorms may cause more frequent disruptions in power service.
- **Environment**—Exposure and vulnerability of the environment would be unlikely to increase; however, more frequent wind and heat events may place additional stress on already stressed systems.

18.2.9 Tsunami

The impacts of global climate change on tsunami probability are unknown. However, even if climate change does not increase the frequency with which tsunamis occur, it may result in more destructive waves. As sea levels continue to rise, tsunami inundation areas would likely extend further inland.

The following summarizes changes in exposure and vulnerability to the tsunami hazard resulting from climate change:

- **Population, Property, and Critical Facility**—Population, property, and critical facility exposure and vulnerability to the tsunami hazard may increase as a result of climate change-related sea-level rise. As sea levels rise, tsunami impact areas may reach into parts of the community that were previously outside the tsunami risk area. The extent of this change will depend on the size of the tsunami, the local topography, and the extent of sea-level rise in the area.
- **Environment**—Exposure and vulnerability of the environment to tsunamis may be impacted by the effects of climate change. In particular, sea-level rise could alter the shape of the existing shoreline, placing different structures and ecosystems at risk from potential tsunami impacts. Additionally, ice crust melt could lead to a rise of the earth's crust, especially at higher latitudes, causing more submarine landslides and a greater vulnerability to tsunamis.

18.2.10 Wildfire

Climate change has the potential to affect multiple elements of the wildfire system: fire behavior, ignitions, fire management, and vegetation fuels. Hot dry spells create the highest fire risk. Increased temperatures may intensify wildfire danger by warming and drying out vegetation.

Climate change may increase winds or change the timing/seasonality of winds that spread fires. Most of California's worst wildfires occur in the fall, when vegetation is driest and the Santa Ana winds start to pick up. Some research indicates a shift in the annual pattern of Santa Ana winds that would move the wildfire season later in the year (AGU 2019).

Changes in climate patterns may impact the distribution and perseverance of insect outbreaks that create dead trees (increase fuel). When climate alters fuel loads and fuel moisture, forest susceptibility to wildfires changes.

The following summarizes changes in exposure and vulnerability to the wildfire hazard resulting from climate change:

- **Population, Property and Critical facilities**—According to *Projected Changes in Ventura County Climate*, wildfire risk in Ventura County is expected to increase, with wildfire season starting earlier and extending later in the year due to drought, increased temperatures, and greater evaporative demand. While the future frequency, size and intensity of wildfires is uncertain, it is likely that exposure and vulnerability to the wildfire hazard would increase.
- **Environment**—It is likely that the exposure and vulnerability of the environment will be impacted by changes in wildfire risk due to climate change. Natural fire regimes may change, resulting in more frequent or higher intensity burns. These impacts may alter the composition of the ecosystems in areas in and surrounding planning area. Whether areas burn more frequently, or more acreage is burned in each fire, wildlife has the potential to become more stressed as suitable habitat is lost.

18.2.11 Other Hazards of Interest

Agricultural and Biological Hazards

The impacts of global climate change on agricultural and biological hazards are still being studied, however climate change is known to be influencing the spread of many invasive species. Increased temperatures, and both intense rainfall and drought can facilitate the spread and establishment of non-native species, creating new opportunities for them to become invasive (U.S. Department of Agriculture 2021b). Prolonged drought stresses trees and can result in higher susceptibility to detrimental pests.

Pandemic

Climate change will likely have significant indirect impacts on disease outbreaks. In California, injuries and premature deaths related to extreme weather events, changes in the prevalence and geographical distribution of food- and water-borne illnesses and other infectious diseases should be anticipated. The fourth Intergovernmental Panel on Climate Change report states that climate change has altered the distribution of some infectious disease vectors.

19. OTHER HAZARDS OF INTEREST

After reviewing the previous plan and considering options for other hazards of interest to address, the Steering Committee selected a limited number of hazards of interest to include in this update of the Ventura County Multi-Jurisdictional Hazard Mitigation Plan. The sections below provide short profiles of each hazard of interest, including a qualitative discussion of their potential impact in Ventura County. No formal risk assessment was performed, no mitigation actions have been developed to address them, and the hazards are not included in the risk ranking. However, all planning partners for this plan should be aware of these hazards and take steps to reduce the risks they present whenever it is practical to do so.

19.1 AGRICULTURAL AND BIOLOGICAL

19.1.1 Overview

Agricultural infestation generally involves the artificial introduction of an insect, disease, vertebrate, or weed pest. These pests are particularly destructive to local agricultural crops because they have no natural enemies to keep them under control. The type and severity of an agricultural infestation will vary based on many factors, including weather, crop diversity, and proximity to urban areas.

The onset for an agricultural infestation can be rapid. Controlling its spread is critical to limiting the impacts of the infestation. Methods for detecting, limiting, and eradicating exotic pests include delimitation trapping, quarantining the area and preventing the shipment of products from the designated area, aerial and ground application of pesticides, and in extreme cases, premature harvest and/or crop destruction. Duration is largely affected by the degree to which the infestation is aggressively controlled but is commonly more than a week. The warning time needed to control infestation is typically more than 24 hours. Maximizing warning time is also critical for reducing damage from this hazard.

Ventura County's agriculture industry provides a significant base to the County's economy. The agricultural output of Ventura County in 2020 reached almost \$2 billion and encompassed more than 96,500 acres of irrigated cropland (Ventura County Agricultural Commissioner 2020). Ventura County is one of the top 10 agricultural counties in California. The impact of infestation by a pest or disease can include economic losses due to crop losses from pest damage, limitations on the ability to export products from the area, and increased costs for pest control.

Many pests not only damage the agricultural economy but also affect residential areas and open space. Damage to landscape plants and vegetable gardens can be significant.

19.1.2 Identified Agricultural and Biological Hazards

The Ventura County Agricultural Commissioner and the USDA have identified agricultural and biological hazards that currently affect the County or have the potential to do so in the future. Many of these are listed in Table 19-1.

Table 19-1. Agricultural and Biological Hazards That Threaten Ventura County

Type	Description
Invertebrates	
Quagga Mussels	A mollusk that covers hard surfaces in waterways. It clogs water infrastructure, covers boats, disrupts the food chain for native species, and releases toxins that affect other species.
Insects	
Asian Citrus Psyllid	An insect that causes damage to citrus plants and is a carrier of Huanglongbing disease.
Glassy Winged Sharpshooter	An insect that transmits a bacterial disease (Pierce's Disease) that can seriously damage grapevines
Light Brown Apple Moth	A tortricid leafroller that affects over 2,000 types of plants.
Mediterranean Fruit Fly	An insect that infests more than 300 varieties of fruits, vegetables, and nuts by laying eggs in the produce. The larvae feed on the produce, ruining it for human consumption.
Shot Hole Borer	An invasive beetle that attacks over 110 kinds of trees. These tiny beetles tunnel into host trees and spread Fusarium Dieback.
Invasive Weeds	
Artichoke Thistle	An invasive weed with an aggressive root system.
Arundo Grass	Tall perennial grass that forms dense growth, choking out other plants.
Dalmation Todflax	Displaces native plants and may increase soil erosion and surface runoff.
Distaff Thistle	Crowds out grasses and native species.
Geraldton Carnation Spurge	Produces a toxic sap and has allelopathic properties that reduce germination of native plants.
Russian Knapweed	Aggressive plant with allelopathic effects (releases a substance that does not allow other plants to grow).
Scotch Thistle	Dense growths of the spiny plants interrupt grazing lands for livestock and wildlife.
Silverleaf Nightshade	Noxious weed competes with crops, interferes with livestock, acts as a host for insects and plant diseases, and spreads by forming dense colonies from its extensive root system as well as by propagation of seeds.
Skeletonweed	Deep rooted noxious weed with minimal feed value that crowds out native grasses and forage for livestock and wildlife.
Spotted Knapweed	A highly invasive weed that can reduce the availability of desirable forage for livestock operations, degrade wildlife habitats, and hinder reforestation and landscape restoration efforts.
Stinkweed	Rapidly spreading invasive weed.
Tree Spurge	Small invasive shrub that has an economic impact on crop production in the County.
Diseases	
Charcoal Rot	A fungal disease that affects strawberries.
Fusarium Dieback	A fungal disease that disrupts the transport of water and nutrients inside the tree, leading to branch dieback and overall decline
Huanglongbing	A disease spread by the Asian citrus psyllid that kills citrus trees. It has no known cure.
Pierce's Disease	A bacteria-caused disease spread by the Glassy Winged Sharpshooter. Pierce's Disease blocks the water-conducting system in grapevines.
Sudden Oak Death	A tree disease caused by the fungus-like plant pathogen <i>Phytophthora ramorum</i> . It kills oaks, rhododendrons, camellias, and other common horticulture plants.

19.1.3 Location, Extent and Magnitude

Ventura County's agricultural areas are most susceptible to insect pests, agriculture biological diseases, and invasive weeds. Range land, open spaces, and areas affected by wildfire are also susceptible to many of the invasive weeds. Quagga mussels are found in Lake Piru and the Santa Clara River.

Injurious pests commonly enter Ventura County in a number of ways. They may, for example, be inadvertently shipped by a private individual in an infested plant, fruit, or vegetable. When the package is received and the article is found to contain pests, the recipient throws it out and the pests multiply and infest nearby agricultural crops, waterways, or urban properties. Pests can also travel easily on plants and plant parts shipped from uncertified and unlicensed nurseries; on plants offered for sale at swap meets and other open air markets; or in vehicles or luggage. Inspectors from the Agricultural Commissioner's office inspect incoming plants at nurseries, farmer's markets, and swap meets to check for the presence of pests not occurring in this area.

Future agricultural and waterway infestations in Ventura County are likely based on past occurrences. Based on previous history, infestations causing widespread damage have occurred about once every 10 to 20 years. Another factor increasing the likelihood of future infestations is the mild climate in Ventura County, which increases the ability of pests to proliferate.

The extent of a devastating event would depend on many factors, including the specific pest introduced, climatic conditions at the time of introduction, fluctuations in funding for pest detection and eradication, and public pressure regarding aerial and ground applications of pesticides proximate to urban areas.

19.2 PANDEMIC

19.2.1 Overview

According to the World Health Organization, a pandemic involves the international spread of a new disease. While an epidemic remains limited to one city, region, or country, a pandemic spreads beyond national borders and possibly worldwide. Authorities consider a disease to be an epidemic when the number of people with the infection is higher than the forecast number within a specific region. A pandemic is an epidemic that becomes widespread in several countries at the same time. A pandemic affects a higher number of people and can be more deadly than an epidemic.

A new virus strain or subtype that easily transmits between humans can cause a pandemic. Bacteria that become resistant to antibiotic treatment may also be behind the rapid spread. Sometimes, pandemics occur when new diseases develop the ability to spread rapidly, such as COVID-19. Humans may have little or no immunity against a new virus. Often, a new virus cannot spread between animals and people. However, if the disease changes or mutates, it may start to spread easily, and a pandemic may result. Seasonal flu epidemics generally occur because of a viral subtype that is already circulating among people. Novel subtypes, such as COVID-19, generally cause pandemics. These subtypes will not previously have circulated among humans. A pandemic can lead to social disruption, economic loss, and general hardship on a wide scale (Felman 2020).

19.2.2 Identified Health Hazards

The California Department of Public Health has identified the conditions described in Table 19-2 as reportable human communicable diseases that could contribute to a serious epidemic in the state.

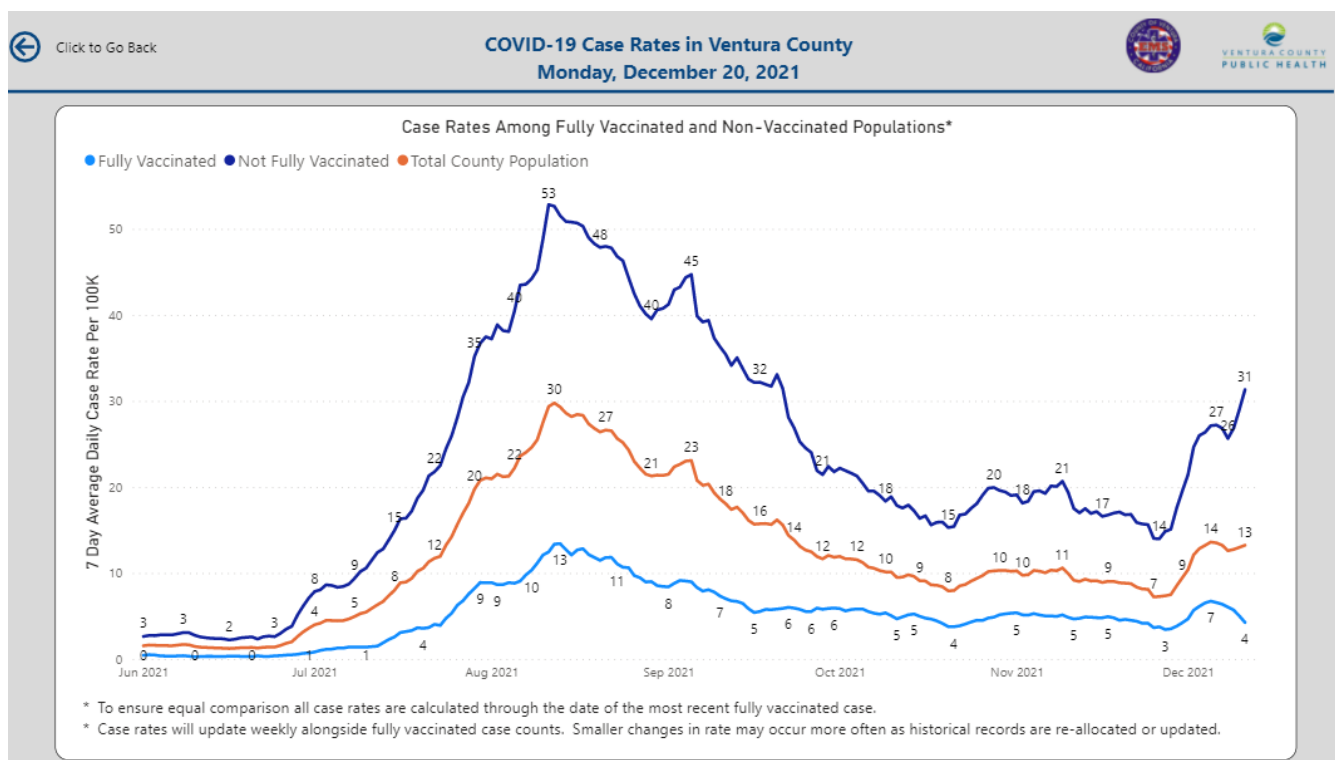
Table 19-2. Naturally Spread Diseases Seen in California

Description	Examples	
Animal Transmitted		
These are diseases that are transmitted to humans by domestic or non-domestic animals.	• Brucellosis (undulant fever) • Campylobacteriosis • Escherichia coli (E. coli) • Giardiasis • Middle Eastern Respiratory Syndrome (MERS) • Plague	• Psittacosis (ornithosis, parrot fever) • Q Fever • Rabies • Salmonellosis • Tularemia
Bloodborne		
Viruses, bacteria and parasites that can be carried in blood and cause disease are known as bloodborne pathogens. Transmission of these diseases may be from direct blood contact, needle sticks, intravenous drug use, sexual behavior, insects or other vectors.	• Hepatitis C • Malaria	
Community-Acquired Infections		
Community-acquired infections are infections that are contracted outside of a hospital (or are diagnosed within 48 hours of admission) without any previous health care encounter.	• Campylobacteriosis • Influenza due to novel strains • Legionellosis • Meningitis (viral, bacterial, fungal, parasitic)	• Respiratory syncytial virus • Smallpox • Tularemia
Foodborne		
Foodborne diseases can be spread when food becomes contaminated with fecal matter containing bacteria, viruses, or parasites. This contamination can happen at a farm, manufacturing plant, restaurant, or home. Foodborne diseases usually result in gastrointestinal illness, which can include symptoms such as diarrhea, vomiting, nausea, stomachache, and fever. People who are ill with a foodborne disease can give the infection to others, so proper hygiene and hand washing practices are essential to limit the spread of disease.	• Brucellosis • Campylobacteriosis • Cholera • Ciguatera fish poisoning • Cryptosporidiosis • Cyclosporiasis • Escherichia coli (E. coli) • Giardiasis	• Listeriosis • Salmonellosis • Scombroid fish poisoning • Shigellosis • Tularemia • Typhoid Fever • Vibriosis • Yersinia enterocolitica
Mosquito-Transmitted		
In addition to causing severe annoyance and allergic reaction, mosquitoes found in California are capable of spreading many diseases to humans.	• Chikungunya • Dengue • Malaria	• West Nile • Yellow Fever • Zika
Respiratory Viruses		
Respiratory viruses are responsible for influenza-like illness. They can also cause the common cold. The virus that caused the COVID-19 pandemic is a respiratory virus. People at high risk (those with certain underlying conditions, the elderly, the very young, and pregnant women) can develop severe illness that results in hospitalization or death.	• Coronaviruses (including SARS and MERS CoV) • Influenza • Respiratory Syncytial Virus	• Measles • Pertussis (whooping cough)
Waterborne Diseases		
Diseases caused by micro-organisms transmitted in water can be spread while bathing, washing, drinking water, or eating food exposed to contaminated water.	• Cholera • Giardiasis • Legionellosis	• Leptospirosis • Typhoid Fever • Vibriosis

Description	Examples
Sexually Transmitted Disease	
The Centers for Disease Control and Prevention uses community engagement methods in their Community Approaches to Reducing Sexually Transmitted Diseases (CARS). California has state-mandated HIV/AIDS prevention education in middle and high schools. In 2019, 154 of every 100,000 people in Ventura County were living with HIV.	• Hepatitis A, B, and C • Human Immunodeficiency Virus/Acquired Immunodeficiency Syndrome (HIV/AIDS) • Syphilis • Zika

As this plan is being prepared, Ventura County, the State of California, and the rest of the world are still dealing with impacts of the global COVID-19 pandemic. In March 2020, Ventura County was included in the FEMA Major Disaster Declaration for the COVID-19 pandemic. As of December 2021, about 107,000 people, or 7.86 percent of the Ventura County population, have had the disease. More than 1,200 people, or 0.14 percent of the population, have died from the disease. Over 572,000 residents are fully vaccinated. Figure 19-1 shows the COVID-19 case rates among the fully vaccinated and unvaccinated populations for the last half of 2021.

Figure 19-1. Ventura County COVID-19 Case Rate June – December 20, 2021



Throughout the cycle of the COVID-19 pandemic, safety precautions have changed or been adapted to current infection rates and circumstances. Ventura County has provided public service outreach through numerous channels, including the Ventura County Recovers website, which provides regular updates regarding:

- Vaccine information
- Business information

- Booster shots
- COVID-19 testing
- School/childcare and sports information
- Quarantine guidance
- Monoclonal antibody treatment
- Outreach activities.

19.2.3 Location, Extent and Magnitude

Health hazards that affect the residents of Ventura County may arise in a variety of situations, such as during a communicable disease outbreak or after a natural disaster. All populations in Ventura County are susceptible to pandemic events. Populations who are young or elderly or have compromised immune systems are likely to be more vulnerable. The relative ease of world-wide travel ensures that all countries are vulnerable to pandemic events at any time.

20. PLANNING AREA RISK RANKING

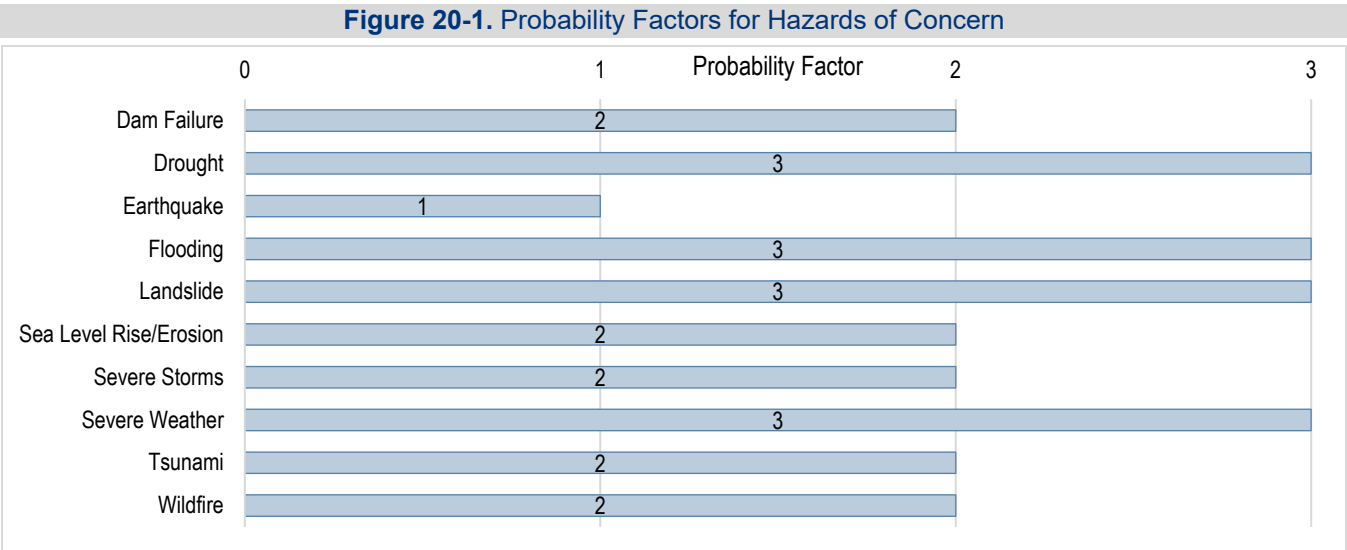
A risk ranking was performed for the hazards of concern described in this plan. This risk ranking assesses the probability of each hazard’s occurrence as well as its likely impact on the people, property, and economy of the planning area. The risk ranking was conducted via facilitated brainstorming sessions with the Steering Committee. Estimates of risk were generated with data from Hazus using methodologies promoted by FEMA. The results are used in establishing mitigation priorities. This chapter presents results for all of Ventura County. Results for individual municipalities are provided in Appendix D and in the Volume 2 annexes for individual planning partners.

20.1 PROBABILITY OF OCCURRENCE

The probability of occurrence of a hazard is indicated by a probability factor based on likelihood of annual occurrence:

- High—Hazard event is likely to occur within 25 years (Probability Factor = 3)
- Medium—Hazard event is likely to occur within 100 years (Probability Factor =2)
- Low—Hazard event is not likely to occur within 100 years (Probability Factor =1)
- No exposure—There is no probability of occurrence (Probability Factor = 0)

The assessment of hazard frequency is generally based on past hazard events in the area. Figure 20-1 summarizes the probability assessment for each hazard of concern for this plan.



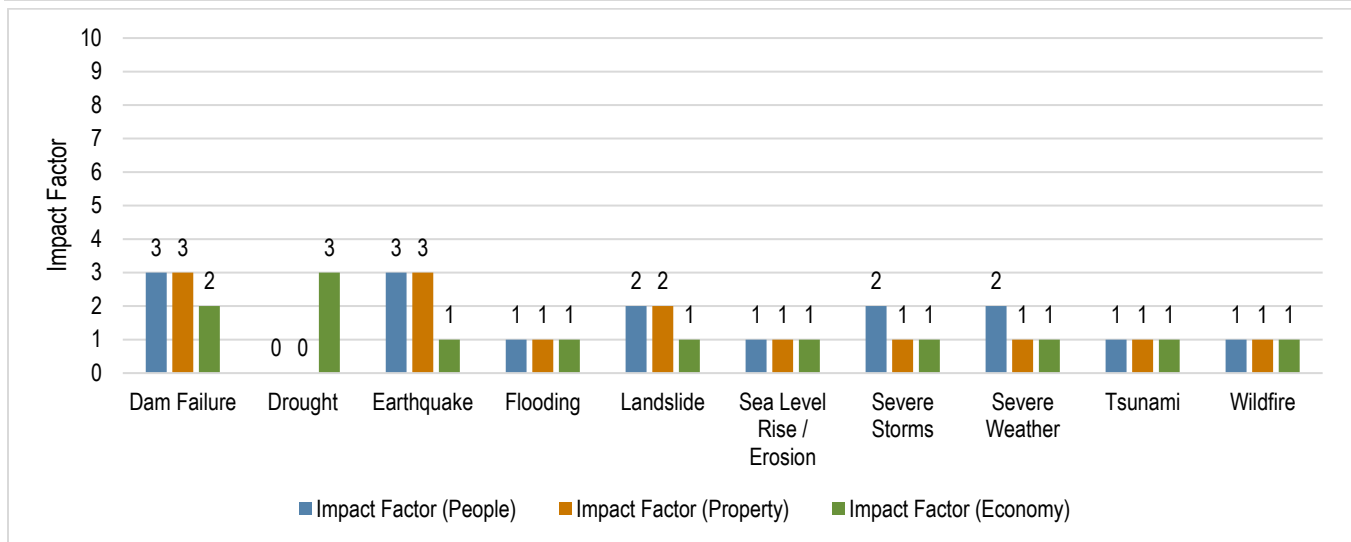
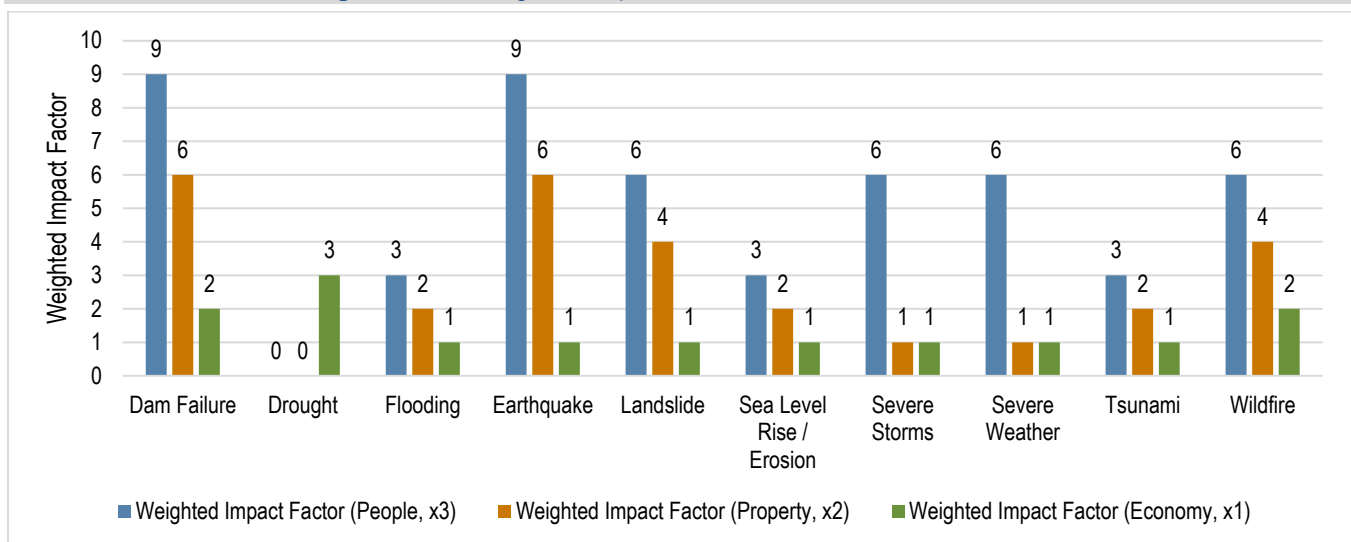
20.2 IMPACT

Hazard impacts were assessed in three categories: impacts on people, impacts on property and impacts on the local economy. Numerical impact factors were assigned as follows:

- **People**—Values were assigned based on the percentage of the total **population exposed** to the hazard event. The degree of impact on individuals will vary and is not measurable, so the calculation assumes for simplicity and consistency that all people exposed to a hazard because they live in a hazard zone will be equally impacted when a hazard event occurs. It should be noted that planners can use an element of subjectivity when assigning values for impacts on people. Impact factors were assigned as follows:
 - High—50 percent or more of the population is exposed to a hazard (Impact Factor = 3)
 - Medium—25 percent to 49 percent of the population is exposed to a hazard (Impact Factor = 2)
 - Low—25 percent or less of the population is exposed to the hazard (Impact Factor = 1)
 - No impact—None of the population is exposed to a hazard (Impact Factor = 0)
- **Property**—Values were assigned based on the percentage of the total **property value exposed** to the hazard event:
 - High—30 percent or more of the total assessed property value is exposed to a hazard (Impact Factor = 3)
 - Medium—15 percent to 29 percent of the total assessed property value is exposed to a hazard (Impact Factor = 2)
 - Low—14 percent or less of the total assessed property value is exposed to the hazard (Impact Factor = 1)
 - No impact—None of the total assessed property value is exposed to a hazard (Impact Factor = 0)
- **Economy**—Values were assigned based on the percentage of the total **property value vulnerable** to the hazard event. Values represent estimates of the loss from a major event of each hazard in comparison to the total assessed value of the property exposed to the hazard. For some hazards, such as wildfire, landslide and severe weather, vulnerability was considered to be the same as exposure due to the lack of loss estimation tools specific to those hazards. Loss estimates separate from the exposure estimates were generated for the earthquake and flood hazards using Hazus.
 - High—Estimated loss from the hazard is 20 percent or more of the total assessed property value (Impact Factor = 3)
 - Medium—Estimated loss from the hazard is 10 percent to 19 percent of the total assessed property value (Impact Factor = 2)
 - Low—Estimated loss from the hazard is 9 percent or less of the total assessed property value (Impact Factor = 1)
 - No impact—No loss is estimated from the hazard (Impact Factor = 0)

The impacts of each hazard category were assigned a weighting factor to reflect the significance of the impact. These weighting factors are consistent with those typically used for measuring the benefits of hazard mitigation actions: impact on people was given a weighting factor of 3; impact on property was given a weighting factor of 2; and impact on the operations was given a weighting factor of 1.

Figure 20-2 and Figure 20-3 summarize the unweighted and weighted impact factors, respectively, for each hazard.

Figure 20-2. Impact Factors for Hazards of Concern**Figure 20-3. Weighted Impact Factors for Hazards of Concern**

20.3 RISK RATING AND RANKING

The risk rating for each hazard was determined by multiplying the probability factor by the sum of the weighted impact factors for people, property, and operations, as summarized in Figure 20-4.

Based on these ratings, a priority of high, medium, or low was assigned to each hazard. The hazards ranked as being of highest concern are dam failure, landslide, and earthquake. Hazards ranked as being of medium concern are flood, severe storms, severe weather, and wildfire. The hazards ranked as being of lowest concern are drought, sea-level rise/coastal erosion, and tsunami. Figure 20-5 shows the hazard risk ranking.

Figure 20-4. Total Risk Rating for Hazards of Concern

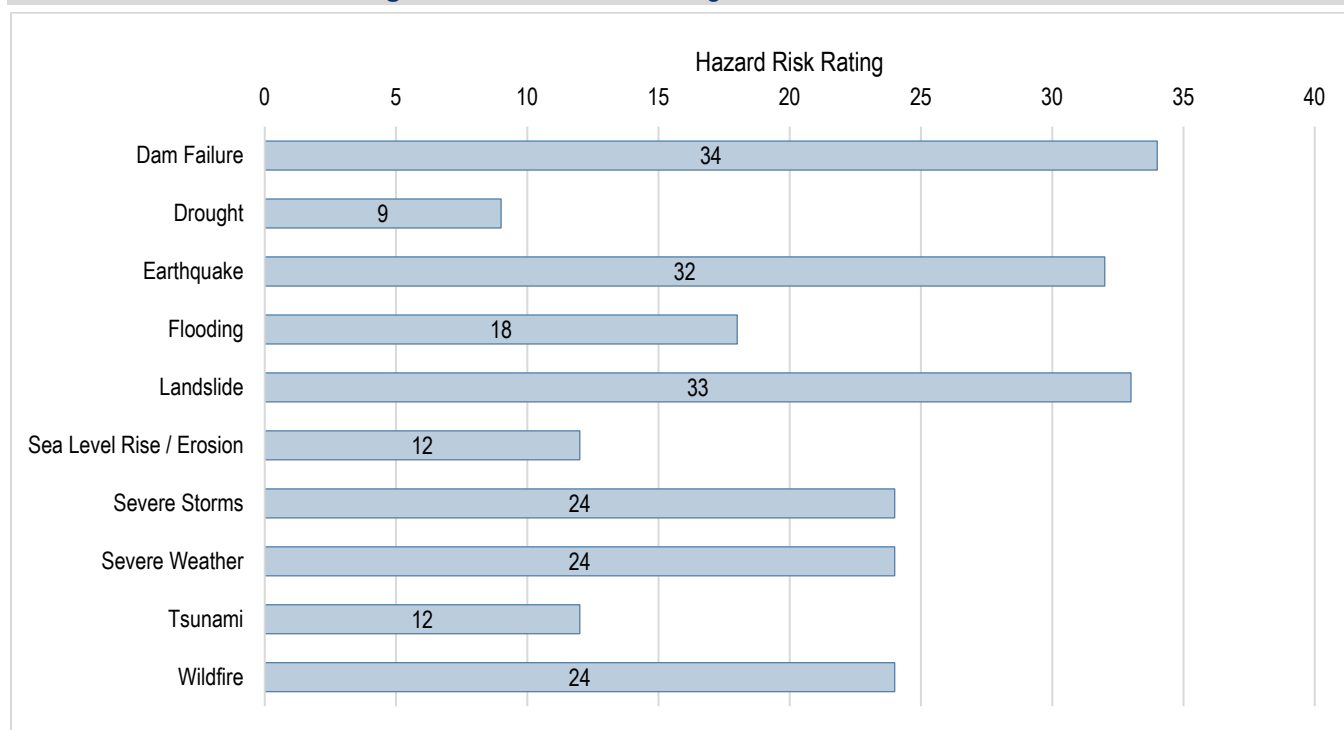


Figure 20-5. Hazard Risk Ranking



Part 3—MITIGATION PLAN

21. VISION STATEMENT, GOALS AND OBJECTIVES

Hazard mitigation plans must identify goals for reducing long-term vulnerabilities to identified hazards (44 CFR Section 201.6(c)(3)(i)). The Steering Committee reviewed the previous plan and noted that neither a vision statement nor a list of objectives was part of the plan. The goals in the previous plan needed to be expanded to better reflect the purpose of this plan update.

The vision statement, goals, objectives, and actions in this plan all support each other. Goals were selected to support the vision statement. Objectives were selected that meet multiple goals. Actions (presented in Chapter 23) were prioritized based on their ability to meet multiple objectives.

21.1 VISION STATEMENT

A vision statement focuses the range of objectives and actions to be considered. A vision statement is not a goal because it does not describe a hazard mitigation outcome and it is broader than a hazard-specific objective. The vision statement for this hazard mitigation plan is as follows:

The Ventura County Multi-Jurisdictional Hazard Mitigation Plan will establish and promote a comprehensive mitigation strategy and efforts to equitably reduce risk and increase the resiliency of the community and environment from natural hazards.

21.2 GOALS

The following are the mitigation goals for this plan:

1. Protect life, property, and the environment, and minimize displacement due to natural hazards events.
2. Effectively communicate natural hazard risks and mitigation strategies to the whole community.
3. Pursue development and implementation of feasible, cost-effective, and environmentally sound hazard mitigation measures.
4. Prioritize multi-objective hazard mitigation actions and those that reduce risk to vulnerable communities.
5. Coordinate with other plans and programs that can support or enhance hazard mitigation.
6. Enhance the County's capability and capacity to prepare for, respond to, and recover from the impacts of natural hazards.
7. Proactively anticipate the risks of future impacts from hazards.
8. Increase the County's adaptive capacity to reduce risk from hazard impacts.

9. Promote proactive, self-sufficient mitigation and response abilities.
10. Reduce risk to and increase the resilience of critical infrastructure and community lifelines.

21.3 OBJECTIVES

Each selected objective meets multiple goals, serving as a stand-alone measurement of the effectiveness of a mitigation action, rather than as a subset of a goal. The objectives also are used to help establish priorities. The objectives are as follows:

1. Utilize the best available data, science, and technology to identify and communicate the risk exposure to hazards to state, regional, and local agencies, as well as the private sector and non-profit groups.
2. Support efforts to improve the resilience of community lifelines in socially vulnerable communities.
3. Enhance supply chain diversity and improved resilience by supporting local food and energy production and increased multi-modal transportation.
4. Research, develop, promote, adopt, and enforce codes and standards to preserve life and property that are affordable and feasible to implement.
5. Promote and implement measures to mitigate the risk of wildfires, such as greenbelts and fire breaks around communities and along roadways.
6. Support the protection of vital records, and strengthen or replace buildings, infrastructure, and lifelines to minimize post-disaster disruption and facilitate short-term and long-term recovery.
7. Improve and expand systems that provide warning and emergency communications to the whole community.
8. Continue developing and strengthening inter-jurisdictional coordination and cooperation in the area of emergency services.
9. Promote and implement the retrofit or replacement of at-risk structures and lifelines to increase community resilience.
10. Incentivize mitigation measures for high-risk and repetitive loss areas to address repairs, major alterations, development plans, and practices to increase community resilience.
11. Reduce repetitive property losses due to hazard impacts through acquisition, retrofitting, design, and updated construction and land use regulations.
12. Encourage and support leadership within the private sector, non-profit agencies, and community-based organizations to promote and implement local hazard mitigation activities.
13. Proactively manage and care for natural resources, including grasslands, forests, oak woodlands, riparian forests, stream channels, coastal wetlands, and beaches, to enhance their ability to withstand and recover from natural disasters and minimize public safety risks.
14. Support hazard mitigation measures that promote and enhance natural processes.
15. Support hazard mitigation measures, where feasible, that utilize nature-based practices and solutions (e.g., holistic watershed management and green belts) and support and enhance natural processes.

16. Encourage the creation of financial and regulatory incentives to motivate stakeholders such as homeowners, private sector businesses, and non-profit community organizations to mitigate hazards and risks.
17. Conduct public outreach activities that increase community awareness and understanding of hazard risk, mitigation options, and preparedness strategies.
18. Minimize impacts of hazard events on the economic drivers for the County.
19. Align the hazard mitigation plan with state mitigation plans; city and county general, community, capital improvement plans; special-purpose district plans; and climate action, resilience, and adaptation plans.

22. MITIGATION BEST PRACTICES

22.1 MITIGATION BEST PRACTICES

Catalogs of hazard mitigation best practices were developed that present a broad range of alternatives to be considered for use by the planning partners, in compliance with 44 CFR (Section 201.6(c)(3)(ii)). One catalog was developed for each hazard of concern evaluated in this plan. The catalogs present alternatives that are categorized in two ways:

- By who would have responsibility for implementation:
 - Individuals (personal scale)
 - Businesses (corporate scale)
 - Government (government scale).
- By what the alternative would do:
 - Manipulate the hazard
 - Reduce exposure to the hazard
 - Reduce vulnerability to the hazard
 - Build local capacity to respond to or prepare for the hazard.

Hazard mitigation actions recommended in this plan were selected from an analysis of the alternatives presented in the catalogs. The catalogs provide a baseline of mitigation alternatives that are backed by a planning process, are consistent with the established goals and objectives, and are generally within the capabilities of the planning partners to implement. They provide a list of what could be considered to reduce risk from natural hazards. Not all actions listed are feasible for this plan. Planning partners selected actions based their ability to implement the action. Actions in the catalog that are not included in partners' action plans were not selected for one or more of the following reasons:

- The action is not feasible.
- The action is already being implemented.
- The planning partner does not have the capability to implement the action.
- There is an apparently more cost-effective alternative.
- The action does not have public or political support.

The catalogs for each hazard are presented in Table 22-1 through Table 22-9.

Table 22-1. Alternatives to Mitigate the Dam Failure Hazard

Personal-Scale	Corporate-Scale	Government-Scale
• Manipulate the hazard: ❖ None • Reduce exposure: ❖ Relocate out of dam failure inundation areas • Reduce vulnerability: ❖ Elevate home to appropriate levels • Build local capacity: ❖ Learn about risk reduction for the dam failure hazard ❖ Learn the evacuation routes for a dam failure event ❖ Educate yourself on early warning systems and the dissemination of warnings	• Manipulate the hazard: ❖ Remove dams ❖ Harden dams • Reduce exposure: ❖ Replace earthen dams with hardened structures • Reduce vulnerability: ❖ Flood-proof facilities within dam failure inundation areas • Build local capacity: ❖ Educate employees on the probable impacts of a dam failure ❖ Develop a continuity of operations plan	• Manipulate the hazard: ❖ Remove dams ❖ Harden dams • Reduce exposure: ❖ Replace earthen dams with hardened structures ❖ Relocate critical facilities out of dam failure inundation areas ❖ Consider open space land use in designated dam failure inundation areas • Reduce vulnerability: ❖ Adopt higher floodplain standards in mapped dam failure inundation areas ❖ Retrofit critical facilities within dam failure inundation areas • Build local capacity: ❖ Map dam failure inundation areas ❖ Enhance emergency operations plan to include a dam failure component ❖ Institute monthly communications checks with dam operators ❖ Inform the public on risk reduction techniques ❖ Adopt real-estate disclosure requirements for the re-sale of property located within dam failure inundation areas ❖ Consider the probable impacts of climate change in assessing the risk associated with the dam failure hazard ❖ Establish early warning capability downstream of listed high hazard dams ❖ Consider the residual risk associated with protection provided by dams in future land use decisions

Table 22-2. Alternatives to Mitigate the Drought Hazard

Personal-Scale	Corporate-Scale	Government-Scale
• Manipulate the hazard: ❖ None • Reduce exposure: ❖ None • Reduce vulnerability: ❖ Drought-resistant landscapes ❖ Reduce water system losses ❖ Modify plumbing systems (through water saving kits) ❖ For homes with on-site water systems: increase storage, utilize rainwater catchment • Build local capacity: ❖ Practice active water conservation	• Manipulate the hazard: ❖ None • Reduce exposure: ❖ None • Reduce vulnerability: ❖ Drought-resistant landscapes ❖ Reduce private water system losses ❖ Support alternative irrigation techniques to reduce water use and encourage use of climate-sensitive water supplies ❖ For businesses with on-site water systems: increase storage, utilize rainwater catchment • Build local capacity: ❖ Practice active water conservation ❖ Participate in the County Integrated Regional Water Management (IRWM) program	• Manipulate the hazard: ❖ Groundwater recharge through stormwater management ❖ Develop a water recycling program ❖ Increase “above-the-dam” regional natural water storage systems • Reduce exposure: ❖ Identify and create groundwater backup sources • Reduce vulnerability: ❖ Water use conflict regulations ❖ Reduce water system losses ❖ Distribute water saving kits ❖ increase conventional storage that is filled during high-flow periods • Build local capacity: ❖ Public education on drought resistance ❖ Identify alternative water supplies for times of drought; mutual aid agreements with alternative suppliers ❖ Develop drought contingency plan ❖ Develop criteria “triggers” for drought-related actions ❖ Improve accuracy of water supply forecasts ❖ Modify rate structure to influence active water conservation techniques ❖ Consider the probable impacts of climate change on the risk associated with the drought hazard ❖ Support, participate in and advocate for funding for the County Integrated Regional Water Management (IRWM) program ❖ Support, encourage, and implement multi-benefit nature-based recharge projects such as off-channel wetlands that provide habitat and groundwater filtration and infiltration

Table 22-3. Alternatives to Mitigate the Earthquake Hazard

Personal-Scale	Corporate-Scale	Government-Scale
• Manipulate the hazard: ❖ None • Reduce exposure: ❖ Locate outside of hazard area (off soft soils) • Reduce vulnerability: ❖ Retrofit structure (anchor house structure to foundation) ❖ Secure household items that can cause injury or damage (such as water heaters, bookcases, and other appliances) ❖ Build to higher design • Build local capacity: ❖ Practice “drop, cover, and hold” ❖ Develop household mitigation plan, such as creating a retrofit savings account, communication capability with outside, 72-hour self-sufficiency during an event ❖ Keep cash reserves for reconstruction ❖ Become informed on the hazard and risk reduction alternatives available. ❖ Develop a post-disaster action plan for your household	• Manipulate the hazard: ❖ None • Reduce exposure: ❖ Locate or relocate mission-critical functions outside hazard area where possible • Reduce vulnerability: ❖ Build redundancy for critical functions and facilities ❖ Retrofit critical buildings and areas housing mission-critical functions • Build local capacity: ❖ Adopt higher standard for new construction; consider “performance-based design” when building new structures ❖ Keep cash reserves for reconstruction ❖ Inform your employees on the possible impacts of earthquake and how to deal with them at your work facility. ❖ Develop a continuity of operations plan	• Manipulate the hazard: ❖ None • Reduce exposure: ❖ Locate critical facilities or functions outside hazard area where possible • Reduce vulnerability: ❖ Harden infrastructure ❖ Provide redundancy for critical functions ❖ Adopt higher regulatory standards ❖ Encourage and invest in renewable energy and back-up and storage, such as microgrids, for vital systems redundancy during power outages and interruptions • Build local capacity: ❖ Provide better hazard maps ❖ Provide technical information and guidance ❖ Enact tools to help manage development in hazard areas (e.g., tax incentives, information) ❖ Include retrofitting and replacement of critical system elements in capital improvement plan ❖ Develop strategy to take advantage of post-disaster opportunities ❖ Warehouse critical infrastructure components such as pipe, power line, and road repair materials ❖ Develop and adopt a continuity of operations plan ❖ Initiate triggers guiding improvements (such as <50% substantial damage or improvements) ❖ Further enhance seismic risk assessment to target high hazard buildings for mitigation opportunities. ❖ Develop a post-disaster action plan that includes grant funding and debris removal components.

Table 22-4. Alternatives to Mitigate the Flood Hazard

Personal-Scale	Corporate-Scale	Government-Scale	
• Manipulate the hazard: ❖ Clear storm drains and culverts ❖ Use low-impact development techniques • Reduce exposure: ❖ Locate outside of hazard area ❖ Elevate utilities above base flood elevation ❖ Use low-impact development techniques • Reduce vulnerability: ❖ Raise structures above base flood elevation ❖ Elevate items within house above base flood elevation ❖ Build new homes above base flood elevation ❖ Flood-proof structures • Build local capacity: ❖ Buy flood insurance ❖ Develop household plan, such as retrofit savings, communication with outside, 72-hour self-sufficiency during and after an event	• Manipulate the hazard: ❖ Clear storm drains and culverts ❖ Use low-impact development techniques • Reduce exposure: ❖ Locate critical facilities or functions outside hazard area ❖ Use low-impact development techniques • Reduce vulnerability: ❖ Build redundancy for critical functions or retrofit critical buildings ❖ Provide flood-proofing when new critical infrastructure must be located in floodplains • Build local capacity: ❖ Keep cash reserves for reconstruction ❖ Support and implement hazard disclosure for sale of property in risk zones. ❖ Solicit cost-sharing through partnerships with others on projects with multiple benefits.	• Manipulate the hazard: ❖ Maintain drainage system ❖ Institute low-impact development techniques on property ❖ Dredging, levee construction, and providing regional retention areas ❖ Structural flood control, levees, channelization, or revetments, only when no nature-based alternative is feasible ❖ Stormwater management regulations and master planning ❖ Acquire vacant land or promote open space uses in developing watersheds to control increases in runoff • Reduce exposure: ❖ Locate or relocate critical facilities outside of hazard area ❖ Acquire or relocate identified repetitive loss properties ❖ Promote open space uses in identified high hazard areas via techniques such as: planned unit developments, easements, setbacks, greenways, sensitive area tracks. ❖ Adopt land development criteria such as planned unit developments, density transfers, clustering ❖ Institute low impact development techniques on property ❖ Acquire vacant land or promote open space uses in developing watersheds to control increases in runoff ❖ Preserve undeveloped and vulnerable shoreline ❖ Restore existing flood control and riparian corridors, including the removal of invasive species in the floodplain to reduce bulk flows and infrastructure impacts (e.g., Arundo donax removal) • Reduce vulnerability: ❖ Harden infrastructure, bridge replacement program ❖ Provide redundancy for critical functions and infrastructure ❖ Adopt regulatory standards such as freeboard standards, cumulative substantial improvement or damage, lower substantial damage threshold; compensatory storage, non-conversion deed restrictions. ❖ Stormwater management regulations and master planning. ❖ Adopt "no-adverse impact" floodplain management policies that strive to not increase the flood risk on downstream communities	❖ Facilitate managed retreat from, or upgrade of, the most at-risk areas ❖ Require accounting of sea-level rise in all applications for new development in shoreline areas ❖ Implement Assembly Bill 162 (2007) requiring flood hazard information in local general plans • Build local capacity: ❖ Produce better hazard maps ❖ Provide technical information and guidance ❖ Enact tools to help manage development in hazard areas (stronger controls, tax incentives, and information) ❖ Incorporate retrofitting or replacement of critical system elements in capital improvement plan ❖ Develop strategy to take advantage of post-disaster opportunities ❖ Warehouse critical infrastructure components ❖ Develop and adopt a continuity of operations plan ❖ Consider participation in the Community Rating System ❖ Maintain and collect data to define risks and vulnerability ❖ Train emergency responders ❖ Create an elevation inventory of structures in the floodplain ❖ Develop and implement a public information strategy ❖ Charge a hazard mitigation fee ❖ Integrate floodplain management policies into other planning mechanisms within the planning area. ❖ Consider the probable impacts of climate change on the risk associated with the flood hazard ❖ Consider the residual risk associated with structural flood control in future land use decisions ❖ Enforce National Flood Insurance Program requirements ❖ Adopt a Stormwater Management Master Plan ❖ Develop an adaptive management plan to address the long-term impacts of sea-level rise

Table 22-5. Alternatives to Mitigate the Landslide Hazard

Personal-Scale	Corporate-Scale	Government-Scale
• Manipulate the hazard: ❖ Stabilize slope (dewater, armor toe) ❖ Reduce weight on top of slope ❖ Minimize vegetation removal and the addition of impervious surfaces. • Reduce exposure: ❖ Locate structures outside of hazard area (off unstable land and away from slide-run out area) • Reduce vulnerability: ❖ Retrofit home • Build local capacity: ❖ Institute warning system, and develop evacuation plan ❖ Keep cash reserves for reconstruction ❖ Educate yourself on risk reduction techniques for landslide hazards	• Manipulate the hazard: ❖ Stabilize slope (dewater, armor toe) ❖ Reduce weight on top of slope • Reduce exposure: ❖ Locate structures outside of hazard area (off unstable land and away from slide-run out area) • Reduce vulnerability: ❖ Retrofit at-risk facilities • Build local capacity: ❖ Institute warning system, and develop evacuation plan ❖ Keep cash reserves for reconstruction ❖ Develop a continuity of operations plan ❖ Educate employees on the potential exposure to landslide hazards and emergency response protocol.	• Manipulate the hazard: ❖ Stabilize slope (dewater, armor toe) ❖ Reduce weight on top of slope • Reduce exposure: ❖ Acquire properties in high-risk landslide areas. ❖ Adopt land use policies that prohibit the placement of habitable structures in high-risk landslide areas. • Reduce vulnerability: ❖ Adopt higher regulatory standards for new development within unstable slope areas. ❖ Armor/retrofit critical infrastructure against the impact of landslides. • Build local capacity: ❖ Produce better hazard maps ❖ Provide technical information and guidance ❖ Enact tools to help manage development in hazard areas: better land controls, tax incentives, information ❖ Develop strategy to take advantage of post-disaster opportunities ❖ Warehouse critical infrastructure components ❖ Develop and adopt a continuity of operations plan ❖ Educate the public on the landslide hazard and appropriate risk reduction alternatives. ❖ Consider the probable impacts of climate change on the risk associated with the landslide hazard

Table 22-6. Alternatives to Mitigate Sea-Level Rise and Coastal Erosion

Personal-Scale	Corporate-Scale	Government-Scale
Manipulate the hazard: ❖ Barriers (sea wall), only when no nature-based alternative is feasible ❖ Pump Stations ❖ Protect, preserve, and restore beaches and dunes Reduce exposure to the hazard: ❖ Voluntary retreat ❖ Elevate on fill above sea-level rise elevation ❖ Elevate utilities above base flood elevation ❖ Use low-impact development techniques Reduce vulnerability to the hazard: ❖ Elevate ❖ Floodproof Build local capacity to respond to or prepare for the hazard: ❖ Buy flood insurance ❖ Develop household plan, such as retrofit savings, communication with outside, 72-hour self-sufficiency during and after an event	Manipulate the hazard: ❖ Barriers (sea wall), only when no nature-based alternative is feasible ❖ Pump Stations ❖ Protect, preserve, and restore wetlands ❖ Protect, preserve, and restore beaches and dunes Reduce exposure to the hazard: ❖ Relocate out hazard zone ❖ Elevate on fill above sea-level rise elevation ❖ Locate critical facilities or functions outside hazard area ❖ Use low-impact development techniques Reduce vulnerability to the hazard: ❖ Build redundancy for critical functions or retrofit critical buildings ❖ Maintain drainage facilities that service your property. ❖ Provide flood-proofing when new critical infrastructure must be located in floodplains Build local capacity to respond to or prepare for the hazard: ❖ Be informed and understand future impacts of sea-level rise on your business ❖ Develop a Continuity of Operations Plan	Manipulate the hazard: ❖ Barriers (sea wall), only when no nature-based alternative is feasible ❖ Pump Stations ❖ Protect, preserve, and restore wetlands ❖ Protect, preserve, and restore beaches and dunes Reduce exposure to the hazard: ❖ Buyout/Relocation Program ❖ Promote open space uses in identified high hazard areas via techniques such as: planned unit developments, easements, setbacks, greenways, sensitive area tracks. ❖ Adopt land development criteria such as planned unit developments, density transfers, clustering ❖ Institute low impact development techniques on property ❖ Acquire vacant land or promote open space uses in developing watersheds to control increases in runoff Reduce vulnerability to the hazard: ❖ Harden infrastructure ❖ Provide redundancy for critical functions and infrastructure ❖ Adopt higher regulatory standards in sea-level rise zones ❖ Facilitate managed retreat from, or upgrade of, the most at-risk areas ❖ Implement tree management programs. ❖ Elevate roads that are vital/critical to evacuation and local community operations. ❖ Include nature-based elements in infrastructure adaptation projects (e.g., roads) such as living shorelines, ecotone levees, and habitat restoration to increase resilience ❖ Design or enhance existing drainage systems for higher design storms to provide increased capacity of the drainage system. ❖ Maintain the drainage infrastructure to levels that equal or exceed their design specifications. ❖ Require accounting of sea-level rise in all applications for new development in shoreline areas Build local capacity to respond to or prepare for the hazard: ❖ Provide technical information and guidance ❖ Promote the purchase of flood insurance ❖ Enact tools to help manage development in hazard areas (stronger controls, tax incentives, and information) ❖ Incorporate retrofitting or replacement of critical system elements in capital improvement plan ❖ Develop strategy to take advantage of post-disaster opportunities ❖ Provide incentives to guide development away from hazard areas or to retrofit in place ❖ Provide residents with sea-level rise inundation maps

Table 22-7. Alternatives to Mitigate the Severe Storm and Severe Weather Hazards

Personal-Scale	Corporate-Scale	Government-Scale
• Manipulate the hazard: ❖ None • Reduce exposure: ❖ None • Reduce vulnerability: ❖ Insulate house ❖ Provide redundant heat and power ❖ Insulate structure ❖ Plant appropriate trees near home and power lines ("Right tree, right place" National Arbor Day Foundation Program) • Build local capacity: ❖ Trim or remove trees that could affect power lines ❖ Promote 72-hour self-sufficiency ❖ Obtain a NOAA weather radio. ❖ Obtain an emergency generator.	• Manipulate the hazard: ❖ None • Reduce exposure: ❖ None • Reduce vulnerability: ❖ Relocate critical infrastructure (such as power lines) underground ❖ Reinforce or relocate critical infrastructure such as power lines to meet performance expectations ❖ Install tree wire • Build local capacity: ❖ Trim or remove trees that could affect power lines ❖ Create redundancy ❖ Equip facilities with a NOAA weather radio ❖ Equip vital facilities with emergency power sources.	• Manipulate the hazard: ❖ None • Reduce exposure: ❖ Develop an urban heat island reduction program that includes an urban forest program or plan • Reduce vulnerability: ❖ Harden infrastructure such as locating utilities underground ❖ Trim trees back from power lines ❖ Designate snow routes and strengthen critical road sections and bridges • Build local capacity: ❖ Support programs such as "Tree Watch" that proactively manage problem areas through use of selective removal of hazardous trees, tree replacement, etc. ❖ Establish and enforce building codes that require all roofs to withstand snow loads ❖ Increase communication alternatives ❖ Modify land use and environmental regulations to support vegetation management activities that improve reliability in utility corridors. ❖ Modify landscape and other ordinances to encourage appropriate planting near overhead power, cable, and phone lines ❖ Provide NOAA weather radios to the public ❖ Consider the probable impacts of climate change on the risk associated with the severe weather hazard ❖ Review and update heat response plan in light of climate change (heat events) projections

Table 22-8. Alternatives to Mitigate the Tsunami Hazard

Personal-Scale	Corporate-Scale	Government-Scale
• Manipulate the hazard: ❖ None • Reduce exposure: ❖ Locate outside of hazard area • Reduce vulnerability: ❖ Apply personal property mitigation techniques to your home such as anchoring your foundation and foundation openings to allow flow through. • Build local capacity: ❖ Develop and practice a household evacuation plan ❖ Educate yourself on the risk exposure from the tsunami hazard and ways to minimize that risk ❖ Understand tsunami warning signs and signals	• Manipulate the hazard: ❖ None • Reduce exposure: ❖ Locate structure or mission critical functions outside of hazard area whenever possible • Reduce vulnerability: ❖ Mitigate personal property for the impacts of tsunami • Build local capacity: ❖ Develop and practice a corporate evacuation plan ❖ Educate employees on the risk exposure from the tsunami hazard and ways to minimize that risk	• Manipulate the hazard: ❖ Build wave abatement structures (e.g. the “Jacks” looking structure designed by the Japanese) • Reduce exposure: ❖ Locate structure or functions outside of hazard area whenever possible ❖ Harden infrastructure for tsunami impacts ❖ Relocate identified critical facilities located in tsunami high hazard areas • Reduce vulnerability: ❖ Adopt higher regulatory standards that will provide higher levels of protection to structures built in a tsunami inundation area ❖ Utilize tsunami mapping to guide development away from high risk areas through land use planning • Build local capacity: ❖ Use probabilistic tsunami mapping and land use guidance from the state when published ❖ Provide incentives to guide development away from hazard areas ❖ Improve the tsunami warning and response system ❖ Provide residents with tsunami inundation maps ❖ Join NOAA's Tsunami Ready program ❖ Develop and communicate evacuation routes ❖ Enhance the public information program to include risk reduction options for the tsunami hazard

Table 22-9. Alternatives to Mitigate the Wildfire Hazard

Personal-Scale	Corporate-Scale	Government-Scale
• Manipulate the hazard: ❖ Clear potential fuels on property such as dry overgrown underbrush and diseased trees • Reduce exposure: ❖ Create and maintain defensible space around structures ❖ Locate outside of hazard area ❖ Mow regularly • Reduce vulnerability: ❖ Create and maintain defensible space around structures and provide water on site ❖ Use fire-resistant building materials ❖ Create defensible spaces around home • Build local capacity: ❖ Employ techniques from the National Fire Protection Association's Firewise USA program to safeguard home ❖ Identify alternative water supplies for fire fighting ❖ Install/replace roofing material with non-combustible roofing materials and implement other strategies to harden homes from embers and flame impingement	• Manipulate the hazard: ❖ Clear potential fuels on property such as dry underbrush and diseased trees • Reduce exposure: ❖ Create and maintain defensible space around structures and infrastructure ❖ Locate outside of hazard area • Reduce vulnerability: ❖ Create and maintain defensible space around structures and infrastructure ❖ Use fire-resistant building materials ❖ Use fire-resistant plantings in buffer areas of high wildfire threat. • Build local capacity: ❖ Support Firewise USA community initiatives. ❖ Create /establish stored water supplies to be utilized for firefighting.	• Manipulate the hazard: ❖ Clear potential fuels on property such as dry underbrush and diseased trees ❖ Remove invasive non-native hazardous fuels in riparian areas (e.g., <i>Arundo donax</i>) and restore native habitat ❖ Implement best management practices on public lands • Reduce exposure: ❖ Create and maintain defensible space around structures and infrastructure ❖ Locate outside of hazard area ❖ Enhance building code to include use of fire resistant materials in high hazard area. • Reduce vulnerability: ❖ Create and maintain defensible space around structures and infrastructure ❖ Use fire-resistant building materials ❖ Use fire-resistant plantings in buffer areas of high wildfire threat. ❖ Consider higher regulatory standards (such as Class A roofing) ❖ Establish biomass reclamation initiatives ❖ Reintroduce fire (controlled or prescribed burns) to fire-prone ecosystems while also protecting critical native habitat resilience, such as chaparral and sage scrub ❖ Manage fuel load through thinning and brush removal ❖ Establish integrated performance standards for new development to harden homes. ❖ Investigate opportunity to create and manage multi-benefit greenbelts for resilience (also known as wildfire risk reduction buffers zones), such as SOAR (Save Open Space & Agricultural Resources)-designated and wildlife corridors • Build local capacity: ❖ More public outreach and education efforts, including an active Firewise USA program ❖ Possible weapons of mass destruction funds available to enhance fire capability in high-risk areas ❖ Identify fire response and alternative evacuation routes and establish where needed ❖ Seek alternative water supplies ❖ Become a Firewise USA community ❖ Use academia to study impacts/solutions to wildfire risk ❖ Establish/maintain mutual aid agreements between fire service agencies ❖ Develop, adopt, and implement integrated plans for mitigating wildfire impacts in wildland areas bordering on development ❖ Consider the probable impacts of climate change on the risk associated with the wildfire hazard in future land use decisions ❖ Establish a management program to track forest and rangeland health ❖ Provide incentives to for existing structures to be hardened against wildfire.

22.2 ADAPTIVE CAPACITY

Adaptive capacity is defined as “the ability of systems, institutions, humans and other organisms to adjust to potential damage, to take advantage of opportunities, or to respond to consequences” (Intergovernmental Panel on Climate Change 2021). In addition to hazard-specific capacity building, the following list provides general alternatives that planning partners considered to build capacity for adapting to both current and future risks (Cal OES 2020).

- Incorporate climate change adaptation into relevant local and regional plans and projects.
- Establish a climate change adaptation and hazard mitigation public outreach and education program.
- Build collaborative relationships between regional entities, neighboring communities, and private and non-profit partners to promote complementary adaptation and mitigation strategy development and regional approaches.
- Establish an ongoing monitoring program to track local and regional climate impacts and adaptation strategy effectiveness.
- Increase participation of low-income, immigrant, non-English-speaking, racially and ethnically diverse, and special-needs residents in planning and implementation.
- Ask local employers and business associations to participate in local efforts to address climate change and natural hazard risk reduction.
- Conduct a communitywide assessment and develop a program to address health, socioeconomic, and equity vulnerabilities.
- Focus planning and intervention programs on neighborhoods that currently experience social or environmental injustice or bear a disproportionate burden of potential public health impacts.
- Use performance metrics and data to evaluate and monitor the impacts of climate change and natural hazard risk reduction strategies on public health and social equity.
- Develop coordinated plans for mitigating future flood, landslide, and related impacts through concurrent adoption of updated general plan safety elements and local hazard mitigation plans.
- Update safety elements to reflect existing hazards and projected climate change impacts on hazards.
- Implement general plan safety elements through zoning and subdivision practices that restrict development in floodplains, landslide, and other natural hazard areas.
- Identify and protect locations where native species may shift or lose habitat due to climate change impacts (sea-level rise, loss of wetlands, warmer temperatures, drought).
- Collaborate with agencies managing public lands to identify, develop, or maintain corridors and linkages between undeveloped areas.
- Promote economic diversity.
- Incorporate consideration of climate change impacts as part of infrastructure planning and operations.
- Conduct a climate impact assessment on community infrastructure.

- Identify gaps in legal and regulatory capabilities and develop ordinances or guidelines to address them.
- Identify and pursue new sources of funding for mitigation and adaptation activities.
- Hire new staff or provide training to current staff to ensure an adequate level of administrative and technical capability to pursue mitigation and adaptation activities.

23. RECOMMENDED PLANNING-AREA-WIDE ACTIONS

23.1 RECOMMENDED MITIGATION ACTIONS FOR ALL PARTNERS

The Steering Committee reviewed the catalogs of hazard mitigation alternatives and selected planning-area-wide actions to be included in a hazard mitigation action plan for all planning partners. The selection of area-wide actions was based on the risk assessment of identified hazards of concern and the defined hazard mitigation goals and objectives. Table-23-1 lists the recommended hazard mitigation actions that make up the action plan. The timeframe indicated in the table is defined as follows:

- Short Term = to be completed in 1 to 5 years
- Long Term = to be completed in greater than 5 years
- Ongoing = currently being funded and implemented under existing programs.

Additional jurisdiction-specific action plans for each planning partner are included in the partner annexes in Volume 2 of this hazard mitigation plan.

Table-23-1. Action Plan—Countywide Mitigation Initiatives

Hazards Addressed	Lead Agency	Possible Funding Sources or Resources	Time Line	Objectives
CW-1 — Continue to maintain a website that will house the multi-jurisdictional hazard mitigation plan and any amendments to it adopted during the next 5-year period to provide the planning partners and the public with ongoing access to the plan and its implementation.				
All Hazards	Ventura County	General Funds	Short term, Ongoing	1, 2, 7, 17
CW-2 — Continue to leverage/support/enhance ongoing, regional public education and awareness programs, such as VCAAlert, CERT (Community Emergency Response Team), DART (Disaster Assistance Response Team), TsunamiReady, and StormReady, as methods to educate the public on risk, risk reduction, and community resilience.				
All Hazards	Planning Partners	Cost sharing from the partnership General fund allocations Cost sharing with stakeholders	Short term, Ongoing	1, 2, 7, 12, 17
CW-3 — Continue to provide a virtual hub for sharing information on hazard mitigation resources on the readyventuracounty.org website that will support mitigation efforts and awareness of grant funding opportunities to the planning partnership.				
All Hazards	Ventura County	General funds	Short term, Ongoing	1, 2, 17

23.2 AREA-WIDE ACTION PLAN PRIORITIZATION

The actions recommended in the action plan were prioritized based on the following factors:

- Cost and availability of funding
- Benefit, based on likely risk reduction to be achieved

- Number of plan objectives achieved
- Timeframe for project implementation
- Eligibility for grant funding programs

Two priorities were assigned for each action:

- A high, medium, or low priority for implementing the action
- A high, medium, or low priority for pursuing grant funding for the action.

The sections below describe the analysis of benefits and costs and the assignment of the two priority ratings.

23.2.1 Benefit and Cost

The action plan must be prioritized according to a benefit/cost analysis of the proposed actions (44 CFR, Section 201.6(c)(3)(iii)). For this hazard mitigation plan, a qualitative benefit-cost review was performed for each action by assigning ratings for benefit and cost as follows:

- Cost:
 - **High**—Existing funding will not cover the cost of the action; implementation would require new revenue through an alternative source (for example, bonds, grants, and fee increases).
 - **Medium**—The action could be implemented with existing funding but would require a re-apportionment of the budget or a budget amendment, or the cost of the action would have to be spread over multiple years.
 - **Low**—The action could be funded under the existing budget. The action is part of or can be part of an ongoing existing program.
- Benefit:
 - **High**—Action will provide an immediate reduction of risk exposure for life and property.
 - **Medium**—Action will have a long-term impact on the reduction of risk exposure for life and property, or action will provide an immediate reduction in the risk exposure for property.
 - **Low**—Long-term benefits of the action are difficult to quantify in the short term.

To assign priorities, each action with a benefit rating equal to or higher than its cost rating (such as high benefit/medium cost, medium benefit/medium cost, medium benefit/low cost, etc.) was considered to be cost-beneficial. This is not the detailed level of benefit/cost analysis required for some FEMA hazard-related grant programs. Such analysis would be performed at the time a given action is being submitted for grant funding.

23.2.2 Implementation Priority

Implementation priority ratings were assigned as follows:

- **High Priority**—An action that meets multiple objectives, has benefits that exceed costs, and has a secured source of funding. Action can be completed in the short term (1 to 5 years).
- **Medium Priority**—An action that meets multiple objectives, has benefits that exceed costs, and is eligible for funding though no funding has yet been secured for it. Action can be completed in

the short term (1 to 5 years), once funding is secured. Medium-priority actions become high-priority actions once funding is secured.

- **Low Priority**—An action that will mitigate the risk of a hazard, has benefits that do not exceed the costs or are difficult to quantify, has no secured source of funding, and is not eligible for any known grant funding. Action can be completed in the long term (1 to 10 years). Low-priority actions may be eligible for grant funding from programs that have not yet been identified.

23.2.3 Grant Pursuit Priority

Grant pursuit priority ratings were assigned as follows:

- **High Priority**—An action that meets identified grant eligibility requirements, has high benefits, and is listed as high or medium implementation priority; local funding options are unavailable or available local funds could be used instead for actions that are not eligible for grant funding.
- **Medium Priority**—An action that meets identified grant eligibility requirements, has medium or low benefits, and is listed as medium or low implementation priority; local funding options are unavailable.
- **Low Priority**—An action that has not been identified as meeting any grant eligibility requirements.

23.2.4 Prioritization Summary for Countywide Actions

Table 23-2 lists the priority of each action.

Table 23-2. Mitigation Action Priority

Action #	# of Objectives Met	Benefit	Cost	Do Benefits Equal or Exceed Costs?	Is Action Grant Eligible?	Can Action be Funded Under Existing Programs/ Budgets?	Implementation Priority	Grant Pursuit Priority
CW-1	4	Medium	Low	Yes	No	Yes	High	Low
CW-2	5	Medium	Low	Yes	No	Yes	High	Low
CW-3	3	Low	Low	Yes	No	Yes	High	Low

23.3 CLASSIFICATION OF AREA-WIDE MITIGATION ACTIONS

Each recommended action was classified based on the hazard it addresses and the type of mitigation it involves. Table 23-3 shows these classifications. Mitigation types used for this categorization are as follows:

- **Prevention**—Government, administrative or regulatory actions that influence the way land and buildings are developed to reduce hazard losses. Includes planning and zoning, floodplain laws, capital improvement programs, open space preservation, and stormwater management regulations.
- **Property Protection**—Modification of buildings or structures to protect them from a hazard or removal of structures from a hazard area. Includes acquisition, elevation, relocation, structural retrofit, storm shutters, and shatter-resistant glass.

- **Public Education and Awareness**—Actions to inform residents and elected officials about hazards and ways to mitigate them. Includes outreach projects, real estate disclosure, hazard information centers, and school-age and adult education.
- **Natural Resource Protection**—Actions that minimize hazard loss and preserve or restore the functions of natural systems. Includes sediment and erosion control, stream corridor restoration, watershed management, forest and vegetation management, wetland restoration and preservation, and green infrastructure.

Table 23-3. Analysis of Mitigation Actions

Hazard	Actions That Address the Hazard, by Mitigation Type							
	Prevention	Property Protection	Public Education and Awareness	Natural Resource Protection	Emergency Services	Structural Projects	Climate Resiliency	Community Capacity Building
HIGH-PRIORITY HAZARDS								
Dam Failure			CW-1, 2					CW-2, 3
Landslide			CW-1, 2					CW-2, 3
MEDIUM-PRIORITY HAZARDS								
Earthquake			CW-1, 2					CW-2, 3
Flooding			CW-1, 2					CW-2, 3
Severe Storms			CW-1, 2					CW-2, 3
Severe Weather			CW-1, 2					CW-2, 3
Wildfire			CW-1, 2					CW-2, 3
LOW-PRIORITY HAZARDS								
Drought			CW-1, 2					CW-2, 3
Sea-Level Rise			CW-1, 2					CW-2, 3
Tsunami			CW-1, 2					CW-2, 3

- **Emergency Services**—Actions that protect people and property during and immediately after a hazard event. Includes warning systems, emergency response services, and the protection of essential facilities.
- **Structural Projects**—Actions that involve the construction of structures to reduce the impact of a hazard. Includes dams, setback levees, floodwalls, retaining walls, and safe rooms.
- **Climate Resiliency**—Actions that incorporate methods to mitigate and/or adapt to the impacts of climate change. Includes aquifer storage and recovery activities, incorporating future conditions projections in project design or planning, or actions that specifically address jurisdiction-specific climate change risks, such as sea-level rise or urban heat island effect.
- **Community Capacity Building**—Actions that increase or enhance local capabilities to adjust to potential damage, to take advantage of opportunities, or to respond to consequences. Includes staff training, memorandums of understanding, development of plans and studies, and monitoring programs.

24. PLAN ADOPTION AND MAINTENANCE

24.1 PLAN ADOPTION

A hazard mitigation plan must document formal adoption by the governing body of the jurisdiction requesting federal approval of the plan (44 CFR, Section 201.6.c.5). For multi-jurisdictional plans, each jurisdiction requesting approval must document that it has been formally adopted. This plan will be submitted for a pre-adoption review to Cal OES and FEMA Region IX prior to adoption. Once pre-adoption approval has been provided, all planning partners will formally adopt the plan. DMA compliance and its benefits cannot be achieved until the plan is adopted. Copies of the FEMA approval and planning partner resolutions adopting this plan can be found in Appendix F of this volume.

24.2 PLAN MAINTENANCE STRATEGY

This section describes a formal plan maintenance process to ensure that the hazard mitigation plan remains an active and relevant document. It includes an explanation of the responsibilities of a hazard mitigation plan Project Management Team and the planning partners. It outlines steps to ensure that the plan remains an active and relevant document and that any improvements and revisions to the hazard mitigation plan occur in a well-managed, efficient, and coordinated manner. Requirements for monitoring, evaluating, and updating the hazard mitigation plan include the following:

- 44 CFR 201.6, Local Mitigation Plans (Element A)—Inclusion of a description of the method and schedule for keeping the plan current (monitoring, evaluating, and updating the mitigation plan within a 5-year cycle. (Requirement § 201.6(c)(4)(1))
- CRS 510 Floodplain Management Planning, CRS Step 10:
 - A. Procedures to monitor and recommend revisions.
 - B. Same planning committee or successor committee that qualifies under Section 511.a.2 (a) does the evaluation.

A Project Management Team, composed of Ventura County staff members, will take the lead on monitoring, evaluating, and updating the hazard mitigation plan over the 5-year performance period. Table 24-1 summarizes the plan maintenance strategy over the 5-year performance period of the plan. The sections below further describe each element.

Table 24-1. Plan Maintenance Matrix

Approach	Timeline	Lead Responsibility^a
Plan Monitoring		
Track the implementation of plan actions	Continuous	All planning partners will report annually to Ventura County Sheriff's OES on action implementation. Points of contact are listed in Volume 2.
Plan Evaluation		
Review the status of previous actions; assess changes in risk; evaluate success of integration	Upon initiation of hazard mitigation plan update, comprehensive General Plan update, or major disaster	All planning partners
Grant Monitoring and Coordination		
The County will consider options to pursue grants to fund actions identified in this plan.	Continuous, as grants become available	Ventura County Sheriff's OES
Plan Update		
Initiate the process to comprehensively update the plan at least every 5 years.	At the end of year 3 (mid-2025), coordinate with the planning partners, and work to identify grant funding opportunity for update. Obtain grant funding by the end of year 4 (mid 2026).	Ventura County Sheriff's OES will lead the plan update. All planning partners will support the effort.
Integration into Other Planning Mechanisms		
Create a linkage between the hazard mitigation plan and individual jurisdictions' general plans or similar plans identified in the core capability assessments	Continuous	All planning partners
Continuing Public Involvement		
Maintain and update the www.readyventuracounty.org website with relevant hazard mitigation information and public participation opportunities.	Continuous	Ventura County Sheriff's OES will lead continuing public participation. All planning partners will support the effort.

a. Responsible lead party may designate an alternate. Jurisdictional points of contact identified in Volume 2 have support responsibility.

24.2.1 Plan Monitoring

Ventura County Sheriff's OES will be the lead agency responsible for oversight and the Project Management Team will support plan monitoring, evaluation, and the plan update schedule. Each planning partner will monitor plan implementation by tracking the status of mitigation actions in its action plan. Staff or departments with primary responsibility are identified in each jurisdictional annex (see Volume 2).

24.2.2 Plan Evaluation

Plan evaluation will be a shared responsibility among all planning partners identified as lead agencies in the area-wide and jurisdiction-specific action plans. The plan will be analyzed for which goals and objectives were achieved. Additionally, a review of any changes in risk over the performance period will be analyzed by the degree to which those changes may impact and require revision to the mitigation goals and objectives and how they are incorporated into jurisdictional plans, policies and programs. Review of the hazard mitigation plan can include the following:

- Discussion of hazard events that occurred during the prior year and their impact on the planning area
- Impact of potential grant opportunities on the implementation of mitigation actions
- Re-evaluation of the action plans to determine if the timeline for identified actions needs to be amended (such as changing a long-term action to a short-term action because of funding availability)
- Recommendations for new actions
- Impact of any other planning programs or initiatives that involve hazard mitigation

24.2.3 Grant Monitoring and Coordination

Ventura County Sheriff's OES, in consultation with the planning partners, will identify hazard mitigation grant funding opportunities and assume lead responsibility for planning and facilitating grant opportunity calls or meetings. The Project Management Team will communicate and coordinate with the planning partners to review the hazard mitigation plan and pursue a strategy to capture grant funding.

24.2.4 Plan Update

FEMA requires the hazard mitigation plan to be revised and resubmitted for review and approval by Cal OES and FEMA prior to the five-year anniversary date of the plan's adoption in order to remain eligible for benefits under the DMA (44 CFR, Section 201.6(d)(3)). To meet this timeline, at the end of year 3 (2025), Ventura County Sheriff's OES, with support from the Project Management Team, will coordinate with the planning partners to identify a grant funding opportunity for the update. Grant funding for the update will be obtained by the end of year 4 (2026). This cycle may be accelerated to less than five years based on the following triggers:

- A federal disaster declaration that impacts Ventura County
- A hazard event that causes loss of life
- A comprehensive update of the Ventura County General Plan

The revision process may include the following elements, as required by FEMA at the time of the next update:

- The revision process will be convened through a new steering committee
- The hazard risk assessment will be reviewed and, if necessary, revised using best available information and technologies
- The action plan will be reviewed for any actions completed, ongoing, or withdrawn, and will be reconciled to account for changes in the risk assessment or new policies identified under other plans (such as the General Plan)
- The draft plan revision will be sent to appropriate agency departments and divisions for comment
- The public will be given an opportunity to comment on the revised plan prior to adoption
- The Ventura County Board of Supervisors will adopt the updated plan once the reviews by Cal OES and FEMA have been conducted

24.2.5 Integration with Other Planning Mechanisms

The information on hazard, risk, vulnerability, and mitigation contained in this plan is based on the best science and technology available at the time this plan was prepared. The planning partners, through adoption of General Plans and zoning ordinances, have planned for the impact of natural hazards. The hazard mitigation plan development process provided them with an opportunity to review and expand on policies contained within these planning mechanisms. The planning partners used their general plans and the hazard mitigation plan as complementary documents that work together to achieve the goal of reducing risk exposure to the citizens of the planning area. An update to a General Plan may trigger an update to the hazard mitigation plan.

All municipal planning partners have committed to creating a linkage between the hazard mitigation plan and their individual General Plans within one of their identified mitigation actions. Other planning processes and programs to be coordinated with the recommendations of the hazard mitigation plan may include:

- Climate action plans
- Emergency operations plans
- Resilience plans
- Recovery plan
- Emergency response plans
- Training and exercise of emergency response plans
- Capital improvement programs
- Municipal codes
- Community design guidelines
- Stormwater management programs
- Debris management plans
- Water-efficient landscape design guidelines
- Water system vulnerability assessments
- Community wildfire protection plans
- Comprehensive flood hazard management plans
- Community development block grant-disaster recovery action plans
- Public information/education plans.

Some action items do not need to be implemented through regulation. Instead, these items can be implemented through the creation of new educational programs, continued interagency coordination, or improved public participation. As information becomes available from other planning mechanisms that can enhance this plan, that information can be incorporated via the next hazard mitigation plan update.

For the special purpose district planning partners to this plan, identified planning capabilities include capital facility plans, emergency operations plan, continuity of operations plans, and community wildfire

protection plans. Special purpose districts do not have land use authority, so integration with land use plans is not a capability for districts. However, for the planning capabilities that the districts do possess, they will integrate where appropriate relevant sections of this plan when those plans are scheduled for updates. This has already occurred for most of the district planning partners as indicated in Volume 2 of this plan.

24.2.6 Continuing Public Involvement

The public will continue to be apprised of the plan's progress through the www.readyventuracounty.org website. The website will house the final plan and the StoryMap and will provide information regarding the plan, plan implementation, and plan update process. The website will continue to be updated as additional information becomes available. This may include examples of local mitigation in action, planning partner updates, resources, and public participation opportunities.

Upon initiation of future update processes, a new public involvement strategy will be developed. This strategy will be based on the needs and capabilities of Ventura County and its planning partners at the time of the update and will include web, social media, and the use of other local media outlets in the planning area.

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Appendix A. Public Involvement Materials

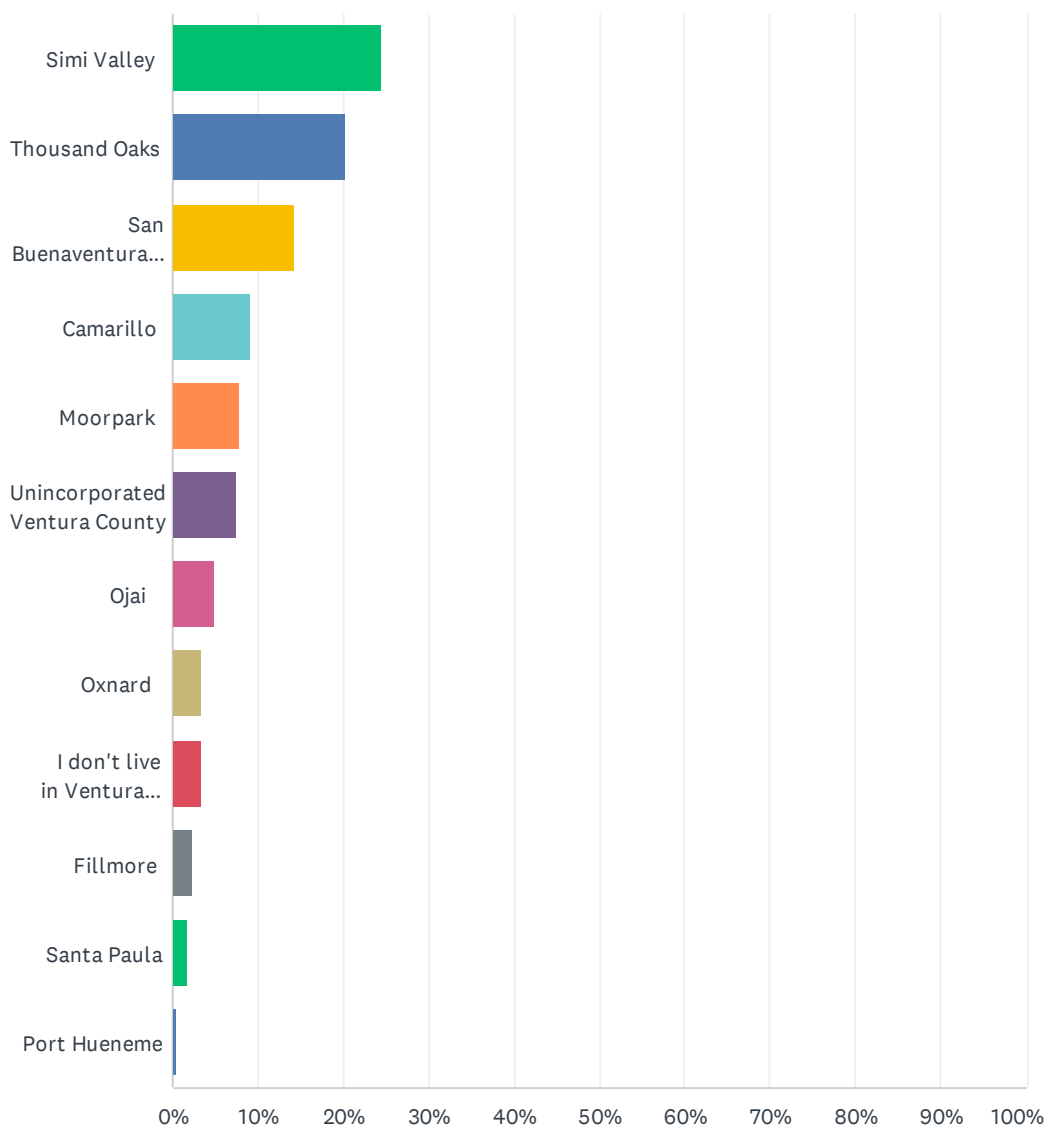
A. PUBLIC INVOLVEMENT MATERIALS

Steering Committee meeting agendas and notes are available online at <https://www.readyventuracounty.org/calendar-of-events/>

Survey results are provided on the following pages.

Q1 Where in Ventura County do you live?

Answered: 831 Skipped: 1

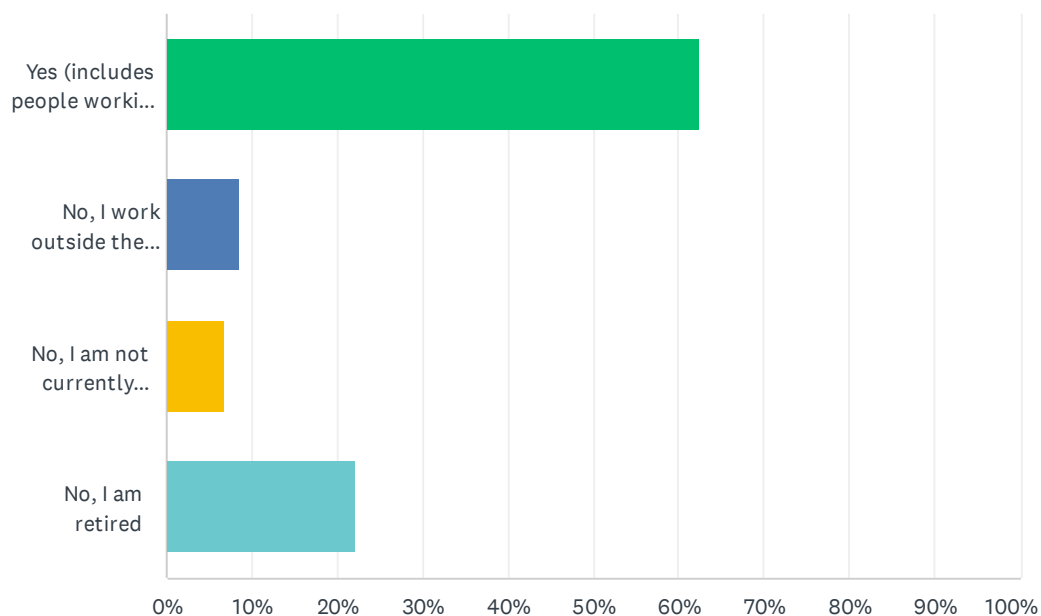


2021 Ventura County Multi-Jurisdictional Hazard Mitigation Plan Update: Community Survey

ANSWER CHOICES	RESPONSES	
Simi Valley	24.55%	204
Thousand Oaks	20.22%	168
San Buenaventura (Ventura)	14.20%	118
Camarillo	9.27%	77
Moorpark	7.82%	65
Unincorporated Ventura County	7.46%	62
Ojai	4.93%	41
Oxnard	3.49%	29
I don't live in Ventura County	3.49%	29
Fillmore	2.29%	19
Santa Paula	1.81%	15
Port Hueneme	0.48%	4
TOTAL		831

Q2 Do you work in Ventura County?

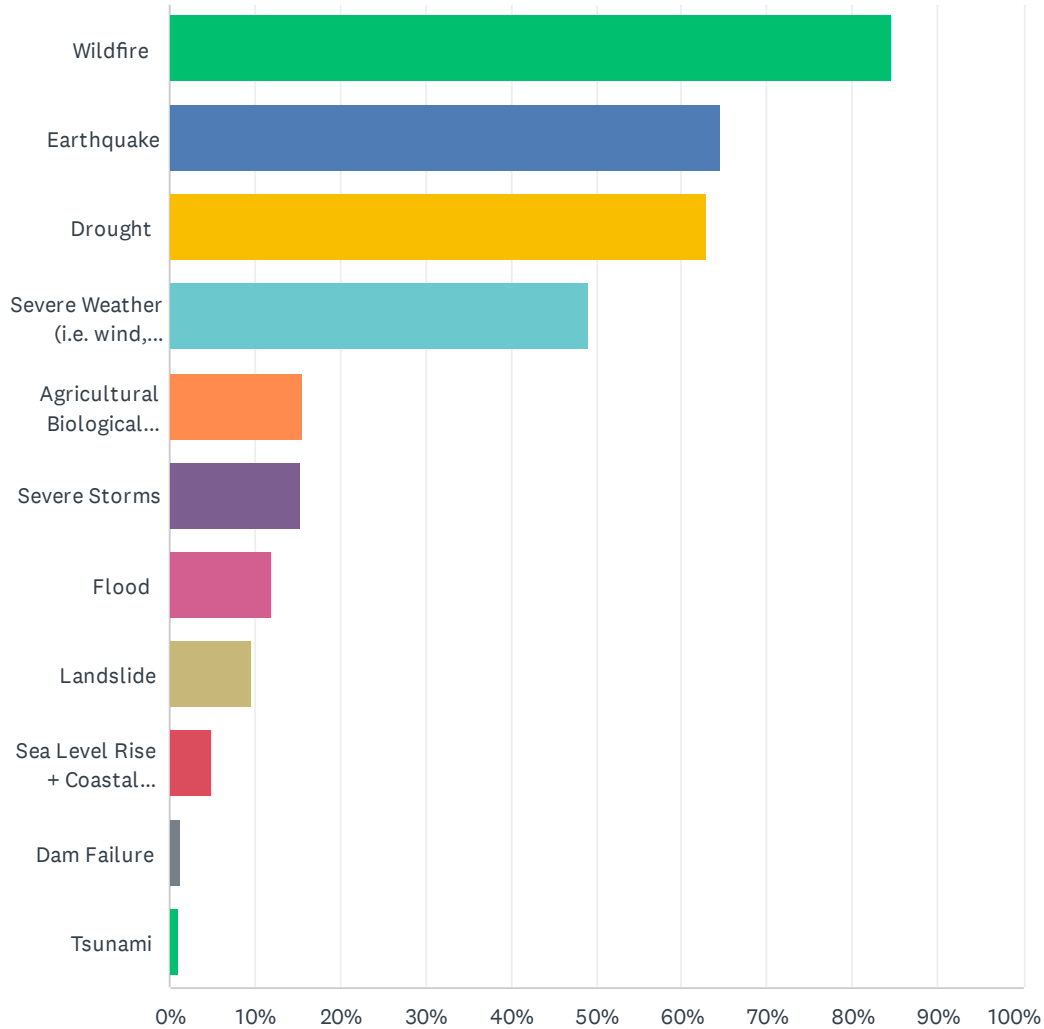
Answered: 831 Skipped: 1



ANSWER CHOICES	RESPONSES	
Yes (includes people working remotely from home)	62.58%	520
No, I work outside the County	8.42%	70
No, I am not currently employed	6.86%	57
No, I am retired	22.14%	184
TOTAL		831

Q3 Which of the following natural hazard events have you experienced or been affected by within Ventura County? (Check all that apply)

Answered: 831 Skipped: 1

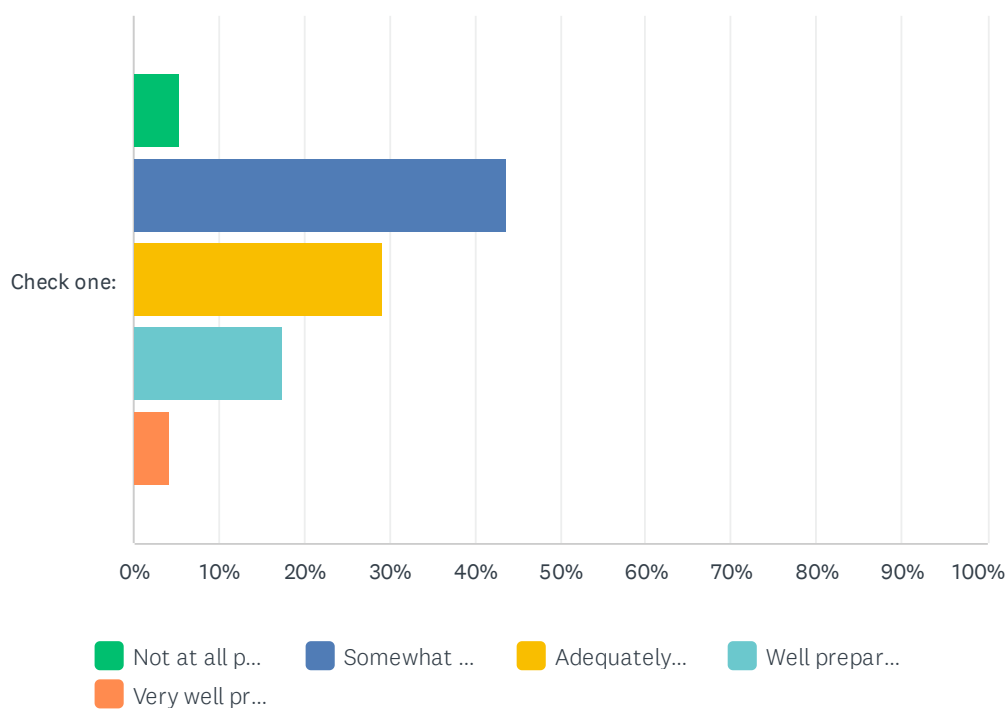


2021 Ventura County Multi-Jurisdictional Hazard Mitigation Plan Update: Community Survey

ANSWER CHOICES	RESPONSES	
Wildfire	84.60%	703
Earthquake	64.50%	536
Drought	62.94%	523
Severe Weather (i.e. wind, cold, heat)	49.10%	408
Agricultural Biological (e.g. west nile, epidemic diseases)	15.64%	130
Severe Storms	15.40%	128
Flood	12.03%	100
Landslide	9.51%	79
Sea Level Rise + Coastal Erosion	4.93%	41
Dam Failure	1.20%	10
Tsunami	0.96%	8
Total Respondents: 831		

Q4 How prepared is your household to deal with a hazard event?

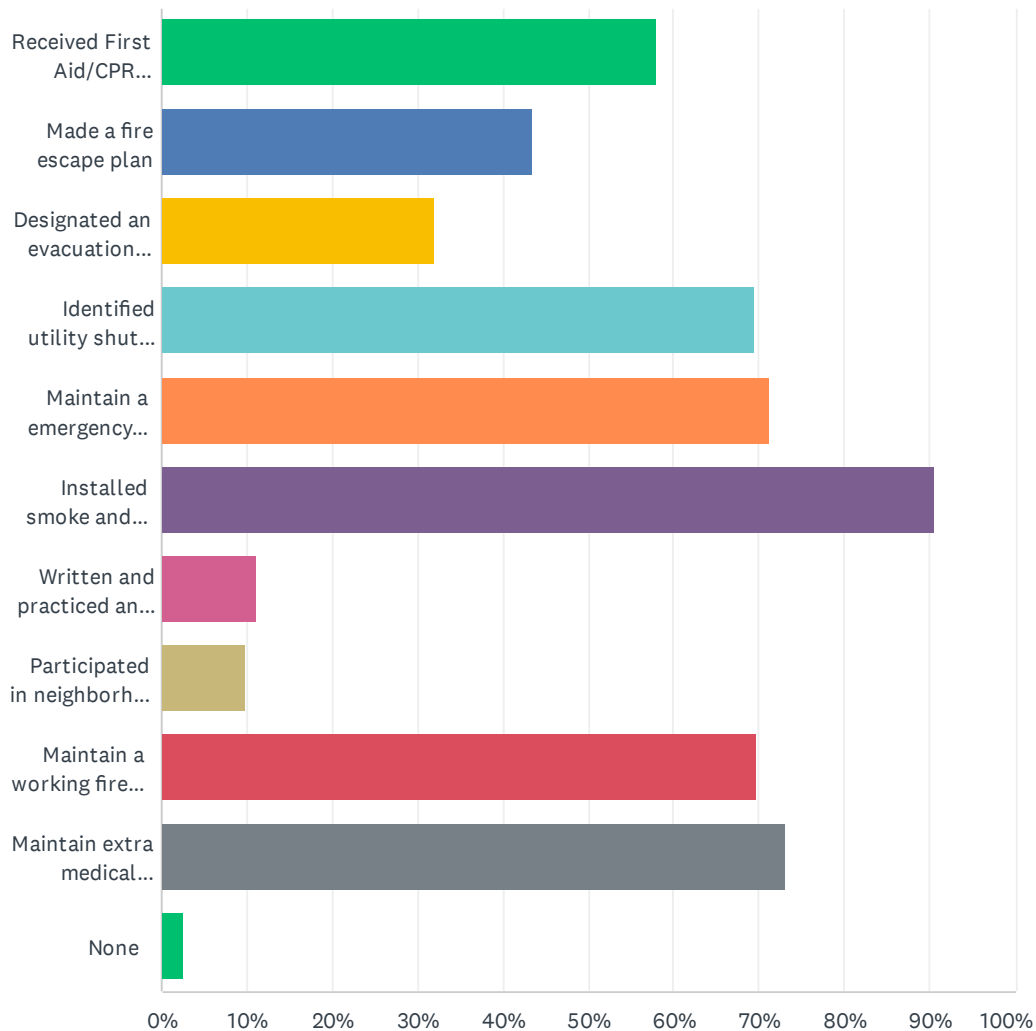
Answered: 792 Skipped: 40



	NOT AT ALL PREPARED	SOMEWHAT PREPARED	ADEQUATELY PREPARED	WELL PREPARED	VERY WELL PREPARED	TOTAL	WEIGHTED AVERAGE
Check one:	5.30% 42	43.69% 346	29.17% 231	17.55% 139	4.29% 34	792	2.72

Q5 What steps has your household taken to prepare for a disaster? (Check all that apply)

Answered: 791 Skipped: 41

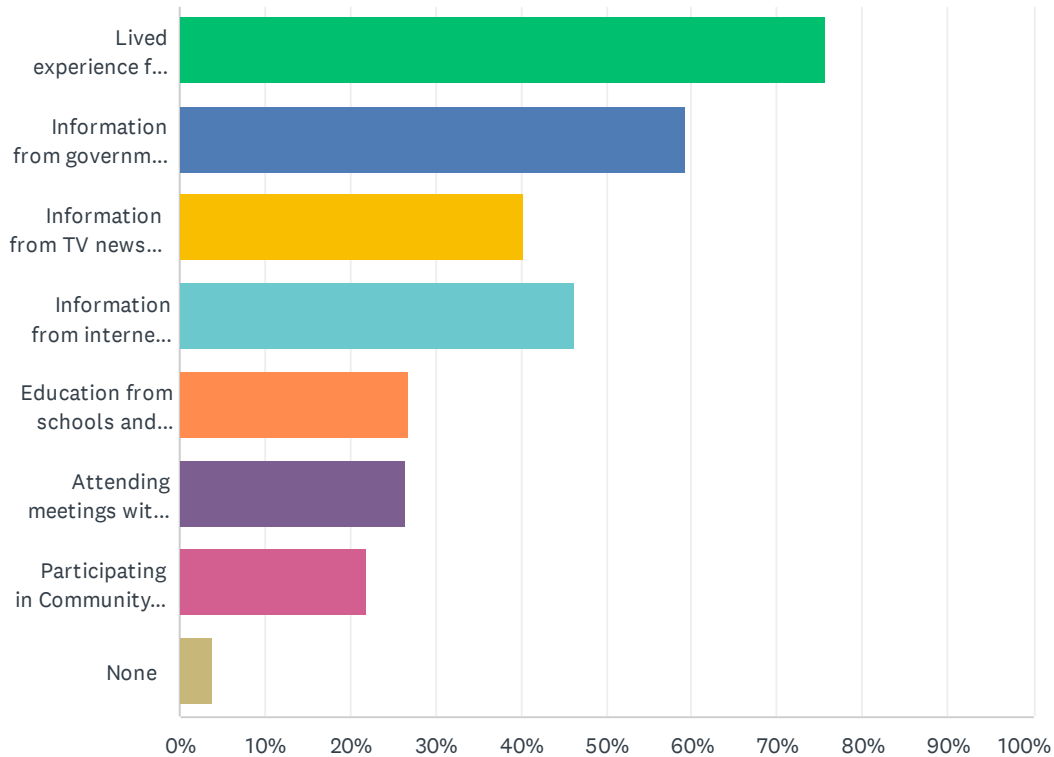


2021 Ventura County Multi-Jurisdictional Hazard Mitigation Plan Update: Community Survey

ANSWER CHOICES	RESPONSES	
Received First Aid/CPR training	57.90%	458
Made a fire escape plan	43.49%	344
Designated an evacuation meeting place	31.98%	253
Identified utility shutoff locations	69.53%	550
Maintain a emergency supply kit (e.g. batteries, flashlights, battery-powered radio, food/water)	71.30%	564
Installed smoke and carbon monoxide detectors	90.52%	716
Written and practiced an individual or family disaster plan	11.00%	87
Participated in neighborhood preparedness and planning	9.86%	78
Maintain a working fire extinguisher at home	69.79%	552
Maintain extra medical supplies (e.g. first aid kit, medications)	73.07%	578
None	2.53%	20
Total Respondents: 791		

Q6 What resources/experiences have helped you to become more prepared? (Check all that apply)

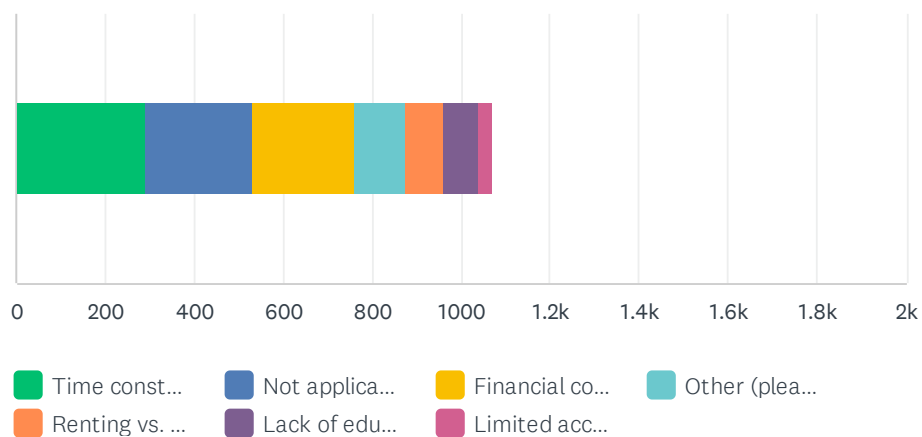
Answered: 792 Skipped: 40



ANSWER CHOICES	RESPONSES	
Lived experience from one or more hazards or disasters	75.76%	600
Information from government sources (e.g. federal, state, or local)	59.22%	469
Information from TV news, radio news	40.28%	319
Information from internet or social media	46.21%	366
Education from schools and other academic institutions	26.89%	213
Attending meetings with information on disaster preparedness	26.39%	209
Participating in Community Emergency Response Training (CERT) or other disaster training program (e.g. DART)	21.97%	174
None	3.91%	31
Total Respondents: 792		

Q7 What are the hurdles preventing you from being more prepared?

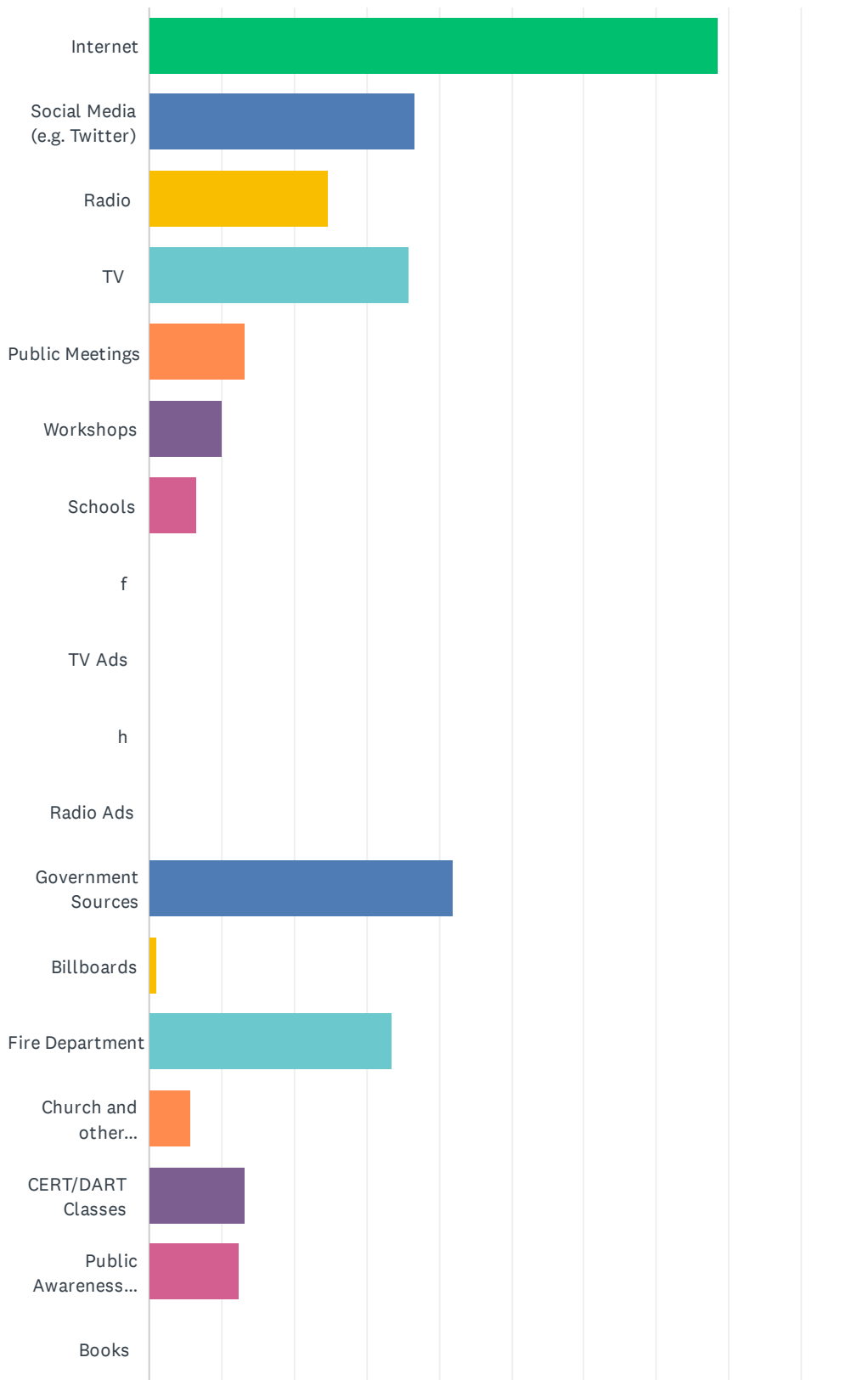
Answered: 789 Skipped: 43

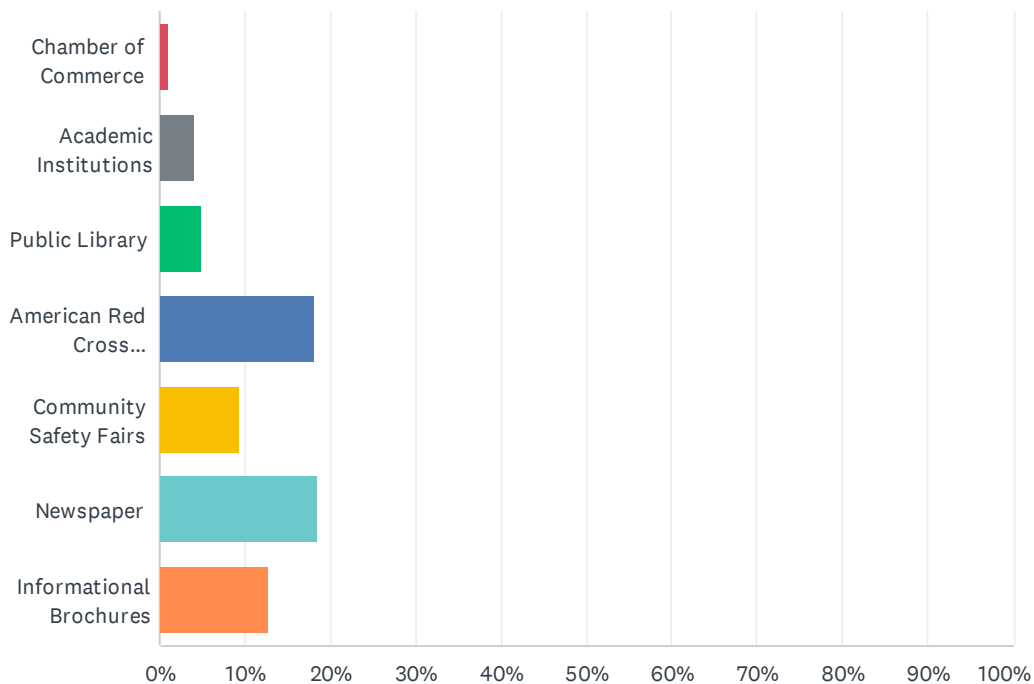


ANSWER CHOICES	RESPONSES	
Time constraints	36.76%	290
Not applicable, I feel adequately prepared already	30.80%	243
Financial constraints	29.02%	229
Other (please specify below)	14.58%	115
Renting vs. owning home or business	10.77%	85
Lack of education about disasters	9.76%	77
Limited access to information resources	4.18%	33
Total Respondents: 789		

Q8 Which information sources on emergency preparedness do you use most? (Check all that apply)

Answered: 792 Skipped: 40



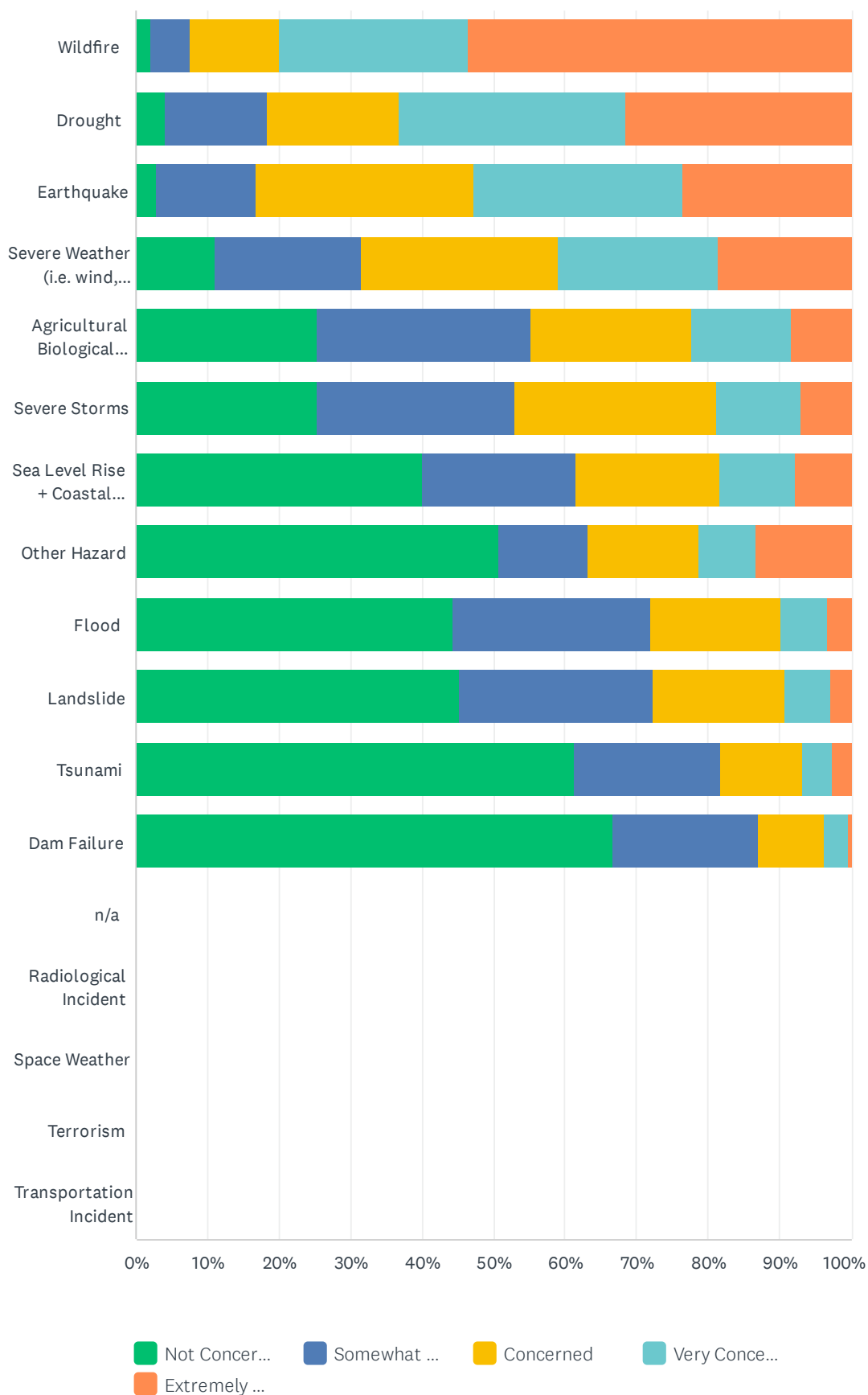


2021 Ventura County Multi-Jurisdictional Hazard Mitigation Plan Update: Community Survey

ANSWER CHOICES	RESPONSES	
Internet	78.54%	622
Social Media (e.g. Twitter)	36.74%	291
Radio	24.75%	196
TV	35.73%	283
Public Meetings	13.26%	105
Workshops	10.10%	80
Schools	6.57%	52
f	0.00%	0
TV Ads	0.00%	0
h	0.00%	0
Radio Ads	0.00%	0
Government Sources	41.92%	332
Billboards	1.14%	9
Fire Department	33.46%	265
Church and other faith-based groups	5.68%	45
CERT/DART Classes	13.13%	104
Public Awareness Campaign (e.g. Flood Awareness Week)	12.37%	98
Books	0.00%	0
Chamber of Commerce	1.01%	8
Academic Institutions	4.04%	32
Public Library	4.80%	38
American Red Cross Information	18.18%	144
Community Safety Fairs	9.47%	75
Newspaper	18.56%	147
Informational Brochures	12.88%	102
Total Respondents: 792		

Q9 How concerned are you about the following hazards? (Check one response for each hazard)

Answered: 679 Skipped: 153



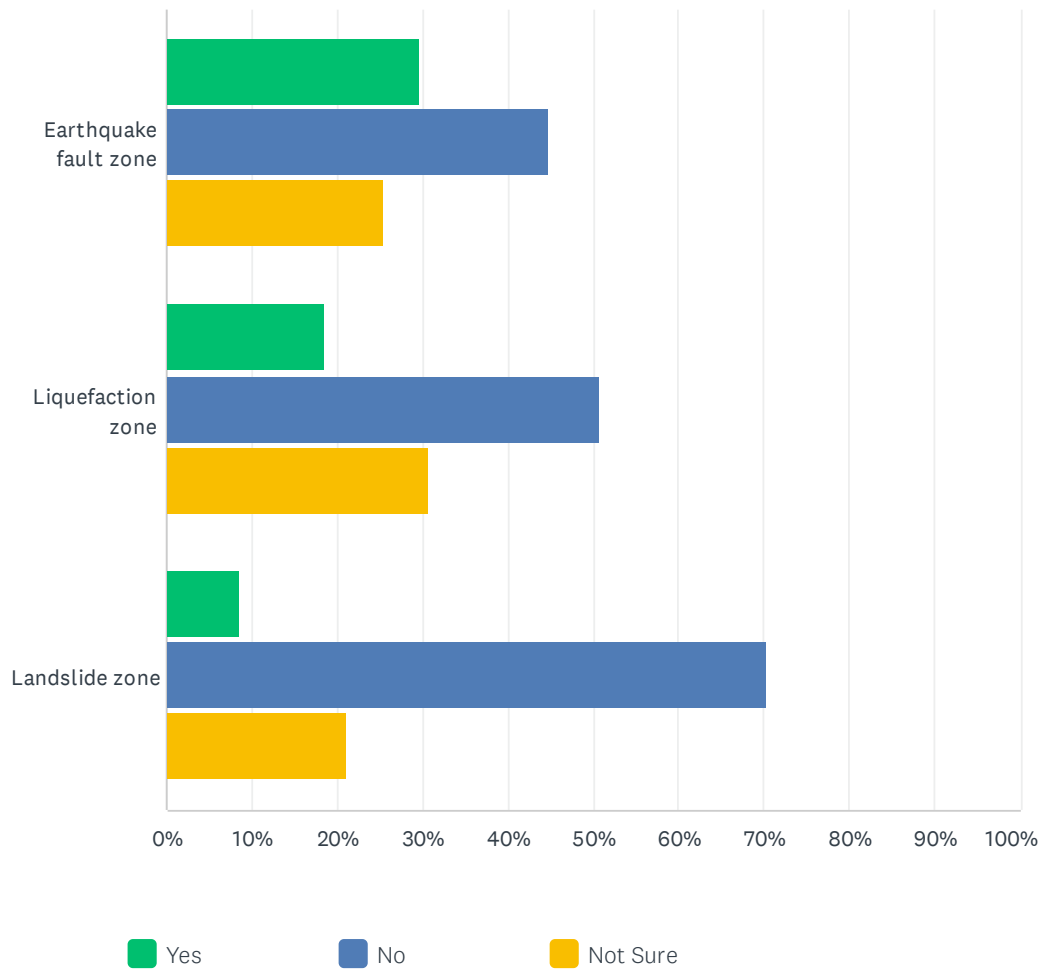
2021 Ventura County Multi-Jurisdictional Hazard Mitigation Plan Update: Community Survey

	NOT CONCERNED	SOMEWHAT CONCERNED	CONCERNED	VERY CONCERNED	EXTREMELY CONCERNED	TOTAL	WEIGHTED AVERAGE
Wildfire	1.95% 13	5.55% 37	12.44% 83	26.39% 176	53.67% 358	667	4.24
Drought	4.17% 28	14.29% 96	18.30% 123	31.85% 214	31.40% 211	672	3.72
Earthquake	2.84% 19	13.88% 93	30.60% 205	29.25% 196	23.43% 157	670	3.57
Severe Weather (i.e. wind, cold, heat)	10.96% 73	20.57% 137	27.48% 183	22.37% 149	18.62% 124	666	3.17
Agricultural Biological (e.g. west nile, epidemic diseases)	25.37% 170	29.85% 200	22.39% 150	14.03% 94	8.36% 56	670	2.50
Severe Storms	25.46% 167	27.59% 181	28.05% 184	11.89% 78	7.01% 46	656	2.47
Sea Level Rise + Coastal Erosion	40.03% 265	21.60% 143	19.94% 132	10.57% 70	7.85% 52	662	2.25
Other Hazard	50.65% 157	12.58% 39	15.48% 48	8.06% 25	13.23% 41	310	2.21
Flood	44.29% 287	27.62% 179	18.21% 118	6.64% 43	3.24% 21	648	1.97
Landslide	45.14% 297	27.20% 179	18.54% 122	6.23% 41	2.89% 19	658	1.95
Tsunami	61.31% 404	20.49% 135	11.53% 76	4.10% 27	2.58% 17	659	1.66
Dam Failure	66.62% 439	20.49% 135	9.26% 61	3.19% 21	0.46% 3	659	1.50
n/a	0.00% 0	0.00% 0	0.00% 0	0.00% 0	0.00% 0	0	0.00
Radiological Incident	0.00% 0	0.00% 0	0.00% 0	0.00% 0	0.00% 0	0	0.00
Space Weather	0.00% 0	0.00% 0	0.00% 0	0.00% 0	0.00% 0	0	0.00
Terrorism	0.00% 0	0.00% 0	0.00% 0	0.00% 0	0.00% 0	0	0.00
Transportation Incident	0.00% 0	0.00% 0	0.00% 0	0.00% 0	0.00% 0	0	0.00

Q10 Is your current residence located within a known earthquake fault zone, liquefaction zone, or landslide zone? (Check all that apply) Need help answering? Add your address to this tool:

<https://maps.conservation.ca.gov/cgs/EQZApp/app/>

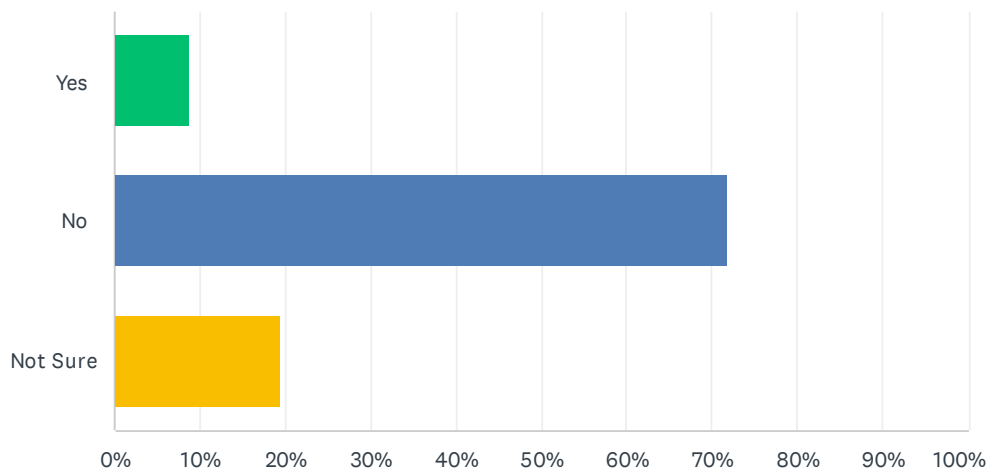
Answered: 679 Skipped: 153



	YES	NO	NOT SURE	TOTAL
Earthquake fault zone	29.72% 200	44.87% 302	25.41% 171	673
Liquefaction zone	18.55% 123	50.68% 336	30.77% 204	663
Landslide zone	8.47% 56	70.35% 465	21.18% 140	661

Q11 Is your current residence located in a FEMA designated floodplain?
 Need help answering? Add your address to this tool:
<https://msc.fema.gov/portal/search>

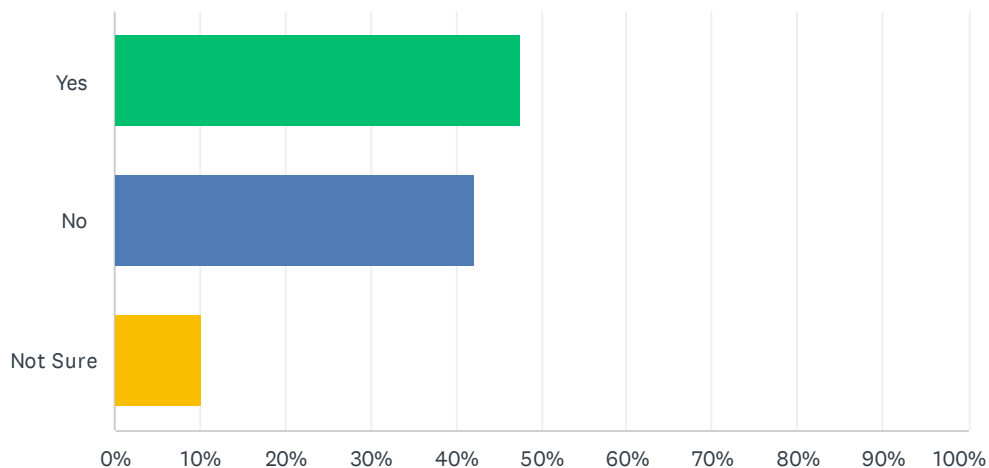
Answered: 679 Skipped: 153



ANSWER CHOICES	RESPONSES	
Yes	8.69%	59
No	71.87%	488
Not Sure	19.44%	132
TOTAL		679

Q12 Is your current residence in a high-risk area for wildfire? Need help answering? Add your address to this tool:
<https://www.arcgis.com/apps/Styler/index.html?appid=5e96315793d445419b6c96f89ce5d153>

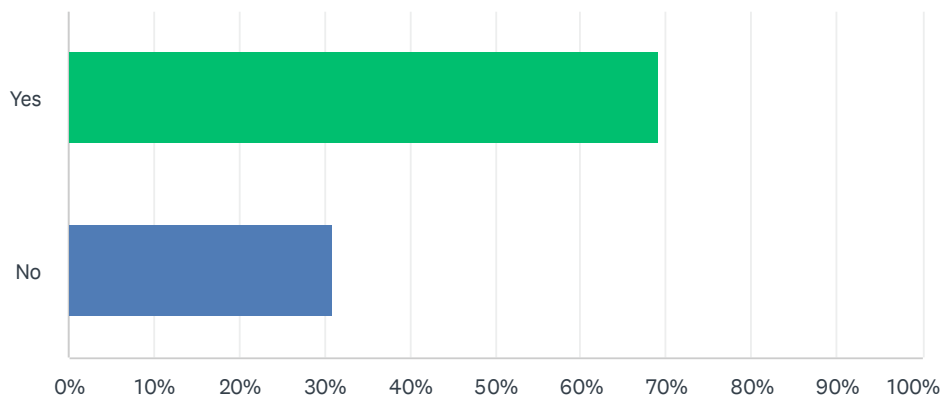
Answered: 679 Skipped: 153



ANSWER CHOICES	RESPONSES	
Yes	47.57%	323
No	42.27%	287
Not Sure	10.16%	69
TOTAL		679

Q13 Are you aware that California law requires the disclosure of a natural hazard risk zone (e.g. earthquake fault zone, dam failure zone, or high fire risk area) before you purchase or move into a home?

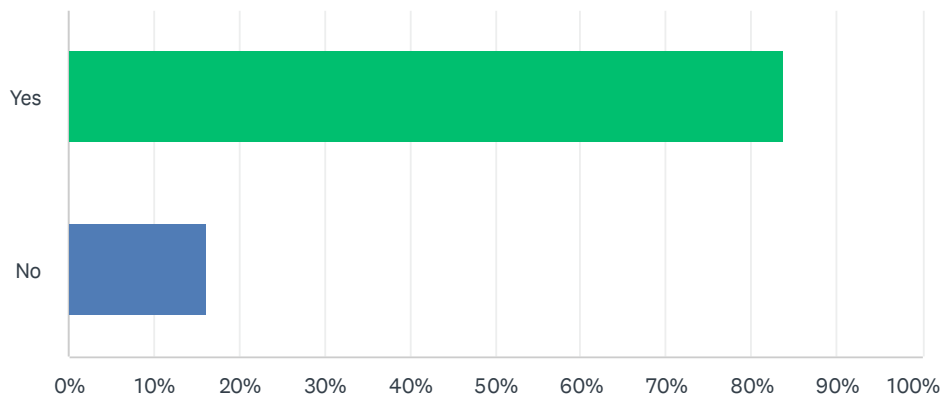
Answered: 679 Skipped: 153



ANSWER CHOICES		RESPONSES
Yes		69.07% 469
No		30.93% 210
TOTAL		679

Q14 Would the disclosure of natural hazard information influence your decision to purchase or move into a home today?

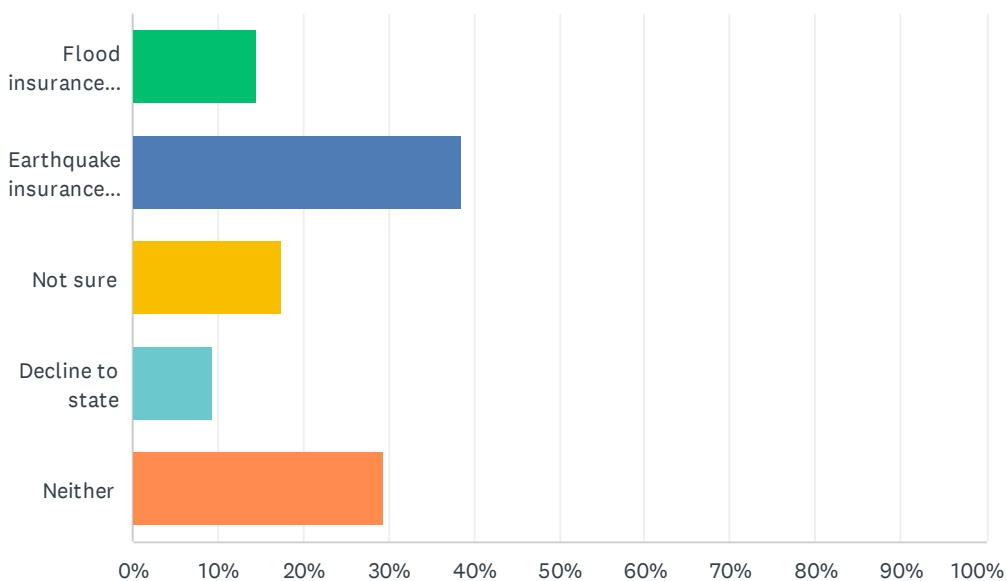
Answered: 679 Skipped: 153



ANSWER CHOICES	RESPONSES	
Yes	83.80%	569
No	16.20%	110
TOTAL		679

Q15 To the best of your knowledge, does the home in which you live have:

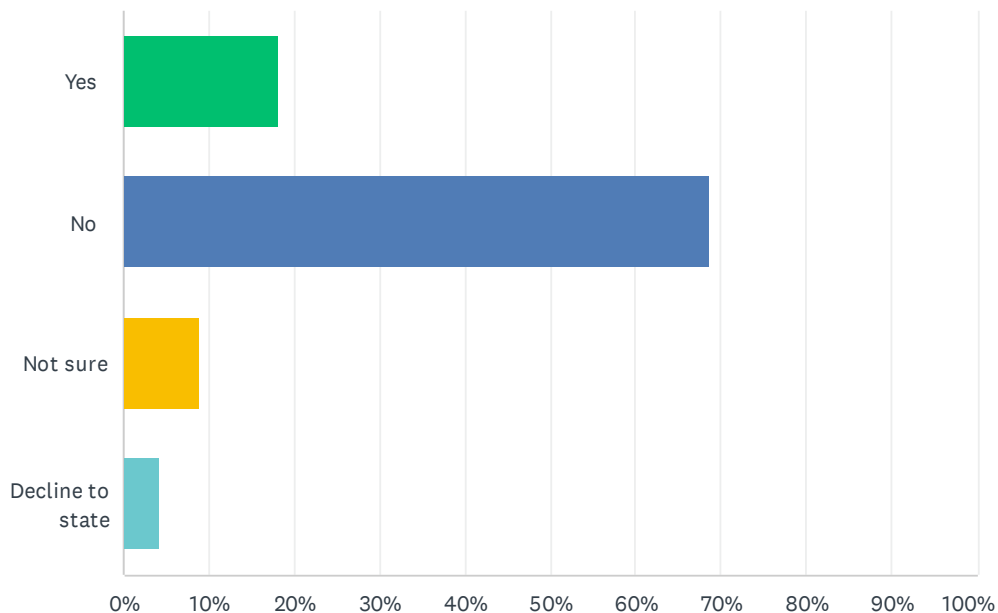
Answered: 678 Skipped: 154



ANSWER CHOICES	RESPONSES	
Flood insurance policy	14.60%	99
Earthquake insurance policy	38.64%	262
Not sure	17.55%	119
Decline to state	9.29%	63
Neither	29.50%	200
Total Respondents: 678		

Q16 Have you ever had difficulty obtaining homeowners or renters insurance due to risks from natural hazards?

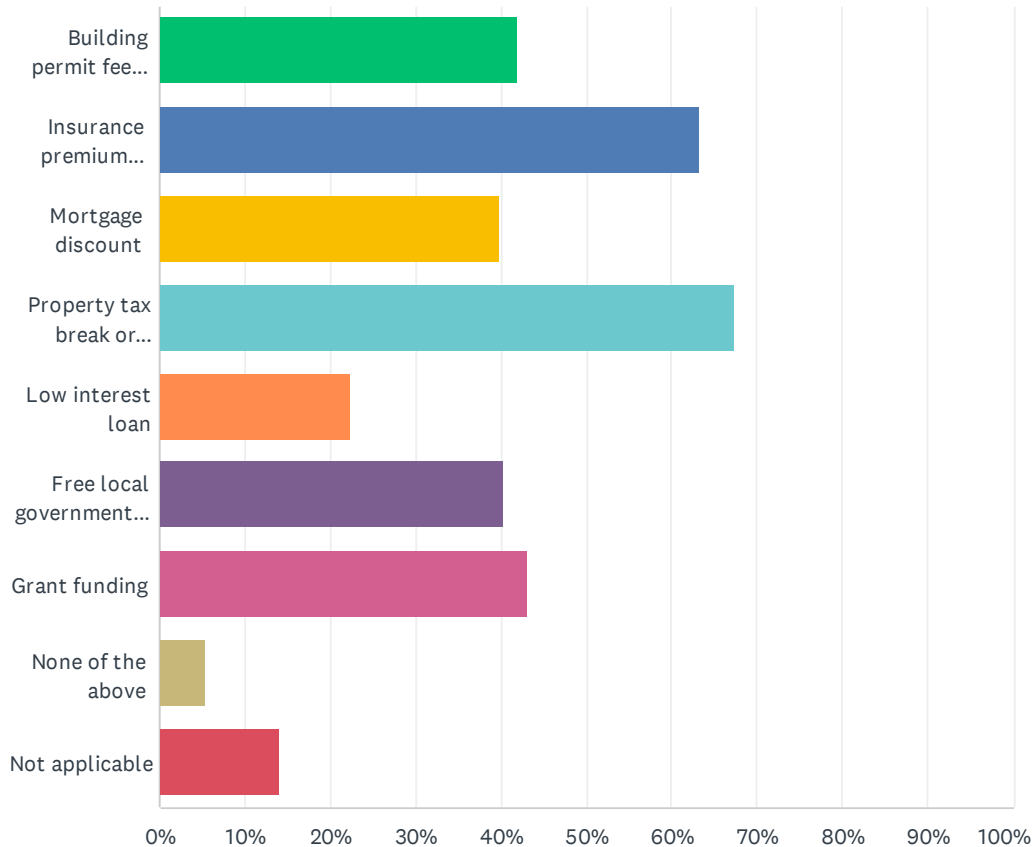
Answered: 678 Skipped: 154



ANSWER CHOICES	RESPONSES	
Yes	18.14%	123
No	68.73%	466
Not sure	8.85%	60
Decline to state	4.28%	29
TOTAL		678

Q17 Which incentives would encourage you to retrofit your home to protect against natural disasters? (Check all that apply)

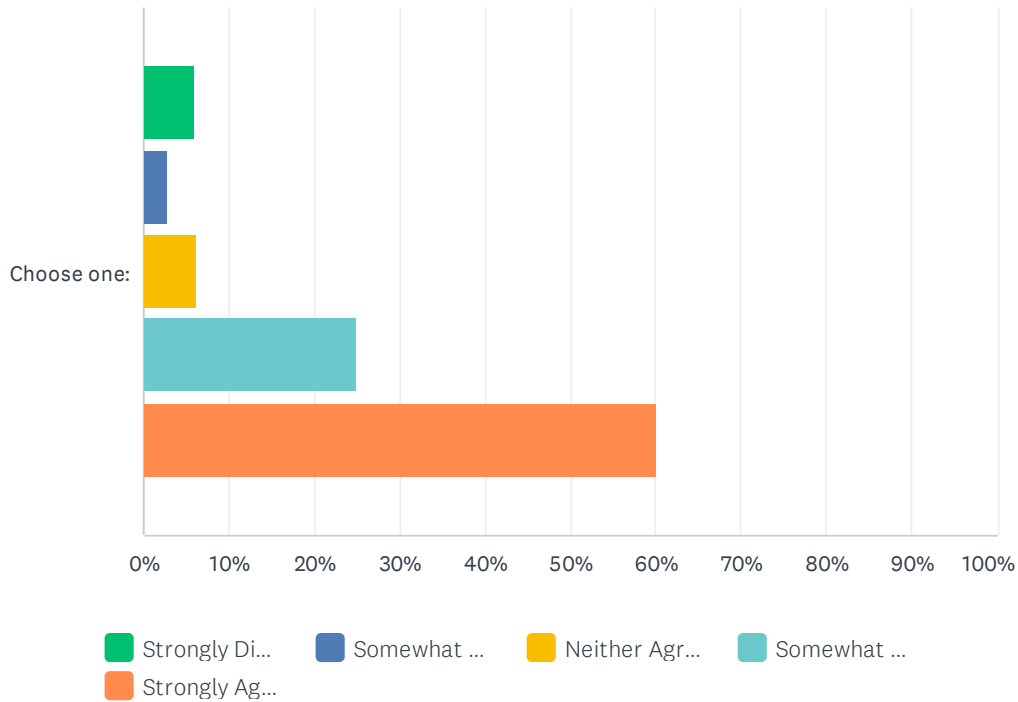
Answered: 679 Skipped: 153



ANSWER CHOICES	RESPONSES	
Building permit fee waiver	41.97%	285
Insurance premium discount	63.33%	430
Mortgage discount	39.91%	271
Property tax break or incentive	67.30%	457
Low interest loan	22.39%	152
Free local government technical assistance	40.35%	274
Grant funding	43.15%	293
None of the above	5.30%	36
Not applicable	13.99%	95
Total Respondents: 679		

Q18 Please indicate how you feel about the following statement: "I think it is important to provide education and programs that promote community members to take action to reduce their exposure and risks to natural hazards."

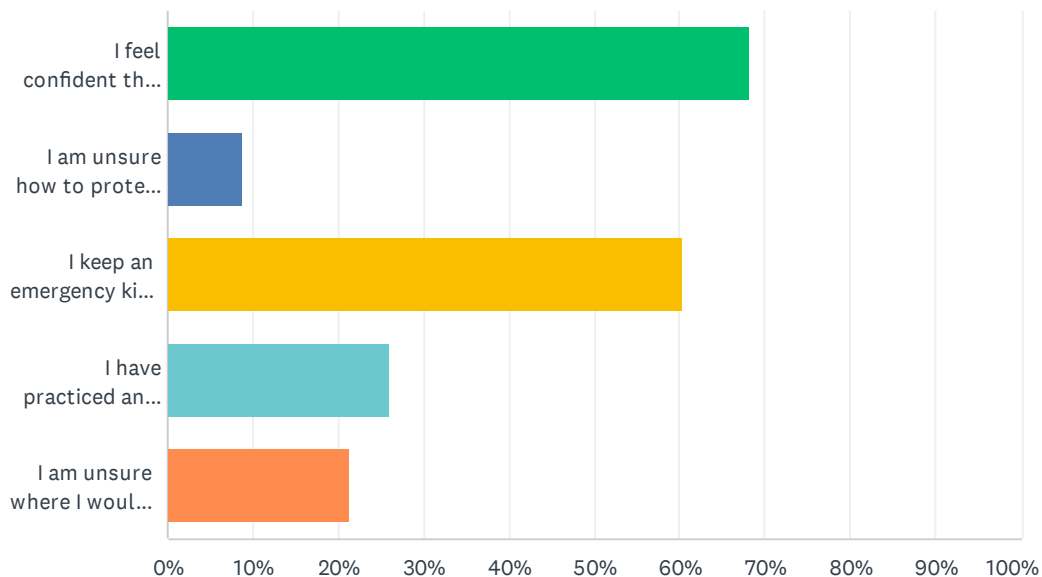
Answered: 678 Skipped: 154



	STRONGLY DISAGREE	SOMEWHAT DISAGREE	NEITHER AGREE NOR DISAGREE	SOMEWHAT AGREE	STRONGLY AGREE	TOTAL	WEIGHTED AVERAGE
Choose one:	6.05% 41	2.80% 19	6.19% 42	24.93% 169	60.03% 407	678	4.30

Q19 If a natural disaster such as a large earthquake were to strike tomorrow... (Check all that apply)

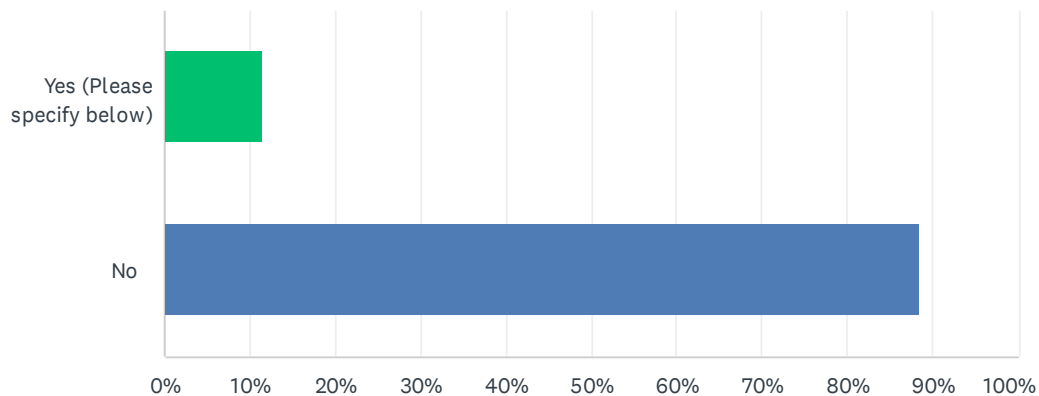
Answered: 679 Skipped: 153



ANSWER CHOICES	RESPONSES	
I feel confident that I know how to protect myself during an earthquake	68.34%	464
I am unsure how to protect myself during an earthquake	8.69%	59
I keep an emergency kit with spare food and water for myself and my family	60.24%	409
I have practiced an evacuation plan and/or know where I and my family would go if we needed to evacuate our home	26.07%	177
I am unsure where I would go if I needed to evacuate my home	21.35%	145
Total Respondents: 679		

Q20 Does your street (or another street that you know of) typically flood during rain events?

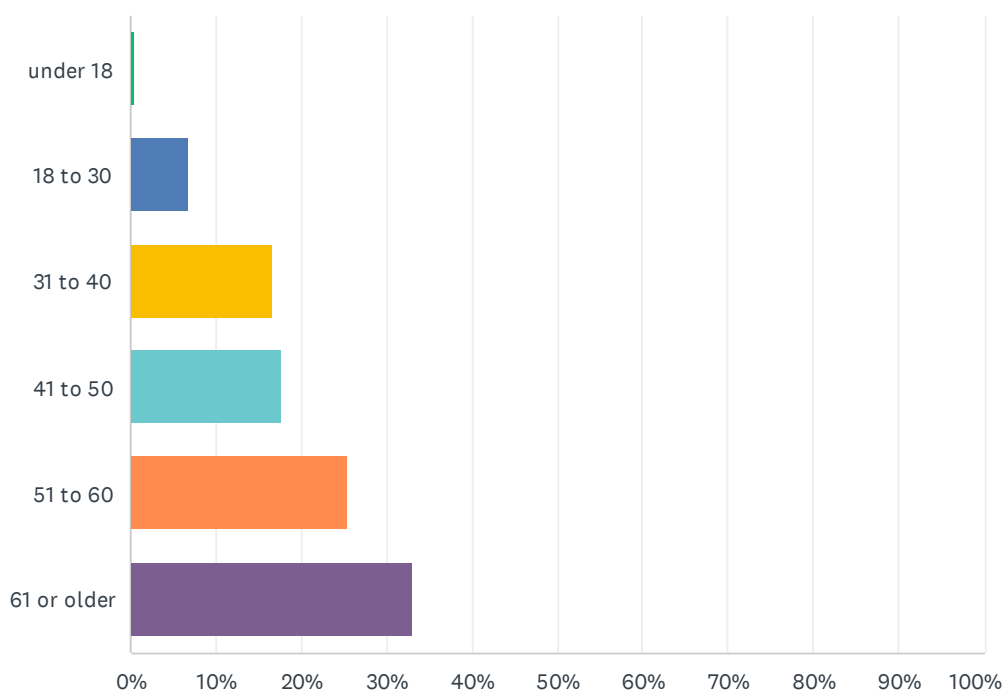
Answered: 678 Skipped: 154



ANSWER CHOICES	RESPONSES	
Yes (Please specify below)	11.50%	78
No	88.50%	600
TOTAL		678

Q21 Please indicate your age range:

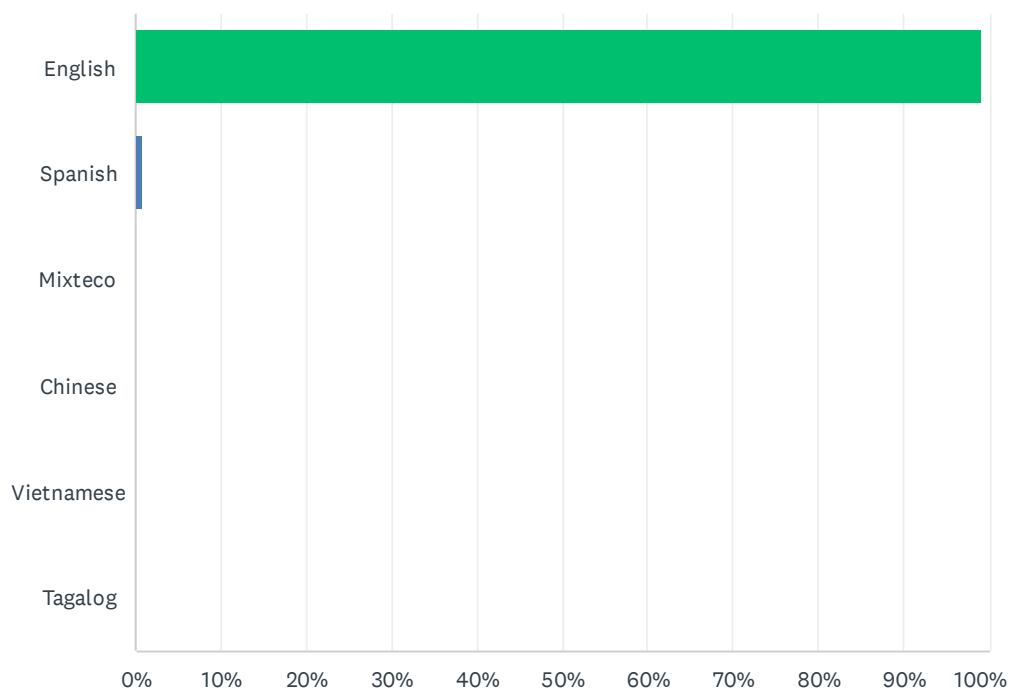
Answered: 665 Skipped: 167



ANSWER CHOICES	RESPONSES	
under 18	0.45%	3
18 to 30	6.77%	45
31 to 40	16.69%	111
41 to 50	17.59%	117
51 to 60	25.41%	169
61 or older	33.08%	220
TOTAL		665

Q22 Please indicate the primary language spoken in your household.

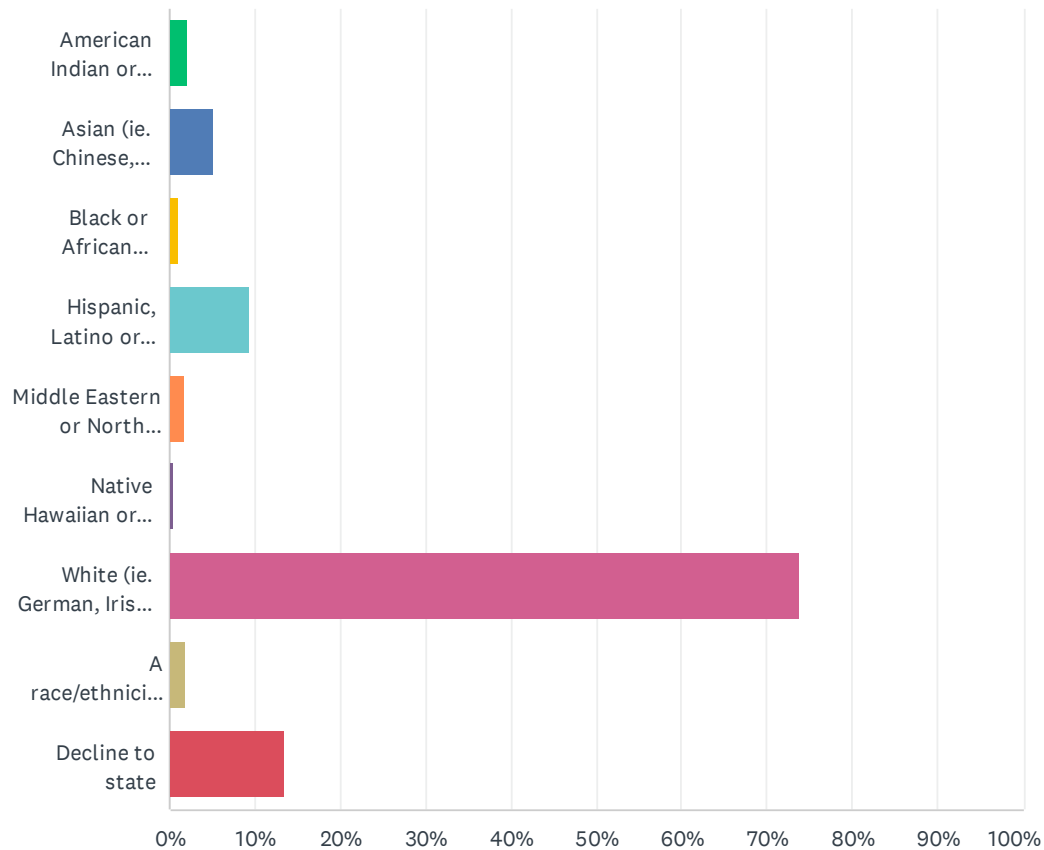
Answered: 665 Skipped: 167



ANSWER CHOICES	RESPONSES	
English	99.25%	660
Spanish	0.75%	5
Mixteco	0.00%	0
Chinese	0.00%	0
Vietnamese	0.00%	0
Tagalog	0.00%	0
TOTAL		665

Q23 Which category best describes you? (Check all that apply)

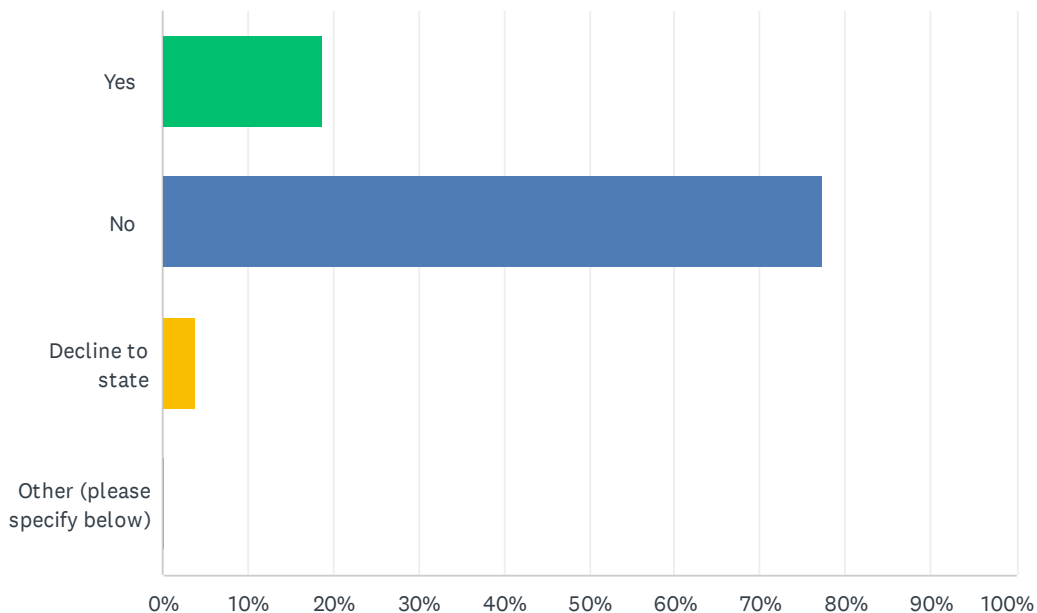
Answered: 665 Skipped: 167



ANSWER CHOICES	RESPONSES	
American Indian or Alaska Native (ie. Navajo nation, Blackfeet tribe, Mayan, Aztec, Nome Eskimo Community, etc)	2.11%	14
Asian (ie. Chinese, Filipino, Asian Indian, Vietnamese, Korean, Japanese, etc)	5.11%	34
Black or African American (ie. African American, Jamaican, Haitian, Nigerian, Ethiopian, Somalian, etc)	1.05%	7
Hispanic, Latino or Spanish origin (ie. Spanish, Mexican or Mexican American, Puerto Rican, Cuban, Salvadoran, Dominican, Colombian, etc.)	9.47%	63
Middle Eastern or North African (ie. Lebanese, Iranian, Egyptian, Syrian, Moroccan, Algerian, etc)	1.65%	11
Native Hawaiian or Other Pacific Islander (ie. Native Hawaiian, Samoan, Chamorro, Tongan, Fijian, etc)	0.45%	3
White (ie. German, Irish, English, Italian, Polish, French, etc)	73.68%	490
A race/ethnicity not listed here	1.95%	13
Decline to state	13.53%	90
Total Respondents: 665		

Q24 Do you, or anyone in your household, identify as a person with a disability (e.g. mobility, hard of hearing/deaf, low vision/blind, intellectual)?

Answered: 664 Skipped: 168



ANSWER CHOICES	RESPONSES	
Yes	18.67%	124
No	77.41%	514
Decline to state	3.77%	25
Other (please specify below)	0.15%	1
TOTAL		664

Q25 What is your annual (gross) household income?

Answered: 665 Skipped: 167



2021 Ventura County Multi-Jurisdictional Hazard Mitigation Plan Update: Community Survey

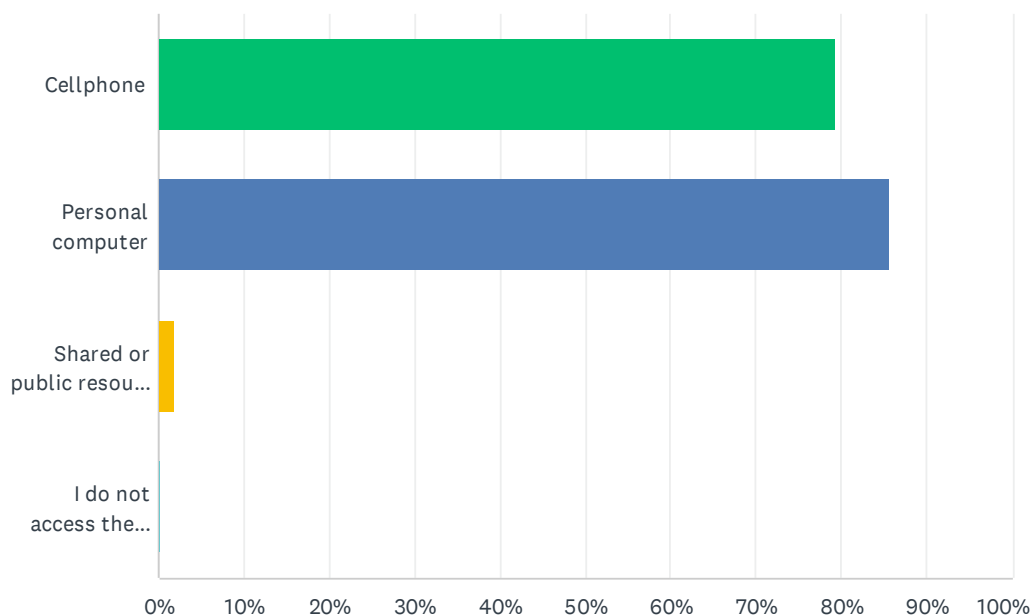
ANSWER CHOICES	RESPONSES	
<\$10,000	0.60%	4
\$10,000 - \$30,000	2.11%	14
\$30,001 - \$50,000	4.96%	33
\$50,001 - \$70,000	5.26%	35
\$70,001 - \$90,000	7.97%	53
\$90,001 - \$110,000	7.82%	52
\$110,001 - \$130,000	8.72%	58
\$130,001 - \$150,000	7.67%	51
\$150,001 - \$170,000	3.46%	23
\$170,001 - \$190,000	2.86%	19
\$190,001 - \$210,000	4.21%	28
\$210,001 - \$230,000	4.06%	27
>\$230,001	7.97%	53
Decline to state	32.33%	215
TOTAL		665

Q26 What is your zipcode?

Answered: 612 Skipped: 220

Q27 How do you typically access the internet? (Check all that apply)

Answered: 665 Skipped: 167



ANSWER CHOICES	RESPONSES	
Cellphone	79.25%	527
Personal computer	85.71%	570
Shared or public resource computer (e.g. library)	1.95%	13
I do not access the internet	0.30%	2
Total Respondents: 665		

Appendix B. Federal and State Agencies, Programs and Regulations

B. FEDERAL AND STATE AGENCIES, PROGRAMS AND REGULATIONS

Existing laws, ordinances, plans and programs at the federal and state level can support or impact hazard mitigation actions identified in this plan. Hazard mitigation plans are required to include a review and incorporation, if appropriate, of existing plans, studies, reports, and technical information as part of the planning process (44 CFR, Section 201.6(b)(3)). The following federal and state programs have been identified as programs that may interface with the actions identified in this plan. Each program enhances capabilities to implement mitigation actions or has a nexus with a mitigation action in this plan. Information presented in this section can be used to review local capabilities to implement the actions found in the jurisdictional annexes of Volume 2. Each planning partner has individually reviewed existing local plans, studies, reports, and technical information in its jurisdictional annex, presented in Volume 2.

FEDERAL

Americans with Disabilities Act

The Americans with Disabilities Act (ADA) seeks to prevent discrimination against people with disabilities in employment, transportation, public accommodation, communications, and government activities. Title II of the ADA deals with compliance with the Act in emergency management and disaster-related programs, services, and activities. It applies to state and local governments as well as third parties, including religious entities and private nonprofit organizations.

The ADA has implications for sheltering requirements and public notifications. During an emergency alert, officials must use a combination of warning methods to ensure that all residents have all necessary information. Those with hearing impairments may not hear radio, television, sirens, or other audible alerts, while those with visual impairments may not see flashing lights or other visual alerts. Two technical documents for shelter operators address physical accessibility needs of people with disabilities, as well as medical needs and service animals.

The ADA intersects with disaster preparedness programs in regards to transportation, social services, temporary housing, and rebuilding. Persons with disabilities may require additional assistance in evacuation and transit (e.g., vehicles with wheelchair lifts or paratransit buses). Evacuation and other response plans should address the unique needs of residents. Local governments may be interested in implementing a special-needs registry to identify the home addresses, contact information, and needs for residents who may require more assistance.

FEMA hazard mitigation project grant applications require full compliance with applicable federal acts. Any action identified in this plan that falls within the scope of this act will need to meet its requirements.

Bureau of Land Management

The U.S. Bureau of Land Management (BLM) funds and coordinates wildfire management programs and structural fire management and prevention on BLM lands. BLM works closely with the Forest Service and state and local governments to coordinate fire safety activities. The Interagency Fire Coordination Center in Boise, Idaho serves as the center for this effort.

Civil Rights Act

The Civil Rights Act of 1964 prohibits discrimination based on race, color, religion, sex or nation origin and requires equal access to public places and employment. The Act is relevant to emergency management and hazard mitigation in that it prohibits local governments from favoring the needs of one population group over another. Local government and emergency response must ensure the continued safety and well-being of all residents equally, to the extent possible. FEMA hazard mitigation project grant applications require full compliance with applicable federal acts. Any action identified in this plan that falls within the scope of this act will need to meet its requirements.

Clean Water Act

The federal Clean Water Act (CWA) employs regulatory and non-regulatory tools to reduce direct pollutant discharges into waterways, finance municipal wastewater treatment facilities, and manage polluted runoff. These tools are employed to achieve the broader goal of restoring and maintaining the chemical, physical, and biological integrity of the nation's surface waters so that they can support "the protection and propagation of fish, shellfish, and wildlife and recreation in and on the water."

Evolution of CWA programs over the last decade has included a shift from a program-by-program, source-by-source, and pollutant-by-pollutant approach to more holistic watershed-based strategies. Under the watershed approach, equal emphasis is placed on protecting healthy waters and restoring impaired ones. Numerous issues are addressed, not just those subject to CWA regulatory authority. Involvement of stakeholder groups in the development and implementation of strategies for achieving and maintaining water quality and other environmental goals is a hallmark of this approach.

The CWA is important to hazard mitigation in several ways. There are often permitting requirements for any construction within 200 feet of water of the United States, which may have implications for mitigation projects identified by a local jurisdiction. Additionally, CWA requirements apply to wetlands, which serve important functions related to preserving and protecting the natural and beneficial functions of floodplains and are linked with a community's floodplain management program. Finally, the National Pollutant Discharge Elimination System is part of the CWA and addresses local stormwater management programs. Stormwater management plays a critical role in hazard mitigation by addressing urban drainage or localized flooding issues within jurisdictions.

FEMA hazard mitigation project grant applications require full compliance with applicable federal acts. Any action identified in this plan that falls within the scope of this act will need to meet its requirements.

Community Development Block Grant Disaster Resilience Program

In response to disasters, Congress may appropriate additional funding for the U.S. Department of Housing and Urban Development Community Development Block Grant programs to be distributed as Disaster Recovery grants (CDBG-DR). These grants can be used to rebuild affected areas and provide seed money to start the recovery process. CDBG-DR assistance may fund a broad range of recovery activities, helping communities and neighborhoods that otherwise might not recover due to limited resources. CDBG-DR grants often supplement disaster programs of FEMA, the Small Business Administration, and the U.S. Army Corps of Engineers. Housing and Urban Development generally awards noncompetitive, nonrecurring CDBG-DR grants by a formula that considers disaster recovery needs unmet by other federal disaster assistance programs. To be eligible for CDBG-DR funds, projects must meet the following criteria:

- Address a disaster-related impact (direct or indirect) in a presidentially declared county for the covered disaster
- Be a CDBG-eligible activity (according to regulations and waivers)
- Meet a national objective.

Incorporating preparedness and mitigation into these actions is encouraged, as the goal is to rebuild in ways that are safer and stronger. CDBG-DR funding is a potential alternative source of funding for actions identified in this plan.

Community Rating System

The CRS is a voluntary program within the NFIP that encourages floodplain management activities that exceed the minimum NFIP requirements. Flood insurance premiums are discounted to reflect the reduced flood risk resulting from community actions meeting the following three goals of the CRS:

- Reduce flood losses.
- Facilitate accurate insurance rating.
- Promote awareness of flood insurance.

For participating communities, flood insurance premium rates are discounted in increments of 5 percent. For example, a Class 1 community would receive a 45 percent premium discount, and a Class 9 community would receive a 5 percent discount. (Class 10 communities are those that do not participate in the CRS; they receive no discount.) The discount partially depends on location of the property. Properties outside the special flood hazard area receive smaller discounts: a 10-percent discount if the community is at Class 1 to 6 and a 5-percent discount if the community is at Class 7 to 9. The CRS classes for local communities are based on 18 creditable activities in the following categories:

- Public information
- Mapping and regulations
- Flood damage reduction
- Flood preparedness.

CRS activities can help to save lives and reduce property damage. Communities participating in the CRS represent a significant portion of the nation's flood risk; over 66 percent of the NFIP's policy base is located in these communities. Communities receiving premium discounts through the CRS range from small to large and represent a broad mixture of flood risks, including both coastal and riverine flood risks.

Disaster Mitigation Act

The DMA is the current federal legislation addressing hazard mitigation planning. It emphasizes planning for disasters before they occur. It specifically addresses planning at the local level, requiring plans to be in place before Hazard Mitigation Assistance grant funds are available to communities. This plan is designed to meet the requirements of DMA, improving eligibility for future hazard mitigation funds.

Emergency Relief for Federally Owned Roads Program

The U.S. Forest Service's Emergency Relief for Federally Owned Roads Program was established to assist federal agencies with repair or reconstruction of tribal transportation facilities, federal lands transportation facilities, and other federally owned roads that are open to public travel and have suffered serious damage by a natural disaster over a wide area or by a catastrophic failure. The program funds both emergency and permanent repairs. Eligible activities under this program meet some of the goals and objectives for this plan and the program is a possible funding source for actions identified in this plan.

Emergency Watershed Program

The USDA Natural Resources Conservation Service (NRCS) administers the Emergency Watershed Protection (EWP) Program, which responds to emergencies created by natural disasters. Eligibility for assistance is not dependent on a national emergency declaration. The program is designed to help people and conserve natural resources by relieving imminent hazards to life and property caused by floods, fires, windstorms, and other natural occurrences. EWP is an emergency recovery program. Financial and technical assistance are available for the following activities:

- Remove debris from stream channels, road culverts, and bridges
- Reshape and protect eroded banks
- Correct damaged drainage facilities
- Establish cover on critically eroding lands
- Repair levees and structures
- Repair conservation practices.

This federal program could be a possible funding source for actions identified in this plan.

Endangered Species Act

The federal Endangered Species Act (ESA) was enacted in 1973 to conserve species facing depletion or extinction and the ecosystems that support them. The act sets forth a process for determining which species are threatened and endangered and requires the conservation of the critical habitat in which those species live. The ESA provides broad protection for species of fish, wildlife and plants that are listed as threatened or endangered. Provisions are made for listing species, as well as for recovery plans and the designation of critical habitat for listed species. The ESA outlines procedures for federal agencies to follow when taking actions that may jeopardize listed species and contains exceptions and exemptions. It is the enabling legislation for the Convention on International Trade in Endangered Species of Wild Fauna and Flora. Criminal and civil penalties are provided for violations of the ESA and the Convention.

Federal agencies must seek to conserve endangered and threatened species and use their authorities in furtherance of the ESA's purposes. The ESA defines three fundamental terms:

- Endangered means that a species of fish, animal or plant is "in danger of extinction throughout all or a significant portion of its range." (For salmon and other vertebrate species, this may include subspecies and distinct population segments.)
- Threatened means that a species "is likely to become endangered within the foreseeable future." Regulations may be less restrictive for threatened species than for endangered species.
- Critical habitat means "specific geographical areas that are...essential for the conservation and management of a listed species, whether occupied by the species or not."

Five sections of the ESA are of critical importance to understanding it:

- Section 4: Listing of a Species—The National Oceanic and Atmospheric Administration Fisheries Service (NOAA Fisheries) is responsible for listing marine species; the U.S. Fish and Wildlife Service is responsible for listing terrestrial and freshwater aquatic species. The agencies may initiate reviews for listings, or residents may petition for them. A listing must be made "solely on the basis of the best scientific and commercial data available." After a listing has been proposed, agencies receive comment and conduct further scientific reviews for 12 to 18 months, after which they must decide if the listing is warranted. Economic impacts cannot be considered in this decision, but it may include an evaluation of the adequacy of local and state protections. Critical habitat for the species may be designated at the time of listing.
- Section 7: Consultation—Federal agencies must ensure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of a listed or proposed species or adversely modify its critical habitat. This includes private and public actions that require a federal permit. Once a final listing is made, non-federal actions are subject to the same review, termed a "consultation." If the listing agency finds that an action will "take" a species, it must propose mitigations or "reasonable and prudent" alternatives to the action; if the proponent rejects these, the action cannot proceed.
- Section 9: Prohibition of Take—It is unlawful to "take" an endangered species, including killing or injuring it or modifying its habitat in a way that interferes with essential behavioral patterns, including breeding, feeding or sheltering.
- Section 10: Permitted Take—Through voluntary agreements with the federal government that provide protections to an endangered species, a non-federal applicant may commit a take that

would otherwise be prohibited as long as it is incidental to an otherwise lawful activity (such as developing land or building a road). These agreements often take the form of a “Habitat Conservation Plan.”

- Section 11: Citizen Lawsuits—Civil actions initiated by any citizen can require the listing agency to enforce the ESA’s prohibition of taking or to meet the requirements of the consultation process.

FEMA hazard mitigation project grant applications require full compliance with applicable federal acts. Any action identified in this plan that falls within the scope of this act will need to meet its requirements.

Federal Energy Regulatory Commission Dam Safety Program

The Federal Energy Regulatory Commission (FERC) cooperates with a large number of federal and state agencies to ensure and promote dam safety. More than 3,000 dams are part of regulated hydroelectric projects in the FERC program. Two-thirds of these are more than 50 years old. As dams age, concern about their safety and integrity grows, so oversight and regular inspection are important. FERC inspects hydroelectric projects on an unscheduled basis to investigate the following:

- Potential dam safety problems
- Complaints about constructing and operating a project
- Safety concerns related to natural disasters
- Issues concerning compliance with the terms and conditions of a license.

Every five years, an independent engineer approved by the FERC must inspect and evaluate projects with dams higher than 32.8 feet (10 meters), or with a total storage capacity of more than 2,000 acre-feet.

FERC monitors seismic research and applies it in performing structural analyses of hydroelectric projects. FERC also evaluates the effects of potential and actual large floods on the safety of dams. During and following floods, FERC visits dams and licensed projects, determines the extent of damage, if any, and directs any necessary studies or remedial measures the licensee must undertake. The FERC publication *Engineering Guidelines for the Evaluation of Hydropower Projects* guides the FERC engineering staff and licensees in evaluating dam safety. The publication is frequently revised to reflect current information and methodologies.

FERC requires licensees to prepare emergency action plans and conducts training sessions on how to develop and test these plans. The plans outline an early warning system if there is an actual or potential sudden release of water from a dam due to failure. The plans include operational procedures that may be used, such as reducing reservoir levels and reducing downstream flows, as well as procedures for notifying affected residents and agencies responsible for emergency management. These plans are frequently updated and tested to ensure that everyone knows what to do in emergency situations.

Federal Wildfire Management Policy and Healthy Forests Restoration Act

Federal Wildfire Management Policy and Healthy Forests Restoration Act (2003). These documents call for a single comprehensive federal fire policy for the Interior and Agriculture Departments (the agencies using federal fire management resources). They mandate community-based collaboration to reduce risks from wildfire.

National Dam Safety Act

Potential for catastrophic flooding due to dam failures led to passage of the National Dam Inspection Act in 1972, creation of the National Dam Safety Program in 1996, and reauthorization of the program through the Dam Safety Act in 2006. National Dam Safety Program, administered by FEMA requires a periodic engineering analysis of the majority of dams in the country; exceptions include the following:

- Dams under jurisdiction of the Bureau of Reclamation, Tennessee Valley Authority, or International Boundary and Water Commission
- Dams constructed pursuant to licenses issued under the Federal Power Act
- Dams that the Secretary of the Army determines do not pose any threat to human life or property.

The goal of this FEMA-monitored effort is to identify and mitigate the risk of dam failure so as to protect lives and property of the public. The National Dam Safety Program is a partnership among the states, federal agencies, and other stakeholders that encourages individual and community responsibility for dam safety. Under FEMA's leadership, state assistance funds have allowed all participating states to improve their programs through increased inspections, emergency action planning, and purchases of needed equipment. FEMA has also expanded existing and initiated new training programs. Grant assistance from FEMA provides support for improvement of dam safety programs that regulate most of the dams in the United States.

National Environmental Policy Act

The National Environmental Policy Act requires federal agencies to consider the environmental impacts of proposed actions and reasonable alternatives to those actions, alongside technical and economic considerations. The National Environmental Policy Act established the Council on Environmental Quality, whose regulations (40 CFR Parts 1500-1508) set standards for compliance. Consideration and decision-making regarding environmental impacts must be documented in an environmental impact statement or environmental assessment. Environmental impact assessment requires the evaluation of reasonable alternatives to a proposed action, solicitation of input from organizations and individuals that could be affected, and an unbiased presentation of direct, indirect, and cumulative environmental impacts. FEMA hazard mitigation project grant applications require full compliance with applicable federal acts. Any action identified in this plan that falls within the scope of this act will need to meet its requirements.

National Fire Plan

The 2001 National Fire Plan was developed based on the National Fire Policy. A major aspect of the National Fire Plan is joint risk reduction planning and implementation carried out by federal, state and

local agencies and communities. The National Fire Plan presented a comprehensive strategy in five key initiatives:

- Firefighting—Be adequately prepared to fight fires each fire season.
- Rehabilitation and Restoration—Restore landscapes and rebuild communities damaged by wildfires.
- Hazardous Fuel Reduction—Invest in projects to reduce fire risk.
- Community Assistance—Work directly with communities to ensure adequate protection.
- Accountability—Be accountable and establish adequate oversight, coordination, program development, and monitoring for performance.

National Flood Insurance Program

The National Flood Insurance Program (NFIP) makes federally backed flood insurance available to homeowners, renters, and business owners in participating communities that enact floodplain regulations. Participation and good standing under NFIP are prerequisites to grant funding eligibility under the Robert T. Stafford Act.

For most participating communities, FEMA has prepared a detailed Flood Insurance Study. The study presents water surface elevations for floods of various magnitudes, including the 1-percent-annual-chance flood and the 0.2-percent-annual-chance flood. Base flood elevations and the boundaries of the flood hazard areas are shown on Flood Insurance Rate Maps, which are the principle tool for identifying the extent and location of the flood hazard. Flood Insurance Rate Maps are the most detailed and consistent data source available, and for many communities they represent the minimum area of oversight under the local floodplain management program. In recent years, Flood Insurance Rate Maps have been digitized as Digital Flood Insurance Rate Maps, which are more accessible to residents, local governments and stakeholders.

NFIP participants must, at a minimum, regulate development in floodplain areas in accordance with NFIP criteria. Before issuing a permit to build in a floodplain, participating jurisdictions must ensure that three criteria are met:

- New buildings and those undergoing substantial improvements must, at a minimum, be elevated to protect against damage by the 1-percent-annual-chance flood.
- New floodplain development must not aggravate existing flood problems or increase damage to other properties.
- New floodplain development must exercise a reasonable and prudent effort to reduce its adverse impacts on threatened salmonid species.

NFIP participation is limited to local governments that possess permit authority and have the ability to adopt and enforce regulations that govern land use. This does not typically apply to special purpose districts. None of the special purpose district planning partners covered by this plan are eligible to participate in the NFIP, so their action plans do not address NFIP participation.

National Incident Management System

The National Incident Management System (NIMS) is a systematic approach for government, nongovernmental organizations, and the private sector to work together to manage incidents involving hazards. The NIMS provides a flexible but standardized set of incident management practices. Incidents typically begin and end locally, and they are managed at the lowest possible geographical, organizational, and jurisdictional level. In some cases, success depends on the involvement of multiple jurisdictions, levels of government, functional agencies, and emergency responder disciplines. These cases necessitate coordination across a spectrum of organizations. Communities using NIMS follow a comprehensive national approach that improves the effectiveness of emergency management and response personnel across the full spectrum of potential hazards (including natural hazards, technological hazards, and human-caused hazards) regardless of size or complexity.

Although participation is voluntary, federal departments and agencies are required to make adoption of NIMS by local and state jurisdictions a condition to receive federal preparedness grants and awards. The content of this plan is considered to be a viable support tool for any phase of emergency management. The NIMS program is considered as a response function, and information in this hazard mitigation plan can support the implementation and update of all NIMS-compliant plans within the planning area.

National Landslide Preparedness Act

The 2021 National Landslide Preparedness Act authorized a national landslide hazards reduction program and a 3D elevation program within the USGS. This broadened the existing Landslide Hazards Program (under the Natural Hazards Mission Area) and the 3D Elevation Program (under the National Geospatial Program). The act required coordination among federal agencies through an Interagency Coordinating Committee on Landslide Hazards representing USGS and other agencies. The act calls for development of a national strategy for landslide loss reduction and a publicly accessible national landslide database of landslide hazard and risk.

Presidential Executive Order 11988, Floodplain Management

Executive Order 11988 requires federal agencies to avoid to the extent possible the long and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct and indirect support of floodplain development wherever there is a practicable alternative. It requires federal agencies to provide leadership and take action to reduce the risk of flood loss, minimize the impact of floods on human safety, health, and welfare, and restore and preserve the natural and beneficial values of floodplains. The requirements apply to the following activities:

- Acquiring, managing, and disposing of federal lands and facilities
- Providing federally undertaken, financed, or assisted construction and improvements
- Conducting federal activities and programs affecting land use, including but not limited to water and related land resources planning, regulation, and licensing.

Presidential Executive Order 11990, Protection of Wetlands

Executive Order 11990 requires federal agencies to provide leadership and take action to minimize the destruction, loss or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands. The requirements apply to the following activities:

- Acquiring, managing, and disposing of federal lands and facilities
- Providing federally undertaken, financed, or assisted construction and improvements
- Conducting federal activities and programs affecting land use, including but not limited to water and related land resources planning, regulation, and licensing.

All actions identified in this plan will seek full compliance with all applicable presidential executive orders.

Rural Development Program

The mission of the U.S. Department of Agriculture (USDA) Rural Development Program is to help improve the economy and quality of life in rural America. The program provides project financing and technical assistance to help rural communities provide the infrastructure needed by rural businesses, community facilities, and households. The program addresses rural America's need for basic services, such as clean running water, sewage and waste disposal, electricity, and modern telecommunications and broadband. Loans and competitive grants are offered for various community and economic development projects and programs, such as the development of essential community facilities including fire stations. This program is a potential source of funding for actions identified in this plan.

U.S. Army Corps of Engineers Dam Safety Program

The U.S. Army Corps of Engineers operates and maintains approximately 700 dams nationwide. It is also responsible for safety inspections of some federal and non-federal dams in the United States that meet the size and storage limitations specified in the National Dam Safety Act. The Corps has inventoried dams; surveyed each state and federal agency's capabilities, practices and regulations regarding design, construction, operation and maintenance of the dams; and developed guidelines for inspection and evaluation of dam safety. The Corps maintains the National Inventory of Dams, which contains information about a dam's location, size, purpose, type, last inspection and regulatory status.

U.S. Army Corps of Engineers Flood Hazard Management

The following U.S. Army Corps of Engineers authorities and programs related to flood hazard management:

- The Floodplain Management Services program offers 100-percent federally funded technical services such as development and interpretation of site-specific data related to the extent, duration and frequency of flooding. Special studies may be conducted to help a community understand and respond to flood risk. These may include flood hazard evaluation, flood warning and preparedness, or flood modeling.

- For more extensive studies, the Corps of Engineers offers a cost-shared program called Planning Assistance to States and Tribes. Studies under this program generally range from \$25,000 to \$100,000 with the local jurisdiction providing 50 percent of the cost.
- The Corps of Engineers has several cost-shared programs (typically 65 percent federal and 35 percent non-federal) aimed at developing, evaluating and implementing structural and non-structural capital projects to address flood risks at specific locations or within a specific watershed:
 - The Continuing Authorities Program for smaller-scale projects includes Section 205 for Flood Control, with a \$7 million federal limit and Section 14 for Emergency Streambank Protection with a \$1.5 million federal limit. These can be implemented without specific authorization from Congress.
 - Larger scale studies, referred to as General Investigations, and projects for flood risk management, for ecosystem restoration or to address other water resource issues, can be pursued through a specific authorization from Congress and are cost-shared, typically at 65 percent federal and 35 percent non-federal.
 - Watershed management planning studies can be specifically authorized and are cost-shared at 50 percent federal and 50 percent non-federal.
- The Corps of Engineers provides emergency response assistance during and following natural disasters. Public Law 84-99 enables the Corps to assist state and local authorities in flood fight activities and cost share in the repair of flood protective structures. Assistance is provided in the following categories:
 - Preparedness—The Flood Control and Coastal Emergency Act establishes an emergency fund for preparedness for emergency response to natural disasters; for flood fighting and rescue operations; for rehabilitation of flood control and hurricane protection structures. Funding for Corps of Engineers emergency response under this authority is provided by Congress through the annual Energy and Water Development Appropriation Act. Disaster preparedness activities include coordination, planning, training and conduct of response exercises with local, state and federal agencies.
 - Response Activities—Public Law 84-99 allows the Corps of Engineers to supplement state and local entities in flood fighting urban and other non-agricultural areas under certain conditions (Engineering Regulation 500-1-1 provides specific details). All flood fight efforts require a project cooperation agreement signed by the public sponsor and the sponsor must remove all flood fight material after the flood has receded. Public Law 84-99 also authorizes emergency water support and drought assistance in certain situations and allows for “advance measures” assistance to prevent or reduce flood damage conditions of imminent threat of unusual flooding.
 - Rehabilitation—Under Public Law 84-99, an eligible flood protection system can be rehabilitated if damaged by a flood event. The flood system would be restored to its pre-disaster status at no cost to the federal system owner, and at 20-percent cost to the eligible non-federal system owner. All systems considered eligible for Public Law 84-99 rehabilitation assistance have to be in the Rehabilitation and Inspection Program prior to the flood event. Acceptable operation and maintenance by the public levee sponsor are verified by levee inspections conducted by the Corps on a regular basis. The Corps has the responsibility to coordinate levee repair issues with interested federal, state, and local agencies following natural disaster events where flood control works are damaged.

These authorities and programs are all available to the planning partners to support any related mitigation actions.

U.S. Bureau of Reclamation Safety Evaluation of Existing Dams Program

The U.S. Bureau of Reclamation's Safety Evaluation of Existing Dams Program was officially implemented in 1978 with passage of the Reclamation Safety of Dams Act (Public Law 95-578). This act was amended in 1984 under Public Law 98-404, in 2000 under Public Law 106-377, in 2002 under Public Law 107-117, and in 2004 under Public Law 108-439. Program development and administration of dam safety activities is the responsibility of the Bureau of Reclamation's Dam Safety Office located in Denver, Colorado.

Dams must be operated and maintained in a safe manner, ensured through inspections for safety deficiencies, analyses utilizing current technologies and designs, and corrective actions if needed based on current engineering practices. In addition, future evaluations should include assessments of benefits foregone with the loss of a dam. For example, a failed dam can no longer provide needed fish and wildlife benefits.

The primary emphasis of the Safety Evaluation of Existing Dams program is to perform site evaluations and to identify potential safety deficiencies on Bureau of Reclamation and other Interior Department dams. The basic objective is to quickly identify dams which pose an increased threat to the public, and to quickly complete the related analyses in order to expedite corrective action decisions and safeguard the public and associated resources. The selected course of action relies on assessments of risks and liabilities with environmental and public involvement input to the decision-making process.

U.S. Fire Administration

There are federal agencies that provide technical support to fire agencies/organizations. For example, the U.S. Fire Administration, which is a part of FEMA, provides leadership, advocacy, coordination, and support for fire agencies and organizations.

U.S. Fish and Wildlife Service

The U.S. Fish and Wildlife Service fire management strategy uses prescribed fire to maintain early successional fire-adapted grasslands and other ecological communities throughout the National Wildlife Refuge system.

STATE

AB 9: Fire safety: wildfires: fire adapted communities.

Establishes the Regional Forest and Fire Capacity Program to support regional leadership, build local and regional capacity, and develop, prioritize, and implement strategies and projects that create fire-adapted communities by improving watershed health, forest health, community wildfire preparedness, and fire resilience.

AB 32: The California Global Warming Solutions Act

This bill identifies the following potential adverse impacts of global warming:

“... the exacerbation of air quality problems, a reduction in the quality and supply of water to the state from the Sierra snowpack, a rise in sea levels resulting in the displacement of thousands of coastal businesses and residences, damage to marine ecosystems and the natural environment, and an increase in the incidences of infectious diseases, asthma, and other human health-related problems.”

AB 32 establishes a state goal of reducing greenhouse gas emissions to 1990 levels by 2020 (a reduction of approximately 25 percent from forecast emission levels), with further reductions to follow. The law requires the state Air Resources Board to do the following:

- Establish a program to track and report greenhouse gas emissions.
- Approve a scoping plan for achieving the maximum technologically feasible and cost-effective reductions from sources of greenhouse gas emissions.
- Adopt early reduction measures to begin moving forward.
- Adopt, implement, and enforce regulations—including market mechanisms such as “cap and-trade” programs—to ensure that the required reductions occur.

The Air Resources Board has adopted a statewide greenhouse gas emissions limit and an emissions inventory, along with requirements to measure, track, and report greenhouse gas emissions by the industries it determined to be significant sources of greenhouse gas emissions.

AB 38: Fire safety: Low-Cost Retrofits: Regional Capacity Review: Wildfire Mitigation

Requires the seller of any real property located in a high or very fire hazard severity zone to provide a disclosure notice, as specified, to the buyer with information relating to fire hardening improvements on the property.

Requires the California Natural Resources Agency, in consultation with the State Fire Marshal and the Forest Management Task Force, to review the regional capacity of each county that contains a very high fire hazard severity zone to improve forest health, fire resilience, and safety.

Requires the California Office of Emergency Services to enter into a joint powers agreement with the Department of Forestry and Fire Protection to administer a comprehensive wildfire mitigation and assistance program to encourage cost-effective structure hardening and facilitate vegetation management, contingent upon appropriation by the Legislature.

AB 70: Flood Liability

This bill provides that a city or county may be required to contribute a fair and reasonable share to compensate for property damage caused by a flood to the extent that it has increased the state’s exposure to liability for property damage by unreasonably approving new development in a previously undeveloped area that is protected by a state flood control project, unless the city or county meets specified requirements.

AB 162: Flood Planning

This California State Assembly Bill passed in 2007 requires cities and counties to address flood-related matters in the land use, conservation, and safety and housing elements of their general plans. The land use element must identify and annually review the areas covered by the general plan that are subject to flooding as identified in floodplain mapping by either FEMA or the state Department of Water Resources (DWR). During the next revision of the housing element on or after January 1, 2009, the conservation element of the general plan must identify rivers, creeks, streams, flood corridors, riparian habitat, and land that may accommodate floodwater for the purpose of groundwater recharge and stormwater management. The safety element must identify information regarding flood hazards, including:

- Flood hazard zones
- Maps published by FEMA, DWR, the U.S. Army Corps of Engineers, the Central Valley Flood Protection Board, and the Governor's Office of Emergency Services (Cal OES)
- Historical data on flooding
- Existing and planned development in flood hazard zones.

The general plan must establish goals, policies and objectives related to flooding risks, including:

- Avoiding or minimizing the risks of flooding new development
- Evaluating whether new development should be located in flood hazard zones
- Identifying construction methods to minimize damage.

AB 162 establishes goals, policies and objectives related to flooding risks. It establishes procedures for the determination of available land suitable for urban development, which may exclude lands where FEMA or DWR has concluded that the flood management infrastructure is not adequate to avoid the risk of flooding.

AB 267: California Environmental Quality Act: Exemption: Prescribed Fire, Thinning, and Fuel Reduction Projects

Current law, until January 1, 2023, exempts from the requirements of CEQA prescribed fire, thinning, or fuel reduction projects undertaken on federal lands to reduce the risk of high-severity wildfire that have been reviewed under the federal National Environmental Policy Act of 1969. Current law requires the Department of Forestry and Fire Protection, beginning December 31, 2019, and annually thereafter until January 1, 2023, to report to the relevant policy committees of the Legislature the number of times the exemption was used. This extends the exemption from CEQA and the requirement on the department to report to the relevant policy committees of the Legislature to January 1, 2026.

AB 380: Forestry: Priority Fuel Reduction Projects

On March 22, 2019, the Governor issued a proclamation of a state of emergency directing the Department of Forestry and Fire Protection to implement fuel reduction projects for communities at greatest risk of wildfire to reduce the risk of catastrophic wildfire. The proclamation of a state of emergency exempts the identified fuel reduction projects from various legal requirements, including,

among others, requirements regarding public contracting for those projects, requirements for environmental review under the California Environmental Quality Act for those projects, and licensure requirements for individuals conducting certain activities for those projects.

This bill requires the department, before December 31, 2022, and before December 31 of each year thereafter, to identify priority fuel reduction projects, as provided. The bill exempts the identified priority fuel reduction projects from legal requirements in a similar manner as provided in the proclamation of a state of emergency described above.

AB 431: Forestry: Timber Harvesting Plans: Defensible Space: Exemptions

The Z'berg-Nejedly Forest Practice Act of 1973 prohibits a person from conducting timber operations, as defined, unless a timber harvesting plan prepared by a registered professional forester has been submitted to, and approved by, the Department of Forestry and Fire Protection. The act authorizes the State Board of Forestry and Fire Protection to exempt from some or all of those provisions of the act a person engaging in specified forest management activities, as prescribed, including, only until January 1, 2022, the cutting or removal of trees on the person's property in compliance with specified defensible space requirements. This bill extends to January 1, 2026, the board's authorization to exempt a person engaging in the cutting or removal of trees on the person's property in compliance with the specified defensible space requirements.

AB 497: Forestry and Fire Protection: Local Assistance Grant Program: Fire Prevention Activities: Street and Road Vegetation Management

Under existing law, the Department of Forestry and Fire Protection is required to develop, implement, and administer forest improvement and fire prevention programs in the state. Existing law requires the department to establish a local assistance grant program for fire prevention activities in California. Existing law requires the department to prioritize, to the extent feasible, projects that are multiyear efforts and to prioritize grant applications from specified local agencies.

This bill appropriated \$25,000,000 to provide the local assistance grants. It requires the department to prioritize projects that manage vegetation along streets and roads to prevent the ignition of wildfire and that require the funds for purposes of purchasing equipment necessary for the project.

AB 575: Civil Liability: Prescribed Burning Activities: Gross Negligence

This bill provides that a private entity engaging in a prescribed burning activity that is supervised by a person certified as burn boss is liable for damages to a third party only if the prescribed burning activity was carried out in a grossly negligent manner.

AB 642: Wildfires

This omnibus fire prevention bill makes changes to support cultural and prescribed fire, including the creation of a Cultural Burning Liaison at the Department of Forestry and Fire Protection, and requires a proposal for creating a prescribed fire training center in California. The Act requires the Director of Forestry and Fire Protection to identify areas in the state as moderate and high fire hazard severity zones and to classify areas into fire hazard severity zones based on additional factors including

possible lightning caused ignition. The bill requires a local agency, within 30 days of receiving a transmittal from the director that identifies fire hazard severity zones, to make the information available for public comment.

AB 747: Required Information for General Plan Safety Elements

This bill requires California communities with general plans to address evacuation routes in the safety element of the general plan. Information on the evacuation routes and their capacity, safety and viability under a range of emergency scenarios must be provided. For communities that have not adopted a local hazard mitigation plan, the safety element must be updated with this information by January 1, 2022. For those with a local hazard mitigation plan, the requirement applies upon the next revision of the hazard mitigation plan on or after January 1, 2022. Communities that have adopted a local hazard mitigation plan, emergency operations plan, or other document that fulfills the goals and objectives of this law may comply with this requirement by summarizing and incorporating by reference the other plan or document in the safety element.

In subsequent revisions to the safety element, communities also will be required to identify new information relating to flood and fire hazards and climate adaptation and resiliency strategies applicable to the city or county that was not available during the previous revision of the safety element. These subsequent updates must occur upon each revision of the general plan housing element or local hazard mitigation plan and not less than once every eight years.

AB 800: Wildfires: Local General Plans: Safety Elements: Fire Hazard Severity Zones

Existing law requires the Director of Forestry and Fire Protection to identify areas of the state as very high fire hazard severity zones, and requires each planning agency to prepare, and the legislative body of each county and city to adopt, a comprehensive, long-term general plan, including a safety element, for the physical development of the county or city. Existing law requires each city or county that contains a very high fire hazard severity zone to submit the draft element of, or draft amendment to the safety element its general plan to the State Board of Forestry and Fire Protection and to every local agency that provides fire protection to territory in the city or county at least 90 days before adoption or amendment.

This requires the director to also identify areas of the state as moderate and high fire hazard severity zones. It requires the draft element of, or draft amendment to, the safety element of a county or city's general plan to be submitted to the state board and to every local agency that provides fire protection to territory in the city or county at least 90 days before the adoption or amendment to the safety element of its general plan for each city or county that contains a moderate or high fire hazard severity zone.

Existing law requires the state board and authorizes a local agency to review the draft or an existing safety element and recommend changes to the planning agency regarding uses of land and policies in state responsibility areas and very high fire hazard severity zones and regarding methods and strategies for wildland fire risk reduction and prevention within state responsibility areas and very high fire hazard severity zones.

This bill also requires the state board and authorizes a local agency to review the draft or an existing safety element and recommend changes to the planning agency regarding uses of land and policies in moderate and high fire hazard severity zones and regarding methods and strategies for wildland fire risk reduction and prevention within moderate and high fire hazard severity zones.

The existing Subdivision Map Act vests the authority to regulate and control the design and improvement of subdivisions in the legislative body of a local agency, and sets forth procedures governing the local agency's processing, approval, conditional approval, or disapproval, and filing of tentative, final, and parcel maps, and the modification thereof. The act generally requires a subdivider to file a tentative map or vesting tentative map with the local agency, and requires the local agency to approve, conditionally approve, or disapprove the map within a specified time period. Before approving a tentative map, or a parcel map for which a tentative map was not required, for an area located in a state responsibility area or a very high fire hazard severity zone, existing law requires a legislative body of a county to make specified findings. Existing law requires a legislative body of a county to transmit these findings to the State Board of Forestry and Fire Protection.

This requires a legislative body of a county to make specified findings before approving a tentative map, or a parcel map for which a tentative map was not required, for areas located in moderate and high fire hazard severity zones, and requires these findings to be transmitted to the state board.

By requiring new duties on a county, the bill imposes a state-mandated local program. The California Constitution requires the state to reimburse local agencies and school districts for certain costs mandated by the state. Statutory provisions establish procedures for making that reimbursement. This bill provides that, if the Commission on State Mandates determines that the bill contains costs mandated by the state, reimbursement for those costs shall be made pursuant to statutory provisions.

AB 1255: Fire Prevention: Fire Risk Reduction Guidance: Local Assistance Grants

This bill requires the Department of Forestry and Fire Protection, in coordination with the Secretary of the Natural Resources Agency, to facilitate regional, habitat-specific, and area-specific approaches to fire risk reduction, prevention, and restoration of projects that improve community safety, protect sites and structures, restore burned habitat, reduce catastrophic wildfires, and protect natural resources. It requires the department to develop policies, funding programs for which the funding shall be contingent upon subsequent appropriation in the annual Budget Act or a similar statute for this purpose, and relevant program guidelines that promote specified objectives. The bill requires various state entities to establish grant programs, for which funding shall be contingent upon subsequent appropriation, to fulfill the specified objectives.

AB 1295: Residential Development Agreements: Very High Fire Risk Areas

Current law requires the Director of Forestry and Fire Protection to identify areas in the state as very high fire hazard severity zones based on the severity of fire hazard that is expected to prevail in those areas and requires each local agency to designate, by ordinance, the very high fire hazard severity zones in its jurisdiction. Current law additionally requires the director to classify lands within state responsibility areas into fire hazard severity zones. This bill, prohibits the legislative body of a city or county from entering into a residential development agreement for property in a very high fire risk area.

The bill defines “very high fire risk area” for these purposes to mean a very high fire hazard severity zone designated by a local agency or a fire hazard severity zone classified by the director.

AB 1439: Property Insurance Discounts

This bill requires a residential property insurance policy to include a discount if a local government of the jurisdiction where the insured property is located funds a local wildfire protection or mitigation program. Because the bill mandates discounts for specified residential property insurance policies, thus affecting the Insurance Commissioner’s consideration of a rate, the bill would amend Proposition 103.

AB 1500: Safe Drinking Water, Wildfire Prevention, Drought Preparation, Flood Protection, Extreme Heat Mitigation, and Workforce Development Bond Act of 2022

If approved by the voters, this bill would authorize the issuance of bonds in the amount of \$6,700,000,000 pursuant to the State General Obligation Bond Law to finance projects for safe drinking water, wildfire prevention, drought preparation, flood protection, extreme heat mitigation, and workforce development programs.

AB 2140: General Plans—Safety Element

This bill provides that the state may allow for more than 75 percent of public assistance funding under the California Disaster Assistance Act only if the local agency is in a jurisdiction that has adopted a local hazard mitigation plan as part of the safety element of its general plan. The local hazard mitigation plan needs to include elements specified in this legislation. In addition, this bill requires Cal OES to give preference for federal mitigation funding to cities and counties that have adopted local hazard mitigation plans. The intent of the bill is to encourage cities and counties to create and adopt hazard mitigation plans.

AB 2800: Climate Change—Infrastructure Planning

This California State Assembly bill passed in 2016 and until July 1, 2020, requires state agencies to take into account the current and future impacts of climate change when planning, designing, building, operating, maintaining, and investing in state infrastructure. The bill, by July 1, 2017, and until July 1, 2020, requires an agency to establish a Climate-Safe Infrastructure Working Group to examine how to integrate scientific data concerning projected climate change impacts into state infrastructure engineering.

Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act was enacted in 1972 to mitigate the hazard of surface faulting to structures for human occupancy. The Alquist-Priolo Earthquake Fault Zoning Act’s main purpose is to prevent construction of buildings used for human occupancy on the surface trace of active faults. Before a new project is permitted, cities and counties require a geologic investigation to demonstrate that proposed buildings will not be constructed on active faults. The act addresses only the hazard of surface fault rupture and is not directed toward other earthquake hazards, such as

liquefaction or seismically induced landslides. The law requires the State of California Geologist to establish regulatory zones around the surface traces of active faults and to issue appropriate maps. The maps are distributed to all affected cities, counties, and state agencies for their use in planning and controlling new or renewed construction. Local agencies must regulate most development projects within the zones. Projects include all land divisions and most structures for human occupancy. All seismic hazard mitigation actions identified in this plan will seek full compliance with the Alquist-Priolo Earthquake Fault Zoning Act.

Board of Forestry and Fire Protection Fire Safe Regulations

California's Board of Forestry and Fire Protection is authorized to adopt regulations to implement specified programs. To become effective, the Office of Administrative Law must approve these regulations. Once adopted, Board regulations are placed in Title 14 of the California Code of Regulations. The Department of Forestry and Fire Protection then implements the regulations.

Since 1991, the Board's Fire Safe Regulations have set the floor for fire safety standards for perimeters and access to all residential, commercial, and industrial building construction in state responsibility areas. They address road standards for fire equipment access, standards for road and building signs, minimum private water supplies for emergency fire use, and fuel breaks and greenbelts. Starting on July 1, 2021, these requirements will also apply in the local responsibility areas and will address construction on ridgelines.

California Coastal Management Program

The California Coastal Management Program under the California Coastal Act requires each city or county lying wholly or partly within the coastal zone to prepare a local coastal plan. The specific contents of such plans are not specified by state law, but they must be certified by the Coastal Commission as consistent with policies of the Coastal Act (Public Resources Code, Division 20). The Coastal Act has provisions relating to geologic hazards, but does not mention tsunamis specifically. Section 30253(1) of the Coastal Act states that new development shall minimize risks to life and property in areas of high geologic, flood, and fire hazard. Development should be prevented or limited in high hazard areas whenever possible. However, where development cannot be prevented or limited, land use density, building value, and occupancy should be kept at a minimum. Any mitigation project identified in this plan that intersects the mapped coastal zone will be consistent with the recommendations of the local coastal plan.

California Department of Forestry and Fire Protection

CAL FIRE has responsibility for wildfires in areas of the county that are not under the jurisdiction of the Forest Service or a local fire organization, including lands designated as State Responsibility Areas. CAL FIRE also has fire protection responsibilities by contract and mutual aid agreements. For example, CAL FIRE provides year-round fire protection under Amador Plan agreements with certain local government agencies (Public Resources Code §4144). Through these agreements, CAL FIRE provides local structural and wildfire protection or dispatch services to a community and maintains a staffing level that otherwise would be available only during the fire season. The local entity pays the additional cost of the service.

California Department of Parks and Recreation

State Parks manages portions of the California coastline including coastal wetlands, estuaries, beaches, and dune systems. The State Parks Resources Management Division has limited wildfire protection resources available to suppress fires on State Park lands.

California Department of Water Resources

In California, the DWR is the coordinating agency for floodplain management. The DWR works with FEMA and local governments by providing grants and technical assistance, evaluating community floodplain management programs, reviewing local floodplain ordinances, participating in statewide flood hazard mitigation planning, and facilitating annual statewide workshops. Compliance is monitored by FEMA regional staff and by the DWR.

California Division of Safety of Dams

California's Division of Safety of Dams (a division of the DWR) monitors the dam safety program at the state level and maintains a working list of dams in the state. When a new dam is proposed, Division engineers and geologists inspect the site and the subsurface. Upon submittal of an application, the Division reviews the plans and specifications prepared by the owner to ensure that the dam is designed to meet minimum requirements and that the design is appropriate for the known geologic conditions. After approval of the application, the Division inspects all aspects of the construction to ensure that the work is done in accordance with the approved plans and specifications. After construction, the Division inspects each dam to ensure that it is performing as intended and is not developing problems. The Division periodically reviews the stability of dams and their major appurtenances in light of improved design approaches and requirements, as well as new findings regarding earthquake hazards and hydrologic estimates in California. Over 1,200 dams are inspected by Division engineers on a yearly schedule to ensure performance and maintenance of dams.

California Environmental Quality Act

The California Environmental Quality Act (CEQA) was passed in 1970, shortly after the federal government enacted the National Environmental Policy Act, to institute a statewide policy of environmental protection. CEQA requires state and local agencies in California to follow a protocol of analysis and public disclosure of the potential environmental impacts of development projects. CEQA makes environmental protection a mandatory part of every California state and local agency's decision-making process.

CEQA establishes a statewide environmental policy and mandates actions all state and local agencies must take to advance the policy. Jurisdictions conduct analysis of the project to determine if there are potentially significant environmental impacts, identify mitigation measures, and possible project alternatives by preparing environmental reports for projects that requires CEQA review. This environmental review is required before an agency takes action on any policy, program, or project. Any project action identified in this plan will seek full CEQA compliance upon implementation.

California Fire Alliance

The California Fire Alliance (CFA) was established in response to directives from the 2001 National Fire Plan. The CFA pursues four strategies to deal with the National Fire Plan's community assistance initiative:

- Work with communities at risk from wildfires to develop community-based planning leadership and facilitate the development of community fire loss mitigation plans, which transcend jurisdiction and ownership boundaries.
- Assist communities in development of fire loss mitigation planning, education and projects to reduce the threat of wildfire losses on public and private lands.
- Develop an information and education outreach plan to increase awareness of wildfire protection program opportunities available to communities at risk.
- Work collaboratively to develop, modify and maintain a comprehensive list of communities at risk.

California Fire Plan

The State Board of Forestry and CAL FIRE have prepared a comprehensive update of the California Fire Plan for wildfire protection. The planning process included defining a level of service measurement; considering assets at risk; incorporating the cooperative interdependent relationships of wildfire protection providers; providing for public stakeholder involvement; and creating a fiscal framework for policy analysis. The California Fire Plan's overall goal is to reduce costs and losses from wildfire in the state by protecting assets at risk through pre-fire management and by reducing the spread of fire through more successful initial response.

California Fire Safe Council

In 1993, the statewide Fire Safe Council, consisting of private and public membership, was formed to educate and encourage Californians to plan and prepare for wildfires by reducing the risk of fire to property, communities, and natural/structural resources. In 2002, this group created a nonprofit organization and board of directors, called the California Fire Safe Council. The Council works with the California Fire Alliance to facilitate the distribution of National Fire Plan grants for wildfire risk reduction and education (www.grants.firesafecouncil.org). The Council also provides assistance to local Fire Safe Councils through its website (www.firesafecouncil.org), the distribution of educational materials, and technical assistance, primarily through regional representatives. More than 130 local Fire Safe Councils have formed in California to plan, coordinate, and implement fire prevention activities.

California Fire Service and Rescue Emergency Mutual Aid Plan

The Governor's Office of Emergency Services Fire and Rescue Branch administers the California Fire Service and Rescue Emergency Mutual Aid Plan. The agency provides guidance and procedures for agencies developing emergency operations plans, as well as training and technical support, primarily to overall emergency service organizations and urban search and rescue teams.

California General Planning Law

California state law requires that every county and city prepare and adopt a comprehensive long-range plan to serve as a guide for community development. The general plan expresses the community's goals, visions, and policies relative to future land uses, both public and private. The general plan is mandated and prescribed by state law (Cal. Gov. Code §65300 et seq.), and forms the basis for most local government land use decision-making.

The plan must consist of an integrated, internally consistent set of goals, policies, and implementation measures. In addition, the plan must focus on issues of the greatest concern to the community and be written in a clear and concise manner. City and county actions, such as those relating to land use allocations, annexations, zoning, subdivision and design review, redevelopment, and capital improvements, must be consistent with the plan.

California Multi-Hazard Mitigation Plan

Under the DMA, California must adopt a federally approved state multi-hazard mitigation plan to be eligible for certain disaster assistance and mitigation funding. The intent of the State of California Multi-Hazard Mitigation Plan is to reduce or prevent injury and damage from hazards in the state through the following:

- Documenting statewide hazard mitigation planning in California
- Describing strategies and priorities for future mitigation activities
- Facilitating the integration of local and tribal hazard mitigation planning activities into statewide efforts
- Meeting state and federal statutory and regulatory requirements.

The plan is an annex to the State Emergency Plan, and it identifies past and present mitigation activities, current policies and programs, and mitigation strategies for the future. It also establishes hazard mitigation goals and objectives. The plan will be reviewed and updated annually to reflect changing conditions and new information, especially information on local planning activities.

Under 44 CFR Section 201.6, local hazard mitigation plans must be consistent with their state's hazard mitigation plan. In updating this plan, the Steering Committee reviewed the California State Hazard Mitigation Plan to identify key relevant state plan elements (see Section 3.7).

California Residential Mitigation Program

The California Residential Mitigation Program was established in 2011 to help Californians strengthen their homes against damage from earthquakes. The program is a joint powers authority created by Cal OES and the California Earthquake Authority, which is a not-for-profit, publicly managed, privately funded provider of home earthquake insurance to California homeowners and renters.

Earthquake Brace + Bolt was developed to help homeowners lessen the potential for damage to their houses during an earthquake. A residential seismic retrofit strengthens an existing older house, making it more resistant to earthquake activity such as ground shaking and soil failure. The seismic retrofitting involves bolting the house to its foundation and adding bracing around the perimeter of the crawl space.

Most homeowners hire a contractor to do the retrofit work, and owners of houses in ZIP Codes with house characteristics suitable for this type of retrofit are eligible for up to \$3,000 toward the cost. A typical retrofit by a contractor may cost between \$3,000 and \$7,000, depending on the location and size of the house, contractor fees, and the amount of materials and work involved. If the homeowner is an experienced do-it-yourselfer, a retrofit can cost less than \$3,000.

California State Building Code

California Code of Regulations Title 24 (CCR Title 24), also known as the California Building Standards Code, is a compilation of building standards from three sources:

- Building standards that have been adopted by state agencies without change from building standards contained in national model codes
- Building standards that have been adopted and adapted from the national model code standards to meet California conditions
- Building standards authorized by the California legislature that constitute extensive additions not covered by the model codes adopted to address particular California concerns.

The state Building Standards Commission is authorized by California Building Standards Law (Health and Safety Code Sections 18901 through 18949.6) to administer the processes related to the adoption, approval, publication, and implementation of California's building codes. These building codes serve as the basis for the design and construction of buildings in California. The national model code standards adopted into Title 24 apply to all occupancies in California, except for modifications adopted by state agencies and local governing bodies. Since 1989, the Building Standards Commission has published new editions of Title 24 every three years.

On January 1, 2014, California Building Code Accessibility Standards found in Chapter 11B incorporated the 2010 Americans with Disabilities Act (ADA) Standards as the model accessibility code for California. The purpose was to ensure consistency with federal guidelines. As a result of this incorporation, the California standards will fully implement and include 2010 ADA Standards within the California Building Code while maintaining enhanced levels of accessibility already provided by existing California accessibility regulations.

Disadvantaged and Low-income Communities Investments

Senate Bill (SB) 535 directs state and local agencies to make investments that benefit California's disadvantaged communities. It also directs the California Environmental Protection Agency to identify disadvantaged communities for the purposes of these investments based on geographic, socio-economic, public health, and environmental hazard criteria. Assembly Bill (AB) 1550 increased the percent of funds for projects located in disadvantaged communities from 10 to 25 percent and added a focus on investments in low-income communities and households. This program is a potential alternative source of funding for actions identified in this plan.

Division of the State Architect's AB 300 List of Seismically At-Risk Schools

In 2002, California's Division of the State Architect completed an inventory of public school buildings built before 1978 that identifies buildings with characteristics that might make them unsafe in future

earthquakes. This inventory provides a list of potentially at-risk schools known as the AB 300 list (the inventory was authorized by Assembly Bill 300 in 1999). Using available information on school buildings' dates of construction, seismic retrofits, and structural systems (wood-frame, concrete shear wall, or steel moment frame, etc.), the inventory categorized California public school buildings into one of two categories: those expected to perform well in future earthquakes; and those that are not expected to perform well and require more detailed seismic evaluation.

The Division of the State Architect recommends that public schools on this list undergo detailed seismic evaluations to determine if they pose life safety risks, but the state has neither required nor funded school districts to do this.

Governor's Executive Order S-13-08

Governor's Executive Order S-13-08 enhances the state's management of climate impacts from sea-level rise, increased temperatures, shifting precipitation and extreme weather events. There are four key actions in the executive order:

- Initiate California's first statewide climate change adaptation strategy to assess expected climate change impacts, identify where California is most vulnerable, and recommend adaptation policies. This effort will improve coordination within state government so that better planning can more effectively address climate impacts on human health, the environment, the state's water supply and the economy.
- Request that the National Academy of Science establish an expert panel to report on sea-level rise impacts in California, to inform state planning and development efforts.
- Issue interim guidance to state agencies for how to plan for sea-level rise in designated coastal and floodplain areas for new projects.
- Initiate a report on critical infrastructure projects vulnerable to sea-level rise.

Office of the State Fire Marshal

The Office of the State Fire Marshal is a division of CAL FIRE that has a wide variety of fire safety and training responsibilities and provides technical support to fire agencies/organizations.

Senate Bill 12: Local Government: Planning and Zoning: Wildfires

This bill imposes new planning requirements on local governments, as follows:

- Defines "very high fire risk areas" to be the VHFHSZ in both the SRA and the Local Responsibility Area.
- Requires each city or county, upon the next revision of the housing element or local hazard mitigation plan on or after July 1, 2024, whichever occurs first, to review and update its safety element to include a comprehensive retrofit strategy that includes specified contents.
- Requires a city or county with VHFHSZ within its jurisdiction to amend the land use element of its general plan upon the next revision of the housing element on or after July 1, 2024. This amendment of the land use element must include the locations of all VHFHSZ within the city or county, the data and analysis described in the Office of Planning and Research's publication

Fire Hazard Planning—General Plan Technical Advice Series, and other specified goals, objectives, and implementation measures.

- Requires, after the initial amendment to the land use element, that a city or county review upon each revision of the housing element the implementation of the wildfire risk reduction standards within the jurisdiction and the designation of VHFHSZ.
- Provides for review and comment on draft findings by the Board and local fire agencies on whether the city or county has implemented the standards or made adequate progress, as defined.
- Requires, on or before January 1, 2023, to develop and post on its web site a clearinghouse of local ordinances, policies, and best practices relating to land use planning in VHFHSZ, wildfire risk reduction, and wildfire preparedness. The Office of Planning and Research must also regularly update the clearinghouse.

Senate Bill 92: Public Resources Portion of Biennial Budget Bill

The State of California updated its requirements regarding emergency action plans (EAPs) via Senate Bill 92, which became effective in June 2017 as part of the state Legislature's biennial budget process. The bill required dam owners to submit EAPs to Cal OES and the Department of Water Resources for approval by January 1, 2018 (for extremely high hazard dams), January 1, 2019 (for high-hazard dams), and January 1, 2021 (for significant hazard dams). The EAPs were to include the following (California Government Code Section 8589.5):

- Emergency notification flow charts
- Information on a four-step response process
- Description of agencies' roles and actions in response to an emergency incident
- Description of actions to be taken in advance of an emergency
- Inundation maps
- Additional information such as revision records and distribution lists.

After the EAPs are approved by the state, the law requires dam owners to send the approved EAPs to relevant stakeholders. Local public agencies can then adopt emergency procedures that incorporate the information in the EAP in a manner that conforms to local needs and includes methods and procedures for alerting and warning the public and other response and preparedness related items.

SB 92 also requires dams other than low-risk dams to have current inundation mapping, which must be updated every 10 years, or sooner if specific circumstances change. EAPs also must be updated every 10 years. It provides DWR with enforcement tools, including fines and operational restrictions for failure to comply. Cal OES is required by the law to work with state and federal agencies, dam owners, planners, and the public to make dam failure inundation maps available to citizens interested in learning their dam failure inundation risk.

Senate Bill 97: Guidelines for Greenhouse Gas Emissions

Senate Bill 97, enacted in 2007, amends CEQA to clearly establish that greenhouse gas emissions and the effects of greenhouse gas emissions are appropriate subjects for CEQA analysis. It directs the

Governor's Office of Planning and Research to develop draft CEQA guidelines for the mitigation of greenhouse gas emissions or their effects by July 1, 2009 and directs the California Natural Resources Agency to certify and adopt the CEQA Guidelines by January 1, 2010.

Senate Bill 99: Evacuation Route Planning

Senate Bill 99, enacted in 2019, requires that cities' and counties' general plans address evacuation routes from any hazard area identified in the safety element. Under this law, the safety element must include information to identify residential developments in hazard areas that do not have at least two emergency evacuation routes. Each city or county must update its safety element with the new information upon the next revision of its housing element on or after January 1, 2020.

Senate Bill 182 Local Government: Planning and Zoning: Wildfires

California Senate Bill 182 made a number of changes to state law regarding planning for and permitting development in areas designated as very high fire risk areas. The bill requires a local jurisdiction to do the following:

- Include a comprehensive retrofit strategy in its safety element to reduce the risk of property loss and damage during wildfires.
- Amend its land use element to identify all very high fire risk areas and to establish measures to protect lives and property from unreasonable risk of wildfire.
- Adopt a very high fire risk overlay zone for its zoning ordinance.
- Allocate a lower portion of projected future housing to very high fire hazard severity zones

This bill prohibits local governments from entering into a development agreement for property in a very high fire risk area, approving a permit for a project in a very high fire risk area, or approving a tentative map for a subdivision in a very high fire risk area, unless the jurisdiction makes specified findings based on substantial evidence.

Senate Bill 379: General Plans: Safety Element—Climate Adaptation

Senate Bill 379 builds upon the flood planning inclusions into the safety and housing elements and the hazard mitigation planning safety element inclusions in general plans outlined in AB 162 and AB 2140, respectively. SB 379 focuses on a new requirement that cities and counties include climate adaptation and resiliency strategies in the safety element of their general plans beginning January 1, 2017. In addition, this bill requires general plans to include a set of goals, policies and objectives, and specified implementation measures based on the conclusions drawn from climate adaptation research and recommendations.

Senate Bill 1000: General Plan Amendments—Safety and Environmental Justice Elements

In 2016, Senate Bill 1000 amended California's Planning and Zoning Law in two ways:

- The original law established requirements for initial revisions of general plan safety elements to address flooding, fire, and climate adaptation and resilience. It also required subsequent review

and revision as necessary based on new information. Senate Bill 1000 specifies that the subsequent reviews and revision based on new information are required to address only flooding and fires (not climate adaptation and resilience).

- Senate Bill 1000 adds a requirement that, upon adoption or revision of any two other general plan elements on or after January 1, 2018, an environmental justice element be adopted for the general plan or environmental justice goals, policies and objectives be incorporated into other elements of the plan.

Senate Bill 1035: Fire, Flood, and Adaptation Safety Element Updates

Senate Bill 1035 clarifies that revisions to a community's General Plan Safety Element—to address fire hazards, flood hazards, and climate adaptation and resilience strategies—must occur upon each revision to a Housing Element or Local Hazard Mitigation Program.

Senate Bill 1241: General Plans: Safety Element—Fire Hazard Impacts

In 2012, Senate Bill 1241 passed requiring that the safety elements of all future general plans address fire risk in state responsibility areas and very high fire hazard severity zones. The bill requires cities and counties to make findings regarding available fire protection and suppression services before approving a tentative map or parcel map.

Standardized Emergency Management System

CCR Title 19 establishes the Standardized Emergency Management System (SEMS) to standardize the response to emergencies involving multiple jurisdictions. SEMS is intended to be flexible and adaptable to the needs of all emergency responders in California. It requires emergency response agencies to use basic principles and components of emergency management. Local governments must use SEMS by December 1, 1996, to be eligible for state funding of response-related personnel costs under CCR Title 19 (Sections 2920, 2925 and 2930). The roles and responsibilities of individual agencies contained in existing laws or the state emergency plan are not superseded by these regulations. This hazard mitigation plan is considered to be a support document for all phases of emergency management, including those associated with SEMS.

Western Governors Association Ten-Year Comprehensive Strategy

The *Western Governors Association Ten-Year Comprehensive Strategy: A Collaborative Approach for Reducing Wildfire Risks to Communities and the Environment* (August 2001) is strategy implementation plan prepared by federal and Western state agencies that outlines measures to restore fire-adapted ecosystems and reduce hazardous fuels.

Appendix C. Mapping Methods & Data Sources

C. MAPPING METHODS & DATA SOURCES

DAM FAILURE INUNDATION MAPPING

Dam breach inundation maps, including inundation boundaries and depth grids, were downloaded from the California Department of Water Resources' (DWR) website (<https://fmds.water.ca.gov/maps/damim/>). As required by California Water Code section 6161, the Division of Safety of Dams (DSOD) at DWR reviews and approves inundation maps prepared by licensed civil engineers and submitted by dam owners for extremely high, high, and significant hazard dams and their critical appurtenant structures. Inundation maps are based on a hypothetical failure of a dam or critical appurtenant structure, and the information depicted on the maps is approximate. The dams and failure scenarios are as follows:

- Arundel Barranca (National Dam ID CA01412)—Scenarios show inundation extents for sunny day failures of Main Dam and Spillway. Files downloaded from DSOD website generated on 5/13/2020.
- Bouquet Canyon (National Dam ID CA00088)—Scenarios show inundation extents for sunny day failures of Main Dam and Saddle Dam 1 (Dam No. 2). Files downloaded from DSOD website generated on 7/22/2019.
- Castaic (National Dam ID CA00044)—Scenarios show inundation extents for sunny day failures of Main Dam, Low Level Outlet, and Spillway. Files downloaded from DSOD website generated on 4/9/2019.
- Lake Eleanor (National Dam ID CA00737)—Scenario shows an inundation extent for a sunny day failure of Main Dam. File downloaded from DSOD website generated on 12/24/2018.
- Lake Sherwood (National Dam ID CA00736)—Scenarios show inundation extents for sunny day failures of Main Dam and Spillway 1. Files downloaded from DSOD website generated on 10/10/2019.
- Lang Creek Detention Basin (National Dam ID CA01368)—Scenarios show inundation extents for sunny day failures of Main Dam and Spillway 1. Files downloaded from DSOD website generated on 8/12/2020.
- Las Lajas (National Dam ID CA01217)—Scenario shows an inundation extent for a sunny day failure of Main Dam. File downloaded from DSOD website generated on 8/12/2020.
- Matilija (National Dam ID CA00312)—Scenario shows an inundation extent for a sunny day failure of Main Dam. File downloaded from DSOD website generated on 12/24/2019.
- Pyramid (National Dam ID CA00052)—Scenarios show inundation extents for sunny day failures of Main Dam, Low Level Outlet, and Spillway 1 (Gated Spillway). Files downloaded from DSOD website generated on 4/10/2019.

- Runkle (National Dam ID CA00313)—Scenario shows an inundation extent for a sunny day failure of Main Dam. File downloaded from DSOD website generated on 3/27/2020.
- Santa Felicia (National Dam ID CA00805)—Scenarios show inundation extents for sunny day failures of Main Dam and Spillway 1. Files downloaded from DSOD website generated on 9/20/2019.
- Senior Canyon (National Dam ID CA01019)—Scenarios show inundation extents for sunny day failures of Main Dam, Dam No. 2 and Dam No. 3. Files downloaded from DSOD website generated on 12/4/2019.
- Sinaloa Lake (National Dam ID CA01018)—Scenario shows an inundation extent for a sunny day failure of Main Dam. File downloaded from DSOD website generated on 10/13/2019.
- Stewart Canyon Debris Basin (National Dam ID CA01159)—Scenario shows an inundation extent for a sunny day failure of Main Dam. File downloaded from DSOD website generated on 5/14/2020.
- Sycamore Canyon (National Dam ID CA01266)—Scenario shows an inundation extent for a sunny day failure of Main Dam. File downloaded from DSOD website generated on 4/8/2020.
- Westlake Reservoir (National Dam ID CA00904)—Scenarios show inundation extents for sunny day failures of Main Dam and West Dam. Files downloaded from DSOD website generated on 11/1/2018.
- Wood Ranch (National Dam ID CA00850)—Scenarios show inundation extents for storm-induced failures of Main Dam, Dike 1, Dike 2, Dike 3, Dike 4, Dike 5 and Dike 6. Files downloaded from DSOD website generated on 12/19/2019.

EARTHQUAKE MAPPING

Liquefaction Zones

Seismic Hazard Zone Maps for Liquefaction dataset downloaded from the California Geological Survey's geologic hazards data website (https://maps.conservation.ca.gov/geologic_hazards/). The seismic hazards zones datasets include areas where liquefaction may occur during a strong earthquake. Developers of properties falling within the zones may be required to investigate the potential hazard and mitigate its threat during the local permitting process. The data is used by cities and counties to regulate development and by property owners selling property within areas where seismic hazard zones have been identified. Local governments can withhold development permits until geologic or soils investigations are conducted for specific sites and mitigation measures are incorporated into development plans. Sellers of property use the data to check the location of their specific site and, if applicable, disclose to the buyer that the property lies within a seismic hazard zone as required by the Seismic Hazards Mapping Act of 1990 (Public Resources Code, Division 2, Chapter 7.8). This data may not show all areas that have potential for liquefaction. Also, a single earthquake capable of causing liquefaction will not uniformly affect the entire zone. The identification and location of liquefaction zones are based on the best available data. However, the quality of data used is varied. Zone boundaries have been drawn as accurately as possible at the map scale (1:24,000).

National Earthquake Hazard Reduction Program (NEHRP) Soils

NEHRP soils information is derived from a shear wave velocity (Vs30) data produced by the California Geological Survey in 2015. The Vs30 data represents simplified geologic units that have been correlated to the time-averaged shear-wave velocity in the upper 30 meters of the earth's surface. The geologic units were compiled from published maps that range in scale from 1:250,000 to 1:24,000. (Wills, et al., 2015)

Probabilistic Peak Ground Acceleration Maps

Probabilistic peak ground acceleration data, by Census tract, are generated by Hazus 4.2 SP03. In Hazus' probabilistic analysis procedure, the ground shaking demand is characterized by spectral contour maps developed by the U.S. Geological Survey (USGS) as part of a 2018 update of the National Seismic Hazard Maps. USGS probabilistic seismic hazard maps are revised about every six years to reflect newly published or thoroughly reviewed earthquake science and to keep pace with regular updates of the building code. Hazus includes maps for eight probabilistic hazard levels: ranging from ground shaking with a 39 percent probability of being exceeded in 50 years (100-year return period) to the ground shaking with a 2 percent probability of being exceeded in 50 years (2,500-year return period).

Shake Maps

A shake map is designed as a rapid response tool to portray the extent and variation of ground shaking throughout the affected region immediately following significant earthquakes. Ground motion and intensity maps are derived from peak ground motion amplitudes recorded on seismic sensors (accelerometers), with interpolation based on estimated amplitudes where data are lacking, and site amplification corrections. Color-coded instrumental intensity maps are derived from empirical relations between peak ground motions and Modified Mercalli intensity. For this plan, shake maps were prepared by the USGS for four earthquake scenarios:

- An earthquake on the Oak Ridge (Onshore) fault with the following characteristics:
 - Magnitude: 7.16
 - Epicenter: N 34.31 W 118.96
 - Depth: 12.8 km
- An earthquake on the San Cayetano fault with the following characteristics:
 - Magnitude: 7.16
 - Epicenter: N 34.54 W 118.95
 - Depth: 10.2 km
- An earthquake on the S. San Andreas fault with the following characteristics:
 - Magnitude: 8.03
 - Epicenter: N 34.80 W 118.85
 - Depth: 9.1 km
- An earthquake on the Ventura-Pitas Point fault with the following characteristics:
 - Magnitude: 7.12
 - Epicenter: N 34.32 W 119.28

- Depth: 10.0 km

FLOOD MAPPING

Flood hazard areas are from the countywide effective FEMA Digital Flood Insurance Rate Map (DFIRM) dated January 29, 2021 with the latest incorporated Letter of Map Revision (LOMR) dated June 18, 2021.

LANDSLIDE MAPPING

Susceptibility to Deep-Seated Landslides data provided by the California Geological Survey. The map, and associated data, show the relative likelihood of deep-seated landsliding based on regional estimates of rock strength and steepness of slopes. On the most basic level, weak rocks and steep slopes are most likely to generate landslides. The map uses detailed information on the location of past landslides, the location and relative strength of rock units, and steepness of slope to estimate susceptibility to deep-seated landsliding (0 to X, low to high). The USGS 2009 National Elevation Dataset (NED) with 10-m grid size was used as the base map. This landslide susceptibility map is intended to provide infrastructure owners, emergency planners and the public with a general overview of where landslides are more likely to occur. (Wills, et al., 2011)

SEA-LEVEL RISE MAPPING

Projected sea level rise data are from the USGS Coastal Storm Modeling System (CoSMoS), accessed via the Our Coast Our Future web platform (Point Blue Conservation Science and USGS). The projections were generated using the latest downscaled climate projections and calibrated hydrodynamic models by the CoSMoS project team led by Patrick Barnard, at the USGS Pacific Coastal and Marine Science Center.

TSUNAMI MAPPING

Initial tsunami modeling was performed by the University of Southern California Tsunami Research Center funded through the California Emergency Management Agency by the National Tsunami Hazard Mitigation Program. The tsunami modeling process utilized the MOST (Method of Splitting Tsunamis) computational program (Version 0), which allows for wave evolution over a variable bathymetry and topography used for the inundation mapping (Titov and Gonzalez, 1997; Titov and Synolakis, 1998).

The bathymetric/topographic data that were used in the tsunami models consist of a series of nested grids. Near-shore grids with a 3 arc-second (75- to 90-meters) resolution or higher were adjusted to “mean high water” sea-level conditions, representing a conservative sea level for the intended use of the tsunami modeling and mapping. A suite of tsunami source events was selected for modeling, representing realistic local and distant earthquakes and hypothetical extreme undersea, near-shore landslides. Local tsunami sources that were considered include offshore reverse-thrust faults, restraining bends on strike-slip fault zones and large submarine landslides capable of significant seafloor displacement and tsunami generation. Distant tsunami sources that were considered include great subduction zone events that are known to have occurred historically (1960 Chile and 1964 Alaska earthquakes) and others that can occur around the Pacific Ocean “Ring of Fire.”

In order to enhance the result from the 75- to 90-meter inundation grid data, a method was developed utilizing higher-resolution digital topographic data (3- to 10-meters resolution) that better defines the location of the maximum inundation line. The location of the enhanced inundation line was determined by using digital imagery and terrain data on a GIS platform with consideration given to historical inundation information (Lander, et al., 1993). This information was verified, where possible, by field work coordinated with local county personnel.

The accuracy of the inundation line shown on these maps is subject to limitations in the accuracy and completeness of available terrain and tsunami source information, and the current understanding of tsunami generation and propagation phenomena as expressed in the models. Thus, although an attempt has been made to identify a credible upper bound to inundation at any location along the coastline, it remains possible that actual inundation could be greater in a major tsunami event. This map does not represent inundation from a single scenario event. It was created by combining inundation results for an ensemble of source events affecting a given region. For this reason, all of the inundation region in a particular area will not likely be inundated during a single tsunami event. (State of California, 2009)

WILDFIRE MAPPING

PRC 4201 – 4204 and Govt. Code 51175-89 directed the California Department of Forestry and Fire Protection, Fire and Resource Assessment Program (CALFIRE - FRAP) to map areas of significant fire hazards based on fuels, terrain, weather, and other relevant factors. These zones, referred to as Fire Hazard Severity Zones (FHSZ), define the application of various mitigation strategies to reduce risk associated with wildland fires. CAL FIRE remapped Fire Hazard Severity Zones (FHSZ) for State Responsibility Areas (SRA) and Very High Fire Hazard Severity Zones (VHFHSZ) recommendations in Local Responsibility Areas (LRA) in 2005 – 2008 to provide updated map zones, based on new data, science, and technology.

Mapping of the areas referred to as Very High Fire Hazard Severity Zones (VHFHSZ) was based on data and models of potential fuels over a 30- to 50-year time horizon and their associated expected fire behavior, and expected burn probabilities to quantify the likelihood and nature of vegetation fire exposure (including firebrands) to buildings. The goal of the mapping effort was to create more accurate fire hazard zone designations such that mitigation strategies would be implemented in areas where hazards warrant these investments. The fire hazard zones provide specific designation for application of defensible space and building standards consistent with known mechanisms of fire risk to people, property, and natural resources.

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Appendix D. Detailed Risk Assessment Results

Appendix D.1

Exposure and Vulnerability of People and Property

Jurisdiction	Estimated Population (1)	Total Number of Buildings (2)	Total Number of Residential Buildings (2)	Total Building Value (Structure and contents in \$) (2)
Camarillo	70,741	21,829	19,657	\$17,707,287,595
Fillmore	16,419	4,855	4,310	\$2,467,839,895
Moorpark	36,284	10,697	9,769	\$8,222,512,567
Ojai	7,637	3,531	2,918	\$2,340,202,613
Oxnard	202,063	45,874	40,471	\$32,903,823,044
Port Hueneme	21,954	6,413	5,583	\$4,655,956,714
San Buenaventura	110,763	35,310	30,694	\$23,838,143,638
Santa Paula	30,657	8,527	7,211	\$4,571,072,937
Simi Valley	126,356	37,802	35,640	\$24,328,139,279
Thousand Oaks	126,966	38,797	36,348	\$30,560,756,798
Unincorporated	94,003	49,022	32,568	\$29,161,232,550
Total	843,843	262,657	225,169	\$180,756,967,629

(1) 2020 population from State of California, Department of Finance. Table C1 - Summary Population and Housing Data: 2020, California, Counties, Incorporated Cities/Towns, and Census Designated Places (CDP). Summary from 2020 Census, Redistricting Data (Public Law 94-171) Summary File, generated August 2021.

(2) Values based off of 2021 tax assessor data provided by Ventura County.

(3) Percent of residential buildings exposed multiplied by the Estimated Population.

(4) Calculated using a Census block level, general building stock (GBS) analysis in Hazus 4.2 SP03.

(5) Calculated using a Census block level, general building stock (GBS) analysis in Hazus 4.2 SP03, and adjusted to reflect the estimated population.

(6) Calculated using a user-defined (UDF) analysis in Hazus 4.2 SP03.

Jurisdiction	Estimated Building Exposure						
	Buildings Exposed (2)	Population Exposed (3)	% of Population Exposed	Value Structure in \$ Exposed (2)	Value Contents in \$ Exposed (2)	Value (Structure and contents in \$) Exposed (2)	% of Total Value Exposed
Camarillo	3,193	10,113	14.3%	\$1,825,655,234	\$1,714,652,312	\$3,540,307,546	20.0%
Fillmore	2,230	7,882	48.0%	\$647,367,412	\$389,746,474	\$1,037,113,886	42.0%
Moorpark	2,410	7,440	20.5%	\$1,342,208,186	\$1,285,066,640	\$2,627,274,826	32.0%
Ojai	315	730	9.6%	\$106,146,197	\$60,372,872	\$166,519,069	7.1%
Oxnard	38,418	168,971	83.6%	\$14,966,842,858	\$11,247,144,546	\$26,213,987,404	79.7%
Port Hueneme	5,610	19,370	88.2%	\$2,153,487,223	\$1,633,337,353	\$3,786,824,576	81.3%
San Buenaventura	1,643	4,929	4.5%	\$856,674,472	\$760,613,648	\$1,617,288,120	6.8%
Santa Paula	3,755	12,312	40.2%	\$1,386,519,268	\$1,184,477,947	\$2,570,997,214	56.2%
Simi Valley	4,606	14,993	11.9%	\$1,747,376,403	\$1,359,059,306	\$3,106,435,709	12.8%
Thousand Oaks	1,105	3,626	2.9%	\$481,014,948	\$283,093,686	\$764,108,634	2.5%
Unincorporated	9,163	16,770	17.8%	\$3,308,551,348	\$2,712,590,423	\$6,021,141,770	20.6%
Total	72,448	267,136	31.7%	\$28,821,843,548	\$22,630,155,206	\$51,451,998,753	28.5%

Jurisdiction	Economic Impact							
	Structure Debris (Tons) (4)	Displaced Population (5)	People Requiring Short-Term Shelter (5)	Buildings Impacted (6)	Value Structure in \$ Damaged (6)	Value Contents in \$ Damaged (6)	Total Value (Structure and Contents in \$) Damaged (6)	% of Total Value Damaged
Camarillo	1,046	3,585	333	495	\$15,418,010	\$16,471,533	\$31,889,543	0.2%
Fillmore	119,360	6,212	355	2,207	\$384,865,558	\$271,540,819	\$656,406,377	26.6%
Moorpark	9,231	3,318	217	967	\$64,152,417	\$111,003,160	\$175,155,577	2.1%
Ojai	1,411	302	13	312	\$12,264,840	\$12,255,418	\$24,520,258	1.0%
Oxnard	752,753	147,071	9,832	36,343	\$3,473,281,467	\$3,970,766,596	\$7,444,048,063	22.6%
Port Hueneme	38,366	17,062	1,266	5,303	\$346,121,830	\$781,138,156	\$1,127,259,987	24.2%
San Buenaventura	45,581	1,474	102	1,472	\$214,837,863	\$333,576,589	\$548,414,452	2.3%
Santa Paula	291,295	10,518	1,015	3,726	\$805,629,910	\$861,507,999	\$1,667,137,909	36.5%
Simi Valley	33,331	4,959	307	3,338	\$256,466,127	\$288,433,026	\$544,899,154	2.2%
Thousand Oaks	26,709	936	75	1,097	\$126,531,174	\$120,995,496	\$247,526,670	0.8%
Unincorporated	377,812	11,720	739	8,676	\$1,096,303,200	\$1,358,579,626	\$2,454,882,825	8.4%
Total	1,696,896	207,158	14,254	63,936	\$6,795,872,395	\$8,126,268,419	\$14,922,140,815	8.3%

Jurisdiction									
	Acres of Inundation Area	Number of Structures in Inundation Area (2)							
		Residential	Commercial	Industrial	Agriculture	Religion	Government	Education	Total
Camarillo	5,678	2,810	97	240	0	4	4	38	3193
Fillmore	5,184	2,069	97	16	2	7	35	4	2230
Moorpark	4,784	2,003	184	126	5	9	50	33	2410
Ojai	131	279	30	0	4	1	1	0	315
Oxnard	28,779	33,843	2,796	711	90	137	382	459	38418
Port Hueneme	4,708	4,926	275	26	0	16	312	55	5610
San Buenaventura	4,529	1,366	137	73	16	0	51	0	1643
Santa Paula	5,017	2,896	543	168	21	35	34	58	3755
Simi Valley	6,070	4,229	263	74	2	15	1	22	4606
Thousand Oaks	797	1,038	57	0	0	0	3	7	1105
Unincorporated	189,084	5,810	789	263	1,756	39	368	138	9163
Total	254,761	61,269	5268	1697	1896	263	1241	814	72448

Jurisdiction	Estimated Population (1)	Total Number of Buildings (2)	Total Number of Residential Buildings (2)	Total Building Value (Structure and contents in \$) (2)
Camarillo	70,741	21,829	19,657	\$17,707,287,595
Fillmore	16,419	4,855	4,310	\$2,467,839,895
Moorpark	36,284	10,697	9,769	\$8,222,512,567
Ojai	7,637	3,531	2,918	\$2,340,202,613
Oxnard	202,063	45,874	40,471	\$32,903,823,044
Port Hueneme	21,954	6,413	5,583	\$4,655,956,714
San Buenaventura	110,763	35,310	30,694	\$23,838,143,638
Santa Paula	30,657	8,527	7,211	\$4,571,072,937
Simi Valley	126,356	37,802	35,640	\$24,328,139,279
Thousand Oaks	126,966	38,797	36,348	\$30,560,756,798
Unincorporated	94,003	49,022	32,568	\$29,161,232,550
Total	843,843	262,657	225,169	180,756,967,629

(1) 2020 population from State of California, Department of Finance. Table C1 - Summary Population and Housing Data: 2020, California, Counties, Incorporated Cities/Towns, and Census Designated Places (CDP). Summary from 2020 Census, Redistricting Data (Public Law 94-171) Summary File, generated August 2021.

(2) Values based off of 2021 tax assessor data provided by Ventura County.

(3) NEHRP soils data provided by the California Geological Survey.

(4) Percent of residential buildings exposed multiplied by the Estimated Population.

Jurisdiction	NEHRP D & E Soils						
	Estimated Exposure						
	Estimated Buildings Exposed (2)	Population Exposed (4)	% of Population Exposed	Value Structure in \$ Exposed (2)	Value Contents in \$ Exposed (2)	Value (Structure and contents in \$) Exposed (2)	% of Total Value
Camarillo	15,491	49,350	69.76%	7,456,431,275	6,204,632,212	13,661,063,487	77.15%
Fillmore	4,822	16,316	99.37%	1,464,670,770	982,603,711	2,447,274,481	99.17%
Moorpark	4,356	13,910	38.34%	2,125,297,386	1,864,215,595	3,989,512,981	48.52%
Ojai	2,917	6,501	85.13%	995,851,526	660,566,859	1,656,418,385	70.78%
Oxnard	45,834	201,963	99.95%	18,438,842,169	14,422,099,593	32,860,941,762	99.87%
Port Hueneme	6,367	21,785	99.23%	2,627,243,574	2,014,522,828	4,641,766,402	99.70%
San Buenaventura	32,419	100,893	91.09%	12,521,527,404	9,707,584,462	22,229,111,866	93.25%
Santa Paula	7,994	28,489	92.93%	2,443,835,102	1,841,164,958	4,285,000,060	93.74%
Simi Valley	27,124	89,850	71.11%	9,989,487,724	7,169,804,343	17,159,292,067	70.53%
Thousand Oaks	5,270	16,176	12.74%	3,187,049,866	2,461,055,120	5,648,104,986	18.48%
Unincorporated	25,385	43,142	45.89%	8,656,246,083	7,004,485,366	15,660,731,449	53.70%
Total	177,979	588,376	69.73%	69,906,482,879	54,332,735,047	124,239,217,926	68.73%

Jurisdiction	Number of Structures in Hazard Area (2)							
	Residential	Commercial	Industrial	Agriculture	Religion	Government	Education	Total
Camarillo	13,713	481	818	11	52	257	159	15,491
Fillmore	4,283	325	39	6	17	67	85	4,822
Moorpark	3,745	289	144	47	12	57	62	4,356
Ojai	2,484	278	30	8	38	23	56	2,917
Oxnard	40,451	3,099	961	92	150	427	654	45,834
Port Hueneme	5,540	298	26	0	18	428	57	6,367
San Buenaventura	27,959	2,827	776	64	187	226	380	32,419
Santa Paula	6,701	819	190	53	69	44	118	7,994
Simi Valley	25,343	1,005	275	1	93	33	374	27,124
Thousand Oaks	4,631	440	43	0	20	55	81	5,270
Unincorporated	14,947	1,844	384	6,898	311	652	349	25,385
Total	149,797	11,705	3,686	7,180	967	2,269	2,375	177,979

Jurisdiction	Estimated Exposure				
	Estimated Population (1)	% Population Exposed	Total Number of Buildings (2)	Total Building Value (Structure and contents in \$) (2)	% of Total Value Exposed
Camarillo	70,741	100%	21,829	\$17,707,287,595	100%
Fillmore	16,419	100%	4,855	\$2,467,839,895	100%
Moorpark	36,284	100%	10,697	\$8,222,512,567	100%
Ojai	7,637	100%	3,531	\$2,340,202,613	100%
Oxnard	202,063	100%	45,874	\$32,903,823,044	100%
Port Hueneme	21,954	100%	6,413	\$4,655,956,714	100%
San Buenaventura	110,763	100%	35,310	\$23,838,143,638	100%
Santa Paula	30,657	100%	8,527	\$4,571,072,937	100%
Simi Valley	126,356	100%	37,802	\$24,328,139,279	100%
Thousand Oaks	126,966	100%	38,797	\$30,560,756,798	100%
Unincorporated	94,003	100%	49,022	\$29,161,232,550	100%
TOTAL	843,843	100%	262,657	\$180,756,967,629	100%

(1) 2020 population from State of California, Department of Finance. Table C1 - Summary Population and Housing Data: 2020, California, Counties, Incorporated Cities/Towns, and Census Designated Places (CDP). Summary from 2020 Census, Redistricting Data (Public Law 94-171) Summary File, generated August 2021.

(2) Values based off of 2021 tax assessor data provided by Ventura County.

(3) Calculated using a Census tract level, general building stock (GBS) analysis in Hazus 4.2 SP03.

(4) Calculated using an Advanced Engineering Building Model (AEBM) analysis in Hazus 4.2 SP03.

Jurisdiction	Economic Impact						
	Structure Debris (x 1,000 Tons) (3)	Number of Displaced Households (3)	People Requiring Short-Term Shelter (3)	Value Structure in \$ Damaged (4)	Value Contents in \$ Damaged (4)	Total Value (Structure and Contents in \$) Damaged (4)	% of Total Value Damaged
Camarillo	255.47	16	9	\$1,254,097,388	\$564,455,389	\$1,818,552,777	10.3%
Fillmore	59.46	3	3	\$323,437,723	\$126,271,963	\$449,709,687	18.2%
Moorpark	95.45	5	4	\$655,376,665	\$296,600,537	\$951,977,202	11.6%
Ojai	6.66	0	0	\$33,663,983	\$15,264,779	\$48,928,763	2.1%
Oxnard	890.52	47	49	\$4,073,453,482	\$1,886,216,754	\$5,959,670,236	18.1%
Port Hueneme	355.11	5	4	\$754,540,064	\$293,494,435	\$1,048,034,499	22.5%
San Buenaventura	780.02	50	30	\$2,576,223,556	\$1,110,614,262	\$3,686,837,817	15.5%
Santa Paula	182.62	11	12	\$603,461,204	\$260,943,809	\$864,405,014	18.9%
Simi Valley	224.01	10	6	\$1,616,097,167	\$689,355,027	\$2,305,452,194	9.5%
Thousand Oaks	96.58	1	1	\$956,864,836	\$407,551,372	\$1,364,416,209	4.5%
Unincorporated	472.31	11	10	\$2,062,054,977	\$956,099,540	\$3,018,154,517	10.3%
TOTAL	3,418.21	160	127	\$14,909,271,045	\$6,606,867,869	21,516,138,914	11.9%

Jurisdiction	Estimated Exposure				
	Estimated Population (1)	% Population Exposed	Total Number of Buildings (2)	Total Building Value (Structure and contents in \$) (2)	% of Total Value Exposed
Camarillo	70,741	100%	21,829	\$17,707,287,595	100%
Fillmore	16,419	100%	4,855	\$2,467,839,895	100%
Moorpark	36,284	100%	10,697	\$8,222,512,567	100%
Ojai	7,637	100%	3,531	\$2,340,202,613	100%
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Santa Paula	30,657	100%	8,527	\$4,571,072,937	100%
Simi Valley	126,356	100%	37,802	\$24,328,139,279	100%
Thousand Oaks	126,966	100%	38,797	\$30,560,756,798	100%
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(2) Values based off of 2021 tax assessor data provided by Ventura County.

(3) Calculated using a Census tract level, general building stock (GBS) analysis in Hazus 4.2 SP03.

(4) Calculated using an Advanced Engineering Building Model (AEBM) analysis in Hazus 4.2 SP03.

Jurisdiction	Economic Impact						
	Structure Debris (x 1,000 Tons) (3)	Number of Displaced Households (3)	People Requiring Short-Term Shelter (3)	Value Structure in \$ Damaged (4)	Value Contents in \$ Damaged (4)	Total Value (Structure and Contents in \$) Damaged (4)	% of Total Value Damaged
Camarillo	24.30	0	0	\$332,511,840	\$161,595,849	\$494,107,689	2.8%
Fillmore	68.22	4	3	\$325,134,215	\$127,875,613	\$453,009,828	18.4%
Moorpark	23.26	0	0	\$389,471,231	\$180,226,732	\$569,697,964	6.9%
Ojai	32.98	3	1	\$114,379,858	\$46,864,014	\$161,243,872	6.9%
Oxnard	55.56	0	0	\$856,288,550	\$393,290,347	\$1,249,578,897	3.8%
Port Hueneme	12.62	0	0	\$112,352,575	\$50,525,161	\$162,877,736	3.5%
San Buenaventura	83.85	0	0	\$724,508,648	\$321,387,735	\$1,045,896,383	4.4%
Santa Paula	93.74	2	2	\$314,494,935	\$130,588,518	\$445,083,453	9.7%
Simi Valley	50.58	0	0	\$786,013,425	\$362,021,100	\$1,148,034,525	4.7%
Thousand Oaks	21.83	0	0	\$365,047,679	\$161,480,442	\$526,528,122	1.7%
Unincorporated	146.29	6	5	\$1,047,501,134	\$491,424,407	\$1,538,925,541	5.3%
TOTAL	613.21	14	11	\$5,367,704,090	\$2,427,279,918	7,794,984,008	4.3%

Jurisdiction	Estimated Exposure				
	Estimated Population (1)	% Population Exposed	Total Number of Buildings (2)	Total Building Value (Structure and contents in \$) (2)	% of Total Value Exposed
Camarillo	70,741	100%	21,829	\$17,707,287,595	100%
Fillmore	16,419	100%	4,855	\$2,467,839,895	100%
Moorpark	36,284	100%	10,697	\$8,222,512,567	100%
Ojai	7,637	100%	3,531	\$2,340,202,613	100%
Oxnard	202,063	100%	45,874	\$32,903,823,044	100%
Port Hueneme	21,954	100%	6,413	\$4,655,956,714	100%
San Buenaventura	110,763	100%	35,310	\$23,838,143,638	100%
Santa Paula	30,657	100%	8,527	\$4,571,072,937	100%
Simi Valley	126,356	100%	37,802	\$24,328,139,279	100%
Thousand Oaks	126,966	100%	38,797	\$30,560,756,798	100%
Unincorporated	94,003	100%	49,022	\$29,161,232,550	100%
TOTAL	843,843	100%	262,657	\$180,756,967,629	100%

(1)2020 population from State of California, Department of Finance. Table C1 - Summary Population and Housing Data: 2020, California, Counties, Incorporated Cities/Towns, and Census Designated Places (CDP). Summary from 2020 Census, Redistricting Data (Public Law 94-171) Summary File, generated August 2021.

(2) Values based off of 2021 tax assessor data provided by Ventura County.

(3) Calculated using a Census tract level, general building stock (GBS) analysis in Hazus 4.2 SP03.

(4) Calculated using an Advanced Engineering Building Model (AEBM) analysis in Hazus 4.2 SP03.

Jurisdiction	Economic Impact						
	Structure Debris (x 1,000 Tons) (3)	Number of Displaced Households (3)	People Requiring Short-Term Shelter (3)	Value Structure in \$ Damaged (4)	Value Contents in \$ Damaged (4)	Total Value (Structure and Contents in \$) Damaged (4)	% of Total Value Damaged
Camarillo	8.03	0	0	\$72,606,865	\$36,652,157	\$109,259,022	0.6%
Fillmore	6.78	0	0	\$71,641,229	\$26,926,763	\$98,567,992	4.0%
Moorpark	3.50	0	0	\$111,151,410	\$51,817,233	\$162,968,643	2.0%
Ojai	2.87	0	0	\$19,176,336	\$8,813,983	\$27,990,319	1.2%
Oxnard	30.04	0	0	\$114,269,681	\$61,286,102	\$175,555,783	0.5%
Port Hueneme	11.78	0	0	\$28,011,094	\$12,126,052	\$40,137,146	0.9%
San Buenaventura	30.20	0	0	\$164,878,846	\$70,237,390	\$235,116,236	1.0%
Santa Paula	11.46	0	0	\$74,173,536	\$32,450,321	\$106,623,857	2.3%
Simi Valley	12.49	0	0	\$278,004,931	\$135,279,174	\$413,284,105	1.7%
Thousand Oaks	6.07	0	0	\$124,654,628	\$57,664,112	\$182,318,740	0.6%
Unincorporated	30.72	0	0	\$308,335,672	\$144,080,027	\$452,415,699	1.6%
TOTAL	153.94	0	0	\$1,366,904,227	\$637,333,313	2,004,237,540	1.1%

Jurisdiction	Estimated Exposure						
	Estimated Population (1)	% Population Exposed	Total Number of Buildings (2)	Total Building Value (Structure and contents in \$) (2)	% of Total Value Exposed	Structure Debris (x 1,000 Tons) (3)	Number of Displaced Households (3)
Camarillo	70,741	100%	21,829	\$17,707,287,595	100%	70.37	1
Fillmore	16,419	100%	4,855	\$2,467,839,895	100%	25.92	1
Moorpark	36,284	100%	10,697	\$8,222,512,567	100%	11.74	0
Ojai	7,637	100%	3,531	\$2,340,202,613	100%	19.19	0
Oxnard	202,063	100%	45,874	\$32,903,823,044	100%	407.03	6
Port Hueneme	21,954	100%	6,413	\$4,655,956,714	100%	119.50	1
San Buenaventura	110,763	100%	35,310	\$23,838,143,638	100%	889.88	85
Santa Paula	30,657	100%	8,527	\$4,571,072,937	100%	184.76	11
Simi Valley	126,356	100%	37,802	\$24,328,139,279	100%	13.38	0
Thousand Oaks	126,966	100%	38,797	\$30,560,756,798	100%	18.60	0
Unincorporated	94,003	100%	49,022	\$29,161,232,550	100%	318.60	7
TOTAL	843,843	100%	262,657	\$180,756,967,629	100%	2,078.98	112

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(2) Values based off of 2021 tax assessor data provided by Ventura County.

(3) Calculated using a Census tract level, general building stock (GBS) analysis in Hazus 4.2 SP03.

(4) Calculated using an Advanced Engineering Building Model (AEBM) analysis in Hazus 4.2 SP03.

Jurisdiction	Economic Impact				
	People Requiring Short-Term Shelter (3)	Value Structure in \$ Damaged (4)	Value Contents in \$ Damaged (4)	Total Value (Structure and Contents in \$) Damaged (4)	% of Total Value Damaged
Camarillo	0	\$618,222,748	\$291,545,429	\$909,768,177	5.1%
Fillmore	1	\$246,340,734	\$94,279,012	\$340,619,745	13.8%
Moorpark	0	\$289,384,837	\$136,815,405	\$426,200,242	5.2%
Ojai	0	\$66,661,698	\$28,680,957	\$95,342,655	4.1%
Oxnard	6	\$2,825,603,981	\$1,243,802,712	\$4,069,406,692	12.4%
Port Hueneme	0	\$410,536,239	\$155,884,805	\$566,421,043	12.2%
San Buenaventura	54	\$2,875,871,126	\$1,267,121,649	\$4,142,992,775	17.4%
Santa Paula	12	\$566,018,120	\$243,512,464	\$809,530,584	17.7%
Simi Valley	0	\$281,527,722	\$141,026,273	\$422,553,996	1.7%
Thousand Oaks	0	\$316,498,805	\$142,979,353	\$459,478,158	1.5%
Unincorporated	6	\$1,576,389,169	\$737,714,488	\$2,314,103,657	7.9%
TOTAL	79	\$10,073,055,177	\$4,483,362,547	14,556,417,724	8.1%

Jurisdiction	Estimated Exposure				
	Estimated Population (1)	% Population Exposed	Total Number of Buildings (2)	Total Building Value (Structure and contents in \$) (2)	% of Total Value Exposed
Camarillo	70,741	100%	21,829	\$17,707,287,595	100%
Fillmore	16,419	100%	4,855	\$2,467,839,895	100%
Moorpark	36,284	100%	10,697	\$8,222,512,567	100%
Ojai	7,637	100%	3,531	\$2,340,202,613	100%
Oxnard	202,063	100%	45,874	\$32,903,823,044	100%
Port Hueneme	21,954	100%	6,413	\$4,655,956,714	100%
San Buenaventura	110,763	100%	35,310	\$23,838,143,638	100%
Santa Paula	30,657	100%	8,527	\$4,571,072,937	100%
Simi Valley	126,356	100%	37,802	\$24,328,139,279	100%
Thousand Oaks	126,966	100%	38,797	\$30,560,756,798	100%
Unincorporated	94,003	100%	49,022	\$29,161,232,550	100%
TOTAL	843,843	100%	262,657	\$180,756,967,629	100%

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(2) Values based off of 2021 tax assessor data provided by Ventura County.

(3) Calculated using a Census tract level, general building stock (GBS) analysis in Hazus 4.2 SP03.

(4) Calculated using an Advanced Engineering Building Model (AEBM) analysis in Hazus 4.2 SP03.

Jurisdiction	Economic Impact						
	Structure Debris (x 1,000 Tons) (3)	Number of Displaced Households (3)	People Requiring Short-Term Shelter (3)	Value Structure in \$ Damaged (4)	Value Contents in \$ Damaged (4)	Total Value (Structure and Contents in \$) Damaged (4)	% of Total Value Damaged
Camarillo	41.80	14	8	\$317,154,975	\$166,355,625	\$483,510,601	2.7%
Fillmore	7.40	2	2	\$96,688,052	\$38,647,908	\$135,335,960	5.5%
Moorpark	16.07	5	4	\$251,966,583	\$121,552,386	\$373,518,968	4.5%
Ojai	4.85	2	1	\$20,372,924	\$10,811,020	\$31,183,944	1.3%
Oxnard	89.40	35	38	\$1,671,772,446	\$792,894,847	\$2,464,667,293	7.5%
Port Hueneme	26.26	6	5	\$238,732,202	\$108,091,762	\$346,823,964	7.4%
San Buenaventura	87.02	35	21	\$621,218,009	\$294,425,700	\$915,643,709	3.8%
Santa Paula	19.90	7	7	\$95,059,205	\$47,029,170	\$142,088,375	3.1%
Simi Valley	78.45	53	33	\$789,228,569	\$366,293,069	\$1,155,521,638	4.7%
Thousand Oaks	44.82	26	14	\$489,697,195	\$235,427,670	\$725,124,865	2.4%
Unincorporated	87.35	20	13	\$814,238,984	\$395,932,641	\$1,210,171,626	4.1%
TOTAL	503.31	205	147	\$5,406,129,145	\$2,577,461,798	7,983,590,943	4.4%

Jurisdiction	Estimated Population (1)	Total Number of Buildings (2)	Total Number of Residential Buildings (2)	Total Building Value (Structure and contents in \$) (2)
Camarillo	70,741	21,829	19,657	\$17,707,287,595
Fillmore	16,419	4,855	4,310	\$2,467,839,895
Moorpark	36,284	10,697	9,769	\$8,222,512,567
Ojai	7,637	3,531	2,918	\$2,340,202,613
Oxnard	202,063	45,874	40,471	\$32,903,823,044
Port Hueneme	21,954	6,413	5,583	\$4,655,956,714
San Buenaventura	110,763	35,310	30,694	\$23,838,143,638
Santa Paula	30,657	8,527	7,211	\$4,571,072,937
Simi Valley	126,356	37,802	35,640	\$24,328,139,279
Thousand Oaks	126,966	38,797	36,348	\$30,560,756,798
Unincorporated	94,003	49,022	32,568	\$29,161,232,550
Total	843,843	262,657	225,169	\$180,756,967,629

(1) 2020 population from State of California, Department of Finance. Table C1 - Summary Population and Housing Data: 2020, California, Counties, Incorporated Cities/Towns, and Census Designated Places (CDP). Summary from 2020 Census, Redistricting Data (Public Law 94-171) Summary File, generated August 2021.

(2) Values based off of 2021 tax assessor data provided by Ventura County.

(3) Percent of residential buildings exposed multiplied by the Estimated Population.

(4) Calculated using a Census block level, general building stock (GBS) analysis in Hazus 4.2 SP03.

(5) Calculated using a Census block level, general building stock (GBS) analysis in Hazus 4.2 SP03, and adjusted to reflect the estimated population.

(6) Calculated using a user-defined (UDF) analysis in Hazus 4.2 SP03.

Jurisdiction	Estimated Building Exposure						
	Buildings Exposed (2)	Population Exposed (3)	% of Population Exposed	Value Structure in \$ Exposed (2)	Value Contents in \$ Exposed (2)	Value (Structure and contents in \$) Exposed (2)	% of Total Value Exposed
Camarillo	1,361	4,077	5.8%	\$811,577,706	\$847,038,963	\$1,658,616,669	9.4%
Fillmore	121	427	2.6%	\$44,066,967	\$26,622,071	\$70,689,039	2.9%
Moorpark	229	691	1.9%	\$171,600,334	\$182,716,297	\$354,316,631	4.3%
Ojai	84	152	2.0%	\$32,023,450	\$24,758,767	\$56,782,217	2.4%
Oxnard	263	839	0.4%	\$153,350,315	\$153,090,160	\$306,440,475	0.9%
Port Hueneme	3	4	0.0%	\$5,817,027	\$5,723,892	\$11,540,919	0.2%
San Buenaventura	186	350	0.3%	\$189,050,175	\$196,450,450	\$385,500,626	1.6%
Santa Paula	2,800	9,493	31.0%	\$863,746,680	\$706,530,251	\$1,570,276,932	34.4%
Simi Valley	3,388	10,643	8.4%	\$1,550,461,207	\$1,397,529,498	\$2,947,990,705	12.1%
Thousand Oaks	411	1,132	0.9%	\$270,559,337	\$214,327,558	\$484,886,895	1.6%
Unincorporated	3,701	5,395	5.7%	\$1,173,621,479	\$926,591,347	\$2,100,212,825	7.2%
Total	12,547	33,202	3.9%	\$5,265,874,679	\$4,681,379,253	\$9,947,253,933	5.5%

Jurisdiction	Economic Impact							
	Structure Debris (Tons) (4)	Displaced Population (5)	People Requiring Short-Term Shelter (5)	Buildings Impacted (6)	Value Structure in \$ Damaged (6)	Value Contents in \$ Damaged (6)	Total Value (Structure and Contents in \$) Damaged (6)	% of Total Value Damaged
Camarillo	995	874	80	924	\$18,136,547	\$14,704,765	\$32,841,312	0.2%
Fillmore	445	80	6	67	\$1,947,318	\$1,702,111	\$3,649,429	0.1%
Moorpark	8,372	154	12	126	\$13,667,492	\$21,518,311	\$35,185,803	0.4%
Ojai	55	24	1	17	\$455,128	\$328,839	\$783,967	0.0%
Oxnard	970	134	7	142	\$3,868,280	\$6,765,501	\$10,633,781	0.0%
Port Hueneme	0	0	0	0	\$0	\$0	\$0	0.0%
San Buenaventura	12,604	30	2	71	\$11,004,892	\$28,605,208	\$39,610,101	0.2%
Santa Paula	8,063	6,168	528	1,871	\$59,011,117	\$71,219,090	\$130,230,207	2.8%
Simi Valley	15,198	2,358	114	2,273	\$104,290,055	\$140,715,076	\$245,005,131	1.0%
Thousand Oaks	1,293	133	8	274	\$13,907,582	\$29,357,341	\$43,264,924	0.1%
Unincorporated	48,715	874	27	2,120	\$81,700,290	\$120,988,721	\$202,689,011	0.7%
Total	96,710	10,829	785	7,885	\$307,988,701	\$435,904,963	\$743,893,665	0.4%

Jurisdiction									
	Acres of Floodplain	Number of Structures in Floodplain (2)							
		Residential	Commercial	Industrial	Agriculture	Religion	Government	Education	Total
Camarillo	1,566	1,133	63	153	1	1	6	4	1361
Fillmore	545	112	1	1	1	1	3	2	121
Moorpark	522	186	18	18	0	0	7	0	229
Ojai	285	58	11	8	0	0	7	0	84
Oxnard	974	168	44	45	0	0	6	0	263
Port Hueneme	132	1	1	0	0	0	1	0	3
San Buenaventura	1,180	97	33	31	12	0	13	0	186
Santa Paula	1,421	2,233	336	109	41	17	14	50	2800
Simi Valley	2,091	3,002	231	126	0	7	0	22	3388
Thousand Oaks	568	324	34	0	0	2	7	44	411
Unincorporated	58,760	1,869	319	46	1,372	34	30	31	3701
Total	68,046	9,183	1091	537	1427	62	94	153	12547

Jurisdiction	Estimated Population (1)	Total Number of Buildings (2)	Total Number of Residential Buildings (2)	Total Building Value (Structure and contents in \$) (2)
Camarillo	70,741	21,829	19,657	\$17,707,287,595
Fillmore	16,419	4,855	4,310	\$2,467,839,895
Moorpark	36,284	10,697	9,769	\$8,222,512,567
Ojai	7,637	3,531	2,918	\$2,340,202,613
Oxnard	202,063	45,874	40,471	\$32,903,823,044
Port Hueneme	21,954	6,413	5,583	\$4,655,956,714
San Buenaventura	110,763	35,310	30,694	\$23,838,143,638
Santa Paula	30,657	8,527	7,211	\$4,571,072,937
Simi Valley	126,356	37,802	35,640	\$24,328,139,279
Thousand Oaks	126,966	38,797	36,348	\$30,560,756,798
Unincorporated	94,003	49,022	32,568	\$29,161,232,550
Total	843,843	262,657	225,169	\$180,756,967,629

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(2) Values based off of 2021 tax assessor data provided by Ventura County.

(3) Percent of residential buildings exposed multiplied by the Estimated Population.

(4) Calculated using a Census block level, general building stock (GBS) analysis in Hazus 4.2 SP03.

(5) Calculated using a Census block level, general building stock (GBS) analysis in Hazus 4.2 SP03, and adjusted to reflect the estimated population.

(6) Calculated using a user-defined (UDF) analysis in Hazus 4.2 SP03.

Jurisdiction	Estimated Building Exposure						
	Buildings Exposed (2)	Population Exposed (3)	% of Population Exposed	Value Structure in \$ Exposed (2)	Value Contents in \$ Exposed (2)	Value (Structure and contents in \$) Exposed (2)	% of Total Value Exposed
Camarillo	7,952	24,425	34.5%	\$4,183,612,188	\$3,705,692,898	\$7,889,305,086	44.6%
Fillmore	312	998	6.1%	\$81,648,513	\$49,666,004	\$131,314,517	5.3%
Moorpark	2,434	7,473	20.6%	\$1,316,023,676	\$1,233,811,450	\$2,549,835,126	31.0%
Ojai	988	2,143	28.1%	\$318,177,110	\$214,977,791	\$533,154,901	22.8%
Oxnard	16,417	72,101	35.7%	\$6,271,339,016	\$5,053,125,090	\$11,324,464,106	34.4%
Port Hueneme	6,120	20,857	95.0%	\$2,570,735,967	\$1,978,060,303	\$4,548,796,270	97.7%
San Buenaventura	1,520	3,969	3.6%	\$1,089,151,905	\$1,055,150,082	\$2,144,301,988	9.0%
Santa Paula	4,955	16,742	54.6%	\$1,549,736,567	\$1,200,236,084	\$2,749,972,651	60.2%
Simi Valley	4,309	13,430	10.6%	\$2,227,840,029	\$2,075,195,072	\$4,303,035,101	17.7%
Thousand Oaks	698	2,040	1.6%	\$418,573,237	\$303,132,032	\$721,705,268	2.4%
Unincorporated	9,273	16,594	17.7%	\$3,205,899,184	\$2,633,930,786	\$5,839,829,970	20.0%
Total	54,978	180,772	21.4%	\$23,232,737,392	\$19,502,977,592	\$42,735,714,984	23.6%

Jurisdiction	Economic Impact							
	Structure Debris (Tons) (4)	Displaced Population (5)	People Requiring Short- Term Shelter (5)	Buildings Impacted (6)	Value Structure in \$ Damaged (6)	Value Contents in \$ Damaged (6)	Total Value (Structure and Contents in \$) Damaged (6)	% of Total Value Damaged
Camarillo	35,705	14,896	1,210	4,556	\$323,354,969	\$610,659,310	\$934,014,279	5.3%
Fillmore	1,300	260	19	112	\$2,834,318	\$3,389,276	\$6,223,594	0.3%
Moorpark	18,723	4,812	358	1,449	\$161,918,925	\$282,897,898	\$444,816,823	5.4%
Ojai	8,058	1,140	81	709	\$52,652,213	\$58,900,791	\$111,553,003	4.8%
Oxnard	40,476	54,691	3,603	5,622	\$217,744,567	\$368,166,618	\$585,911,185	1.8%
Port Hueneme	47,197	20,268	1,573	5,396	\$476,053,503	\$1,091,892,221	\$1,567,945,724	33.7%
San Buenaventura	24,795	1,217	98	681	\$113,780,470	\$247,453,885	\$361,234,355	1.5%
Santa Paula	1,804	9,745	746	769	\$25,853,761	\$38,739,391	\$64,593,152	1.4%
Simi Valley	83,396	3,685	198	1,313	\$176,300,670	\$358,500,485	\$534,801,155	2.2%
Thousand Oaks	1,855	319	19	368	\$17,928,380	\$39,947,125	\$57,875,505	0.2%
Unincorporated	133,015	6,068	317	6,687	\$415,808,250	\$640,849,397	\$1,056,657,647	3.6%
Total	396,325	117,102	8,221	27,662	\$1,984,230,028	\$3,741,396,396	\$5,725,626,424	3.2%

Jurisdiction									
	Acres of Floodplain	Number of Structures in Floodplain (2)							
		Residential	Commercial	Industrial	Agriculture	Religion	Government	Education	Total
Camarillo	5,203	6,787	277	492	12	25	249	110	7952
Fillmore	613	262	22	1	1	1	23	2	312
Moorpark	1,519	2,012	199	126	0	9	50	38	2434
Ojai	673	819	113	33	0	2	13	8	988
Oxnard	6,540	14,441	951	572	29	28	261	135	16417
Port Hueneme	2,812	5,304	299	26	0	17	430	44	6120
San Buenaventura	1,851	1,100	210	169	18	3	20	0	1520
Santa Paula	2,122	3,938	646	147	46	64	36	78	4955
Simi Valley	2,847	3,788	267	179	0	14	0	61	4309
Thousand Oaks	685	584	55	0	0	2	13	44	698
Unincorporated	77,155	5,749	698	197	2,266	55	145	163	9273
Total	102,019	44,784	3737	1942	2372	220	1240	683	54978

Jurisdiction	Estimated Population (1)	Total Number of Buildings (2)	Total Number of Residential Buildings (2)	Total Building Value (Structure and contents in \$) (2)
Camarillo	70,741	21,829	19,657	\$17,707,287,595
Fillmore	16,419	4,855	4,310	\$2,467,839,895
Moorpark	36,284	10,697	9,769	\$8,222,512,567
Ojai	7,637	3,531	2,918	\$2,340,202,613
Oxnard	202,063	45,874	40,471	\$32,903,823,044
Port Hueneme	21,954	6,413	5,583	\$4,655,956,714
San Buenaventura	110,763	35,310	30,694	\$23,838,143,638
Santa Paula	30,657	8,527	7,211	\$4,571,072,937
Simi Valley	126,356	37,802	35,640	\$24,328,139,279
Thousand Oaks	126,966	38,797	36,348	\$30,560,756,798
Unincorporated	94,003	49,022	32,568	\$29,161,232,550
Total	843,843	262,657	225,169	180,756,967,629

Jurisdiction	Estimated Population (1)	Total Number of Buildings (2)	Total Number of Residential Buildings (2)	Total Building Value (Structure and contents in \$) (2)
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Fillmore	16,419	4,855	4,310	\$2,467,839,895
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Simi Valley	126,356	37,802	35,640	\$24,328,139,279
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Jurisdiction	Estimated Population (1)	Total Number of Buildings (2)	Total Number of Residential Buildings (2)	Total Building Value (Structure and contents in \$) (2)
Camarillo	70,741	21,829	19,657	\$17,707,287,595
Fillmore	16,419	4,855	4,310	\$2,467,839,895
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Ojai	7,637	3,531	2,918	\$2,340,202,613
Oxnard	202,063	45,874	40,471	\$32,903,823,044
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San Buenaventura	110,763	35,310	30,694	\$23,838,143,638
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Unincorporated	94,003	49,022	32,568	\$29,161,232,550
Total	843,843	262,657	225,169	180,756,967,629

(1) 2020 population from State of California, Department of Finance. Table C1 - Summary Population and Housing Data: 2020, California, Counties, Incorporated Cities/Towns, and Census Designated Places (CDP). Summary from 2020 Census, Redistricting Data (Public Law 94-171) Summary File, generated August 2021.

(2) Values based off of 2021 tax assessor data provided by Ventura County.

(3) Susceptibility to Deep-Seated Landslides in California (CGS Map Sheet 58) provided by the CA Geological Survey. Susceptibility classes categorized as follows: Very High

(4) Percent of residential buildings exposed multiplied by the Estimated Population.

Jurisdiction	Landslide Susceptibility Category Very High (3)						
	Estimated Exposure						
	Estimated Buildings Exposed (2)	Population Exposed (4)	% of Population Exposed	Value Structure in \$ Exposed (2)	Value Contents in \$ Exposed (2)	Value (Structure and contents in \$) Exposed (2)	% of Total Value
Camarillo	319	1,098	1.6%	\$145,360,202	\$76,937,994	\$222,298,196	1.3%
Fillmore	17	57	0.3%	\$7,191,809	\$4,831,118	\$12,022,927	0.5%
Moorpark	177	591	1.6%	\$104,729,266	\$82,711,386	\$187,440,653	2.3%
Ojai	6	16	0.2%	\$6,143,914	\$3,071,957	\$9,215,871	0.4%
Oxnard	1	0	0.0%	\$2,295,792	\$2,295,792	\$4,591,584	0.0%
Port Hueneme	0	0	0.0%	\$0	\$0	\$0	0.0%
San Buenaventura	1,218	4,240	3.8%	\$418,645,287	\$216,801,830	\$635,447,117	2.7%
Santa Paula	79	319	1.0%	\$27,764,158	\$14,198,759	\$41,962,917	0.9%
Simi Valley	214	716	0.6%	\$141,777,522	\$118,366,473	\$260,143,994	1.1%
Thousand Oaks	821	2,756	2.2%	\$385,793,664	\$213,145,840	\$598,939,504	2.0%
Unincorporated	1,891	2,707	2.9%	\$562,531,836	\$390,036,748	\$952,568,584	3.3%
Total	4,743	12,500	1.5%	\$1,802,233,448	\$1,122,397,897	\$2,924,631,346	1.6%

Jurisdiction	Landslide Susceptibility Category High (3)						
	Estimated Exposure						
	Estimated Buildings Exposed (2)	Population Exposed (4)	% of Population Exposed	Value Structure in \$ Exposed (2)	Value Contents in \$ Exposed (2)	Value (Structure and contents in \$) Exposed (2)	% of Total Value
Camarillo	3,310	11,376	16.1%	\$1,276,555,651	\$760,035,742	\$2,036,591,394	11.5%
Fillmore	282	956	5.8%	\$84,242,891	\$56,428,708	\$140,671,600	5.7%
Moorpark	2,408	8,190	22.6%	\$1,093,504,171	\$656,025,717	\$1,749,529,888	21.3%
Ojai	608	1,392	18.2%	\$246,345,265	\$152,323,811	\$398,669,076	17.0%
Oxnard	522	2,347	1.2%	\$211,406,543	\$139,856,728	\$351,263,272	1.1%
Port Hueneme	18	59	0.3%	\$3,256,669	\$1,881,834	\$5,138,503	0.1%
San Buenaventura	4,764	15,528	14.0%	\$1,623,676,875	\$990,475,247	\$2,614,152,122	11.0%
Santa Paula	1,201	4,626	15.1%	\$352,153,064	\$207,857,159	\$560,010,223	12.3%
Simi Valley	7,205	24,505	19.4%	\$3,049,935,458	\$1,890,121,993	\$4,940,057,452	20.3%
Thousand Oaks	15,214	50,335	39.6%	\$6,861,797,417	\$4,488,875,991	\$11,350,673,408	37.1%
Unincorporated	16,522	32,552	34.6%	\$5,398,296,121	\$3,556,065,421	\$8,954,361,542	30.7%
Total	52,054	151,866	18.0%	\$20,201,170,128	\$12,899,948,351	\$33,101,118,479	18.3%

Jurisdiction	Landslide Susceptibility Category Moderate (3)						
	Estimated Exposure						
	Estimated Buildings Exposed (2)	Population Exposed (4)	% of Population Exposed	Value Structure in \$ Exposed (2)	Value Contents in \$ Exposed (2)	Value (Structure and contents in \$) Exposed (2)	% of Total Value
Camarillo	334	1,112	1.6%	\$160,265,279	\$85,604,299	\$245,869,578	1.4%
Fillmore	11	38	0.2%	\$2,567,876	\$1,334,235	\$3,902,111	0.2%
Moorpark	1,006	3,458	9.5%	\$474,259,020	\$288,593,875	\$762,852,896	9.3%
Ojai	63	131	1.7%	\$18,627,630	\$10,296,846	\$28,924,475	1.2%
Oxnard	0	0	0.0%	\$0	\$0	\$0	0.0%
Port Hueneme	0	0	0.0%	\$0	\$0	\$0	0.0%
San Buenaventura	17	58	0.1%	\$2,799,965	\$1,446,188	\$4,246,153	0.0%
Santa Paula	0	0	0.0%	\$0	\$0	\$0	0.0%
Simi Valley	2,944	10,115	8.0%	\$1,424,660,482	\$816,256,331	\$2,240,916,814	9.2%
Thousand Oaks	4,759	16,148	12.7%	\$1,875,554,525	\$1,049,243,077	\$2,924,797,602	9.6%
Unincorporated	2,716	4,898	5.2%	\$1,019,871,610	\$672,102,212	\$1,691,973,823	5.8%
Total	11,850	35,958	4.3%	\$4,978,606,389	\$2,924,877,062	\$7,903,483,451	4.4%

Jurisdiction	Number of Structures in Category Very High (2)							
	Residential	Commercial	Industrial	Agriculture	Religion	Government	Education	Total
Camarillo	305	7	0	1	0	6	0	319
Fillmore	15	0	0	1	0	1	0	17
Moorpark	159	4	2	2	1	2	7	177
Ojai	6	0	0	0	0	0	0	6
Oxnard	0	0	0	0	0	1	0	1
Port Hueneme	0	0	0	0	0	0	0	0
San Buenaventura	1,175	28	0	2	3	10	0	1,218
Santa Paula	75	1	0	2	0	1	0	79
Simi Valley	202	10	2	0	0	0	0	214
Thousand Oaks	789	16	0	0	5	10	1	821
Unincorporated	938	153	3	744	42	8	3	1,891
Total	3,664	219	7	752	51	39	11	4,743

Jurisdiction	Number of Structures in Category High (2)							
	Residential	Commercial	Industrial	Agriculture	Religion	Government	Education	Total
Camarillo	3,161	88	17	12	7	9	16	3,310
Fillmore	251	17	3	0	0	4	7	282
Moorpark	2,205	86	10	69	0	4	34	2,408
Ojai	532	28	4	13	19	10	2	608
Oxnard	470	28	0	0	0	24	0	522
Port Hueneme	15	1	0	0	0	2	0	18
San Buenaventura	4,303	319	15	7	23	57	40	4,764
Santa Paula	1,088	74	4	3	1	6	25	1,201
Simi Valley	6,912	165	46	10	8	13	51	7,205
Thousand Oaks	14,410	448	130	1	75	71	79	15,214
Unincorporated	11,278	888	64	3,874	261	85	72	16,522
Total	44,625	2,142	293	3,989	394	285	326	52,054

Jurisdiction	Number of Structures in Category Moderate (2)							
	Residential	Commercial	Industrial	Agriculture	Religion	Government	Education	Total
Camarillo	309	21	0	0	2	1	1	334
Fillmore	10	1	0	0	0	0	0	11
Moorpark	931	33	1	17	0	1	23	1,006
Ojai	50	6	0	6	0	1	0	63
Oxnard	0	0	0	0	0	0	0	0
Port Hueneme	0	0	0	0	0	0	0	0
San Buenaventura	16	1	0	0	0	0	0	17
Santa Paula	0	0	0	0	0	0	0	0
Simi Valley	2,853	49	8	10	2	8	14	2,944
Thousand Oaks	4,623	87	10	3	13	9	14	4,759
Unincorporated	1,697	195	7	757	31	8	21	2,716
Total	10,489	393	26	793	48	28	73	11,850

Jurisdiction	Estimated Population (1)	Total Number of Buildings (2)	Total Number of Residential Buildings (2)	Total Building Value (Structure and contents in \$) (2)
Camarillo	70,741	21,829	19,657	\$17,707,287,595
Fillmore	16,419	4,855	4,310	\$2,467,839,895
Moorpark	36,284	10,697	9,769	\$8,222,512,567
Ojai	7,637	3,531	2,918	\$2,340,202,613
Oxnard	202,063	45,874	40,471	\$32,903,823,044
Port Hueneme	21,954	6,413	5,583	\$4,655,956,714
San Buenaventura	110,763	35,310	30,694	\$23,838,143,638
Santa Paula	30,657	8,527	7,211	\$4,571,072,937
Simi Valley	126,356	37,802	35,640	\$24,328,139,279
Thousand Oaks	126,966	38,797	36,348	\$30,560,756,798
Unincorporated	94,003	49,022	32,568	\$29,161,232,550
Total	843,843	262,657	225,169	180,756,967,629

(1) 2020 population from State of California, Department of Finance. Table C1 - Summary Population and Housing Data: 2020, California, Counties, Incorporated Cities/Towns, and Census Designated Places (CDP). Summary from 2020 Census, Redistricting Data (Public Law 94-171) Summary File, generated August 2021.

(2) Values based off of 2021 tax assessor data provided by Ventura County.

(3) 25cm of sea level rise inundation areas downloaded from Our Coast Our Future website.

(4) Percent of residential buildings exposed multiplied by the Estimated Population.

Jurisdiction	Sea Level Rise 25cm (3)						
	Estimated Exposure						
	Estimated Buildings Exposed (2)	Population Exposed (4)	% of Population Exposed	Value Structure in \$ Exposed (2)	Value Contents in \$ Exposed (2)	Value (Structure and contents in \$) Exposed (2)	% of Total Value
Camarillo	0	0	0.00%	0	0	0	0.00%
Fillmore	0	0	0.00%	0	0	0	0.00%
Moorpark	0	0	0.00%	0	0	0	0.00%
Ojai	0	0	0.00%	0	0	0	0.00%
Oxnard	6	30	0.01%	1,844,110	922,055	2,766,165	0.01%
Port Hueneme	0	0	0.00%	0	0	0	0.00%
San Buenaventura	1	0	0.00%	13,147,511	13,147,511	26,295,022	0.11%
Santa Paula	0	0	0.00%	0	0	0	0.00%
Simi Valley	0	0	0.00%	0	0	0	0.00%
Thousand Oaks	0	0	0.00%	0	0	0	0.00%
Unincorporated	3	9	0.01%	782,482	391,241	1,173,722	0.00%
Total	10	39	0.00%	15,774,103	14,460,807	30,234,909	0.02%

Jurisdiction	Number of Structures in Hazard Area (2)							
	Residential	Commercial	Industrial	Agriculture	Religion	Government	Education	Total
Camarillo	0	0	0	0	0	0	0	0
Fillmore	0	0	0	0	0	0	0	0
Moorpark	0	0	0	0	0	0	0	0
Ojai	0	0	0	0	0	0	0	0
Oxnard	6	0	0	0	0	0	0	6
Port Hueneme	0	0	0	0	0	0	0	0
San Buenaventura	0	0	0	0	0	1	0	1
Santa Paula	0	0	0	0	0	0	0	0
Simi Valley	0	0	0	0	0	0	0	0
Thousand Oaks	0	0	0	0	0	0	0	0
Unincorporated	3	0	0	0	0	0	0	3
Total	9	0	0	0	0	1	0	10

Jurisdiction	Estimated Population (1)	Total Number of Buildings (2)	Total Number of Residential Buildings (2)	Total Building Value (Structure and contents in \$) (2)
Camarillo	70,741	21,829	19,657	\$17,707,287,595
Fillmore	16,419	4,855	4,310	\$2,467,839,895
Moorpark	36,284	10,697	9,769	\$8,222,512,567
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(3) 100cm of sea level rise inundation areas downloaded from Our Coast Our Future website

(4) Percent of residential buildings exposed multiplied by the Estimated Population.

Jurisdiction	Sea Level Rise 100cm (3)						
	Estimated Exposure						
	Estimated Buildings Exposed (2)	Population Exposed (4)	% of Population Exposed	Value Structure in \$ Exposed (2)	Value Contents in \$ Exposed (2)	Value (Structure and contents in \$) Exposed (2)	% of Total Value
Camarillo	0	0	0.00%	0	0	0	0.00%
Fillmore	0	0	0.00%	0	0	0	0.00%
Moorpark	0	0	0.00%	0	0	0	0.00%
Ojai	0	0	0.00%	0	0	0	0.00%
Oxnard	71	320	0.16%	19,837,269	11,436,689	31,273,958	0.10%
Port Hueneme	26	0	0.00%	41,938,508	41,938,508	83,877,017	1.80%
San Buenaventura	9	22	0.02%	17,805,334	16,492,114	34,297,448	0.14%
Santa Paula	0	0	0.00%	0	0	0	0.00%
Simi Valley	0	0	0.00%	0	0	0	0.00%
Thousand Oaks	0	0	0.00%	0	0	0	0.00%
Unincorporated	143	222	0.24%	61,259,909	51,582,876	112,842,786	0.39%
Total	249	563	0.07%	140,841,021	121,450,187	262,291,208	0.15%

Jurisdiction	Number of Structures in Hazard Area (2)							
	Residential	Commercial	Industrial	Agriculture	Religion	Government	Education	Total
Camarillo	0	0	0	0	0	0	0	0
Fillmore	0	0	0	0	0	0	0	0
Moorpark	0	0	0	0	0	0	0	0
Ojai	0	0	0	0	0	0	0	0
Oxnard	64	0	0	0	0	7	0	71
Port Hueneme	0	0	0	0	0	26	0	26
San Buenaventura	6	2	0	0	0	1	0	9
Santa Paula	0	0	0	0	0	0	0	0
Simi Valley	0	0	0	0	0	0	0	0
Thousand Oaks	0	0	0	0	0	0	0	0
Unincorporated	77	5	0	0	0	61	0	143
Total	147	7	0	0	0	95	0	249

Jurisdiction	Estimated Population (1)	Total Number of Buildings (2)	Total Number of Residential Buildings (2)	Total Building Value (Structure and contents in \$) (2)
Camarillo	70,741	21,829	19,657	\$17,707,287,595
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(3) Percent of residential buildings exposed multiplied by the Estimated Population.

(4) Calculated using a Census block level, general building stock (GBS) analysis in Hazus 4.2 SP03.

(5) Calculated using a Census block level, general building stock (GBS) analysis in Hazus 4.2 SP03, and adjusted to reflect the estimated population.

(6) Calculated using a user-defined (UDF) analysis in Hazus 4.2 SP03.

Jurisdiction	Estimated Building Exposure						
	Buildings Exposed (2)	Population Exposed (3)	% of Population Exposed	Value Structure in \$ Exposed (2)	Value Contents in \$ Exposed (2)	Value (Structure and contents in \$) Exposed (2)	% of Total Value Exposed
Camarillo	0	0	0.0%	\$0	\$0	\$0	0.0%
Fillmore	0	0	0.0%	\$0	\$0	\$0	0.0%
Moorpark	0	0	0.0%	\$0	\$0	\$0	0.0%
Ojai	0	0	0.0%	\$0	\$0	\$0	0.0%
Oxnard	3,680	17,365	8.6%	\$1,353,632,901	\$772,006,907	\$2,125,639,808	6.5%
Port Hueneme	179	79	0.4%	\$286,568,639	\$285,192,330	\$571,760,969	12.3%
San Buenaventura	1,324	4,338	3.9%	\$455,402,336	\$284,490,968	\$739,893,304	3.1%
Santa Paula	0	0	0.0%	\$0	\$0	\$0	0.0%
Simi Valley	0	0	0.0%	\$0	\$0	\$0	0.0%
Thousand Oaks	0	0	0.0%	\$0	\$0	\$0	0.0%
Unincorporated	2,117	5,845	6.2%	\$607,923,225	\$318,142,306	\$926,065,532	3.2%
Total	7,300	27,626	3.3%	\$2,703,527,102	\$1,659,832,511	\$4,363,359,613	2.4%

Jurisdiction	Economic Impact							
	Structure Debris (Tons) (4)	Displaced Population (5)	People Requiring Short-Term Shelter (5)	Buildings Impacted (6)	Value Structure in \$ Damaged (6)	Value Contents in \$ Damaged (6)	Total Value (Structure and Contents in \$) Damaged (6)	% of Total Value Damaged
Camarillo	0	0	0	0	\$0	\$0	\$0	0.0%
Fillmore	0	0	0	0	\$0	\$0	\$0	0.0%
Moorpark	0	0	0	0	\$0	\$0	\$0	0.0%
Ojai	0	0	0	0	\$0	\$0	\$0	0.0%
Oxnard	1,681,815	13,969	991	1,136	\$118,372,314	\$190,275,068	\$308,647,382	0.9%
Port Hueneme	2,743	13	1	6	\$72,738	\$351,789	\$424,527	0.0%
San Buenaventura	12,848	2,772	293	22	\$735,705	\$1,320,813	\$2,056,518	0.0%
Santa Paula	0	0	0	0	\$0	\$0	\$0	0.0%
Simi Valley	0	0	0	0	\$0	\$0	\$0	0.0%
Thousand Oaks	0	0	0	0	\$0	\$0	\$0	0.0%
Unincorporated	58,074	5,202	299	133	\$6,014,799	\$6,695,977	\$12,710,776	0.0%
Total	1,755,480	21,957	1,584	1,297	\$125,195,556	\$198,643,647	\$323,839,203	0.2%

Jurisdiction									
	Acres of Inundation Area	Number of Structures in Inundation Area (2)							
		Residential	Commercial	Industrial	Agriculture	Religion	Government	Education	Total
Camarillo	0	0	0	0	0	0	0	0	0
Fillmore	0	0	0	0	0	0	0	0	0
Moorpark	0	0	0	0	0	0	0	0	0
Ojai	0	0	0	0	0	0	0	0	0
Oxnard	1,566	3,478	93	1	0	0	108	0	3680
Port Hueneme	555	20	43	0	0	0	116	0	179
San Buenaventura	782	1,202	77	3	18	0	18	6	1324
Santa Paula	0	0	0	0	0	0	0	0	0
Simi Valley	0	0	0	0	0	0	0	0	0
Thousand Oaks	0	0	0	0	0	0	0	0	0
Unincorporated	1,788	2,025	61	0	0	0	21	10	2117
Total	4,690	6,725	274	4	18	0	263	16	7300

Jurisdiction	Estimated Population (1)	Total Number of Buildings (2)	Total Number of Residential Buildings (2)	Total Building Value (Structure and contents in \$) (2)
Camarillo	70,741	21,829	19,657	\$17,707,287,595
Fillmore	16,419	4,855	4,310	\$2,467,839,895
Moorpark	36,284	10,697	9,769	\$8,222,512,567
Ojai	7,637	3,531	2,918	\$2,340,202,613
Oxnard	202,063	45,874	40,471	\$32,903,823,044
Port Hueneme	21,954	6,413	5,583	\$4,655,956,714
San Buenaventura	110,763	35,310	30,694	\$23,838,143,638
Santa Paula	30,657	8,527	7,211	\$4,571,072,937
Simi Valley	126,356	37,802	35,640	\$24,328,139,279
Thousand Oaks	126,966	38,797	36,348	\$30,560,756,798
Unincorporated	94,003	49,022	32,568	\$29,161,232,550
Total	843,843	262,657	225,169	180,756,967,629

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Camarillo	70,741	21,829	19,657	\$17,707,287,595
Fillmore	16,419	4,855	4,310	\$2,467,839,895
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Total	843,843	262,657	225,169	180,756,967,629

(1) 2020 population from State of California, Department of Finance. Table C1 - Summary Population and Housing Data: 2020, California, Counties, Incorporated Cities/Towns, and Census Designated Places (CDP). Summary from 2020 Census, Redistricting Data (Public Law 94-171) Summary File, generated August 2021.

(2) Values based off of 2021 tax assessor data provided by Ventura County.

(3) Fire and Resource Assessment Program (FRAP) wildfire severity zones data provided by California Department of Forestry and Fire Protection.

(4) Percent of residential buildings exposed multiplied by the Estimated Population.

Jurisdiction	Very High Wildfire Severity Zone (3)						
	Estimated Exposure						
	Estimated Buildings Exposed (2)	Population Exposed (4)	% of Population Exposed	Value Structure in \$ Exposed (2)	Value Contents in \$ Exposed (2)	Value (Structure and contents in \$) Exposed (2)	% of Total Value
Camarillo	1,241	4,322	6.1%	\$412,245,811	\$253,108,930	\$665,354,741	3.8%
Fillmore	590	2,084	12.7%	\$135,636,784	\$73,425,732	\$209,062,516	8.5%
Moorpark	5,516	18,798	51.8%	\$2,426,708,694	\$1,612,958,481	\$4,039,667,175	49.1%
Ojai	341	827	10.8%	\$103,962,503	\$54,880,475	\$158,842,977	6.8%
Oxnard	0	0	0.0%	\$0	\$0	\$0	0.0%
Port Hueneme	0	0	0.0%	\$0	\$0	\$0	0.0%
San Buenaventura	4,482	14,629	13.2%	\$1,398,813,270	\$814,379,281	\$2,213,192,552	9.3%
Santa Paula	530	2,181	7.1%	\$170,305,792	\$92,229,228	\$262,535,020	5.7%
Simi Valley	10,911	37,102	29.4%	\$4,922,319,612	\$3,113,957,340	\$8,036,276,952	33.0%
Thousand Oaks	17,407	58,118	45.8%	\$8,260,681,793	\$5,081,079,764	\$13,341,761,557	43.7%
Unincorporated	17,660	37,699	40.1%	\$6,420,219,970	\$4,228,896,068	\$10,649,116,038	36.5%
Total	58,678	175,759	20.8%	\$24,250,894,229	\$15,324,915,299	\$39,575,809,528	21.9%

Jurisdiction	High Wildfire Severity Zone (3)						
	Estimated Exposure						
	Estimated Buildings Exposed (2)	Population Exposed (4)	% of Population Exposed	Value Structure in \$ Exposed (2)	Value Contents in \$ Exposed (2)	Value (Structure and contents in \$) Exposed (2)	% of Total Value
Camarillo	0	0	0.0%	\$0	\$0	\$0	0.0%
Fillmore	0	0	0.0%	\$0	\$0	\$0	0.0%
Moorpark	0	0	0.0%	\$0	\$0	\$0	0.0%
Ojai	0	0	0.0%	\$0	\$0	\$0	0.0%
Oxnard	0	0	0.0%	\$0	\$0	\$0	0.0%
Port Hueneme	0	0	0.0%	\$0	\$0	\$0	0.0%
San Buenaventura	0	0	0.0%	\$0	\$0	\$0	0.0%
Santa Paula	0	0	0.0%	\$0	\$0	\$0	0.0%
Simi Valley	0	0	0.0%	\$0	\$0	\$0	0.0%
Thousand Oaks	25	0	0.0%	\$12,204,790	\$12,204,790	\$24,409,581	0.1%
Unincorporated	2,847	4,188	4.5%	\$942,999,892	\$713,358,653	\$1,656,358,545	5.7%
Total	2,872	4,188	0.5%	\$955,204,682	\$725,563,443	\$1,680,768,126	0.9%

Jurisdiction	Moderate Wildfire Severity Zone (3)						
	Estimated Exposure						
	Estimated Buildings Exposed (2)	Population Exposed (4)	% of Population Exposed	Value Structure in \$ Exposed (2)	Value Contents in \$ Exposed (2)	Value (Structure and contents in \$) Exposed (2)	% of Total Value
Camarillo	1	0	0.0%	\$2,956,756	\$2,956,756	\$5,913,513	0.0%
Fillmore	28	107	0.6%	\$11,077,799	\$5,538,900	\$16,616,699	0.7%
Moorpark	0	0	0.0%	\$0	\$0	\$0	0.0%
Ojai	0	0	0.0%	\$0	\$0	\$0	0.0%
Oxnard	0	0	0.0%	\$0	\$0	\$0	0.0%
Port Hueneme	0	0	0.0%	\$0	\$0	\$0	0.0%
San Buenaventura	0	0	0.0%	\$0	\$0	\$0	0.0%
Santa Paula	45	140	0.5%	\$8,041,685	\$4,930,717	\$12,972,401	0.3%
Simi Valley	0	0	0.0%	\$0	\$0	\$0	0.0%
Thousand Oaks	0	0	0.0%	\$0	\$0	\$0	0.0%
Unincorporated	4,574	5,854	6.2%	\$1,422,824,222	\$1,085,736,342	\$2,508,560,564	8.6%
Total	4,648	6,101	0.7%	\$1,444,900,462	\$1,099,162,715	\$2,544,063,177	1.4%

Jurisdiction	Number of Structures in Category Very High (2)							
	Residential	Commercial	Industrial	Agriculture	Religion	Government	Education	Total
Camarillo	1,201	38	2	0	0	0	0	1,241
Fillmore	547	38	2	1	0	2	0	590
Moorpark	5,061	190	67	101	2	18	77	5,516
Ojai	316	16	0	9	0	0	0	341
Oxnard	0	0	0	0	0	0	0	0
Port Hueneme	0	0	0	0	0	0	0	0
San Buenaventura	4,054	287	38	8	22	34	39	4,482
Santa Paula	513	11	0	0	0	6	0	530
Simi Valley	10,465	248	75	56	6	25	36	10,911
Thousand Oaks	16,638	378	125	7	76	88	95	17,407
Unincorporated	13,061	1,068	182	2,740	315	70	224	17,660
Total	51,856	2,274	491	2,922	421	243	471	58,678

Jurisdiction	Number of Structures in Category High (2)							
	Residential	Commercial	Industrial	Agriculture	Religion	Government	Education	Total
Camarillo								0
Fillmore								0
Moorpark								0
Ojai								0
Oxnard								0
Port Hueneme								0
San Buenaventura								0
Santa Paula								0
Simi Valley								0
Thousand Oaks	0	0	0	0	0	25	0	25
Unincorporated	1,451	178	0	1,141	28	31	18	2,847
Total	1,451	178	0	1,141	28	56	18	2,872

Jurisdiction	Number of Structures in Category Moderate (2)							
	Residential	Commercial	Industrial	Agriculture	Religion	Government	Education	Total
Camarillo	0	0	0	0	0	1	0	1
Fillmore	28	0	0	0	0	0	0	28
Moorpark	0	0	0	0	0	0	0	0
Ojai	0	0	0	0	0	0	0	0
Oxnard	0	0	0	0	0	0	0	0
Port Hueneme	0	0	0	0	0	0	0	0
San Buenaventura	0	0	0	0	0	0	0	0
Santa Paula	33	11	0	1	0	0	0	45
Simi Valley	0	0	0	0	0	0	0	0
Thousand Oaks	0	0	0	0	0	0	0	0
Unincorporated	2,028	270	12	2,132	59	63	10	4,574
Total	2,089	281	12	2,133	59	64	10	4,648

Appendix D.2

Exposure of Critical Facilities

COUNT OF ALL CRITICAL FACILITIES

Jurisdiction Where Facility Is Located	Communications	Energy	Food, Water, Shelter	Hazardous Material	Health & Medical	Safety & Security	Transportation	Total
Camarillo	20	5	34	14	1	35	32	141
Fillmore	3	1	4	1	0	10	3	22
Moorpark	5	1	7	9	0	19	11	52
Ojai	6	1	14	0	1	13	2	37
Oxnard	24	33	11	23	2	59	36	188
Port Hueneme	7	2	1	2	0	7	8	27
San Buenaventura	34	10	6	6	3	54	63	176
Santa Paula	5	1	3	3	1	15	20	48
Simi Valley	19	4	4	13	1	51	71	163
Thousand Oaks	53	7	20	13	1	55	54	203
Unincorporated	74	46	106	9	0	73	223	531
Total	250	111	210	93	10	391	523	1,588

Jurisdiction That Owns Facility	Communications	Energy	Food, Water, Shelter	Hazardous Material	Health & Medical	Safety & Security	Transportation	Total
Calleguas Municipal Water District	0	0	24	0	0	0	0	24
Casitas Municipal Water District	0	0	66	0	0	0	0	66
Channel Islands Beach Community Services District	0	0	6	0	0	0	0	6
Conejo Recreation & Park District	0	0	5	0	0	0	0	5
Ojai Valley Sanitary District	0	0	2	0	0	0	0	2
Pleasant Valley Recreation and Park District	0	0	1	0	0	3	0	4
Saticoy Sanitary District	0	0	2	0	0	0	0	2
Triunfo Water & Sanitation District	0	0	12	0	0	0	0	12
United Water Conservation District	0	0	1	0	0	0	0	1
VCPWA-WP	0	0	0	0	0	8	0	8
Ventura Co Fire Protection District	0	0	0	0	0	72	0	72
Ventura County Office of Education	0	0	1	0	0	210	0	211
Ventura Regional Sanitation District	0	1	1	0	0	0	0	2
Other	250	110	89	93	10	98	523	1,173
Total	250	111	210	93	10	391	523	1,588

CRITICAL FACILITIES EXPOSED TO DAM FAILURE

Jurisdiction Where Facility Is Located	Communications	Energy	Food, Water, Shelter	Hazardous Material	Health & Medical	Safety & Security	Transportation	Total
Camarillo	1	1	7	9	0	3	7	28
Fillmore	1	0	2	0	0	2	2	7
Moorpark	5	1	0	8	0	6	2	22
Ojai	0	0	1	0	0	2	0	3
Oxnard	23	27	11	16	2	46	28	153
Port Hueneme	7	2	1	2	0	7	7	26
San Buenaventura	0	2	1	0	0	0	3	6
Santa Paula	5	1	3	2	0	8	20	39
Simi Valley	2	1	0	7	0	4	13	27
Thousand Oaks	4	1	3	0	0	1	6	15
Unincorporated	6	5	19	4	0	12	42	88
Total	54	41	48	48	2	91	130	414

Jurisdiction That Owns Facility	Communications	Energy	Food, Water, Shelter	Hazardous Material	Health & Medical	Safety & Security	Transportation	Total
Calleguas Municipal Water District	0	0	5	0	0	0	0	5
Casitas Municipal Water District	0	0	3	0	0	0	0	3
Channel Islands Beach Community Services District	0	0	6	0	0	0	0	6
Conejo Recreation & Park District	0	0	1	0	0	0	0	1
Ojai Valley Sanitary District	0	0	0	0	0	0	0	0
Pleasant Valley Recreation and Park District	0	0	0	0	0	0	0	0
Saticoy Sanitary District	0	0	2	0	0	0	0	2
Triunfo Water & Sanitation District	0	0	1	0	0	0	0	1
United Water Conservation District	0	0	1	0	0	0	0	1
VCPWA-WP	0	0	0	0	0	1	0	1
Ventura Co Fire Protection District	0	0	0	0	0	19	0	19
Ventura County Office of Education	0	0	1	0	0	52	0	53
Ventura Regional Sanitation District	0	0	0	0	0	0	0	0
Other	54	41	28	48	2	19	130	322
Total	54	41	48	48	2	91	130	414

CRITICAL FACILITIES EXPOSED TO 1% ANNUAL CHANCE FLOOD

Jurisdiction Where Facility Is Located	Communications	Energy	Food, Water, Shelter	Hazardous Material	Health & Medical	Safety & Security	Transportation	Total
Camarillo	4	1	1	3	0	0	11	20
Fillmore	0	0		0	0	0	0	0
Moorpark	0	0	1	0	0	0	1	2
Ojai	0	0	8	0	0	0	2	10
Oxnard	0	0	0	0	0	0	1	1
Port Hueneme	4	0	0	0	0	0	4	8
San Buenaventura	0	0	0	0	0	0	10	10
Santa Paula	0	1	1	1	0	4	4	11
Simi Valley	9	0	0	7	0	5	31	52
Thousand Oaks	1	1	1	0	0	1	4	8
Unincorporated	5	2	10	0	0	3	91	111
Total	23	5	22	11	0	13	159	233

Jurisdiction That Owns Facility	Communications	Energy	Food, Water, Shelter	Hazardous Material	Health & Medical	Safety & Security	Transportation	Total
Calleguas Municipal Water District	0	0	3	0	0	0	0	3
Casitas Municipal Water District	0	0	14	0	0	0	0	14
Channel Islands Beach Community Services District	0	0	0	0	0	0	0	0
Conejo Recreation & Park District	0	0	1	0	0	0	0	1
Ojai Valley Sanitary District	0	0	0	0	0	0	0	0
Pleasant Valley Recreation and Park District	0	0	0	0	0	0	0	0
Saticoy Sanitary District	0	0	0	0	0	0	0	0
Triunfo Water & Sanitation District	0	0	0	0	0	0	0	0
United Water Conservation District	0	0	0	0	0	0	0	0
VCPWA-WP	0	0	0	0	0	0	0	0
Ventura Co Fire Protection District	0	0	0	0	0	2	0	2
Ventura County Office of Education	0	0	0	0	0	9	0	9
Ventura Regional Sanitation District	0	0	0	0	0	0	0	0
Other	23	5	4	11	0	2	159	204
Total	23	5	22	11	0	13	159	233

CRITICAL FACILITIES EXPOSED TO 0.2% ANNUAL CHANCE FLOOD

Jurisdiction Where Facility Is Located	Communications	Energy	Food, Water, Shelter	Hazardous Material	Health & Medical	Safety & Security	Transportation	Total
Camarillo	13	3	18	10	0	22	20	86
Fillmore	0	0	0	0	0	0	2	2
Moorpark	4	1	1	5	0	7	3	21
Ojai	0	1	9	0	0	4	2	16
Oxnard	5	13	6	9	0	12	19	64
Port Hueneme	7	2	1	2	0	6	8	26
San Buenaventura	3	1	0	1	0	1	12	18
Santa Paula	3	1	1	1	0	9	5	20
Simi Valley	9	0	0	8	0	10	34	61
Thousand Oaks	2	1	1	0	0	1	5	10
Unincorporated	6	8	24	1	0	10	103	152
Total	52	31	61	37	0	82	213	476

Jurisdiction That Owns Facility	Communications	Energy	Food, Water, Shelter	Hazardous Material	Health & Medical	Safety & Security	Transportation	Total
Calleguas Municipal Water District	0	0	3	0	0	0	0	3
Casitas Municipal Water District	0	0	20	0	0	0	0	20
Channel Islands Beach Community Services District	0	0	6	0	0	0	0	6
Conejo Recreation & Park District	0	0	1	0	0	0	0	1
Ojai Valley Sanitary District	0	0	1	0	0	0	0	1
Pleasant Valley Recreation and Park District	0	0	1	0	0	3	0	4
Saticoy Sanitary District	0	0	2	0	0	0	0	2
Triunfo Water & Sanitation District	0	0	0	0	0	0	0	0
United Water Conservation District	0	0	0	0	0	0	0	0
VCPWA-WP	0	0	0	0	0	1	0	1
Ventura Co Fire Protection District	0	0	0	0	0	17	0	17
Ventura County Office of Education	0	0	1	0	0	46	0	47
Ventura Regional Sanitation District	0	0	0	0	0	0	0	0
Other	52	31	26	37	0	15	213	374
Total	52	31	61	37	0	82	213	476

CRITICAL FACILITIES IN HIGH OR VERY HIGH LANDSLIDE SUSCEPTIBILITY ZONE

Jurisdiction Where Facility Is Located	Communications	Energy	Food, Water, Shelter	Hazardous Material	Health & Medical	Safety & Security	Transportation	Total
Camarillo	1	1	3	1	0	2	3	11
Fillmore	0	0	0	0	0	1	0	1
Moorpark	0	0	4	2	0	3	4	13
Ojai	0	0	3	0	0	1	1	5
Oxnard	0	1	0	0	0	0	1	2
Port Hueneme	0	0	0	0	0	0	0	0
San Buenaventura	4	1	1	0	0	8	6	20
Santa Paula	0	0	0	0	1	4	1	6
Simi Valley	0	0	0	3	0	9	22	34
Thousand Oaks	5	3	10	2	0	18	20	58
Unincorporated	28	21	53	1	0	18	82	203
Total	38	27	74	9	1	64	140	353

Jurisdiction That Owns Facility	Communications	Energy	Food, Water, Shelter	Hazardous Material	Health & Medical	Safety & Security	Transportation	Total
Calleguas Municipal Water District	0	0	14	0	0	0	0	14
Casitas Municipal Water District	0	0	40	0	0	0	0	40
Channel Islands Beach Community Services District	0	0	0	0	0	0	0	0
Conejo Recreation & Park District	0	0	2	0	0	0	0	2
Ojai Valley Sanitary District	0	0	0	0	0	0	0	0
Pleasant Valley Recreation and Park District	0	0	0	0	0	0	0	0
Saticoy Sanitary District	0	0	0	0	0	0	0	0
Triunfo Water & Sanitation District	0	0	5	0	0	0	0	5
United Water Conservation District	0	0	0	0	0	0	0	0
VCPWA-WP	0	0	0	0	0	7	0	7
Ventura Co Fire Protection District	0	0	0	0	0	10	0	10
Ventura County Office of Education	0	0	0	0	0	30	0	30
Ventura Regional Sanitation District	0	1	0	0	0	0	0	1
Other	38	26	13	9	1	17	140	244
Total	38	27	74	9	1	64	140	353

CRITICAL FACILITIES ON NEHRP D OR E SOILS

Jurisdiction Where Facility Is Located	Communications	Energy	Food, Water, Shelter	Hazardous Material	Health & Medical	Safety & Security	Transportation	Total
Camarillo	16	3	29	13	1	29	27	118
Fillmore	3	1	4	1	0	10	3	22
Moorpark	5	1	3	9	0	10	7	35
Ojai	4	1	11	0	0	11	1	28
Oxnard	24	33	11	23	2	59	36	188
Port Hueneme	7	2	1	2	0	7	8	27
San Buenaventura	32	9	5	6	3	53	63	171
Santa Paula	5	1	3	3	0	14	20	46
Simi Valley	18	4	4	13	1	45	62	147
Thousand Oaks	28	3	6	3	0	7	34	81
Unincorporated	9	16	50	6	0	36	191	308
Total	151	74	127	79	7	281	452	1,171

Jurisdiction That Owns Facility	Communications	Energy	Food, Water, Shelter	Hazardous Material	Health & Medical	Safety & Security	Transportation	Total
Calleguas Municipal Water District	0	0	5	0	0	0	0	5
Casitas Municipal Water District	0	0	32	0	0	0	0	32
Channel Islands Beach Community Services District	0	0	6	0	0	0	0	6
Conejo Recreation & Park District	0	0	2	0	0	0	0	2
Ojai Valley Sanitary District	0	0	2	0	0	0	0	2
Pleasant Valley Recreation and Park District	0	0	1	0	0	3	0	4
Saticoy Sanitary District	0	0	2	0	0	0	0	2
Triunfo Water & Sanitation District	0	0	1	0	0	0	0	1
United Water Conservation District	0	0	1	0	0	0	0	1
VCPWA-WP	0	0	0	0	0	1	0	1
Ventura Co Fire Protection District	0	0	0	0	0	53	0	53
Ventura County Office of Education	0	0	1	0	0	161	0	162
Ventura Regional Sanitation District	0	1	0	0	0	0	0	1
Other	151	73	74	79	7	63	452	899
Total	151	74	127	79	7	281	452	1,171

CRITICAL FACILITIES EXPOSED TO 25-CENTIMETER SEA-LEVEL RISE

Jurisdiction Where Facility Is Located	Communications	Energy	Food, Water, Shelter	Hazardous Material	Health & Medical	Safety & Security	Transportation	Total
Camarillo	0	0	0	0	0	0	0	0
Fillmore	0	0	0	0	0	0	0	0
Moorpark	0	0	0	0	0	0	0	0
Ojai	0	0	0	0	0	0	0	0
Oxnard	0	0	0	0	0	0	0	0
Port Hueneme	0	0	0	0	0	0	1	1
San Buenaventura	0	0	0	0	0	0	0	0
Santa Paula	0	0	0	0	0	0	0	0
Simi Valley	0	0	0	0	0	0	0	0
Thousand Oaks	0	0	0	0	0	0	0	0
Unincorporated	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	1	1

Jurisdiction That Owns Facility	Communications	Energy	Food, Water, Shelter	Hazardous Material	Health & Medical	Safety & Security	Transportation	Total
Calleguas Municipal Water District	0	0	0	0	0	0	0	0
Casitas Municipal Water District	0	0	0	0	0	0	0	0
Channel Islands Beach Community Services District	0	0	0	0	0	0	0	0
Conejo Recreation & Park District	0	0	0	0	0	0	0	0
Ojai Valley Sanitary District	0	0	0	0	0	0	0	0
Pleasant Valley Recreation and Park District	0	0	0	0	0	0	0	0
Saticoy Sanitary District	0	0	0	0	0	0	0	0
Triunfo Water & Sanitation District	0	0	0	0	0	0	0	0
United Water Conservation District	0	0	0	0	0	0	0	0
VCPWA-WP	0	0	0	0	0	0	0	0
Ventura Co Fire Protection District	0	0	0	0	0	0	0	0
Ventura County Office of Education	0	0	0	0	0	0	0	0
Ventura Regional Sanitation District	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	1	1
Total	0	0	0	0	0	0	1	1

CRITICAL FACILITIES EXPOSED TO 100-CENTIMETER SEA-LEVEL RISE

Jurisdiction Where Facility Is Located	Communications	Energy	Food, Water, Shelter	Hazardous Material	Health & Medical	Safety & Security	Transportation	Total
Camarillo	0	0	0	0	0	0	0	0
Fillmore	0	0	0	0	0	0	0	0
Moorpark	0	0	0	0	0	0	0	0
Ojai	0	0	0	0	0	0	0	0
Oxnard	0	0	1	0	0	0	1	2
Port Hueneme	0	0	0	0	0	0	1	1
San Buenaventura	0	0	0	0	0	0	0	0
Santa Paula	0	0	0	0	0	0	0	0
Simi Valley	0	0	0	0	0	0	0	0
Thousand Oaks	0	0	0	0	0	0	0	0
Unincorporated	0	0	0	1	0	0	2	3
Total	0	0	1	1	0	0	4	6

Jurisdiction That Owns Facility	Communications	Energy	Food, Water, Shelter	Hazardous Material	Health & Medical	Safety & Security	Transportation	Total
Calleguas Municipal Water District	0	0	0	0	0	0	0	0
Casitas Municipal Water District	0	0	0	0	0	0	0	0
Channel Islands Beach Community Services District	0	0	1	0	0	0	0	1
Conejo Recreation & Park District	0	0	0	0	0	0	0	0
Ojai Valley Sanitary District	0	0	0	0	0	0	0	0
Pleasant Valley Recreation and Park District	0	0	0	0	0	0	0	0
Saticoy Sanitary District	0	0	0	0	0	0	0	0
Triunfo Water & Sanitation District	0	0	0	0	0	0	0	0
United Water Conservation District	0	0	0	0	0	0	0	0
VCPWA-WP	0	0	0	0	0	0	0	0
Ventura Co Fire Protection District	0	0	0	0	0	0	0	0
Ventura County Office of Education	0	0	0	0	0	0	0	0
Ventura Regional Sanitation District	0	0	0	0	0	0	0	0
Other	0	0	0	1	0	0	4	5
Total	0	0	1	1	0	0	4	6

CRITICAL FACILITIES EXPOSED TO TSUNAMI

Jurisdiction Where Facility Is Located	Communications	Energy	Food, Water, Shelter	Hazardous Material	Health & Medical	Safety & Security	Transportation	Total
Camarillo	0	0	0	0	0	0	0	0
Fillmore	0	0	0	0	0	0	0	0
Moorpark	0	0	0	0	0	0	0	0
Ojai	0	0	0	0	0	0	0	0
Oxnard	2	1	2	0	0	1	3	9
Port Hueneme	2	0	0	0	0	0	2	4
San Buenaventura	0	0	2	0	0	1	1	4
Santa Paula	0	0	0	0	0	0	0	0
Simi Valley	0	0	0	0	0	0	0	0
Thousand Oaks	0	0	0	0	0	0	0	0
Unincorporated	0	0	9	0	0	1	1	11
Total	4	1	13	0	0	3	7	28

Jurisdiction That Owns Facility	Communications	Energy	Food, Water, Shelter	Hazardous Material	Health & Medical	Safety & Security	Transportation	Total
Calleguas Municipal Water District	0	0	0	0	0	0	0	0
Casitas Municipal Water District	0	0	2	0	0	0	0	2
Channel Islands Beach Community Services District	0	0	6	0	0	0	0	6
Conejo Recreation & Park District	0	0	0	0	0	0	0	0
Ojai Valley Sanitary District	0	0	0	0	0	0	0	0
Pleasant Valley Recreation and Park District	0	0	0	0	0	0	0	0
Saticoy Sanitary District	0	0	0	0	0	0	0	0
Triunfo Water & Sanitation District	0	0	0	0	0	0	0	0
United Water Conservation District	0	0	0	0	0	0	0	0
VCPWA-WP	0	0	0	0	0	0	0	0
Ventura Co Fire Protection District	0	0	0	0	0	1	0	1
Ventura County Office of Education	0	0	0	0	0	2	0	2
Ventura Regional Sanitation District	0	0	0	0	0	0	0	0
Other	4	1	5	0	0	0	7	17
Total	4	1	13	0	0	3	7	28

CRITICAL FACILITIES IN HIGH OR VERY HIGH WILDFIRE HAZARD SEVERITY ZONE

Jurisdiction Where Facility Is Located	Communications	Energy	Food, Water, Shelter	Hazardous Material	Health & Medical	Safety & Security	Transportation	Total
Camarillo	0	0	1	0	0	0	4	5
Fillmore	0	1	0	0	0	0	0	1
Moorpark	1	1	6	4	0	9	8	29
Ojai	0	0	4	0	0	1	0	5
Oxnard	0	0	0	0	0	0	0	0
Port Hueneme	0	0	0	0	0	0	0	0
San Buenaventura	2	1	1	0	0	2	4	10
Santa Paula	0	0	0	0	1	1	0	2
Simi Valley	2	0	1	5	1	5	24	38
Thousand Oaks	10	2	14	2	0	17	17	62
Unincorporated	57	31	52	3	0	34	74	251
Total	72	36	79	14	2	69	131	403

Jurisdiction That Owns Facility	Communications	Energy	Food, Water, Shelter	Hazardous Material	Health & Medical	Safety & Security	Transportation	Total
Calleguas Municipal Water District	0	0	17	0	0	0	0	17
Casitas Municipal Water District	0	0	28	0	0	0	0	28
Channel Islands Beach Community Services District	0	0	0	0	0	0	0	0
Conejo Recreation & Park District	0	0	2	0	0	0	0	2
Ojai Valley Sanitary District	0	0	1	0	0	0	0	1
Pleasant Valley Recreation and Park District	0	0	0	0	0	0	0	0
Saticoy Sanitary District	0	0	0	0	0	0	0	0
Triunfo Water & Sanitation District	0	0	11	0	0	0	0	11
United Water Conservation District	0	0	0	0	0	0	0	0
VCPWA-WP	0	0	0	0	0	6	0	6
Ventura Co Fire Protection District	0	0	0	0	0	17	0	17
Ventura County Office of Education	0	0	0	0	0	28	0	28
Ventura Regional Sanitation District	0	1	1	0	0	0	0	2
Other	72	35	19	14	2	18	131	291
Total	72	36	79	14	2	69	131	403

Appendix D.3

Risk Ranking

	Probability		Impact on People			
	Probability (High, Medium, Low, None)	Probability Factor (3,2,1,0)	% Population Exposed	Impact (High, Medium, Low, None)	Impact Factor	Weighted Impact Factor
Camarillo	Medium	2	14.30%	Medium	2	6
Fillmore	Medium	2	48.00%	High	3	9
Moorpark	Medium	2	20.50%	Medium	2	6
Ojai	Medium	2	9.56%	Low	1	3
Oxnard	Medium	2	83.62%	High	3	9
Port Hueneme	Medium	2	88.23%	High	3	9
San Buenaventura	Medium	2	4.45%	Low	1	3
Santa Paula	Medium	2	40.16%	High	3	9
Simi Valley	Medium	2	11.87%	Medium	2	6
Thousand Oaks	Medium	2	2.86%	Low	1	3
Unincorporated	Medium	2	17.84%	Medium	2	6
Total	Medium	2	31.66%	High	3	9

	Impact on Property				Impact on Economy					
	% of Total Value Exposed	Impact (High, Medium, Low, None)	Impact Factor	Weighted Impact Factor	% of Total Value Damaged	Impact (High, Medium, Low, None)	Impact Factor	Weighted Impact Factor	Risk Ranking Score	Hazard Risk Rating
Camarillo	19.99%	Medium	2	4	0.18%	Low	1	1	22	Medium
Fillmore	42.03%	High	3	6	26.60%	High	3	3	36	High
Moorpark	31.95%	High	3	6	2.13%	Low	1	1	26	Medium
Ojai	7.12%	Low	1	2	1.05%	Low	1	1	12	Low
Oxnard	79.67%	High	3	6	22.62%	High	3	3	36	High
Port Hueneme	81.33%	High	3	6	24.21%	High	3	3	36	High
San Buenaventura	6.78%	Low	1	2	2.30%	Low	1	1	12	Low
Santa Paula	56.24%	High	3	6	36.47%	High	3	3	36	High
Simi Valley	12.77%	Medium	2	4	2.24%	Low	1	1	22	Medium
Thousand Oaks	2.50%	Low	1	2	0.81%	Low	1	1	12	Low
Unincorporated	20.65%	Medium	2	4	8.42%	Medium	2	2	24	Medium
Total	28.46%	High	3	6	8.26%	Medium	2	2	34	High

	Probability		Impact on People			
	Probability (High, Medium, Low, None)	Probability Factor (3,2,1,0)	% Population Exposed	Impact (High, Medium, Low, None)	Impact Factor	Weighted Impact Factor
Camarillo	Low	1	100.00%	High	3	9
Fillmore	Low	1	100.00%	High	3	9
Moorpark	Low	1	100.00%	High	3	9
Ojai	Low	1	100.00%	High	3	9
Oxnard	Low	1	100.00%	High	3	9
Port Hueneme	Low	1	100.00%	High	3	9
San Buenaventura	Low	1	100.00%	High	3	9
Santa Paula	Low	1	100.00%	High	3	9
Simi Valley	Low	1	100.00%	High	3	9
Thousand Oaks	Low	1	100.00%	High	3	9
Unincorporated	Low	1	100.00%	High	3	9
TOTAL	Low	1	100.00%	High	3	9

	Impact on Property				Impact on Economy				Risk Ranking Score	Hazard Risk Rating
	% of Total Value Exposed	Impact (High, Medium, Low, None)	Impact Factor	Weighted Impact Factor	% of Total Value Damaged	Impact (High, Medium, Low, None)	Impact Factor	Weighted Impact Factor		
Camarillo	100.00%	High	3	6	10.27%	High	3	3	18	Medium
Fillmore	100.00%	High	3	6	18.22%	High	3	3	18	Medium
Moorpark	100.00%	High	3	6	11.58%	High	3	3	18	Medium
Ojai	100.00%	High	3	6	2.09%	Low	1	1	16	Medium
Oxnard	100.00%	High	3	6	18.11%	High	3	3	18	Medium
Port Hueneme	100.00%	High	3	6	22.51%	High	3	3	18	Medium
San Buenaventura	100.00%	High	3	6	15.47%	High	3	3	18	Medium
Santa Paula	100.00%	High	3	6	18.91%	High	3	3	18	Medium
Simi Valley	100.00%	High	3	6	9.48%	Medium	2	2	17	Medium
Thousand Oaks	100.00%	High	3	6	4.46%	Low	1	1	16	Medium
Unincorporated	100.00%	High	3	6	10.35%	High	3	3	18	Medium
TOTAL	100.00%	High	3	6	11.90%	High	3	3	18	Medium

	Probability		Impact on People			
	Probability (High, Medium, Low, None)	Probability Factor (3,2,1,0)	% Population Exposed	Impact (High, Medium, Low, None)	Impact Factor	Weighted Impact Factor
Camarillo	Low	1	100.00%	High	3	9
Fillmore	Low	1	100.00%	High	3	9
Moorpark	Low	1	100.00%	High	3	9
Ojai	Low	1	100.00%	High	3	9
Oxnard	Low	1	100.00%	High	3	9
Port Hueneme	Low	1	100.00%	High	3	9
San Buenaventura	Low	1	100.00%	High	3	9
Santa Paula	Low	1	100.00%	High	3	9
Simi Valley	Low	1	100.00%	High	3	9
Thousand Oaks	Low	1	100.00%	High	3	9
Unincorporated	Low	1	100.00%	High	3	9
TOTAL	Low	1	100.00%	High	3	9

	Impact on Property				Impact on Economy				Risk Ranking Score	Hazard Risk Rating
	% of Total Value Exposed	Impact (High, Medium, Low, None)	Impact Factor	Weighted Impact Factor	% of Total Value Damaged	Impact (High, Medium, Low, None)	Impact Factor	Weighted Impact Factor		
Camarillo	100.00%	High	3	6	2.79%	Low	1	1	16	Medium
Fillmore	100.00%	High	3	6	18.36%	High	3	3	18	Medium
Moorpark	100.00%	High	3	6	6.93%	Medium	2	2	17	Medium
Ojai	100.00%	High	3	6	6.89%	Medium	2	2	17	Medium
Oxnard	100.00%	High	3	6	3.80%	Low	1	1	16	Medium
Port Hueneme	100.00%	High	3	6	3.50%	Low	1	1	16	Medium
San Buenaventura	100.00%	High	3	6	4.39%	Low	1	1	16	Medium
Santa Paula	100.00%	High	3	6	9.74%	Medium	2	2	17	Medium
Simi Valley	100.00%	High	3	6	4.72%	Low	1	1	16	Medium
Thousand Oaks	100.00%	High	3	6	1.72%	Low	1	1	16	Medium
Unincorporated	100.00%	High	3	6	5.28%	Medium	2	2	17	Medium
TOTAL	100.00%	High	3	6	4.31%	Low	1	1	16	Medium

	Probability		Impact on People			
	Probability (High, Medium, Low, None)	Probability Factor (3,2,1,0)	% Population Exposed	Impact (High, Medium, Low, None)	Impact Factor	Weighted Impact Factor
Camarillo	Medium	2	100.00%	High	3	9
Fillmore	Medium	2	100.00%	High	3	9
Moorpark	Medium	2	100.00%	High	3	9
Ojai	Medium	2	100.00%	High	3	9
Oxnard	Medium	2	100.00%	High	3	9
Port Hueneme	Medium	2	100.00%	High	3	9
San Buenaventura	Medium	2	100.00%	High	3	9
Santa Paula	Medium	2	100.00%	High	3	9
Simi Valley	Medium	2	100.00%	High	3	9
Thousand Oaks	Medium	2	100.00%	High	3	9
Unincorporated	Medium	2	100.00%	High	3	9
TOTAL	Medium	2	100.00%	High	3	9

	Impact on Property				Impact on Economy				Risk Ranking Score	Hazard Risk Rating
	% of Total Value Exposed	Impact (High, Medium, Low, None)	Impact Factor	Weighted Impact Factor	% of Total Value Damaged	Impact (High, Medium, Low, None)	Impact Factor	Weighted Impact Factor		
Camarillo	100.00%	High	3	6	0.62%	Low	1	1	32	Medium
Fillmore	100.00%	High	3	6	3.99%	Low	1	1	32	Medium
Moorpark	100.00%	High	3	6	1.98%	Low	1	1	32	Medium
Ojai	100.00%	High	3	6	1.20%	Low	1	1	32	Medium
Oxnard	100.00%	High	3	6	0.53%	Low	1	1	32	Medium
Port Hueneme	100.00%	High	3	6	0.86%	Low	1	1	32	Medium
San Buenaventura	100.00%	High	3	6	0.99%	Low	1	1	32	Medium
Santa Paula	100.00%	High	3	6	2.33%	Low	1	1	32	Medium
Simi Valley	100.00%	High	3	6	1.70%	Low	1	1	32	Medium
Thousand Oaks	100.00%	High	3	6	0.60%	Low	1	1	32	Medium
Unincorporated	100.00%	High	3	6	1.55%	Low	1	1	32	Medium
TOTAL	100.00%	High	3	6	1.11%	Low	1	1	32	Medium

	Probability		Impact on People			
	Probability (High, Medium, Low, None)	Probability Factor (3,2,1,0)	% Population Exposed	Impact (High, Medium, Low, None)	Impact Factor	Weighted Impact Factor
Camarillo	Low	1	100.00%	High	3	9
Fillmore	Low	1	100.00%	High	3	9
Moorpark	Low	1	100.00%	High	3	9
Ojai	Low	1	100.00%	High	3	9
Oxnard	Low	1	100.00%	High	3	9
Port Hueneme	Low	1	100.00%	High	3	9
San Buenaventura	Low	1	100.00%	High	3	9
Santa Paula	Low	1	100.00%	High	3	9
Simi Valley	Low	1	100.00%	High	3	9
Thousand Oaks	Low	1	100.00%	High	3	9
Unincorporated	Low	1	100.00%	High	3	9
TOTAL	Low	1	100.00%	High	3	9

	Impact on Property				Impact on Economy				Risk Ranking Score	Hazard Risk Rating
	% of Total Value Exposed	Impact (High, Medium, Low, None)	Impact Factor	Weighted Impact Factor	% of Total Value Damaged	Impact (High, Medium, Low, None)	Impact Factor	Weighted Impact Factor		
Camarillo	100.00%	High	3	6	5.14%	Medium	2	2	17	Medium
Fillmore	100.00%	High	3	6	13.80%	High	3	3	18	Medium
Moorpark	100.00%	High	3	6	5.18%	Medium	2	2	17	Medium
Ojai	100.00%	High	3	6	4.07%	Low	1	1	16	Medium
Oxnard	100.00%	High	3	6	12.37%	High	3	3	18	Medium
Port Hueneme	100.00%	High	3	6	12.17%	High	3	3	18	Medium
San Buenaventura	100.00%	High	3	6	17.38%	High	3	3	18	Medium
Santa Paula	100.00%	High	3	6	17.71%	High	3	3	18	Medium
Simi Valley	100.00%	High	3	6	1.74%	Low	1	1	16	Medium
Thousand Oaks	100.00%	High	3	6	1.50%	Low	1	1	16	Medium
Unincorporated	100.00%	High	3	6	7.94%	Medium	2	2	17	Medium
TOTAL	100.00%	High	3	6	8.05%	Medium	2	2	17	Medium

	Probability		Impact on People			
	Probability (High, Medium, Low, None)	Probability Factor (3,2,1,0)	% Population Exposed	Impact (High, Medium, Low, None)	Impact Factor	Weighted Impact Factor
Camarillo	Medium	2	100.00%	High	3	9
Fillmore	Medium	2	100.00%	High	3	9
Moorpark	Medium	2	100.00%	High	3	9
Ojai	Medium	2	100.00%	High	3	9
Oxnard	Medium	2	100.00%	High	3	9
Port Hueneme	Medium	2	100.00%	High	3	9
San Buenaventura	Medium	2	100.00%	High	3	9
Santa Paula	Medium	2	100.00%	High	3	9
Simi Valley	Medium	2	100.00%	High	3	9
Thousand Oaks	Medium	2	100.00%	High	3	9
Unincorporated	Medium	2	100.00%	High	3	9
TOTAL	Medium	2	100.00%	High	3	9

	Impact on Property				Impact on Economy				Risk Ranking Score	Hazard Risk Rating
	% of Total Value Exposed	Impact (High, Medium, Low, None)	Impact Factor	Weighted Impact Factor	% of Total Value Damaged	Impact (High, Medium, Low, None)	Impact Factor	Weighted Impact Factor		
Camarillo	100.00%	High	3	6	2.73%	Low	1	1	32	Medium
Fillmore	100.00%	High	3	6	5.48%	Medium	2	2	34	High
Moorpark	100.00%	High	3	6	4.54%	Low	1	1	32	Medium
Ojai	100.00%	High	3	6	1.33%	Low	1	1	32	Medium
Oxnard	100.00%	High	3	6	7.49%	Medium	2	2	34	High
Port Hueneme	100.00%	High	3	6	7.45%	Medium	2	2	34	High
San Buenaventura	100.00%	High	3	6	3.84%	Low	1	1	32	Medium
Santa Paula	100.00%	High	3	6	3.11%	Low	1	1	32	Medium
Simi Valley	100.00%	High	3	6	4.75%	Low	1	1	32	Medium
Thousand Oaks	100.00%	High	3	6	2.37%	Low	1	1	32	Medium
Unincorporated	100.00%	High	3	6	4.15%	Low	1	1	32	Medium
TOTAL	100.00%	High	3	6	4.42%	Low	1	1	32	Medium

	Probability		Impact on People			
	Probability (High, Medium, Low, None)	Probability Factor (3,2,1,0)	% Population Exposed	Impact (High, Medium, Low, None)	Impact Factor	Weighted Impact Factor
Camarillo	High	3	5.76%	Low	1	3
Fillmore	High	3	2.60%	Low	1	3
Moorpark	High	3	1.90%	Low	1	3
Ojai	High	3	1.99%	Low	1	3
Oxnard	High	3	0.42%	Low	1	3
Port Hueneme	High	3	0.02%	Low	1	3
San Buenaventura	High	3	0.32%	Low	1	3
Santa Paula	High	3	30.97%	High	3	9
Simi Valley	High	3	8.42%	Low	1	3
Thousand Oaks	High	3	0.89%	Low	1	3
Unincorporated	High	3	5.74%	Low	1	3
Total	High	3	3.93%	Low	1	3

	Impact on Property				Impact on Economy					
	% of Total Value Exposed	Impact (High, Medium, Low, None)	Impact Factor	Weighted Impact Factor	% of Total Value Damaged	Impact (High, Medium, Low, None)	Impact Factor	Weighted Impact Factor	Risk Ranking Score	Hazard Risk Rating
Camarillo	9.37%	Low	1	2	0.19%	Low	1	1	18	Medium
Fillmore	2.86%	Low	1	2	0.15%	Low	1	1	18	Medium
Moorpark	4.31%	Low	1	2	0.43%	Low	1	1	18	Medium
Ojai	2.43%	Low	1	2	0.03%	Low	1	1	18	Medium
Oxnard	0.93%	Low	1	2	0.03%	Low	1	1	18	Medium
Port Hueneme	0.25%	Low	1	2	0.00%	None	0	0	15	Low
San Buenaventura	1.62%	Low	1	2	0.17%	Low	1	1	18	Medium
Santa Paula	34.35%	High	3	6	2.85%	Low	1	1	48	High
Simi Valley	12.12%	Medium	2	4	1.01%	Low	1	1	24	Medium
Thousand Oaks	1.59%	Low	1	2	0.14%	Low	1	1	18	Medium
Unincorporated	7.20%	Low	1	2	0.70%	Low	1	1	18	Medium
Total	5.50%	Low	1	2	0.41%	Low	1	1	18	Medium

	Probability		Impact on People			
	Probability (High, Medium, Low, None)	Probability Factor (3,2,1,0)	% Population Exposed	Impact (High, Medium, Low, None)	Impact Factor	Weighted Impact Factor
Camarillo	Medium	2	34.53%	High	3	9
Fillmore	Medium	2	6.08%	Low	1	3
Moorpark	Medium	2	20.60%	Medium	2	6
Ojai	Medium	2	28.07%	High	3	9
Oxnard	Medium	2	35.68%	High	3	9
Port Hueneme	Medium	2	95.00%	High	3	9
San Buenaventura	Medium	2	3.58%	Low	1	3
Santa Paula	Medium	2	54.61%	High	3	9
Simi Valley	Medium	2	10.63%	Medium	2	6
Thousand Oaks	Medium	2	1.61%	Low	1	3
Unincorporated	Medium	2	17.65%	Medium	2	6
Total	Medium	2	21.42%	Medium	2	6

	Impact on Property				Impact on Economy					
	% of Total Value Exposed	Impact (High, Medium, Low, None)	Impact Factor	Weighted Impact Factor	% of Total Value Damaged	Impact (High, Medium, Low, None)	Impact Factor	Weighted Impact Factor	Risk Ranking Score	Hazard Risk Rating
Camarillo	44.55%	High	3	6	5.27%	Medium	2	2	34	High
Fillmore	5.32%	Low	1	2	0.25%	Low	1	1	12	Low
Moorpark	31.01%	High	3	6	5.41%	Medium	2	2	28	Medium
Ojai	22.78%	Medium	2	4	4.77%	Low	1	1	28	Medium
Oxnard	34.42%	High	3	6	1.78%	Low	1	1	32	Medium
Port Hueneme	97.70%	High	3	6	33.68%	High	3	3	36	High
San Buenaventura	9.00%	Low	1	2	1.52%	Low	1	1	12	Low
Santa Paula	60.16%	High	3	6	1.41%	Low	1	1	32	Medium
Simi Valley	17.69%	Medium	2	4	2.20%	Low	1	1	22	Medium
Thousand Oaks	2.36%	Low	1	2	0.19%	Low	1	1	12	Low
Unincorporated	20.03%	Medium	2	4	3.62%	Low	1	1	22	Medium
Total	23.64%	Medium	2	4	3.17%	Low	1	1	22	Medium

	Probability		Impact on People			
	Probability (High, Medium, Low, None)	Probability Factor (3,2,1,0)	% Population Exposed	Impact (High, Medium, Low, None)	Impact Factor	Weighted Impact Factor
Camarillo	High	3	1.55%	Low	1	3
Fillmore	High	3	0.35%	Low	1	3
Moorpark	High	3	1.63%	Low	1	3
Ojai	High	3	0.21%	Low	1	3
Oxnard	High	3	0.00%	None	0	0
Port Hueneme	High	3	0.00%	None	0	0
San Buenaventura	High	3	3.83%	Low	1	3
Santa Paula	High	3	1.04%	Low	1	3
Simi Valley	High	3	0.57%	Low	1	3
Thousand Oaks	High	3	2.17%	Low	1	3
Unincorporated	High	3	2.88%	Low	1	3
Total	High	3	1.48%	Low	1	3

Impact on Property					Impact on Economy				Risk Ranking Score	Hazard Risk Rating
	% of Total Value Exposed	Impact (High, Medium, Low, None)	Impact Factor	Weighted Impact Factor	% of Total Value Damaged	Impact (High, Medium, Low, None)	Impact Factor	Weighted Impact Factor		
Camarillo	1.26%	Low	1	2	0.31%	Low	1	1	18	Medium
Fillmore	0.49%	Low	1	2	0.12%	Low	1	1	18	Medium
Moorpark	2.28%	Low	1	2	0.57%	Low	1	1	18	Medium
Ojai	0.39%	Low	1	2	0.10%	Low	1	1	18	Medium
Oxnard	0.01%	Low	1	2	0.00%	None	0	0	6	Low
Port Hueneme	0.00%	None	0	0	0.00%	None	0	0	0	Low
San Buenaventura	2.67%	Low	1	2	0.67%	Low	1	1	18	Medium
Santa Paula	0.92%	Low	1	2	0.23%	Low	1	1	18	Medium
Simi Valley	1.07%	Low	1	2	0.27%	Low	1	1	18	Medium
Thousand Oaks	1.96%	Low	1	2	0.49%	Low	1	1	18	Medium
Unincorporated	3.27%	Low	1	2	0.82%	Low	1	1	18	Medium
Total	1.62%	Low	1	2	0.40%	Low	1	1	18	Medium

	Probability		Impact on People			
	Probability (High, Medium, Low, None)	Probability Factor (3,2,1,0)	% Population Exposed	Impact (High, Medium, Low, None)	Impact Factor	Weighted Impact Factor
Camarillo	High	3	0.00%	None	0	0
Fillmore	High	3	0.00%	None	0	0
Moorpark	High	3	0.00%	None	0	0
Ojai	High	3	0.00%	None	0	0
Oxnard	High	3	0.01%	Low	1	3
Port Hueneme	High	3	0.00%	None	0	0
San Buenaventura	High	3	0.00%	None	0	0
Santa Paula	High	3	0.00%	None	0	0
Simi Valley	High	3	0.00%	None	0	0
Thousand Oaks	High	3	0.00%	None	0	0
Unincorporated	High	3	0.01%	None	0	0
Total	High	3	0.00%	None	0	0

Impact on Property					Impact on Economy				Risk Ranking Score	Hazard Risk Rating
	% of Total Value Exposed	Impact (High, Medium, Low, None)	Impact Factor	Weighted Impact Factor	% of Total Value Damaged	Impact (High, Medium, Low, None)	Impact Factor	Weighted Impact Factor		
Camarillo	0.00%	None	0	0	0.00%	None	0	0	0	Low
Fillmore	0.00%	None	0	0	0.00%	None	0	0	0	Low
Moorpark	0.00%	None	0	0	0.00%	None	0	0	0	Low
Ojai	0.00%	None	0	0	0.00%	None	0	0	0	Low
Oxnard	0.01%	Low	1	2	0.01%	Low	1	1	18	Medium
Port Hueneme	0.00%	None	0	0	0.00%	None	0	0	0	Low
San Buenaventura	0.11%	Low	1	2	0.11%	Low	1	1	9	Low
Santa Paula	0.00%	None	0	0	0.00%	None	0	0	0	Low
Simi Valley	0.00%	None	0	0	0.00%	None	0	0	0	Low
Thousand Oaks	0.00%	None	0	0	0.00%	None	0	0	0	Low
Unincorporated	0.00%	None	0	0	0.00%	None	0	0	0	Low
Total	0.02%	Low	1	2	0.02%	Low	1	1	9	Low

	Probability		Impact on People			
	Probability (High, Medium, Low, None)	Probability Factor (3,2,1,0)	% Population Exposed	Impact (High, Medium, Low, None)	Impact Factor	Weighted Impact Factor
Camarillo	Medium	2	0.00%	None	0	0
Fillmore	Medium	2	0.00%	None	0	0
Moorpark	Medium	2	0.00%	None	0	0
Ojai	Medium	2	0.00%	None	0	0
Oxnard	Medium	2	0.16%	Low	1	3
Port Hueneme	Medium	2	0.00%	None	0	0
San Buenaventura	Medium	2	0.02%	Low	1	3
Santa Paula	Medium	2	0.00%	None	0	0
Simi Valley	Medium	2	0.00%	None	0	0
Thousand Oaks	Medium	2	0.00%	None	0	0
Unincorporated	Medium	2	0.24%	Low	1	3
Total	Medium	2	0.07%	Low	1	3

Impact on Property					Impact on Economy				Risk Ranking Score	Hazard Risk Rating
	% of Total Value Exposed	Impact (High, Medium, Low, None)	Impact Factor	Weighted Impact Factor	% of Total Value Damaged	Impact (High, Medium, Low, None)	Impact Factor	Weighted Impact Factor		
Camarillo	0.00%	None	0	0	0.00%	None	0	0	0	Low
Fillmore	0.00%	None	0	0	0.00%	None	0	0	0	Low
Moorpark	0.00%	None	0	0	0.00%	None	0	0	0	Low
Ojai	0.00%	None	0	0	0.00%	None	0	0	0	Low
Oxnard	0.10%	Low	1	2	0.10%	Low	1	1	12	Low
Port Hueneme	1.80%	Low	1	2	1.80%	Low	1	1	6	Low
San Buenaventura	0.14%	Low	1	2	0.14%	Low	1	1	12	Low
Santa Paula	0.00%	None	0	0	0.00%	None	0	0	0	Low
Simi Valley	0.00%	None	0	0	0.00%	None	0	0	0	Low
Thousand Oaks	0.00%	None	0	0	0.00%	None	0	0	0	Low
Unincorporated	0.39%	Low	1	2	0.39%	Low	1	1	12	Low
Total	0.15%	Low	1	2	0.15%	Low	1	1	12	Low

	Probability		Impact on People			
	Probability (High, Medium, Low, None)	Probability Factor (3,2,1,0)	% Population Exposed	Impact (High, Medium, Low, None)	Impact Factor	Weighted Impact Factor
Camarillo	Medium	2	0.00%	None	0	0
Fillmore	Medium	2	0.00%	None	0	0
Moorpark	Medium	2	0.00%	None	0	0
Ojai	Medium	2	0.00%	None	0	0
Oxnard	Medium	2	8.59%	Low	1	3
Port Hueneme	Medium	2	0.36%	Low	1	3
San Buenaventura	Medium	2	3.92%	Low	1	3
Santa Paula	Medium	2	0.00%	None	0	0
Simi Valley	Medium	2	0.00%	None	0	0
Thousand Oaks	Medium	2	0.00%	None	0	0
Unincorporated	Medium	2	6.22%	Low	1	3
Total	Medium	2	3.27%	Low	1	3

	Impact on Property				Impact on Economy					
	% of Total Value Exposed	Impact (High, Medium, Low, None)	Impact Factor	Weighted Impact Factor	% of Total Value Damaged	Impact (High, Medium, Low, None)	Impact Factor	Weighted Impact Factor	Risk Ranking Score	Hazard Risk Rating
Camarillo	0.00%	None	0	0	0.00%	None	0	0	0	Low
Fillmore	0.00%	None	0	0	0.00%	None	0	0	0	Low
Moorpark	0.00%	None	0	0	0.00%	None	0	0	0	Low
Ojai	0.00%	None	0	0	0.00%	None	0	0	0	Low
Oxnard	6.46%	Low	1	2	0.14%	Low	1	1	12	Low
Port Hueneme	12.28%	Medium	2	4	0.00%	None	0	0	14	Low
San Buenaventura	3.10%	Low	1	2	0.00%	None	0	0	10	Low
Santa Paula	0.00%	None	0	0	0.00%	None	0	0	0	Low
Simi Valley	0.00%	None	0	0	0.00%	None	0	0	0	Low
Thousand Oaks	0.00%	None	0	0	0.00%	None	0	0	0	Low
Unincorporated	3.18%	Low	1	2	0.01%	None	0	0	10	Low
Total	2.41%	Low	1	2	0.03%	Low	1	1	12	Low

	Probability		Impact on People			
	Probability (High, Medium, Low, None)	Probability Factor (3,2,1,0)	% Population Exposed	Impact (High, Medium, Low, None)	Impact Factor	Weighted Impact Factor
Camarillo	Medium	2	6.11%	Low	1	3
Fillmore	Medium	2	12.69%	Medium	2	6
Moorpark	Medium	2	51.81%	High	3	9
Ojai	Medium	2	10.83%	Medium	2	6
Oxnard	Medium	2	0.00%	None	0	0
Port Hueneme	Medium	2	0.00%	None	0	0
San Buenaventura	Medium	2	13.21%	Medium	2	6
Santa Paula	Medium	2	7.11%	Low	1	3
Simi Valley	Medium	2	29.36%	High	3	9
Thousand Oaks	Medium	2	45.77%	High	3	9
Unincorporated	Medium	2	44.56%	High	3	9
Total	Medium	2	21.32%	Medium	2	6

Impact on Property					Impact on Economy				Risk Ranking Score	Hazard Risk Rating
	% of Total Value Exposed	Impact (High, Medium, Low, None)	Impact Factor	Weighted Impact Factor	% of Total Value Damaged	Impact (High, Medium, Low, None)	Impact Factor	Weighted Impact Factor		
Camarillo	3.76%	Low	1	2	0.94%	Low	1	1	12	Low
Fillmore	8.47%	Low	1	2	2.12%	Low	1	1	18	Medium
Moorpark	49.13%	High	3	6	24.56%	High	3	3	36	High
Ojai	6.79%	Low	1	2	1.70%	Low	1	1	18	Medium
Oxnard	0.00%	None	0	0	0.00%	None	0	0	0	Low
Port Hueneme	0.00%	None	0	0	0.00%	None	0	0	0	Low
San Buenaventura	9.28%	Low	1	2	2.32%	Low	1	1	18	Medium
Santa Paula	5.74%	Low	1	2	1.44%	Low	1	1	12	Low
Simi Valley	33.03%	High	3	6	16.52%	High	3	3	36	High
Thousand Oaks	43.74%	High	3	6	21.87%	High	3	3	36	High
Unincorporated	42.20%	High	3	6	21.10%	High	3	3	36	High
Total	22.82%	Medium	2	4	5.71%	Medium	2	2	24	Medium

Appendix E. Summary of Peak Discharges for the Planning Area

E. SUMMARY OF PEAK DISCHARGES FOR THE PLANNING AREA

Table E-1. Summary of Peak Discharges in Ventura County Waterways

Source/Location	Drainage Area (square miles)	Discharge (cubic feet/second)			
		10-Percent	2-Percent	1-Percent	0.2- Percent
Adams Canyon Creek					
At Telegraph Road	8.40	1,200	3,100	4,200	7,400
Alamos Canyon Creek					
At Southern Pacific Railroad	6.00	*	*	3,800	*
Arroyo Las Posas					
Upstream of confluence of Peach Hill Wash	117.4	8,260	17,120	22,090	36,520
Downstream of confluence of Long Canyon Creek	143.4	9,390	19,460	25,100	41,500
Arroyo Santa Rosa					
Upstream of confluence with Arroyo Conejo	14.35	1,970	3,770	4,740	7,510
At confluence of Arroyo Santa Rosa Tributary	13.04	1,980	3,800	4,770	7,570
At East Las Posas Road	8.33	1,861	3,561	4,473	7,099
At Santa Rosa Road	8.61	1,770	2,610	2,830	3,650
Downstream of Duval Road	9.29	1,750	2,580	2,790	3,580
Arroyo Santa Rosa Tributary					
Upstream of confluence with Arroyo Santa Rosa	3.75	950	2,590	3,700	6,720
At Vista Arroyo Drive3.75950Upstream of confluence with Arroyo Santa Rosa1.73550At Vista Arroyo Drive Upstream of confluence with Arroyo Santa Rosa	1.73	550	1,060	1,330	2,110
Arroyo Simi					
Downstream of confluence with Happy Camp Canyon Creek	113.20	8,300	17,200	22,190	36,670
Downstream of Alamos Canyon	88.70	5,670	13,060	17,460	31,200
Downstream of North Simi Canyon	69.50	5,600	12,890	17,240	30,810
Upstream of Bus Canyon Drain	61.50	5,110	11,950	15,900	28,580
Upstream of Tapo Canyon Channel	32.30	4,440	10,220	13,670	24,420
Downstream of Meier Canyon	30.90	4,460	10,270	13,730	24,540
Upstream of Las Llajas Canyon Channel	10.40	2,410	5,540	7,400	13,230
Upstream of White Oak Canyon	2.70	1,000	2,300	3,080	5,500
Arundell Barranca					
At U.S. Highway 101	9.24	1,360	4,420	6,200	11,500
Barlow Barranca					
At U.S. Highway 101	2.13	380	1,250	1,700	3,200

Source/Location	Drainage Area (square miles)	Discharge (cubic feet/second)			
		10-Percent	2-Percent	1-Percent	0.2- Percent
Beardsley Wash					
At Ventura Freeway ^a	15.00	2,100	4,600	6,200	11,000
Upstream of Wright Road	14.00	2,300	5,000	6,800	12,000
Bell Canyon Creek					
Upstream of Ventura/Los Angeles County boundary (approximately 1,860 feet downstream of East Bell Canyon Road)	5.13	700	2,340	3,300	6,200
Upstream of elevation 1,128 feet (approximately 2,150 feet downstream of North Buckskin Road)	3.32	490	1,650	2,300	4,300
Brea Canyon Creek					
At confluence with Arroyo Simi	2.10	*	*	1,250	*
Brown Barranca					
At confluence with Santa Clara River	3.49	600	1,930	2,660	5,000
Upstream of Telegraph Road Upstream of Telegraph Road	1.81	325	1,050	1,450	2,700
Bus Canyon Drain					
At confluence with Arroyo Simi	5.10	*	*	3,050	*
Above confluence of Bus Canyon Drain Tributary	3.70	*	*	2,800	*
Bus Canyon Drain Tributary					
At First Street	1.10	*	*	1,300	*
At Fitzgerald Road	0.80	*	*	1,050	*
Calleguas Creek					
At Highway 1 ^b	262.00	12,230	28,140	37,630	67,240
Downstream of confluence of Conejo Creek	248.30	16,000	30,610	38,460	61,030
Upstream of Conejo Creek & Lewis Drain	168.70	10,390	21,520	27,770	45,900
At Seminary Road	164.90	10,350	21,450	27,680	45,760
Camarillo Hills Drain					
Upstream of confluence with Revolon Slough	8.1	1,720	3,564	3,564	7,620
Upstream of confluence of Las Posas Estates Drain ¹	7.5	1,670	3,336	3,336	7,440
Downstream of confluence of Crestview Drain	5.55	1,780	3,640	4,790	7,920
At Ventura Freeway	*	*	*	3,220	*
At Lantana Street	*	*	*	2,226	*
At Dunnigan Street	*	*	*	842	*
Downstream of Ponderosa Drive	*	*	*	737	*
Cañada Larga					
At confluence with Ventura River ^a	19.1	5,047	7,801	8,632	12,945
Just downstream of Ojai Freeway ^a	*	5,047	7,975	8,940	15,394
Approximately 450 feet upstream of Ojai Freeway ^a	*	4,917	9,087	11,586	21,266
At Canada Larga Right Overbank ^a	*	4,917	10,145	13,748	26,639
Approximately 1,800 feet upstream of Ojai Freeway	16.2	5,240	14,220	20,004	39,050
Downstream of confluence of Canada de Aliso	13.2	5,110	13,860	19,500	38,060
Downstream of confluence of Conche Creek	8.7	3,350	9,100	12,800	24,990
Downstream of confluence of Sulphur Creek	8.2	3,190	8,649	12,158	23,705

Source/Location	Drainage Area (square miles)	Discharge (cubic feet/second)			
		10-Percent	2-Percent	1-Percent	0.2- Percent
Cañada Larga Left Overbank					
At confluence with Ventura River ^d	*	0	1,413	2,472	5,938
Approximately 400 feet downstream of Ojai Freeway ^d	*	0	1,562	3,200	8,684
At Norway Drive approximately 540 feet north of East Bounds Road intersection ^d	*	0	1,113	2,647	5,873
Cañada Larga Right Overbank					
At confluence with Ventura River ^d	*	322	4,156	6,616	13,511
At Ojai Freeway and Canada Larga Road ^d	*	324	5,134	8,419	17,785
Conejo Creek					
At confluence with Calleguas Creek	77.60	9,300	17,800	22,300	35,500
At Highway 101 bridge	71.90	9,560	18,300	22,000	36,500
Downstream of confluence of Arroyo Conejo	60.00	9,660	18,500	23,200	36,900
Coyote Creek					
Upstream of confluence with Ventura River	41.10	680	1,980	3,410	4,830
Approximately 570 feet downstream of Casitas Dam Spillway	40.10	671	1,953	3,363	4,766
At Casitas Dam Spillway	38.50	120	370	2,590	3,750
Cozy Del Canyon					
Downstream of confluence with McDonald Canyon Drain ^a	3.4	790	2,066	2,734	4,370
Upstream of confluence with McDonald Canyon Drain ^a	2.4	720	1,886	2,476	3,870
Approximately 705 feet downstream of Maricopa Highway ^a	*	590	1,546	1,998	2,968
Approximately 0.4 mile upstream of Maricopa Highway	2.1	590	1,610	2,262	4,420
Doris Avenue Drain					
At Patterson Road	0.40	50	150	250	750
Approximately 1,000 feet west of Ventura Road	0.10	10	20	50	130
Dry Canyon Drain					
At Heywood Street	3.70	*	*	3,350	*
At Southern Pacific Railroad	2.90	*	*	2,400	*
At Highway 118/Simi Valley Freeway ^{2.20**1,750*} At Heywood Street ^{3.70**3,350*} At Highway 118/Simi Valley Freeway	2.20	*	*	1,750	*
Edgemore Drain					
Downstream of Getman Street	*	*	*	451	*
Downstream of Aileen Street	*	*	*	366	*
El Rio Drain					
At confluence with Santa Clara River	1.70	90	220	300	800
At Vineyard Avenue	1.60	90	190	250	800
Downstream of Ventura Freeway	1.40	90	160	200	760
Upstream of Ventura Freeway	0.87	170	450	580	1,100
Downstream of Walnut Drive	0.26	70	170	220	400
Erringer Drain					
Upstream of confluence with Arroyo Simi	1.40	*	*	1,420	*
At Arcane Street	1.30	*	*	1,410	*
At Fitzgerald Street	1.20	*	*	1,410	*

	Drainage Area	Discharge (cubic feet/second)			
Source/Location	(square miles)	10-Percent	2-Percent	1-Percent	0.2- Percent
Happy Valley Drain					
Downstream of confluence with McDonald Canyon Drain South	1.55	636	1,126	1,370	2,058
Upstream of confluence with McDonald Canyon Drain South	1.32	608	1,077	1,310	1,968
Downstream of confluence with Happy Valley Drain South	1.23	602	1,067	1,298	1,949
Upstream of confluence with Happy Valley Drain South	1.23	620	1,099	1,337	2,008
Downstream of confluence with Happy Valley Drain Tributary	0.91	477	846	1,029	1,545
Upstream of confluence with Happy Valley Drain Tributary	0.51	318	563	685	949
Downstream of El Roblar Drive	0.44	285	504	613	840
Upstream of El Roblar Drive	0.31	210	372	452	679
Upstream of State Route 33	0.27	183	327	394	679
Happy Valley Drain South					
At confluence with Ventura River	1.1	410	730	890	1,840
Approximately 320 feet upstream of Old Baldwin Road	0.4	188	333	405	1,110
Upstream of confluence of Mira Monte Drain	0.2	166	296	359	1,046
Approximately 0.6 mile upstream of confluence of Mira Monte Drain	0.1	65	111	134	701
Happy Valley Drain Tributary					
Upstream of State Route 33	0.39	27	39	58	88
Downstream of State Route 33	0.13	83	147	178	268
At confluence with Happy Valley Drain	0.04	218	386	470	706
Harmon Barranca					
At confluence with Santa Clara River	5.28	700	2,320	3,270	6,100
Upstream of Telephone Road	4.59	610	2,070	2,900	5,400
Hummingbird Creek					
At Alscot Avenue	1.90	*	*	1,790	*
At Keuhner Drive	1.80	*	*	1,570	*
At Freeway	1.60	*	*	1,480	*
J Street Drain					
At mouth	1.90	200	550	900	3,000
At Pleasant Valley Road	1.70	200	500	850	2,900
At Bard Road	1.50	150	450	750	2,450
At Redwood Street	0.90	100	300	450	1,500
Lang Creek					
Upstream of confluence of Arroyo Conejo	6.80	1,390	2,670	3,350	5,320
Downstream of Wilbur Road	6.00	1,390	2,610	3,280	5,210
Las Lajas Canyon Channel					
At Industrial Street	12.50	*	*	2,800	*
Las Posas Estates Drain					
Upstream of confluence with Camarillo Hills Drive	2.50	380	1,240	1,710	3,200
Northeast of Central Avenue at elevation 103 feet	1.88	310	980	1,360	2,600

	Drainage Area	Discharge (cubic feet/second)			
Source/Location	(square miles)	10-Percent	2-Percent	1-Percent	0.2- Percent
Manuel Canyon					
At confluence with Ventura River ^a	*	520	1,331	1,614	2,925
Approximately 50 feet downstream of Crooked Palm Road ^a	*	520	1,337	1,768	3,379
Approximately 600 feet upstream of North Ventura Avenue	1.04	520	1,400	1,970	3,850
Manuel Canyon Left Overbank					
At confluence with Ventura River ^a	*	0	71	359	929
McDonald Canyon Drain South					
At confluence with McDonald Canyon Drain	0.2	67	119	314	993
Approximately 50 feet downstream of South La Luna Avenue	0.1	47	83	269	927
Approximately 410 feet upstream of West El Roblar Drive	*	20	40	169	775
McNell Creek					
Upstream of confluence with San Antonio Creek	2.2	570	1,540	2,170	4,240
Downstream of confluences of North and South Tributaries	1.1	470	1,270	1,780	3,470
Downstream of Upper McNell Creek South	0.6	220	590	833	1,630
Mills Road Drain					
At U.S. Highway 101	1.30	240	790	1,100	2,000
Mira Monte Drain					
At confluence with Happy Valley Drain South	0.7	180	480	680	1,330
Approximately 360 feet upstream of Loma Drive	0.4	107	280	394	773
Mirror Lake Drain					
At confluence with Ventura River ^a	0.39	139	330	433	851
Just upstream of Bonmark Drive ^a	*	139	238	394	620
Approximately 80 feet downstream of North Ventura Avenue ^a	*	16	34	46	80
Approximately 250 feet upstream of North Ventura Avenue ^a	*	16	39	54	102
Mirror Lake Drain Overland Reach					
At confluence with Mirror Lake Drain ^{a,e}	0.34	38	91	136	225
Approximately 1,000 feet upstream of confluence with Mirror Lake Drain ^e	*	40	124	241	622
Upstream of stormwater conduit approximately 0.4 mile upstream of confluence with Mirror Lake Drain	*	108	286	403	784
Mission Drain					
Downstream of Glenbrook Avenue	*	*	*	570	*
Downstream of Coe Street	*	*	*	666	*
North Simi Drain					
At confluence with Arroyo Simi	2.20	*	*	1,952	*
At First Street	1.80	*	*	1,610	*
At Simi Valley Freeway	1.40	*	*	789	*
Oak View Drain					
At confluence with Ventura River	0.9	430	760	919	1,380
At Ventura Highway	0.5	223	383	460	680

Source/Location	Drainage Area (square miles)	Discharge (cubic feet/second)			
		10-Percent	2-Percent	1-Percent	0.2- Percent
Oxnard Industrial Drain					
At mouth	8.90	500	1,400	2,100	7,600
Above confluence of Rice Avenue Drain	3.40	250	600	950	3,400
At East Wooley Road	1.90	150	400	650	2,300
Oxnard West Drain					
At Edison Company Water Canal	4.9	400	1,050	1,750	5,850
At Channel Islands Boulevard	3.5	300	800	1,300	4,400
At West Hemlock Street	3.2	300	750	1,250	4,100
At Wooley Road	2.8	250	620	1,050	3,450
At West Fifth Street	2.2	200	500	800	2,650
Peach Hill Wash					
Upstream of confluence with Calleguas Creek/Arroyo Las Posas/Arroyo Simi	3.95	700	1,450	1,870	3,090
Upstream of Home Acres Drive	2.60	470	970	1,250	2,060
Downstream of confluence of Small Dam/Debris Basin Dike	1.13	530	1,100	1,420	2,350
Upstream of Peach Hill Road	0.43	240	500	650	1,080
Peck Road Drain					
At confluence with Santa Clara River	1.2	370 ^a	980	1,150	1,370
At Santa Paula Street ^a	*	410	630	730	990
Just downstream of Foothill Road	*	850	1,500	1,820	2,730
Piru Creek					
At confluence with Santa Clara River	441	2,500	33,000	41,000	60,000
Pole Creek					
At confluence with Santa Clara River	9.10	6,178	6,827	7,484	14,686
Ponderosa Drain					
Downstream of Mobil Avenue	*	*	*	308	*
Reeves Creek					
At confluence with Thacher Creek	4.90	1,530	4,150	5,840	11,400
Upstream of confluence of McAndrews Canyon Creek	4.2	1,390	3,760	5,290	10,330
Downstream of Upper Reeves Creek	1.9	880	2,380	3,350	6,540
Revolon Slough					
Downstream of Camarillo Hills Drain	38.70	2,500	7,100	10,000	20,000
At Highway 101	30.00	2,200	6,200	8,700	16,500
Rice Avenue (Road) Drain					
At Rose Avenue	4.40	230	600	900	3,050
At Etting Road	4.10	200	550	800	2,600
At Ventura County limits south of Wooley Road	2.20	50	110	150	1,500
At downstream crossing of Southern Pacific Railroad	1.90	30	45	50	1,500
Approximately 500 feet upstream of Southern Pacific Railroad crossing	1.30	110	300	500	1,650

Source/Location	Drainage Area (square miles)	Discharge (cubic feet/second)			
		10-Percent	2-Percent	1-Percent	0.2- Percent
Rincon Creek					
At confluence with Pacific Ocean	14.60	2,990	7,530	10,320	*
At U.S. Highway 101 culvert	14.60	2,990	7,530	8,500	*
Upstream of U.S. Highway 101 culvert	14.60	2,990	7,530	10,320	*
Runkle Canyon Creek					
At confluence with Arroyo Simi	2.80	*	*	1,400	*
At Fitzgerald Road	2.40	*	*	1,200	*
San Antonio Creek					
At confluence with Ventura River ^a	51.1	9,960	24,715	32,679	51,450
Approximately 410 feet upstream of North Ventura Avenue	49.7	9,930	26,946	37,893	73,689
Upstream of confluence of San Antonio Creek Tributary	46.5	10,430	28,300	39,800	77,690
Upstream of confluence with Lion Canyon Creek	33.8	7,760	21,050	29,600	57,780
Downstream of Stewart Canyon Creek	31.3	8,590	23,320	32,800	64,030
Upstream of confluence of Steward Canyon Creek	26.5	7,620	20,690	29,100	56,800
Downstream of confluence of Thatcher Creek	25.4	7,490	20,330	28,600	55,830
Downstream of confluence of McNell Creek	13.5	5,760	15,630	21,980	42,900
Upstream of confluence of McNell Creek ^c	11.3	4,220	11,450	16,100	31,430
At the confluences of Senior Canyon Creek and Gridley Canyon Creek ^c	9.7	4,590	12,440	17,500	34,160
Upstream of confluence of Gridley Canyon Creek ^c	5.8	2,860	7,750	10,990	21,280
Santa Clara Ditch					
Upstream of Nyeland Sump	9.26	920	3,120	4,430	8,200
Upstream of Central Avenue	6.65	750	2,530	3,580	6,600
Santa Clara River					
At mouth	1,625	41,000	116,000	161,000	270,000
At Willard Bridge	1,534	41,000	116,000	161,000	270,000
Upstream of confluence of Santa Paula Creek	1,505	40,000	113,000	157,000	265,000
Downstream of confluence of Sespe Creek	1,500	40,000	113,000	157,000	265,000
Upstream of confluence of Sespe Creek	1,182	23,000	66,000	92,000	160,000
Downstream of confluence of Hopper Creek	1,174	40,000	113,000	157,000	265,000
Downstream of confluence of Piru Creek	1,100	40,000	113,000	157,000	265,000
At Ventura County/Los Angeles County boundary	644	15,000	43,000	60,000	104,000
Santa Clara River Breakout					
At mouth at Pacific Ocean	*	*	28,000	73,000	182,000
Santa Paula Creek					
At stream gauging station	40	6,800	18,000	26,000	48,000
Sespe Creek					
Approximately 4,000 feet downstream of Highway 126	263	33,000	72,000	92,000	145,000
Approximately 5,000 feet upstream of Southern Pacific Railroad	259	29,000	62,000	80,000	131,000

Source/Location	Drainage Area (square miles)	Discharge (cubic feet/second)			
		10-Percent	2-Percent	1-Percent	0.2- Percent
Skyline Drain					
At the confluence with Ventura River ^{d,e}	1.0	440	737	936	1,427
Approximately 0.4 mile upstream of confluence with Ventura River ^{d,e}	*	10	137	336	827
Approximately 130 feet downstream of Willey Street ^{d,e}	*	10	45	202	629
Approximately 200 feet downstream of North Ventura Avenue ^{d,e}	*	10	29	180	594
Approximately 100 feet downstream of Valley Meadow Court	*	340	598	726	1,092
Somis Drain					
At Corby Avenue	*	*	*	582	*
At Shepherd Drive	*	*	*	952	*
South Branch Arroyo Conejo					
Upstream of Ventura Freeway	10.72	1,470	4,850	6,800	12,800
Upstream of Jenny Drive Extension	7.46	1,210	4,000	5,700	10,700
Stewart Canyon Creek					
Upstream of confluence with San Antonio Creek	5.0	1,382	4,059	5,941	12,830
Sycamore Canyon Creek					
Below detention dam	*	*	*	184	*
Tapo Canyon Channel					
At confluence with Arroyo Simi	20.70	*	*	8,500	*
At Tapo Canyon Road	17.80	*	*	8,500	*
Telephone Road Drain					
At confluence with Arundell Barranca	2.02	430	1,290	1,760	3,300
Upstream of U.S. Highway 101	1.68	375	1,110	1,500	2,800
Thacher Creek					
At confluence with San Antonio Creek	10.60	2,860	7,750	10,900	21,280
Downstream of confluence of Reeves Creek	8.70	3,200	8,670	12,200	23,810
Upstream of confluence of Reeves Creek	3.40	1,730	4,690	6,590	12,860
Thousand Oaks North Drain					
Upstream of confluence of Arroyo Conejo	1.26	780	1,490	1,870	2,970
At State Highway 23	1.13	740	1,420	1,780	2,830
At La Jolla Drive	0.90	630	1,210	1,530	2,420

Source/Location	Drainage Area (square miles)	Discharge (cubic feet/second)			
		10-Percent	2-Percent	1-Percent	0.2- Percent
Ventura River					
At Pacific Ocean ^C	226	34,000	67,000	78,000	103,000
At Shell Chemical Plant	223	41,300	67,900	78,900	105,500
Approximately 0.6 mile upstream of confluence of Canada Larga	191	36,583	59,999	70,055	93,593
At Casitas Vista Road	188	36,400	59,700	69,700	93,100
Approximately 1,400 feet upstream of Casitas Vista Road	148	35,529	57,135	67,239	90,127
Approximately 1,000 feet downstream of confluence of San Antonio Creek	144	35,000	56,600	66,600	89,000
Approximately 300 feet upstream of confluence of San Antonio Creek	92.8	16,449	25,493	29,104	37,856
At Baldwin Road	83.0	16,000	24,800	28,300	36,700
Approximately 1,120 feet upstream of Camino Cielo	72.4	15,000	24,000	27,100	35,200
Upstream of confluence of North Fork Matilija Creek	56.4	12,500	18,800	21,600	27,900
Walnut Canyon Drain					
At Walnut Canyon Road	0.61	310	640	820	1,360
West Camarillo Hills Tributary					
At Euclid Avenue	*	*	*	820	*
West Wooley Drain					
At West Hemlock Street	0.80	100	300	450	1,550
At Ventura Railway crossing	0.20	25	70	100	390
White Oak Creek					
At confluence with Arroyo Simi	4.20	*	*	3,470	*
At confluence with Hummingbird Creek	3.70	*	*	2,670	*
At freeway	1.50	*	*	960	*

Note: All locations are at mouth unless otherwise noted. Locations do not include jurisdictional boundaries.

*Data not available

- a. Decrease due to overbank losses upstream
- b. Decrease due to Bajo Aqua timing of hydrograph attenuation (Calleguas Creek)
- c. Discharges are larger than those downstream due to updated hydrology (San Antonio Creek & Ventura River)
- d. Discharge received from adjacent overbank flow
- e. Discharge decreased to due stormwater conduit

Source: Ventura County FIS 06111CV002E, FEMA January 29, 2021

Appendix F. FEMA Approval and Partner Adoption Resolutions

F. FEMA APPROVAL AND PARTNER ADOPTION RESOLUTIONS

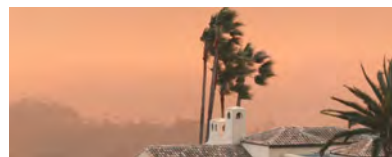
To be provided with final draft of this hazard mitigation plan update.

Ventura County

Multi-Jurisdictional Hazard Mitigation Plan

Update 2022

Volume 2—Jurisdictional Annexes



June 2022



Ventura County Multi-Jurisdictional Hazard Mitigation Plan Update 2022

June 2022

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Appendices

- Appendix A. Planning Partner Expectations
- Appendix B. Annex Instructions and Templates

ACRONYMS

The following acronyms are used throughout the annexes in this volume:

- AASHTO—American Association of State Highway and Transportation Officials
- AB—Assembly Bill
- APCD—air pollution control district
- BEACON—Beach Erosion Authority for Clean Oceans and Nourishment
- BOS—Board of Supervisors
- BRIC—Building Resilient Infrastructure and Communities
- CAAP—Climate Action and Adaptation Plan
- CAL FIRE—California Department of Forestry and Fire Protection
- Cal OES—California Office of Emergency Services
- CalARP—California Accidental Release Prevention Program
- CAMUTCD—California Manual on Uniform Traffic Control Devices
- CDAA—California Disaster Assistance Act
- CDBG—Community Development Block Grant
- CDFW—California Department of Fish and Wildlife
- CEQA—California Environmental Quality Act
- CERT—Community Emergency Response Team
- CFR—Code of Federal Regulations
- CIBCSD—Channel Islands Beach Community Services District
- CIP—capital improvement program
- COS—Conservation and Open Space Element
- COSCA—Conejo Open Space Conservancy Agency
- COSP—City of Santa Paula
- CRPD—Conejo Recreation and Park District
- CRS—Community Rating System
- CSU—California State University
- CSUCI—California State University, Channel Islands
- CTM—Circulation, Transportation, and Mobility Element
- DAC—disadvantaged community
- DFIRM—digital flood insurance rate map
- DHS—Department of Homeland Security
- DSOD—Division of Safety of Dams
- DUNS—Dun and Bradstreet Number
- DWR—Department of Water Resources
- EAP—emergency action plan
- EIR—Environmental Impact Report
- EMPG—Emergency Management Performance Grant
- EOC—emergency operations center
- EOP—emergency operations plan
- EPA—Environmental Protection Agency
- ERP—emergency response plan
- ESRM—Environmental Science and Resource Management
- FB—finance and budgeting

- FEMA—Federal Emergency Management Agency
- FHRP—fire hazard reduction program
- FIPS—Federal Information Processing System
- FIRM—flood insurance rate map
- FMA—Flood Mitigation Assistance Grant Program
- FMAP—Fire Management Assistance Program
- FWS—flood warning system
- GHG—greenhouse gas
- GIS—geographic information system
- GSA—Ventura County General Services Agency
- HHPD—Rehabilitation of High Hazard Potential Dams
- HMA—Hazard Mitigation Assistance
- HMGP—Hazard Mitigation Grant Program
- HMP—hazard mitigation plan
- HPS—City of Santa Paula Hazards and Public Safety Element
- IDF—Inflow Design Flood
- IGC—intergovernmental coordination
- IRWM—Integrated Regional Water Management
- IRWMP—Integrated Regional Water Management Plan
- JP—joint partnership
- LARWQCB—Los Angeles Regional Water Quality Control Board
- LCP—Local Coastal Program
- LLAP—Local Levee Assistance Program
- MDERP—Matilija Dam Ecosystem Restoration Project
- MPSP—master plans, strategies, and programs
- MS4—municipal separate storm sewer system
- MWD—municipal water district
- NFIP—National Flood Insurance Program
- NFWF—National Fish and Wildlife Foundation
- NGO—non-governmental organization
- NOAA—National Oceanic and Atmospheric Administration
- NRCS—Natural Resources Conservation Service
- NWS—National Weather Service
- OBRAP—Ormond Beach Restoration and Access Plan
- OCC—Oxnard City Code
- OES—office of emergency services
- OMC—Ojai Municipal Code
- OVLC—Ojai Valley Land Conservancy
- OVSD—Ojai Valley Sanitary District
- PDM—Pre-Disaster Mitigation Grant Program
- PFS—Public Facilities, Services, and Infrastructure
- PMF—probable maximum flood
- POC—point of contact
- PSPS—public safety power shutoff
- PSR—planning, studies and reports
- PTP—Pumping Trough Pipeline
- PVRPD—Pleasant Valley Recreation & Park District
- RDR—regulation and development review
- RHNA—Regional Housing Needs Allocation

- SB—Senate Bill
- SCADA—supervisory control and data acquisition
- SCAG—Southern California Association of Governments
- SCC—California State Coastal Conservancy
- SCRC—Santa Clara River Conservancy
- SFD—Santa Felicia Dam
- SFHA—special flood hazard area
- SGMA—Sustainable Groundwater Management Act
- SLR—sea-level rise
- SMP—Salinity Management Pipeline
- SO—services and operations
- SVMC—Simi Valley Municipal Code
- SVOES—Simi Valley Office of Emergency Services
- SVPD—Simi Valley Police Department
- SWRCB—California State Water Resources Control Board
- THIRA—Threat & Hazard Identification & Risk Assessment
- TNC—The Nature Conservancy
- TOMC—Thousand Oaks Municipal Code
- USACE—U.S. Army Corps of Engineers
- USBR—U.S. Bureau of Reclamation
- USDA—U.S. Department of Agriculture
- UWCD—United Water Conservation District
- UWMP—urban water management plan
- VCFPD—Ventura County Fire Protection District
- VCOE—Ventura County Office of Education
- VCPWA-RT—Ventura County Public Works Agency—Roads and Transportation Department
- VCPWA-WP—Ventura County Public Works Agency—Watershed Protection
- VCSOES—Ventura County Sheriff's Office of Emergency Services
- VCSSFA—Ventura County Schools Self-Funding Authority
- VCTC—Ventura County Transportation Commission
- VMT—vehicle miles traveled
- VOAD—Voluntary Organizations Active in Disaster
- VRSD—Ventura Regional Sanitation District
- WCB—Wildlife Conservation Board
- WCVC—Watershed Coalition of Ventura County
- WEA—Wireless Emergency Alerts
- WSD—Water and Sanitation District

INTRODUCTION

BACKGROUND

Ventura County's hazard mitigation plan was developed and adopted in 2005 as a multi-jurisdictional process. Subsequent updates conducted in both 2010 and 2015 were also multi-jurisdictional efforts. Multi-jurisdictional hazard mitigation planning can be an effective process to build partnerships between communities that face common hazard risks, leading to shared solutions. It can also help build a foundation to shift priorities as risks and vulnerabilities change. Multi-jurisdictional planning processes are encouraged by the Federal Emergency Management Agency (FEMA), and offer the following advantages:

- Improves communication and coordination among jurisdictions and other regional entities
- Enables comprehensive mitigation approaches to reduce risks that affect multiple jurisdictions
- Maximizes economies of scale by leveraging individual capabilities and sharing costs and resources
- Avoids duplication of efforts, and
Provides an organizational structure that local jurisdictions may find supportive.

For the *Ventura County Multi-Jurisdictional Hazard Mitigation Plan* 2022 update, a planning partnership was formed that expanded the partnership established during the 2015 hazard mitigation plan update, leveraging resources and meeting requirements of the federal Disaster Mitigation Act for as many eligible local governments as possible. The Disaster Mitigation Act defines a local government as follows:

“Any county, municipality, city, town, township, public authority, school district, special district, intrastate district, council of governments (regardless of whether the council of governments is incorporated as a nonprofit corporation under State law), regional or interstate government entity, or agency or instrumentality of a local government; any Indian tribe or authorized tribal organization, or Alaska Native village or organization; and any rural community, unincorporated town or village, or other public entity.”

In addition to the County, the jurisdictions participating in the *Multi-Jurisdictional Hazard Mitigation Plan* 2022 update include:

- 10 incorporated municipalities
- 14 special districts

All participating jurisdictions in a multi-jurisdictional plan must meet the requirements of Chapter 44 of the Code of Federal Regulations (44 CFR):

“Multi-jurisdictional plans (e.g., watershed plans) may be accepted, as appropriate, as long as each jurisdiction has participated in the process and has officially adopted the plan.” (Section 201.6(a)(4)).

Each participating planning partner prepared a jurisdiction-specific annex to this plan. These annexes, as well as information on the process by which they were created, are contained in this volume.

THE PLANNING PARTNERSHIP

Initial Solicitation and Letters of Commitment

A planning team made up of Ventura County staff solicited the participation of eligible municipalities and special districts in June 2019, at the outset of this update effort. Emails were sent to the applicable points of contact for the 18 members of the 2015 plan and to additional interested parties. Local governments wishing to join the planning effort were asked to provide the California Office of Emergency Services and County with a “letter of commitment” as a participating jurisdiction in the County’s plan update process. In all, the planning team received formal commitment from 24 planning partners in addition to the County.

Municipalities/County	Special-Purpose Districts
• Ventura County • City of Camarillo • City of Fillmore • City of Moorpark • City of Ojai • City of Oxnard • City of Port Hueneme • City of Santa Paula • City of Simi Valley • City of Thousand Oaks • City of Ventura	• California State University, Channel Islands • Calleguas Municipal Water District • Casitas Municipal Water District • Channel Islands Beach Community Services District • Conejo Recreation & Park District • Ojai Valley Sanitary District • Pleasant Valley Recreation & Park District • Saticoy Sanitary District • Triunfo Water & Sanitation District • United Water Conservation District • Ventura County Fire Protection District • Ventura County Office of Education • Ventura County Public Works Agency—Watershed Protection • Ventura Regional Sanitation District

A map showing the location of participating special-purpose districts is provided at the end of this introduction. Risk assessment maps for all planning areas (countywide) are provided in Volume 1 of this hazard mitigation plan while maps showing the risk assessment results for each of the participating municipalities are provided in the individual annexes for each city.

Planning Partner Expectations

The planning team and consultant, Tetra Tech, developed the following list of planning partner expectations, which were provided and discussed at a formal kickoff meeting held in May 2021 (see Appendix A for details):

- Re-confirm lead and primary points of contact for the update effort.
- Support and participate in the Steering Committee meetings.
- Provide support required to implement the public involvement strategy.
- Participate in the planning process through:
 - Steering Committee meetings
 - Public meetings and outreach efforts
 - Workshops and planning partner-specific training sessions
 - Public review and comment periods prior to adoption.
- Perform a “consistency review” of all technical studies, plans and ordinances specific to hazards.
- Review the risk assessment and identify hazards and vulnerabilities specific to the jurisdiction.
- Attend the mandatory Phase 3 jurisdictional annex workshop.
- Review and determine if the mitigation recommendations chosen in Volume 1 will meet the needs of the jurisdiction.
- Create an action plan that identifies each project, who will oversee the task, how it will be financed, and when it is estimated to occur.
- Formally adopt the hazard mitigation plan.

By adopting the hazard mitigation plan, each planning partner also agrees to the plan implementation and maintenance protocol established in Volume 1. Failure to meet these criteria would result in a partner being dropped from the partnership by the Steering Committee, and thus losing eligibility under the scope of the plan. All planning partners met the planning partner expectations, including attendance at mandatory workshops.

Final Coverage

All of the above jurisdictions submitted letters of commitment to participate, completed an annex template, fully met the participation requirements for this update, and will be covered by the updated hazard mitigation plan upon FEMA’s approval of the plan and adoption of the plan by their individual governing bodies.

ANNEX DEVELOPMENT

Capability Assessment

A capability assessment creates an inventory of a jurisdiction’s mission, programs, and policies, and evaluates its capacity to carry them out. All participating jurisdictions compiled a capability assessment which helped to identify potential gaps in the jurisdictions’ capabilities. Specifically, if the capability

assessment identified an opportunity to add a missing core capability or expand an existing one, then doing so has been selected as an action in the jurisdiction's action plan. The sections below describe specific capabilities evaluated under the assessment.

Planning and Regulatory Capabilities

Jurisdictions can develop policies and programs and implement rules and regulations to protect and serve residents. Local policies are typically identified in planning documents, implemented via a local ordinance, and enforced by a governmental body. Because the planning and regulatory authority of counties and municipalities is generally broader than that of special-purpose districts, the assessment of these capabilities is more detailed for those partners.

Development and Permitting Capability

The County and its municipalities regulate land use through the adoption and enforcement of zoning, subdivision, and land development ordinances, building codes, building permit ordinances, floodplain, and stormwater management ordinances. When effectively prepared and administered, these regulations can mitigate hazards. As special-purpose districts typically do not have the ability to regulate land use, this capability was assessed only for the County and municipalities.

Fiscal Capability

Assessing a jurisdiction's fiscal capability provides an understanding of the ability to fulfill the financial needs associated with hazard mitigation projects. This assessment identifies both outside resources, such as grant-funding eligibility, and local jurisdictional authority to generate internal financial capability, such as through impact fees (fees charged to a development project).

Administrative and Technical Capability

Without appropriate personnel, the mitigation strategy may not be implemented. Administrative and technical capabilities focus on the availability of personnel resources responsible for implementing all the facets of hazard mitigation. These resources include technical experts, such as engineers, scientists, and grant writers.

Education and Outreach Capability

Regular engagement with the public on hazard mitigation provides opportunities to open a two-way dialogue that can result in a more resilient community. Use of a jurisdictional website, social media outlets, and other outreach resources to communicate mitigation information are assessed for each planning partner. Assessing outreach and education capability illustrates the connection between the government and community members.

Compliance with National Flood Insurance Program Requirements

Flooding is the costliest natural hazard in the United States and homeowners face increasingly high flood insurance premiums. Community participation in the National Flood Insurance Program (NFIP) opens up opportunities for additional grant funding associated specifically with flooding issues. Assessment of a jurisdiction's current NFIP status and compliance provides a greater understanding of

the local flood management program, opportunities for improvement, and available grant funding opportunities. The NFIP is not available to special-purpose districts, so this set of capabilities was assessed only for municipalities and the County.

Participation in Voluntary Programs

Participation in voluntary programs, such as FEMA's Community Rating System (CRS), the National Weather Service's StormReady and TsunamiReady programs, and the National Fire Protection Association's Firewise USA, can enhance a jurisdiction's ability to mitigate, prepare for, and respond to natural hazards. These programs complement each other by focusing on communication, mitigation, and community preparedness to save lives and minimize the impact of natural hazards on a community. Participation in these programs demonstrates a jurisdiction's commitment to go beyond the minimum requirements set forth by local, state, and federal regulations in order to create a more resilient community. The programs reviewed here are only applicable to municipalities and the County, so were not included in the capability assessments for the special-purpose districts.

Adaptive Capacity

An adaptive capacity assessment evaluates a jurisdiction's ability to anticipate impacts that may occur in the future. By looking at public support, technical adaptive capacity, and other factors, jurisdictions can identify their core capability for resilience against issues such as sea level rise and climate change. The assessment provides jurisdictions with an opportunity to identify areas for improvement by ranking their adaptive capacity as high, medium, or low.

Mitigation Action Plan Development

Risk Ranking

The risk-ranking methodology for partner annexes was the same as that used for the countywide risk ranking described in Volume 1. Each planning partner was asked to review the ranked risk for its jurisdiction, based on the impact on its population and/or facilities. Municipalities and the County based this ranking on the probability of occurrence of each hazard, and its potential impact on people, property, and the economy. Special-purpose districts based this ranking on probability of occurrence and the potential impact on their constituency, vital facilities, and the facilities' functionality after a hazard event.

The objectives of this exercise were to familiarize the planning partnership with how to use the risk ranking, part of the assessment results, as a tool to support other planning and hazard mitigation processes and to help prioritize types of mitigation actions that should be considered. Hazards that were ranked as "high" and "medium" for each jurisdiction were considered to be priorities for identifying mitigation actions, although jurisdictions also identified actions to mitigate hazards ranked "low", as appropriate.

Information Reviewed to Develop the Action Plan

In September 2021, each planning partner was provided with a tool kit of relevant documents to assist in developing their jurisdiction's action plan and was required to attend a workshop that provided

guidance to develop their action plans. The tool kits were used during the mandatory Phase 3 workshops and in follow-up work conducted by the planning partners. Planning partners reviewed the following information included in the tool kit to assist in the identification of proposed mitigation actions:

- **Capability assessment**—Reviewed to identify capabilities that the jurisdiction does not currently have but should consider pursuing, or capabilities that should be revisited and updated to include best available information; also reviewed to determine how existing capabilities can be leveraged to increase or improve hazard mitigation in the jurisdiction.
- **National Flood Insurance Program compliance table**—Reviewed to identify opportunities to increase floodplain management capabilities.
- **Adaptive capacity**—Reviewed to identify ways to leverage or continue to improve existing capacities and to improve understanding of other capacities.
- **Future integration opportunities**—Reviewed to identify specific integration actions to be included in the mitigation strategy.
- **Jurisdiction-specific vulnerabilities**—Reviewed to identify actions that could reduce known vulnerabilities.
- **Mitigation best practices catalog**—Reviewed to identify actions that the jurisdiction should consider including in its action plan.
- **Public input**—Reviewed to identify potential actions and community priorities.

Action Plan Prioritization

The mitigation actions recommended in each jurisdiction's action plan were prioritized based on the following factors:

- Cost and availability of funding
- Benefit, based on likely risk reduction to be achieved
- Number of plan objectives achieved
- Timeframe for project implementation
- Eligibility for grant funding programs

Two priorities were assigned for each action:

- A high, medium, or low priority for implementing the action
- A high, medium, or low priority for pursuing grant funding for the action.

The sections below describe the benefit-cost analysis and the assignment of the two priority ratings.

Benefit/Cost Review

Pursuant to 44 CFR, Section 201.6(c)(3)(iii), the action plan must be prioritized according to a benefit-cost analysis (BCA) of the proposed actions. BCA is a method that determines the future risk reduction benefits of a hazard mitigation project and compares those benefits to its costs. For this hazard mitigation plan, a qualitative review was performed for each mitigation action by assigning ratings for benefit and cost as follows:

- **Cost:**
 - **High**—Existing funding will not cover the cost of the action; implementation would require new revenue through an alternative source (for example, bonds, grants, and fee increases).
 - **Medium**—The action could be implemented with existing funding but would require a re-apportionment of the budget or a budget amendment, or the cost of the action would have to be spread over multiple years.
 - **Low**—The action could be funded under the existing budget. The action is part of, or can be part of, an ongoing, existing program.
- **Benefit:**
 - **High**—Action will provide an immediate reduction of risk exposure for life and property.
 - **Medium**—Action will have a long-term impact on the reduction of risk exposure for life and property, or action will provide an immediate reduction in the risk exposure for property.
 - **Low**—Long-term benefits of the action are difficult to quantify in the short term.

To assign priorities, each action with a benefit rating equal to or higher than its cost rating (such as high benefit/medium cost, medium benefit/medium cost, medium benefit/low cost, etc.) was considered to be cost-beneficial. It is important to note that this qualitative review is not intended to substitute for the more detailed level of benefit-cost analysis required for some FEMA hazard-related grant programs. More specific analysis would be performed at the time a given action is submitted for grant funding approval.

Implementation Priority

Implementation priority ratings were assigned as follows:

- **High Priority**—An action that meets multiple objectives, has benefits that exceed costs, and has a secured source of funding. Action can be completed in the short term (1 to 5 years).
- **Medium Priority**—An action that meets multiple objectives, has benefits that exceed costs, and is eligible for funding though no funding has yet been secured for it. Action can be completed in the short term (1 to 5 years) once funding is secured. Medium-priority actions become high-priority actions once funding is secured.
- **Low Priority**—An action that will mitigate the risk of a hazard, but has benefits that do not exceed the costs or are difficult to quantify, has no secured source of funding, and is not eligible for any known grant funding. Action can be completed in the long term (1 to 10 years). Low-priority actions may be eligible for grant funding from programs that have not yet been identified.

Grant Pursuit Priority

Grant pursuit priority ratings were assigned as follows:

- **High Priority**—An action that meets identified grant eligibility requirements, has high benefits, and is listed as high or medium implementation priority; local funding options are unavailable or available local funds could be used instead for actions that are not eligible for grant funding.
- **Medium Priority**—An action that meets identified grant eligibility requirements, has medium or low benefits, and is listed as medium or low implementation priority; local funding options are unavailable.

- **Low Priority**—An action that has not been identified as meeting any grant eligibility requirements.

Classification of Actions

Each recommended action was also classified based on the hazard it addresses and the type of mitigation it involves. Mitigation types used for this classification are as follows:

- **Prevention**—Government, administrative or regulatory actions that influence the way land and buildings are developed to reduce hazard losses. Includes planning and zoning, floodplain laws, capital improvement programs, open space preservation, and stormwater management regulations.
- **Property Protection**—Modification of buildings or structures to protect them from a hazard or removal of structures from a hazard area. Includes acquisition, elevation, relocation, structural retrofit, storm shutters, and shatter-resistant glass.
- **Public Education and Awareness**—Actions to inform residents and elected officials about hazards and ways to mitigate them. Includes outreach projects, real estate disclosure, hazard information centers, and school-age and adult education.
- **Natural Resource Protection**—Actions that minimize hazard loss and preserve or restore the functions of natural systems. Includes sediment and erosion control, stream corridor restoration, watershed management, forest and vegetation management, wetland restoration and preservation, and green infrastructure.
- **Emergency Services**—Actions that protect people and property during and immediately after a hazard event. Includes warning systems, emergency response services, and the protection of essential facilities.
- **Structural Projects**—Actions that involve the construction of structures to reduce the impact of a hazard. Includes dams, setback levees, floodwalls, retaining walls, and safe rooms.
- **Climate Resiliency**—Actions that incorporate methods to mitigate and/or adapt to the impacts of climate change. Includes aquifer storage and recovery activities, incorporating future conditions projections in project design or planning, or actions that specifically address jurisdiction-specific climate change risks, such as sea-level rise or urban heat island effects.
- **Community Capacity Building**—Actions that increase or enhance local capabilities to adjust to potential damage, to take advantage of opportunities to build capacity, or to respond to consequences of insufficient capacity. Includes staff training, memorandums of understanding, development of plans and studies, and monitoring programs.

Annex-Preparation Process

Templates

Templates were created for the two types of jurisdictions (municipalities and special districts) participating in this plan to help the planning partners prepare their jurisdiction-specific annexes. The templates were designed so that all criteria of Section 201.6 of 44 CFR for local governments would be met based on the partners' capabilities and mode of operation. The templates were deployed in three phases during the course of the plan update process as follows:

- **Phase 1**—Profile, Trends, Previous Plan Status
 - Deployed: May 10, 2021
 - Due: June 21, 2021
- **Phase 2**—Capability Assessment and Information Sources
 - Deployed: July 6, 2021
 - Due: August 20, 2021
- **Phase 3**—Risk Ranking, Action Plan, and Information Sources
 - Deployed: September 9, 2021
 - Workshops: September 22-23, 2021
 - Due: October 25, 2021

The templates were designed to lead all partners through the necessary steps to generate the Disaster Mitigation Act-required elements specific to their jurisdictions. The templates and their instructions are included in Appendix B of this volume.

Tool Kit

Each planning partner was provided with a tool kit to assist in completing the annex template and developing their jurisdiction's action plan. The tool kits contained the following:

- A copy of the *2015 Ventura County Multi-Hazard Mitigation Plan*
- The vision statement, goals and objectives developed for the plan update
- Information on past hazard events that have impacted the planning area
- The risk assessment results developed for the plan update
- A list of jurisdiction-specific issues noted during the risk assessment
- Information on climate change and expected impacts in the planning area
- Jurisdiction-specific annex templates, with instructions for completing them
- A catalog of mitigation best practices and suggested actions to enhance adaptive capacity
- Information on the FEMA Hazard Mitigation Assistance grant program
- FEMA guidance on plan integration
- AB 2140 compliance guidance
- The results of the public survey on community awareness of hazards conducted as part of the public involvement strategy
- The public service announcement (PSA) hazard mitigation video produced by the Ventura County Sheriff's Office of Emergency Services and the Ventura County Public Works Agency.

Workshop

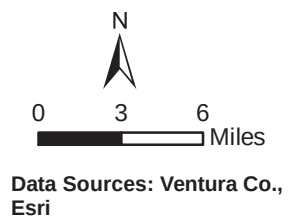
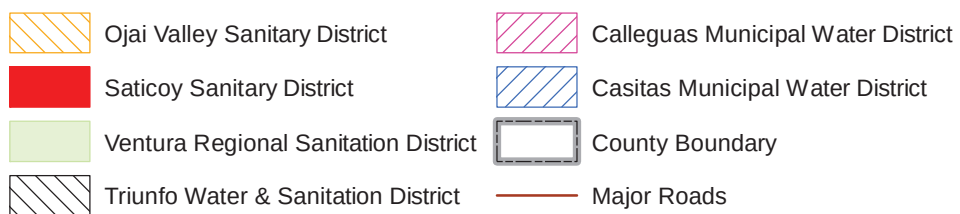
All partners were required to attend and participate in a virtual technical assistance workshop held the week of September 20, 2021, where key elements of the annex template were discussed. The workshops focused on how the tool kit could be used to facilitate completion of the template and develop each jurisdiction's mitigation action plan. The templates were subsequently completed by a designated point of contact for each partner and a member of the planning team. The workshop addressed the following topics:

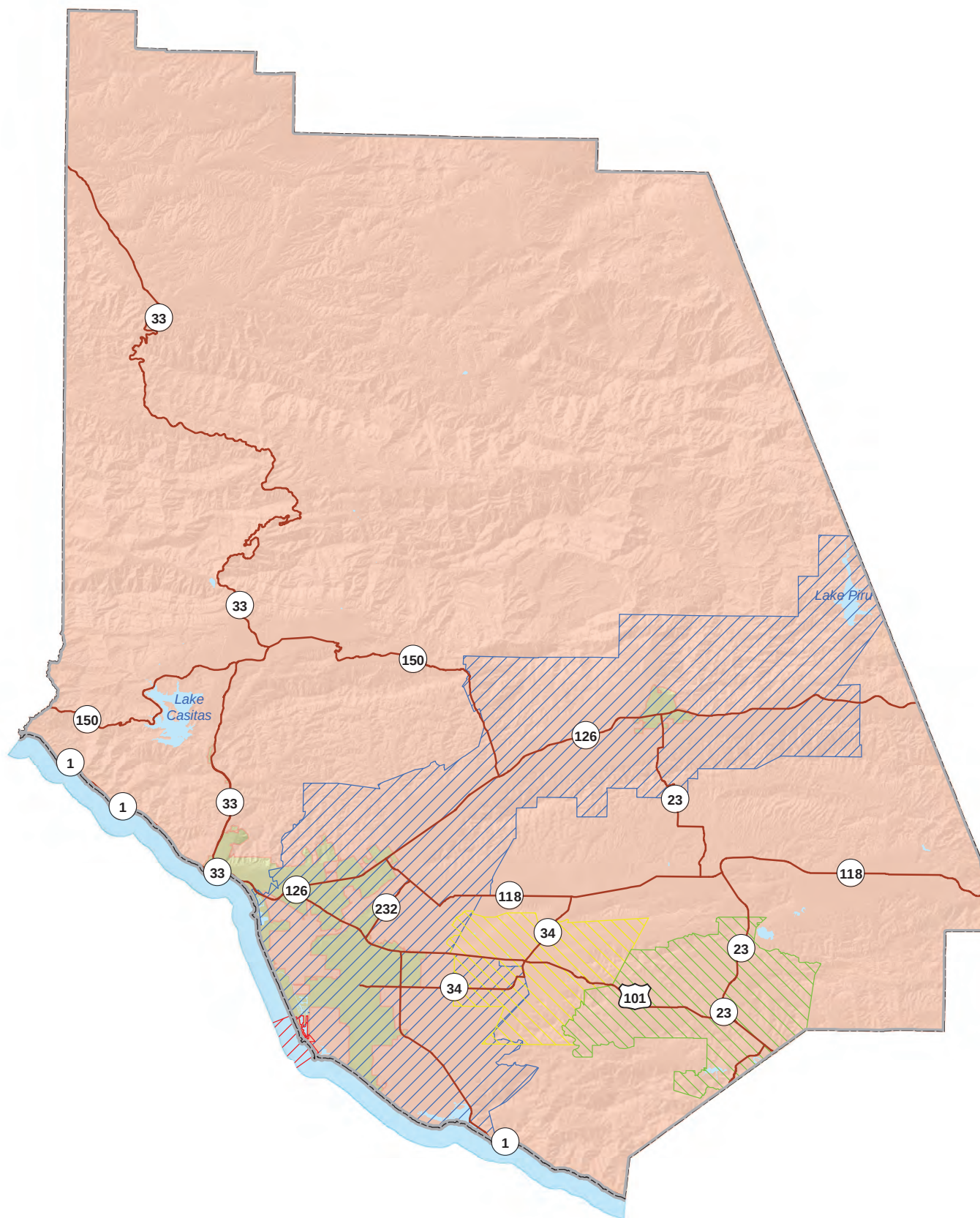
- The jurisdictional annex templates and the tool kit
- Natural events history
- Jurisdiction-specific issues
- Risk ranking
- Status of prior actions
- Developing the action plan
- Benefit-cost review
- Prioritization protocol
- Next steps

Following conclusion of the workshop, a copy of the presentation given at the workshop session was added to the tool kit provided to each of the planning partners.



Special Purpose Districts (1 of 2)



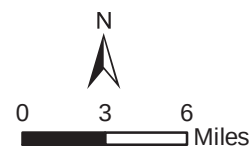


Special Purpose Districts (2 of 2)

-  Channel Islands Beach Community Services District
-  Conejo Recreation & Park District
-  Pleasant Valley Recreation & Parks District
-  United Water Conservation District
-  Ventura County Fire Protection District

-  County Boundary
-  Major Roads

Ventura County Office of Education, Ventura County Public Works Agency - Watershed Protection, and California State University - Channel Islands provide services countywide.



Data Sources: Ventura Co., Esri

1. VENTURA COUNTY (UNINCORPORATED AREA)

1.1 LOCAL HAZARD MITIGATION PLANNING TEAM

Primary Point of Contact

Bonnie Luke, Senior Program Administrator
800 South Victoria Avenue
Ventura, CA 93009
Telephone: 805-765-7007
e-mail Address: BonnieK.Luke@ventura.org

Alternate Point of Contact

Kathy Gibson, Program Administrator II
800 South Victoria Avenue
Ventura, CA 93009
Telephone: 805-765-0326
e-mail Address:
Kathy.Gibson@ventura.org

This annex was developed by the local hazard mitigation planning team, whose members are listed in Table 1-1.

Table 1-1. Local Mitigation Planning Team Members

Name	Title
Patrick Maynard	Director of Emergency Services, Sheriff's Office of Emergency Services
Bonnie Luke	Senior Program Administrator, Sheriff's Office of Emergency Services
Kathy Gibson	Program Administrator II, Sheriff's Office of Emergency Services
Gerard Kapuscik	Manager, Strategic Resiliency Group, Ventura County Public Works Agency-Watershed Protection
Glenn Shephard	Director, Ventura County Public Works Agency-Watershed Protection
Ashley Bautista	Public Information Officer, County Executive Office
Jackie Nuñez	Assistant Public Information Officer, County Executive Office
Aaron Engstrom	Long Range Planning Manager, Ventura County Planning Division
Dave Ward	Director, Ventura County Planning Division
Matt Wyatt	District Manager West County Office, Ventura County Building & Safety Division
Clay Downing	Program Administrator, Sustainability Division, County Executive Office
Mark Lorenzen	Fire Chief, Ventura County Fire Protection District
Jeff Shea	Division Chief, Ventura County Fire Protection District
Debbie Conner	Management Assistant, Ventura County Fire Protection District

1.2 JURISDICTION PROFILE

1.2.1 Location and Features

Ventura County is located on southern California's Pacific coast, approximately 60 miles northwest of Los Angeles. The County is bordered to the north by Kern County; to the northwest and southwest by

Santa Barbara County and the Pacific Ocean, respectively; and to the east and southeast by Los Angeles County.

Ventura County stretches across 2,208 square miles, of which 1,845 square miles is land and 363 square miles is water. The northern half of the county, comprising approximately 53 percent of the county's total area is located within the Los Padres National Forest, and is mostly uninhabited. Two offshore islands, Anacapa and San Nicolas, are also included within the jurisdictional boundary for Ventura County. Anacapa Island is located approximately 11 miles offshore and is one of five islands that make up Channel Islands National Park. San Nicolas Island is located approximately 61 miles offshore and is operated by the United States Navy as a weapons testing and training facility. For the purposes of statistical analyses, the county is divided into 15 distinct planning areas. Within the County there are 10 cities and 18 unincorporated communities that are recognized census designated places (CDPs).

1.2.2 History

Ventura County was historically inhabited by the Chumash people, who also settled throughout much of Santa Barbara and San Luis Obispo Counties. The Chumash were originally hunters and gatherers, fisherman, traders, and are known for their rock paintings and basketry.

Spanish explorers began arriving in the area in the mid-1500s, although active occupation did not effectively occur until more than 200 years later. The Spanish encouraged settlement of the area with large land grants called ranchos, while the Catholic church established the Mission San Buenaventura in 1782 in what is now the City of Ventura.

On January 1, 1873, just 23 years after California's statehood was attained in 1850, Ventura County was formally established. At this time, however, the area remained largely rural, consisting of a population of less than 5,000 individuals that engaged predominately in ranching and the cultivation of grain crops.

During the early 1900s, increased demand from new markets in the burgeoning Los Angeles area led to a significant expansion and diversification of agriculture in Ventura. Together with the discovery of vast oil reserves in the area, this resulted in an influx of immigrants, wealth, and substantial improvements to transportation infrastructure in the region.

A second, intense population boom (>5% annually) occurred beginning in the 1940s with the construction of Port Hueneme and the establishment of a military base at Point Mugu which brought numerous professionals and ancillary industries to the region. Ventura County, and the Oxnard area in particular, benefitted from the hiring of more than 10,000 civilian workers and 21,000 military personnel, thus providing jobs for local residents and reviving the economy following the Depression of the 1930s. By 1950, the population of the county had increased to over 114,000 individuals, more than double its population in 1930.

The population continued to grow rapidly through the 1970s, assisted further by the completion of highway 101 in the mid-1964, which helped make the commute to Los Angeles easier. Although much of this growth was centered in incorporated communities, development also expanded in the unincorporated areas, particularly on the east side of the County.

1.2.3 Governing Body Format

Ventura County is administered by five elected supervisors who each serve four-year terms. The supervisors appoint department administrators who manage county functions.

The Board of Supervisors assumes responsibility for the adoption of this plan; Ventura County Sheriff's Office of Emergency Services will oversee its implementation.

1.3 CURRENT TRENDS

1.3.1 Population

According to the California Department of Finance, as of January 2020 the unincorporated areas of the County had a population of 95,001. This represents a negligible increase from the 2010 census data (94,937 individuals).

Table 1-2 lists unincorporated communities in Ventura County that are recognized by the United States Census Bureau as census-designated places for the 2020 census:

Table 1-2. Ventura County Unincorporated Communities

Census Designated Place	Population 2020	Population 2010	Population Change Since 2010
Bell Canyon	1,946	2,049	-103
Casa Conejo	3,267	3,249	+18
Channel Islands Beach (e.g. Hollywood Beach and Silver Strand)	2,870	3,103	-233
El Rio	7,037	7,198	-161
Lake Sherwood	1,759	1,527	+180
Meiners Oaks	3,911	3,571	+340
Mira Monte	6,618	6,854	-227
Oak Park	13,898	13,811	+87
Oak View	6,215	4,066	+2,149
Piru	2,587	2,063	+524
Santa Rosa Valley	3,312	3,334	-22
Santa Susana	1,160	1,037	+123
Saticoy	1,133	1,029	+104

Source: United States Census Bureau. <https://www.census.gov/>.

The bulk of the population within the unincorporated county area is concentrated within four of these communities. Approximately 17,000 people reside in the adjoining communities of Oak View, Meiners Oaks and Mira Monte on the west end of the county. Meanwhile, nearly 14,000 people reside in the community of Oak Park on the east end of the county.

1.3.2 Development

Unincorporated Ventura County is a slow-growth, mostly rural land use jurisdiction with policies and initiatives that seek to focus growth and development in more urbanized areas. Developed areas include about 18 existing census-designated places listed in the previous section, most of which are

governed by one of nine specific area plans. For the period between 2016-2020, single-family residences made up approximately half of the development activity in the unincorporated areas, while accessory dwelling units comprised an additional 35 percent of the development activity. Agricultural worker housing projects represented approximately 1 percent of development activity, while other multi-family projects and subdivisions were uncommon, representing less than 7 percent of the development in the unincorporated areas. Permits for commercial development constituted 9 percent of the development activity. For a more detailed description of development trends, see the 2020 Annual Progress Report available here:

https://vcrma.org/docs/images/pdf/planning/plans/2020_Ventura_County_Annual_Progress_Report.pdf

Table 1-3 summarizes development trends in the unincorporated County in the period since the preparation of the previous (2015) Hazard Mitigation Plan update, as well as expected future development trends.

Table 1-3. Recent and Expected Future Development Trends

Criterion	Response
Has your jurisdiction annexed any land since the preparation of the previous hazard mitigation plan? If yes, give the estimated area annexed and estimated number of parcels or structures.	No
Is your jurisdiction expected to annex any areas during the performance period of this plan? - If yes, describe land areas and dominant uses. - If yes, who currently has permitting authority over these areas?	No
Provide the number of new construction permits for each hazard area or provide a qualitative description of where development has occurred.	Permitting activity in 2020 was concentrated in the areas around Piru, Oak View, and Meiners Oaks. In particular, within the Piru area, the buildout of the Piru Gateway development (Tract Map 5553, recorded in 2017) has been under construction for the past several years. This development consists of 53 single-family homes, 4 duplex units, and 10 triplex units, for a total of 91 new residential units. Conversely, in the Oak View and Meiners Oaks areas, most new development consisted of legalization of existing, unpermitted accessory units, and construction of new accessory dwelling units. Much of this development is being driven by state-level regulation changes that went into effect on January 1, 2020 which limit local agency authority to regulate accessory dwelling units. Much of the development is located in high fire hazard severity zones, including Piru, the Oak View and Meiners Oaks areas near Ojai, the hills north of Camarillo, and southeast of Simi Valley in Bell Canyon. A small number of single-family permits have also been issued in coastal areas that are primarily for redevelopment of existing structures. Most of these coastal structures are vulnerable to tsunami and other coastal hazards. For a more detailed description of development trends, see the 2020 Annual Progress Report available here: https://vcrma.org/docs/images/pdf/planning/plans/2020_Ventura_County_Annual_Progress_Report.pdf

Criterion	Response					
Are any areas targeted for development or major redevelopment in the next five years? If yes, briefly describe, including whether any of the areas are in known hazard risk areas	Yes In February 2021, the County approved a 360-unit farmworker housing project north of the city of Camarillo called "Somis Ranch", which will be constructed in three phases over the next few years. Five hundred, ninety-eight additional units are also planned to be constructed over the next four years as part of the continued development (Phase II) of the University Glenn area located adjacent to California State University Channel Islands. This master-planned, mixed-use residential community is proposed to be located on 32 acres south of the City of Camarillo, along the western edge of the Santa Monica Mountains, within a high-fire hazard area. Additional housing is also anticipated to be constructed south of Camarillo as part of the Rancho Sierra Senior Supportive Housing (50 units) on Lewis Road. Finally, there are a total of 224 dwelling units anticipated to be constructed adjacent to Hwy 126 in the Piru Expansion Area as part of the development of two recorded tract maps: the Reider subdivision, comprising 49 townhomes, and the Finch subdivision, comprising 175 new dwelling units. The Piru Expansion area is partially located within FEMA's A99 flood zone. In addition to the new housing outlined above, there are a number of redevelopment projects related to fire rebuilds. Between 2017 and 2018, 337 residential dwelling units were destroyed by the Thomas and the Woolsey Fires, which together burned more than 377,000 acres, most of which were located within Ventura County. As of 2020, rebuilding efforts have included issuance of 122 Planning Permits, 87 Building Permits, and the rebuild of 40 residential units. Many of these units were located in high-fire hazard areas. Efforts by the County Planning Division are ongoing to implement programs outlined for the disadvantaged communities within the El Rio/ Del Norte Area Plan and Satcoy Area Plan that would accommodate additional development in these areas through roadway, sewer, and water infrastructure improvements. The County also continues to improve regulatory pathways that support the development of additional affordable housing and agricultural worker housing throughout the County via an update to the General Plan Housing Element, as well as zoning amendments for agricultural worker housing regulations and accessory dwelling units.					
How many permits for new construction were issued in your jurisdiction since the preparation of the previous hazard mitigation plan?		2016	2017	2018	2019	2020
	Single Family	40	46	46	65	47
	Multi-Family	0	0	14	3	21
	Other (mobile homes, accessory dwellings, mixed use, etc.)	23	35	52	40	50
	Commercial	11	4	14	9	7
	Total	74	85	126	117	125
Describe the level of buildout in the jurisdiction, based on your jurisdiction's buildable lands inventory. If no such inventory exists, provide a qualitative description.	The 2040 Ventura County General Plan Background Report included an inventory of both residential holding capacity and residential development potential. The unincorporated residential development potential was estimated to be 1,361 units (Section 3.7, Table 3-19). The residential development potential accounted for parcels on vacant and underutilized land, as well as other constraints such as steep slopes and floodways. If second dwellings, farmworker housing, Channel Islands University housing, and vacant OS, AE, and RA zone parcels with single-family potential are included, the remaining residential development potential is 28,228 units (Section 3.7, Table 3-22). The County of Ventura's General Plan Annual Report details that Unincorporated Ventura County's Regional Housing Needs Allocation (RHNA) for the period from 2014 to 2021 was 1,015 units. As of 2019 the County has authorized permits for 590 of the 1,015 RHNA units (Exhibit 1, page 7). The Ventura County 2040 General Plan, Chapter 3 Housing Element includes the final RHNA allocation for the period of 2021-2029 which is 1,262 units (Section 3.2, Table 3-1).					

1.4 CAPABILITY ASSESSMENT

This section describes an assessment of existing capabilities for implementing hazard mitigation strategies. The introduction at the beginning of this volume of the hazard mitigation plan describes the components included in the capability assessment and their significance for hazard mitigation planning.

Findings of the capability assessment were reviewed to identify opportunities to expand, initiate or integrate capabilities to further hazard mitigation goals and objectives. Where such opportunities were identified and determined to be feasible, they are included in the action plan. The “Analysis of Mitigation Actions” table in this annex identifies these as community capacity building mitigation actions. The findings of the assessment are presented as follows:

- An assessment of planning and regulatory capabilities is presented in Table 1-4.
- Development and permitting capabilities are presented in Table 1-5.
- An assessment of fiscal capabilities is presented in Table 1-6.
- An assessment of administrative and technical capabilities is presented in Table 1-7.
- An assessment of education and outreach capabilities is presented in Table 1-8.
- Information on National Flood Insurance Program (NFIP) compliance is presented in Table 1-9.
- Classifications under various community mitigation programs are presented in Table 1-10.
- The community’s adaptive capacity for responding to the impacts of climate change is presented in Table 1-11.

Table 1-4. Planning and Regulatory Capability

	Local Authority	Other Jurisdiction Authority	State Mandated	Integration Opportunity?
Codes, Ordinances, & Requirements				
Building Code <i>Comment: 2019 Ventura County Building Code, Ord. #4548</i>	Yes	No	Yes	Yes
Zoning Code <i>Comment: Non-Coastal Zoning Ordinance, last amended 4/13/21 Coastal Zoning Ordinance, last certification 6/11/21</i>	Yes	No	Yes	Yes
Subdivisions <i>Comment: Ventura County Subdivision Ordinance, last amended 6/16/20</i>	Yes	No	Yes	Yes
Stormwater Management <i>Comment: Ventura County Ordinance Code Relating to Stormwater Quality Management for Unincorporated Areas, Ordinance #4450, last amended 7/17/12</i>	Yes	No	Yes	Yes

	Local Authority	Other Jurisdiction Authority	State Mandated	Integration Opportunity?
Post-Disaster Recovery	Yes	Yes	No	Yes
Comment: See https://www.venturacountyrecovers.org/ (click on "Hill and Woolsey Fires" in upper right) Board of Supervisors Ordinance No. 4515, Approved 12/26/17: An Emergency Ordinance establishing local standards and procedures for cleanup of debris generated by the Thomas Fire. Board of Supervisors Resolution No. 17-148, Approved 12/26/17: Resolution waiving certain Planning, Building and Safety, and Environmental Health Division fees related to Temporary Dwellings during rebuilding of residential structures damaged or destroyed in the Thomas Fire. Board of Supervisors Ordinance No. 4532, Approved 10/30/18: Ordinance amending Division 8, Chapter 1, Article 5, Sections 8105-1.1, 8105-4 and 8105-5, Article 6, section 8106-5.12, article 7, Sections 8107-14.2 and 8107-14.3, and Article 13, Section 8113-6.1.1 of the Ventura County Ordinance code, Non-Coastal Zoning Ordinance pertaining to the permitted uses matrix, temporary dwelling during construction and reconstruction, and destruction of non-conforming structures and structures containing nonconforming uses.				
Real Estate Disclosure	No	No	No	No
Comment: None currently				
Growth Management	Yes	No	Yes	No
Comment: Measure C, Save Open Space and Agricultural Resources Extension to year 2050, 11/3/16				
Site Plan Review	Yes	Yes	Yes	Yes
Comment: Non-Coastal Zoning Ordinance, last amended 4/13/21 Coastal Zoning Ordinance, last certification 6/11/21 2019 Ventura County Building Code, Ord. #4548				
Environmental Protection	Yes	No	Yes	Yes
Comment: Initial Study Assessment Guidelines, last amended 4/26/11				
Flood Damage Prevention	Yes	No	Yes	Yes
Comment: Ventura County Floodplain Management Ordinance, Ordinance. #4521, Enacted 3/27/18				
Emergency Management	Yes	No	No	Yes
Comment: Code of Ordinances, Div 5 (Safety), Section 3 (Public Emergency) (5300) https://library.municode.com/ca/ventura_county/codes/code_of_ordinances?nodeId=DIV5SA_CH3PUEM Created the Emergency Planning Council				
Climate Change	Yes	No	Yes	Yes
Comment: 2040 General Plan, Climate Action Plan in Appendix B, September 15, 2020 General Services Agency, Energy Action Plan, April 2010 Climate Protection Plan for Government Operations, April 2012 Saticoy Area Plan, Mobility Element Coastal Zoning Ordinance, Section 8178-8—Water Efficient Landscaping Requirements (2018) Non-Coastal Zoning Ordinance, Section 8107-25 (last amended 2008) and Coastal Zoning Ordinance, Section 8178-7 Tree Protection Regulations (last amended 2018) and Tree Protection Guidelines Non-Coastal Zoning Ordinance, Section 8106-8.2—General Landscaping and Water Conservation Requirements (last amended 2021), which requires compliance with the State's Model Water Efficient Landscaping Ordinance.				
Planning Documents				
General Plan	Yes	No	Yes	Yes
Is the County's General Plan compliant with Assembly Bill 2140? ^a Comment: 2040 General Plan, Appendix B, September 15, 2020.				
Capital Improvement Plan	Yes	No	No	Yes
How often is the plan updated? Annually Comment: Capital Improvement Plan Project Sheet Submittals are revised and updated annually in support of a rolling 5-year planning horizon.				

	Local Authority	Other Jurisdiction Authority	State Mandated	Integration Opportunity?
Disaster Debris Management Plan <i>Comment: Emergency Ordinance No. 4534, Dec. 4, 2018 An emergency ordinance establishing local standards and procedures for cleanup of debris generated by the Hill and Woolsey Fires.</i>	Yes	Yes	No	No
Floodplain or Watershed Plan <i>Comment: Flood Safety Plan for Ventura County, March 2017</i>	Yes	No	Yes	Yes
Stormwater Plan <i>Comment: County Stormwater Program Compliance Strategy in the Unincorporated Area, approved by the Board of Supervisors on Feb. 5, 2019</i>	Yes	No	No	Yes
Urban Water Management Plan <i>Comment: 2020 Urban Water Management Plan (UWMP) for County Waterworks District #1, June 22, 2021</i>	Yes	No	Yes	Yes
Habitat Conservation Plan <i>Comment: Habitat Connectivity and Wildlife Corridors Ordinance, Non-Coastal Zoning Ordinance, 2019, Ord #'s 4537 and 4539</i>	Yes	No	No	Yes
Economic Development Plan <i>Comment: 2040 General Plan, Economic Vitality Element, September 15, 2020 County of Ventura Economic Vitality Strategic Plan, November 13, 2017</i>	Yes	No	No	Yes
Shoreline Management Plan <i>Comment: Beach Erosion Authority for Clean Oceans and Nourishment (BEACON) Coastal Regional Sediment Management Plan and Programmatic EIR, 2009 and 2011</i>	No	Yes	No	No
Community Wildfire Protection Plan <i>Comment: Ventura County Community Wildfire Protection Plan, 2010. Plan update scheduled for completion in 2022.</i>	Yes	No	No	Yes
Forest Management Plan <i>Comment: Los Padres National Forest Land Management Plan, 2005</i>	No	Yes	No	Yes
Climate Action Plan <i>Comment: 2040 General Plan, Climate Action Plan in Appendix B, September 15, 2020 General Services Agency, Energy Action Plan, April 2010 Climate Protection Plan for Government Operations, April 2012</i>	Yes	No	Yes	Yes
Threat & Hazard Identification & Risk Assessment (THIRA) <i>Comment: NA</i>	No	No	No	No
Post-Disaster Recovery Plan <i>Comment: Ventura County Disaster Recovery Plan, Adopted by BOS in April 2019</i>	Yes	No	No	Yes
Continuity of Operations Plan <i>Comment: Ventura County Continuity of Operations Plan was first adopted by BOS in 2008 and is maintained by the County Executive Office. The plan is included by reference within the 2021 EOP draft update (which is currently pending approval).</i>	Yes	N/A	No	Yes
Public Health Plan <i>Comment: Ventura County Public Health Strategic Plan, 2015-2020</i>	Yes	No	Yes	Yes
Other <i>Comment:</i> • Sea Level Rise Vulnerability Assessment and Adaptation Report, 2018 and 2019 • Farmworker Housing Ordinance, underway • Tree Mitigation Fund and County Tree Planting Program, • Ventura County Land Conservation Act Program, • Ventura County Surface Mining and Reclamation Act Program, • Naval Base Ventura County Joint Land Use Study, 2015	Yes	Yes	No	Yes

a. AB 2140 compliance tracks with each plan update. The County will re-link the two plans once this update is approved.

Table 1-5. Development and Permitting Capability

Criterion	Response
Does your jurisdiction issue development permits? <i>If no, who does? If yes, which department?</i>	Yes Planning Division, Public Works Agency
Does your jurisdiction have the ability to track permits by hazard area?	Yes
Does your jurisdiction have a buildable lands inventory?	Yes

Table 1-6. Fiscal Capability

Financial Resource	Accessible or Eligible to Use?
Community Development Block Grants	Yes
Capital Improvements Project Funding <i>Comment:</i> Check with Public Works and General Services Agency	Yes
Authority to Levy Taxes for Specific Purposes <i>Comment:</i> new taxes require 2/3rds Board of Supervisors approval	Yes
User Fees for Water, Sewer, Gas or Electric Service <i>If yes, specify:</i> Check with Special Districts, typically require fee study	Yes
Incur Debt through General Obligation Bonds <i>Comment:</i> Requires Board of Supervisors Approval	Yes
Incur Debt through Special Tax Bonds <i>Comment:</i> Requires Board of Supervisors Approval or voter approval	Yes
Incur Debt through Private Activity Bonds <i>Comment:</i> Recovery Zone Economic Development Bonds, 2010 http://bosagenda.countyofventura.org/sirepub/cache/2/qdv0sgxbtll0epc0ihgn2r24/551690082020210412476.PDF	Yes
Withhold Public Expenditures in Hazard-Prone Areas	Yes
State-Sponsored Grant Programs <i>Comment:</i> Requires Board of Supervisors Approval to Receive Grants	Yes
Development Impact Fees for Homebuyers or Developers <i>Comment:</i> Requires Board of Supervisors Approval	Yes

Table 1-7. Administrative and Technical Capability

Staff/Personnel Resource	Available?
Planners or engineers with knowledge of land development and land management practices <i>If Yes, Department /Position:</i> Yes, various positions throughout Planning Division and Public Works Agency	Yes
Engineers or professionals trained in building or infrastructure construction practices <i>If Yes, Department /Position:</i> Yes, Building and Safety Department various positions, Public Works Agency—Transportation Department and Watershed Protection, all positions.	Yes
Planners or engineers with an understanding of natural hazards <i>If Yes, Department /Position:</i> Building & Safety manager has CFM and Emergency response, Public Works Agency—Watershed Protection, Planning Division, Area Plans and Resources Manager, General Plan Manager	Yes
Staff with training in benefit-cost analysis <i>If Yes, Department /Position:</i> Building & Safety management team, Public Works Agency Directors and General Services Agency Parks Department Director	Yes
Surveyors <i>If Yes, Department /Position:</i> Public Works Agency, Surveyor's office.	Yes
Personnel skilled or trained in GIS applications <i>If Yes, Department /Position:</i> Building & Safety counter staff, plan review engineers and management team, Resource Management Agency GIS Supervisor	Yes
Scientist familiar with natural hazards in local area <i>If Yes, Department /Position:</i> PWA Engineering Managers and Hydrologists. For scientists, the Planning Division and Public Works agency also contract with consultants as needed.	Yes
Emergency manager <i>If Yes, Department /Position:</i> Sheriff's Office of Emergency Services (OES Director, and 6 additional full-time EMs), Building & Safety district managers	Yes
Grant writers <i>If Yes, Department /Position:</i> Planning Division Long Range Planning Managers, County Executive Office, Office of Sustainability Manager, various Public Works Agency departments.	Yes

Table 1-8. Education and Outreach Capability

Criterion	Response
Do you have a public information officer or communications office?	Yes
Do you have personnel skilled or trained in website development?	Yes
Do you have hazard mitigation information available on your website? <i>If yes, briefly describe:</i> ReadyVenturaCounty.org contains pages dedicated to the Hazard Mitigation Plan Update, including information on hazard mitigation and links to the existing Hazard Mitigation Plan.	Yes
Do you use social media for hazard mitigation education and outreach? <i>If yes, briefly describe:</i> Twitter, Nixle	Yes
Do you have any citizen boards or commissions that address issues related to hazard mitigation? <i>If yes, briefly describe:</i> Emergency Planning Council, CERT, Disaster Assistance Response Team, Ventura Regional Fire Safe Council, Ojai Valley Fire Safe Council, Ventu Park Fire Safe Council, and Bell Canyon Fire Safe Council	Yes
Do you have any other programs in place that could be used to communicate hazard-related information? <i>If yes, briefly describe:</i> VCEmergency.com ; ReadyVenturaCounty.org , VC Alert ,	Yes
Do you have any established warning systems for hazard events? <i>If yes, briefly describe:</i> VC Alert , Wireless Emergency Alerts (WEA); VCEmergency.com ; Hi-Lo Sirens	Yes

Table 1-9. National Flood Insurance Program Compliance

Criterion	Response
What local department is responsible for floodplain management?	Ventura County Public Works Agency-Engineering Services Department, Development Services Section.
Who is your floodplain administrator? (department/position)	Director, Ventura County Public Works Agency
Are any certified floodplain managers on staff in your jurisdiction?	Yes
What is the date that your flood damage prevention ordinance was last amended?	3/27/2018
Does your floodplain management program meet or exceed minimum requirements?	Meets
When was the most recent Community Assistance Visit or Community Assistance Contact?	9/21/2018
Does your jurisdiction have any outstanding NFIP compliance violations that need to be addressed?	No
Are any RiskMAP projects currently underway in your jurisdiction?	No
Do your flood hazard maps adequately address the flood risk within your jurisdiction?	Yes
Does your floodplain management staff need any assistance or training to support its floodplain management program?	Yes
<i>If so, what type of assistance/training is needed?</i>	Additional training on benefit-cost analysis for the BRIC grant program, and green-flood plain management project solutions eligible for FEMA funding.
Does your jurisdiction participate in the Community Rating System (CRS)?	Yes
<i>If yes, is your jurisdiction interested in improving its CRS Classification?</i>	No
How many flood insurance policies are in force in your jurisdiction? ^a	1,346
<i>What is the insurance in force?</i>	\$395,320,600
<i>What is the premium in force?</i>	\$1,327,849
How many total loss claims have been filed in your jurisdiction? ^a	724
<i>What were the total payments for losses?</i>	\$10,126,504

a. According to FEMA statistics as of March 31, 2021

Table 1-10. Community Classifications

	Participating?	Classification	Date Classified
FIPS Code	Yes	06111	N/A
DUNS #	Yes	066691122	N/A
Community Rating System	Yes	5	5/1/2016
Building Code Effectiveness Grading Schedule	No	N/A	N/A
Public Protection	Yes	03/3X	12/21/2018
Storm Ready	Yes	N/A	N/A
Firewise	Yes	N/A	Unknown
Tsunami Ready	Yes	N/A	N/A

Table 1-11. Adaptive Capacity for Climate Change

Criterion	Jurisdiction Rating
Technical Capacity	
Jurisdiction-level understanding of potential climate change impacts <i>Comment: High level of understanding of anticipated exacerbation of drought and wildfire risks, and sea -level rise-related impacts. Moderate understanding of secondary impacts to agricultural/biological risks, and severe weather/severe storm impacts.</i>	High
Jurisdiction-level monitoring of climate change impacts <i>Comment: 2040 General Plan has emission reduction and climate adaptation programs adopted and monitoring programs are being implemented.</i>	Medium
Technical resources to assess proposed strategies for feasibility and externalities <i>Comment: The Planning Division has access to technical resources in other County Agencies, coordination with outside agencies with resources is frequent, and the County also has the capacity to hire consultants when needed. Additional resources in adaptation pathway planning would be helpful.</i>	Medium
Jurisdiction-level capacity for development of greenhouse gas emissions inventory <i>Comment: A GHG inventory was completed for the 2040 General Plan Update with baseline data for 2015. There is also an operational emissions inventory, and monitoring is planned for the future as part of General Plan implementation.</i>	High
Capital planning and land use decisions informed by potential climate impacts <i>Comment: The 2040 General Plan includes policies related to climate adaptation to guide development due to climate change impacts. The 2040 General Plan also includes implementation programs that function as climate adaptation strategies.</i>	High
Participation in regional groups addressing climate change risks <i>Comment: Some members of the Board of Supervisors are on committees for sea level rise and beach sediment management. The County's Office of Sustainability, the Long Range sections of the Planning Division, and the Public Works Agency regularly participate with regional groups to address climate change risks. The County Executive Office's Ventura County Climate Emergency Council is a citizen advisory committee focused on GHG reductions. The County's Sustainability Committee is an interagency work group focused on integrating sustainable practices into agency activities including Climate Action Plan implementation.</i>	High
Implementation Capacity	
Clear authority/mandate to consider climate change impacts during public decision-making processes <i>Comment: Included in 2040 General Plan policies and programs, see Appendix B.</i>	High
Identified strategies for greenhouse gas mitigation efforts <i>Comment: Included in 2040 General Plan policies and programs. The County Executive Office's Sustainability Division manages the Ventura County Climate Emergency Council to advise the County's Board of Supervisors on climate action planning and Climate Action Plan implementation. https://www.ventura.org/vcccec/</i>	High
Identified strategies for adaptation to impacts <i>Comment: The County's 2019 Sea level Rise Adaptation Report includes adaptation strategies that have yet to be adopted in policy form.</i>	Medium
Champions for climate action in local government departments <i>Comment: Action ultimately requires Board authorization for policies and programs. The County Executive Office's Sustainability Division acts as lead for Climate Action Plan implementation including time invested by a full-time Sustainability Officer and supporting staff. The Sustainability Officer is the Chair of the County's the Sustainability Committee, an interagency work group focused on integrating sustainable practices into agency activities including Climate Action Plan implementation.</i>	Medium
Political support for implementing climate change adaptation strategies <i>Comment: In June 2020, the County's Board of Supervisors allocated an additional full-time, fixed-term employee to focus on supporting Climate Action Plan implementation efforts as part of its budget hearing process.</i>	High

Criterion	Jurisdiction Rating
Financial resources devoted to climate change adaptation <i>Comment: The County funded the 2020 Climate Action Plan, which is a component of the 2040 General Plan, and has provided matching funds for sea level rise planning grants. The County Executive Office's Sustainability Division has staff devoted to climate action and adaptation programs, including an additional fixed-term position focused on supporting Climate Action Plan implementation that was approved in June 2020. The County also contributes membership funds to BEACON.</i>	High
Local authority over sectors likely to be negative impacted <i>Comment: The County exercises land use authority in the unincorporated County.</i>	High
Public Capacity	
Local residents' knowledge of and understanding of climate change risk <i>Comment: Many residents have a general understanding of climate change risks, but ongoing outreach and education is needed for the broader community.</i>	Medium
Local residents' support of adaptation efforts <i>Comment: While most residents support adaptation efforts, they may be resistant if new requirements impact them financially.</i>	Medium
Local residents' capacity to adapt to climate impacts <i>Comment: Applications for new development and redevelopment have rarely included voluntary climate adaptation features, but some features are required to be included according to 2040 General Plan policies. The County has allowed redevelopment in areas impacted by wildfires.</i>	Low
Local economy's current capacity to adapt to climate change impacts <i>Comment: The agricultural industry is a substantial contributor to the local economy, with an estimated gross value in 2020 of over 1.9 billion dollars, and employing over 40,000 individuals. The County (~8,000 employees) and Naval Base Ventura County (>16,000 employees) are the two largest local employers and both are planning for climate change impacts. Additionally, the City of Port Hueneme is conducting a General Plan update that will include a vulnerability assessment and planning for sea level rise impacts at the Port of Hueneme. Adaptive capacity is highly dependent on the scope and severity of climate impacts. Rebuilding levees, managed retreat, and rebuilding/relocating buildings and infrastructure in the face of extreme flooding and sea level rise are costly adaptation measures and, in many cases, would require substantial public funding and a multi-jurisdictional approach to implement.</i>	Medium
Local ecosystems' capacity to adapt to climate change impacts <i>Comment: A 2019 report by the Western Regional Climate Center indicated that, as a result of climate change Ventura County will experience air temperature increases, a greater number of extreme heat days annually, and an increased number of annual dry days leading to fewer but more intense rainfall events. Based on these findings, it is anticipated that such changes will lead to challenges in evapotranspiration and crop cultivation, increased potential for flash flooding and/or debris flows, increased susceptibility to drought, and longer wildfire seasons. More work needs to be done to evaluate how ecosystems that often straddle jurisdictional boundaries can migrate and adapt. More community education and benefit-cost analysis is needed to demonstrate how ecosystem services can minimize or abate climate change impacts.</i> https://wrcc.dri.edu/Climate/reports.php https://wrcc.dri.edu/Docs/VenturaClimate2019_bookmarked.pdf	Low

High = Capacity exists and is in use

Medium = Capacity may exist, but is not used or could use some improvement

Low = Capacity does not exist or could use substantial improvement

Unsure = Not enough information is known to assign a rating.

1.5 INTEGRATION REVIEW

For hazard mitigation planning, "integration" means that hazard mitigation information is used in other relevant planning mechanisms, such as general planning and capital facilities planning, and that relevant information from those sources is used in hazard mitigation. This section identifies where such integration is already in place, and where there are opportunities for further integration in the future. Resources listed at the end of this annex were used to provide information on integration. The progress reporting process described in Volume 1 of the hazard mitigation plan will document the progress of hazard mitigation actions related to integration and identify new opportunities for integration.

1.5.1 Existing Integration

Some level of integration has already been established between local hazard mitigation planning and the following other local plans and programs:

- The **Ventura County 2040 General Plan**, Hazards and Safety Element was updated in September, 2020. The update also included a Water Resources Element and a Climate Action Plan.
- The **Non-Coastal Zoning Ordinance (NCZO)** includes standards for hazard mitigation and abatement relative to high fire hazard areas, earthquakes, geology and floods. Recent updates to the NCZO added water efficient landscaping standards and a wildlife corridor overlay zone that includes new standards in fencing and lighting to promote the movement of wildlife.
- The **County's Local Coastal Program (LCP)** is comprised of the **Coastal Area Plan** and **Coastal Zoning Ordinance (CZO)**. The CZO includes standards for hazard mitigation and abatement related to beach erosion, geology, earthquakes, and floods.
- The **Ventura County Subdivision Ordinance** requires consideration of both geologic and flood hazards during the siting and design of proposed lots. Additionally, it requires consideration of wildfire hazards when a proposed subdivision is located in a "state responsibility area" or a "very high fire hazard severity zone".
- **Ventura County Emergency Operations Plan** addresses the County's planned response to hazard events.
- **Ventura County Building Code** is the local adoption of the State codes Title 24

1.5.2 Opportunities for Future Integration

The capability assessment in this annex indicates opportunities to integrate this mitigation plan with other jurisdictional planning/regulatory capabilities. Capabilities were identified as integration opportunities if they can support or enhance the actions identified in this plan or be supported or enhanced by components of this plan. The capability assessment identified the following plans and programs that offer opportunities for future integration or expanded integration with this mitigation plan:

- The **Ventura County 2040 General Plan** includes policies and programs for hazard mitigation and abatement relative to high-fire hazard areas, earthquakes, geology and floods, as well as climate change adaptation related to droughts, sea level rise and coastal erosion. The County will re-link the General Plan with this HMP once this HMP update is approved. This will enable compliance with AB 2140.
- The County's **Initial Study Assessment Guidelines (ISAGs)** are in the process of being updated and this may be an integration opportunity.
- The County's **NCZO** is periodically amended per Board of Supervisors directive or as required by state law. Updates per new fire codes related to brush clearance and fire prevention may be needed.
- The **County's LCP** includes standards for hazard mitigation and abatement relative to beach erosion, geology, earthquakes, and floods. The policies and standards related to environmentally sensitive habitat, coastal hazards, and sea level rise are being consolidated and updated, and this effort could present an opportunity for future integration.

- **Wetland Project Permitting Guide, 2006**—this document could be updated with support from the County's Public Works Agency to include hazard integration.

The following projects are currently underway or are planned to be updated. There could be integration opportunities to include hazards in siting and design standards.

- Sea Level Rise Vulnerability Assessment and Adaptation Report, 2019
- Farmworker Housing Ordinance, underway
- Tree Mitigation Fund and County Tree Planting Program
- Land Conservation Act Program
- Initial Study Assessment Guidelines (ISAGs)

Taking action to integrate each of these programs with the hazard mitigation plan was considered as a mitigation action to include in the action plan in this annex.

1.6 RISK ASSESSMENT

1.6.1 Jurisdiction-Specific Natural Hazard Event History

Table 1-12 lists past occurrences of natural hazards for which specific damage was recorded in this jurisdiction. Other hazard events that broadly affected the entire planning area, including this jurisdiction, are listed in the risk assessments in Volume 1 of this hazard mitigation plan.

Table 1-12. Past Natural Hazard Events

Type of Event	FEMA Disaster #	Date	Damage Assessment
2019 Easy Fire	FM5298	10/30/2019 to 11/2/2019	1,806 acres burned; 6,500 homes threatened; 30,000 residents evacuated.
2019 Maria Fire	FM5302	10/31/2019 to 11/4/2019	9,412 acres burned including a substantial portion of prime ag lands; 4 structures destroyed; >1,800 homes / 7,500 residents evacuated; triggered temporary shut-down of local oil and natural gas field facilities and pipelines; damage to communications and oil and gas field facilities occurred. 160 acres of avocado orchards and 25 acres of lemon orchards were moderately to severely damaged or destroyed. Damage to avocado and lemon crops was estimated at ~\$5.2 million, according to Korinne Bell, Ventura County Chief Deputy Agricultural Commissioner.
2018 Hill Fire	DR4407	11/8/2018 to 11/16/2018	4,531 acres burned; 4 structures destroyed; 4 structures damaged; 5,000 structures threatened.
2018 Woolsey Fire	DR4407/FM5280	11/8/2018 to 11/21/2018	96,949 acres burned; \$6 billion in property damage; \$10 million in firefighting costs; 1643 structures destroyed, 3 deaths, 295,000 residents (in Ventura and L.A. County) evacuated.
2018 Heat Event (July)		7/4/2018 to 7/6/2018	Extreme 2-day heat event broke records across the county, and resulted in damage to crops. For crops such as avocados and citrus, heat can damage both the current crop and also the fruit set for the coming season, packing a two-year punch. The California Avocado Board estimated a 2019 crop of 210 million pounds, down from 372 million pounds a year earlier, and the smallest crop in over a decade. Citrus officials say it knocked down up to 15 percent of the region's lemon crop at the tail end of the harvest. Lemons dropped by 14% in value in the County's 2019 ag report.

Type of Event	FEMA Disaster #	Date	Damage Assessment
2018 Montecito Debris Flows	DR4353	1/9/2018 – 1/22/2018	A 30-mile section of U.S. Route 101 (US 101) from Santa Barbara to Ventura was shut down for two weeks as sections filled with two feet (60 cm) of mud and debris, some of which also reached beaches 2.25 miles (3.6 km) from the mountains. Following the closure, access to Santa Barbara from the Los Angeles area was limited to a 260-mile (420 km) detour around the Los Padres National Forest or through the use of private ferries to Ventura. This closure severely impacted commerce throughout the county. Based on commuter surveys conducted by the U.S. Census Bureau (2013) and Department of Transportation estimates, in 2017 an average of 2,300 vehicles (2,400 workers) commuted daily from Santa Barbara to Ventura County, and approximately 10,000 vehicles (11,500 workers) commuted from Ventura, in addition to approximately 3,700 commercial trucks. The loss to Ventura County cities from commuter earnings for each week of the closure has been approximated at \$12,235,774.
2017 Thomas Fire	FM5224	12/4/2017 to 1/12/2018	Over 280,000 acres burned. Cost of \$2.2 billion; \$171,296,703 in agricultural losses (crop losses and farm equipment) alone; 1,063 structures destroyed; 280 damaged; 2 deaths; and 104,607 residents evacuated; Businesses, including Ag also experienced loss of perishable goods from the nearly two-week closure of U.S. 101 that shut down commerce and prevented workers from accessing fields.
2017 Winter Storms	NA	2/17/2017 to 2/18/2017	Rainfall amounts from 2 to 6 inches across coastal areas with up to around 10 inches in the local mountains produced numerous reports of flash flooding as well as mud and debris flows. Strong southerly winds with gusts up to 70 mph reported in some areas. Highway 101 was closed in both directions north of Ventura due to mud and debris flows near the Solimar burn area. Flash flooding near the community of Thousand Oaks; three men rescued when Wildwood Creek flooded. Near the community of Camarillo, Conejo Creek to overflow its banks, flooding acres of agricultural land. State disaster declaration No. CA77 and CA77.1
2015 Coastal Erosion and Flooding Event	NA	12/11/2015	Strong waves (up to 15 ft.) from a large westerly swell event resulted in evacuation and closure of the Ventura and Port Hueneme piers. Heavy surf caused approximately 15 pylons to break off the sides of the Ventura pier—triggering an extended (four month) closure while repairs were made. Pier repairs cost \$1.4 million. Localized flooding of beachfront homes in the Pierpont neighborhood and nearby streets also occurred Harbor Boulevard between Sanjon Road and California Street in the city of Ventura had to be closed due to flooding. Erosion from this event substantially altered the beach profile along Ventura State Beach near the pier, including impacts to Surfer's Point as well as other exposed coastline areas. At Naval Base Ventura County, officials temporarily closed Family Beach and a nearby campground because of high surf. Farther east along Pacific Coast Highway, State Parks relocated campers inland from the beachside Thornhill Broome State Beach Campground after the combination of high tide and the swell flooded the east and west ends of the campground.
2014 Pacific Coast Highway (Hwy 1) Landslide		11/20/2014 to 3/15/2015	Rocks, boulders, and 4-6 feet of mud slumped onto Hwy 1 near the May 2013 Springs Fire burn area. The substantial slope stabilization and highway repairs required resulted in a months-long closure of 9 miles of Hwy 1 (November through mid-March) between the Mugu and Malibu areas, isolating unincorporated south coast communities, impacting commuter traffic, and limiting access to coastal recreational resources.
2014 Coastal Erosion and Flooding Event (Hurricane Marie)	NA	8/26/2014	Large southeast swells from Hurricane Marie generated high surf conditions along local beaches and resulted in numerous rescues by local lifeguards, beach and campground closures, and flooding of some coastal roads. Local piers experienced some damage including the pier at Port Hueneme. Extensive damage also occurred to the road infrastructure of Hwy 1 near Sycamore Canyon campground in Point Mugu State Park. At postmile (PM) 4.0, the existing revetment was damaged and at PM 4.2, the vegetated slope between the road and beach was severely eroded.
2013 Springs Fire	FM5024	5/2/2013	24,251 acres burned; 15 homes destroyed; 4,000 homes threatened as well as key communications infrastructure (including \$1 billion dollar Naval satellite operations station on Laguna Peak). More than \$10 million in firefighting costs incurred.

Type of Event	FEMA Disaster #	Date	Damage Assessment
2009 Guiberson Fire	FM2839	9/22/2009 to 9/29/2009	17,500 acres burned; 1 structure destroyed; estimated firefighting costs of more than \$6.9 million
2007 Ranch Fire	FM1731	10/21/2007	58,401 acres burned in both L.A. and eastern Ventura County near Piru; over \$9 million in firefighting costs
2007 Freeze Event	DR-1689	1/11/2007 to 1/17/2007	4 nights of below freezing temperatures caused losses of over \$1.3 billion statewide and \$281 million in crop damage locally. Damage was mainly to citrus and avocado groves, and the winter strawberry crop that was just going to harvest.
2006 Shekell Complex Fire	FM2681	12/3/2006 to 12/6/2006	13,600 acres burned; 5 homes, 2 comm. Buildings; 11 structures destroyed; \$12.8-13 million in damage; 9.2 million in structural damage; 25 million in ag damage
2006 Day Fire	FM2677	9/4/2006 to 10/9/2006	162,702 acres burned, including substantial wilderness and national forest areas; \$78 million in fire suppression costs; 11 structures burned, residences threatened in Lockwood Valley and Upper Ojai over course of several weeks.
2005 La Conchita Landslide	DR1577	1/10/2005	The landslide resulted in the deaths of 10 people, destroyed 13 homes and resulted in red-tagging of 23 others. It occurred following a two-week period from Dec 27-Jan 10 in which 430 mm of rainfall fell (a record 15-day rainfall). Estimated costs of ~\$1.75 million in county agencies' response to the event.
2005 Winter Storms (January)	DR1577	1/7/2005 to 1/11/2005	Damage totaled more than \$200 million. High water flows, scouring, and washouts in the Ventura River damaged several water wells and exposed water lines owned by the Ojai Valley Sanitary District. Severe erosion occurred along both embankments of the Ventura River. The Calleguas Creek topped its banks near the state hospital in Camarillo and flooded nearby ag fields. Homes in Moorpark, Casitas Springs and Ojai were flooded, major roads including Highways 101, 126, 33 and 150 were closed for more than a week, and the Santa Paula Airport was closed for several months due to flood damage to the runway.
2003 Simi Fire	DR1498/ FM2504	10/24/2003	108,204 acres burned; crop losses of nearly \$8 million.
1999 Ranch Fire	NA	12/27/1999	4,372 acres burned, including a large proportion of national forest lands in Los Padres National Forest. Reported losses include thousands of dollars in outdoor equipment and numerous small structures at The Ojai Foundation. The fire also threatened numerous homes in Ojai Valley area. Fire officials estimated the cost of fighting the fire at nearly \$5 million, and noted that firefighters constructed more than 20 miles of fire lines.
1998 Freeze Event	DR1267	12/20/1998	This severe freeze impacted citrus/avocado/strawberry crops across Ventura County; 1,139 services received; \$71,541,000 in damages to agriculture industry. Other sources estimated losses as high as \$74.3 million for Ventura County farmers.
1928 St. Francis Dam Failure	NA	3/12/1928	>530 people died; bridges, orchards, farms, and homes were all eradicated in flood's path down the Santa Clara river valley to the Pacific Ocean. Considered to be one of the worst engineering disasters of the 20 th century.

1.6.2 Hazard Risk Ranking

Table 1-13 presents a ranking of all hazards of concern for which this hazard mitigation plan provides quantitative risk assessments. As described in detail in Volume 1, the ranking process involves an assessment of the likelihood of occurrence for each hazard, along with its potential impacts on people, property, and the economy. Mitigation actions target hazards with high and medium rankings.

Table 1-13. Hazard Risk Ranking

Rank	Hazard	Risk Ranking Score	Risk Category
1	Landslides	51	High
2	Wildfire	36	High
3	Earthquake	32	High
4	Severe Storms	24	High ^a
5	Severe Weather	24	High ^a
6	Dam Failure	24	High ^a
7	Flooding	18	High ^a
8	Sea Level Rise	12	Low
9	Tsunami	10	Low
10	Drought	9	Low

a. The risk category was increased to High, based on jurisdiction-specific vulnerabilities.

1.6.3 Jurisdiction-Specific Vulnerabilities

Volume 1 of this hazard mitigation plan provides complete risk assessments for each identified hazard of concern. This section provides information on a few key vulnerabilities for this jurisdiction. Available jurisdiction-specific risk maps of the hazards are provided at the end of this annex.

Repetitive Loss Properties

Repetitive loss records are as follows:

- Number of FEMA-identified Repetitive-Loss Properties: 63
- Number of FEMA-identified Severe-Repetitive-Loss Properties: N/A
- Number of Repetitive-Loss or Severe-Repetitive-Loss Properties that have been mitigated: N/A

Other Noted Vulnerabilities

The following jurisdiction-specific issues have been identified based on a review of the results of the risk assessment, public involvement strategy, and other available resources:

- **Prioritization of Open Space / Natural Resource Areas**—In 2015, the U.S. Department of Agriculture named Ventura County the most desirable place to live in America. Ventura's mild climate, varied topography, bountiful open space and natural resources, and proximity to additional natural resource areas are a large part of its draw for residents and visitors. Vast tracts of the unincorporated County lie adjacent to, or within, the Los Padres National Forest, Santa Monica Mountains National Recreation Area, and the Pacific Ocean. Valuation of these resources, and of our interface with these open space areas is outside the scope of FEMA's traditional risk analysis tools (e.g., property/structural damage estimates, loss of life, and critical infrastructure inventories, insurance claims), which can result in radical underestimation of disaster impacts to recreation, tourism, and the overall desirability of living and working here.
- **Santa Ana Winds and Planned/Unplanned Utility Outages**—Warm, dry northeasterly winds are a local weather phenomenon in Southern California that can result in downed trees and power lines, blowing dust and air quality concerns. Although the winds themselves do not cause wildfires and rarely rise to the level of an area-wide disaster on their own, they exacerbate

critical fire weather conditions in our area and substantially complicate wildfire response and containment. These winds may occur throughout the year, but are typically most common from October to March. Nearly all of the region's significant wildfires have occurred in conjunction with strong Santa Ana wind conditions. Local power outages have been enacted with increasing frequency by utility companies in response to high wind/low humidity conditions, both within Ventura County and adjacent counties. Supporting adaptation of local businesses and individual residents to sporadic utility outages triggered by potential wind events, as well as critical facilities (e.g., communications towers and other energy infrastructure) should be prioritized.

- **Localized Flooding**—Many communities within the unincorporated County are located adjacent to rivers (e.g., Santa Clara River, Ventura River, Sespe Creek, Piru Creek, Lockwood Creek) that are prone to flood to varying degrees during periods of heavy rainfall. The effects of this flooding range from localized road closures to damage to property (e.g., flooded croplands), vehicles, and buildings.
- **Ventura County Public Works Agency – Watershed Protection's (VCPWA-WP's) Critical Facilities in the Unincorporated Areas**—Based on the fact that virtually all of VCPWA-WP's critical facility assets were constructed to provide flood protection and/or are geospatially located proximate to and/or in flood plains, and as documented in Table 1.8 Past Natural Hazard Events above, during the aforementioned 56-year period, VCPWA-WP's critical facility flood protection assets experienced \$81 Million in damage from flooding, severe storms and severe weather events, VCPWA-WP has ranked Flood risks as "High" in Table 1.9 above.
- **Matilija Dam Seismic Risk Vulnerability**—Matilija Dam in the Ventura River watershed is vulnerable to seismic failure. Many communities are at risk of inundation. Implementation of the Matilija Dam Ecosystem Restoration Project (MDERP) would address this risk while also opening 17 miles of habitat for endangered steelhead trout. MDERP comprises several downstream flood protection and water supply reliability components that must precede removal of the dam, some of which have been completed or are at various stages of completion (alternatives analysis, design, or construction).
- **Levee Rehabilitation and Certification Projects in Unincorporated Areas**—Ventura County Watershed Protection is engaged in preliminary design and CEQA work for levee retrofit and/or flood-protection enhancement projects required to certify all its levees in compliance with federal levee certification requirements. Major levee rehabilitation and ultimate certification projects in the unincorporated areas include: the Ventura River Levee (VR-2) located in the unincorporated community of Casitas Springs, and the Live Oak Acres Levee located in the near the unincorporated community of Oak View. VCPWA-WP is working with FEMA, the U.S. Army Corps of Engineers (USACE), as well as affected cities, residents, and property owners throughout Ventura County to marshal scarce Federal, State, and local funding resources necessary to complete five very important levee retrofit public safety and flood protection projects. Once all VCPWA-WP's levee retrofit projects are completed, VCPWA-WP's levees will fully comply with applicable Federal Levee Certification requirements found in 44 CFR 65.10. At best, full completion of VCPWA-WP's five levee rehab projects will require a minimum of five to ten years, and could take longer, depending on final engineering design plan results, environmental considerations, and availability of project funding required to construct the rehab projects.
- **Unincorporated Area Pump Stations Vulnerable to Sea-Level Rise**—San Nicholas, Santa Monica, and Santa Paula Pump Stations lift stormwater from low elevation coastal neighborhoods and discharge directly to the Pacific Ocean. The Santa Monica and Santa Paula Pump Station outlets are frequently clogged during high tide and heavy surf events, causing the

pumps to shut off and requiring manual removal of sand to ensure the coastal communities do not flood. With sea level rise, the risk increases. While not currently afflicted with the propensity for sand to clog its outlet, San Nicholas Pump Station is vulnerable to failure as sea level rises. The pumps in each facility are over 40 years old and do not have on site backup generators, making them vulnerable to power failures, which cause alarms to sound signaling the need for immediate emergency response. All three facilities need constant repair due to corrosive salt air and water. Upgrades are needed, but more land is required for truly effective solutions, and adjacent land is occupied by high value coastal residences.

- **Ormond Lagoon Coastal Estuary Vulnerable to Sea Level Rise**—Ormond Lagoon is a coastal estuary open to the ocean only during rain events and for a variable period thereafter depending on time between rain events, tides, etc. Sea level rise may reduce the ability of storm runoff from Ormond Lagoon Waterway and Tšumaš Creek to breach the lagoon and flow into the Pacific Ocean. Without a Beach Elevation Management Plan, the following are vulnerable to flooding from storm water backed up in the lagoon: the adjacent Oxnard Wastewater Treatment Plant and Advanced Water Purification Facility, the New-Indy recycled containerboard mill, the Halaco Superfund Site, local residences and roads. Restoration of the Ormond Wetlands complex may help reduce flood potential.
- **Homeless Population**—The size and distribution of the homeless population in the unincorporated area is not easily quantified, but has been increasing in recent years and exacerbates hazard risks and mitigation costs. During a January 2020 point-in-time survey coordinated by the County Executive Office, 128 homeless individuals were counted as residing within the unincorporated County area. Many homeless individuals within the unincorporated area inhabit encampments within the Ventura and Santa Clara river bottoms, where both wildfires and flooding risks are regular concerns. Unsheltered living locations have negative impacts on watershed viability and resilience in addition to posing risks to the broader community. The presence of unauthorized habitation within the watersheds increases wildfire risks (e.g., accidental starts from cooking/warmth fires and arson) as well as the cost of hazard mitigation actions (e.g., brush clearance for wildfire hazard abatement and trash and debris removal efforts prior to winter storm season). Communication barriers, fear of government officials and law enforcement, substance abuse issues, and mental health issues can complicate public outreach and hazard awareness efforts to homeless individuals, and confound accurate assessments of hazard risk and disaster damage.
- **Importance of Agriculture and Potential for Undervaluation of Drought and Ag/Biological Risks**—Agriculture, in the forms of ranching and farming, has been a keystone of Ventura County's economy since its inception. With fertile soils and a mild climate, Ventura remains one of the leading counties for agricultural production in the state. In addition to a variety of row crops and nursery products, the county is one of the top producers of citrus, avocados, and strawberries in the nation. Much of the cultivated land lies within the unincorporated County areas of the Oxnard Plain and Santa Clara River Valley. In addition to generating direct on-farm employment and revenue, agricultural production supports a wide range of other businesses, including packinghouses, equipment dealers, chemical applicators, pest-control firms, labor contractors, fertilizer and other supply dealers, trucking firms, fuel distributors, and repair and manufacturing facilities. Altogether, farming and farm-dependent businesses provide an estimated 43,000 jobs in Ventura County, more than any other sector of the economy except services. Agriculture and agriculture-related businesses account for about 4.4 percent of overall economic activity in Ventura County, generating \$2.1 billion in revenue and \$76 million in indirect business taxes annually. One in 10 county residents relies to some degree on income derived from farming. However, drought and agricultural/biological hazards (e.g., invasive crop

pests and disease) do not lend themselves to evaluation using FEMA’s traditional risk analysis tools (e.g. property, structural damage estimates, loss of life, critical infrastructure inventories), which results in underestimation of the disaster impacts/costs that these hazards can have on the local environment, economy, and area communities.

- **Unauthorized Immigrants**—Ventura County’s farm bureau estimates there are about 36,000 immigrant workers in the county, many of them undocumented. Unauthorized immigrants may be disproportionately affected by disasters (e.g., wildfires, flooding, pandemics), particularly those that impact agricultural operations in the unincorporated county areas where many work as farm laborers. Language/ communication barriers and fear of government and law enforcement personnel can complicate public outreach and education efforts to these individuals.

Mitigation actions addressing these issues were prioritized for consideration in the action plan in this annex.

1.7 STATUS OF PREVIOUS PLAN ACTIONS

Table 1-14 summarizes the actions that were recommended in the previous version of the hazard mitigation plan and their implementation status at the time this update was prepared.

Table 1-14. Status of Previous Plan Actions

Action Item from Previous Plan	Completed	Removed; No Longer Feasible	Carried Over to Plan Update	
			Check if Yes	Action # in Update
OA 11—Develop and implement plans to increase the building owner’s general knowledge of and appreciation for the value of seismic upgrading of the building’s structural and nonstructural elements. <i>Comment: This is an ongoing effort to be developed over the next year.</i>			✓	VUC-8
OA 19—Maintain vegetation management program that provides vegetation management services to elderly, disabled, or low-income property owners who lack the resources to remove flammable vegetation from around their homes. <i>Comment: This is an ongoing program and will be carried over to the plan update.</i>			✓	VUC-9
OA 21—Maintain hazards fuel treatment program for areas that have been identified with overgrown/dead brush/trees to reduce the potential for tree-to-tree ignition. Ensure that a “maintenance now” component to provide continued fire resistance is part of the program. <i>Comment: This is an ongoing program and will be carried over to the plan update.</i>			✓	VUC-10
UVC 1—Continue to participate in the National Weather Service’s (NWS) StormReady Program. <i>Comment: Ventura County continues to participate in TsunamiReady and StormReady. NWS confirmed that Ventura County was last renewed for both SR and TR on 2/25/2019. The next renewal will be due on 3/19/2022.</i>			✓	VUC-11
UVC 2—Develop a plan to identify funding to replace/relocate the Operational Area Emergency Operations Center (EOC). <i>Comment: This item was not completed/pursued during the last update cycle (Thomas & Woolsey fire events, OES staffing changes, and COVID impacted planning and development of many items over the last several years) but continues to be a project of interest that will be carried over to the plan update.</i>			✓	VUC-12

Action Item from Previous Plan	Completed	Removed; No Longer Feasible	Carried Over to Plan Update	
			Check if Yes	Action # in Update
UVC 3—Update Seismic Standards for Communications (Cell Towers) Facilities (Building Code).			✓	VUC-13
<i>Comment: This will be done through the Ventura County Building Code VCBC 2019</i>				
UVC 4—Reinforce and maintain County roads, bridges, ditches and culverts from flooding through various flood proofing measures.			✓	VUC-17
<i>Comment: Ventura County Public Works Agency—Roads and Transportation Department (VCPWA-RT) is responsible for the operation and maintenance of County roads, bridges, ditches, and culverts in the unincorporated areas of Ventura County. VCPWA-RT conducts annual ditch cleaning and culvert cleaning before winter storm season to maintain the capacity of ditches and proper drainage flow to mitigate roadway flooding in rural areas of the county. In addition to the annual cleaning of ditches and culverts, the VCPWA-RT is actively working to rehabilitate Bridge Road Bridge (#442) which is currently in design and environmental permitting phase and is expected to be completed in 2023. Replacement of Catalina Drive Bridge (#384) was completed in May 2020 and replacement of Casitas Vista Road Bridge (#327) was completed in September 2020. Mupu Road Bridge and the Wheeler Canyon Road Bridge improvements projects were completed in 2016-2017. The VCPWA-RT is developing a Bridge Management Program to maintain County bridges. The program will identify and prioritize VCPWA-RT's 158 bridge structures which include 81 bridges on the National Bridge Inventory and 77 other structures. This program will identify budget needs, and schedules for preventive maintenance as well as budget for required rehabilitation or replacement of VCPWA-RT maintained bridges for short and long-term planning needs. The Bridge Management Program is expected to be completed in calendar year 2021. In 2020-2021, VCPWA-WP continued to clean flood control channels and catch basins to prepare for winter storm seasons. VCPWA-WP also secured Proposition 1 grant funding for the Santa Ana Bridge and Camino Cielo Bridge replacement projects which are managed by VCPWA-RT (both are components of the MDERP). The design of Camino Cielo Bridge is progressing towards 30% millstone. For the Santa Ana Bridge project, a construction contract was awarded in March 2021 with an estimated completion date of December 2022.</i>				

1.8 HAZARD MITIGATION ACTION PLAN

Table 1-15 lists the identified actions, which make up the hazard mitigation action plan for this jurisdiction. Table 1-16 identifies the priority for each action. Table 1-17 summarizes the mitigation actions by hazard of concern and mitigation type.

Table 1-15. Hazard Mitigation Action Plan Matrix

Benefits New or Existing Assets	Objectives Met	Lead Agency	Support Agency	Estimated Cost	Sources of Funding	Timeline ^a
Action VUC-1—Where appropriate, support retrofitting, purchase or relocation of structures located in hazard areas, prioritizing those that have experienced repetitive losses and/or are located in high- or medium-risk hazard areas.						
<i>Hazards Mitigated:</i> Landslide, Earthquake, Severe Storm, Severe Weather, Flooding, Wildfire, Dam Failure, Sea Level Rise, Tsunami						
New & Existing	1, 4, 6, 9, 10, 11, 16	Ventura County	NA	High	HMGP, PDM, FMA	Short-term

Benefits New or Existing Assets	Objectives Met	Lead Agency	Support Agency	Estimated Cost	Sources of Funding	Timeline ^a
Action VUC-2—Integrate the Hazard Mitigation Plan into other plans, ordinances and programs that dictate land use decisions in the community, including the 2040 General Plan, Non-Coastal Zoning Ordinance, and Local Coastal Program.						
<u>Hazards Mitigated:</u> Landslide, Earthquake, Severe Storm, Severe Weather, Flooding, Wildfire, Dam Failure, Sea Level Rise, Tsunami, Drought, Agricultural/Biological						
New & Existing	1, 2, 4, 6, 9, 10, 11, 12, 15, 17, 18, 19	Ventura County Resource Management Agency, Ventura County Sheriff's OES, Ventura County Public Works Agency	NA	Low	Staff Time, General Funds	Ongoing
Action VUC-3—Actively participate in the plan maintenance protocols outlined in Volume 1 of this hazard mitigation plan.						
<u>Hazards Mitigated:</u> Landslide, Earthquake, Severe Storm, Severe Weather, Flooding, Wildfire, Dam Failure, Sea Level Rise, Tsunami, Drought, Agricultural/Biological						
New & Existing	1, 2, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19	Ventura County Agencies	NA	Low	Staff Time, General Funds	Short-term
Action VUC-4—Continue to maintain good standing and compliance under the NFIP through implementation of floodplain management programs that, at a minimum, meet the NFIP requirements to: • Enforce the flood damage prevention ordinance. • Participate in floodplain identification and mapping updates. • Provide public assistance/information on floodplain requirements and impacts.						
<u>Hazards Mitigated:</u> Flooding, Severe Storms, Sea Level Rise, Dam Failure						
New & Existing	1, 2, 4, 6, 9, 10, 11, 13, 14, 15, 17, 19	County Public Works	Building and Safety	Low	Staff Time, General Funds	Ongoing
Action VUC-5—Identify and pursue strategies to increase adaptive capacity to climate change including but not limited to the following: • Implementation of 2040 General Plan programs including a Cool Roof Ordinance and Cool Pavement Standards, Performance-Based Building Code for Green Building, Groundwater Basins Resilience Program, Sea Level Impacts Monitoring Program, and Wildfire Vulnerability Assessment and Mapping Program. • Develop programs to increase energy efficiency of new buildings above state-required design requirements						
<u>Hazards Mitigated:</u> Sea Level Rise, Flooding, Drought, Wildfire, Severe Weather, Severe Storms, Agricultural/Biological						
New & Existing	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19	Ventura County	NA	Low	Staff Time, General Funds	Ongoing and Short-term
Action VUC-6—Purchase and install permanent generators for critical facilities and infrastructure that lack adequate backup power.						
<u>Hazards Mitigated:</u> Dam Failure, Earthquake, Flooding, Severe Weather, Severe Storms, Tsunami, Wildfire						
Existing	2, 6	Ventura County	NA	High	FEMA HMA (BRIC and HMGP), Staff Time & General Funds	Short-term

Benefits New or Existing Assets	Objectives Met	Lead Agency	Support Agency	Estimated Cost	Sources of Funding	Timeline ^a
Action VUC-7—Purchase and install mobile generators for critical facilities and infrastructure that lack adequate backup power.						
<u>Hazards Mitigated:</u> Dam Failure, Earthquake, Flooding, Severe Weather, Severe Storms, Tsunami, Wildfire						
Existing	2, 6	Ventura County	NA	High	FEMA HMA (BRIC and HMGP), Staff Time & General Funds	Short-term
Action VUC-8—Develop and implement plans to increase building owner's general knowledge of and appreciation for the value of seismic upgrading of their building's structural and nonstructural elements. (formerly 2015 Action OA-11)						
<u>Hazards Mitigated:</u> Earthquake						
Existing	1, 2, 4, 6, 9, 16, 17	Ventura County Building and Safety	NA	Medium	Staff Time, General Funds	Ongoing and Short-term
Action VUC-9—Maintain new vegetation management program that provides vegetation management services to elderly, disabled, or low-income property owners who lack the resources to remove flammable vegetation from around their homes. (formerly 2015 Action OA-19) (Coordinates with Ventura County Fire Protection District Action VFP-12)						
<u>Hazards Mitigated:</u> Wildfire						
New & Existing	2, 4, 5, 8, 10, 13, 14, 15, 19	VCFPD	Ventura County	Medium	FEMA HMA (BRIC, FMAP and HMGP), Staff Time, General Funds	Ongoing
Action VUC-10—Maintain wildfire hazard fuel reduction program for areas that have been identified with overgrown or dead brush, trees and weeds to reduce the potential for tree-to-tree ignition. Ensure that a "maintenance now" component to provide continued fire resistance is part of the program. (formerly 2015 Action OA-21) (Coordinates with Ventura County Fire Protection District Action VFP-6)						
<u>Hazards Mitigated:</u> Wildfire						
New & Existing	2, 4, 5, 6, 8, 10, 11, 13, 14, 15, 18, 19	VCFPD	CAL FIRE & USDA	Medium	FEMA HMA (BRIC, FMAP and HMGP), Staff Time & General Funds	Ongoing
Action VUC-11—Continue to participate in the National Weather Service's (NWS) StormReady and TsunamiReady Programs. (formerly 2015 Action UVC-1) (Coordinates with Action VCPWA-WP-16)						
<u>Hazards Mitigated:</u> Severe Storms, Severe Weather, Tsunami, Flooding, Dam Failure, Landslide, Sea Level Rise						
New & Existing	1, 2, 7, 8, 17	Ventura County Public Works	Ventura County Sheriff's OES	Low	Staff Time, General Funds	Ongoing
Action VUC-12—Develop a plan to identify funding to replace/relocate the Operational Area Emergency Operations Center (EOC). (formerly 2015 Action UVC-2)						
<u>Hazards Mitigated:</u> Landslide, Earthquake, Severe Storm, Severe Weather, Flooding, Wildfire, Dam Failure, Sea Level Rise, Tsunami						
New & Existing	6, 7, 8	Ventura County Sheriff's OES	NA	High	Staff Time, General Funds	Long-term
Action VUC-13—Update Seismic Standards for Communications (Cell Towers) Facilities (Building Code).						
<u>Hazards Mitigated:</u> Earthquake						
New & Existing	1, 2, 4, 6, 11	Ventura County Building and Safety	NA	High	HMGP, PDM, FMA	Short-term
Action VUC-14—Develop a countywide Evacuation Route Plan to identify and evaluate evacuation routes for wildfires and other hazards.						
<u>Hazards Mitigated:</u> Wildfire, Dam Failure, Flooding, Landslide						
New & Existing	7, 8, 17, 19	Ventura County OES	VCFPD	High	Staff Time, General Funds, Fire Safe Council Grant	Short-term

Benefits New or Existing Assets	Objectives Met	Lead Agency	Support Agency	Estimated Cost	Sources of Funding	Timeline ^a
Action VUC-15 —Implement a Post Disaster Critical Facilities Risk Impact Assessment Program designed to capture and geo-reference perishable data after significant events (e.g., preliminary damage estimates, damage photos, event mapping, etc.) in support of future hazard mitigation efforts including the implementation and maintenance of the HMP. Leverage applications (Maintstar v15, ArcGIS Online) to capture information related to VCPWA-RT, W&S, and WP critical facility asset impacts, and establish a centralized location to document and archive critical facilities geospatial data related to disaster events which will facilitate the development and optimize the pursuit of grant funding for future hazard mitigation projects. (Coordinates with Action VCPWA-WP-3)						
<u>Hazards Mitigated:</u> Dam Failure, Drought, Earthquake, Flooding, Landslide, Sea Level Rise, Severe Storms, Severe Weather, Tsunami, Wildfire						
New & Existing	1, 2, 4, 6, 8, 9, 10, 11, 12, 13, 16, 17, 18, 19	VCPWA-WP	Ventura County Departments, Cities, Special-Purpose Districts, and NGOs.	Low	WP Structural Revenues augmented by FEMA Grants (BRIC) and County General Funds, as required	Short Term
Action VUC-16 —Improve public awareness and community response to flood event emergencies by upgrading and modernizing the Flood Warning System (FWS) optimized to leverage multi-social media venues. Expand the public outreach of the FWS through targeted marketing based on web-site analytics and develop multiple language interfaces to better reflect the linguistic and cultural diversity found in Ventura County communities. (Coordinates with Action VCPWA-WP-4)						
<u>Hazards Mitigated:</u> Flooding, Landslide, Sea Level Rise, Severe Storms, Severe Weather, Tsunami						
New & Existing	1, 2, 6, 7, 12, 17, 18, 19	VCPWA-WP	DWR, NOAA, VCSOES, Ventura County Departments, Cities, Special-Purpose Districts, community and tribal leaders, community councils, and NGOs	Medium	WP Structural Revenues augmented by DWR and FEMA Grants (BRIC and HMGP) and County General Funds, as required	Short Term
Action VUC-17 —Prioritize efforts to upgrade County bridges, culverts, dams, debris and detention basins, flood conveyance channel and pipeline infrastructure, pump stations, roads, water and wastewater community infrastructure, and other critical facilities required to provide adequate flood-proofing protection and enhance the resiliency of vital community lifelines in Ventura County. (Coordinates with Action VCPWA-WP-5)						
<u>Hazards Mitigated:</u> Dam Failure, Earthquake, Flooding, Landslide, Sea Level Rise, Severe Storms, Severe Weather, Tsunami, Wildfire						
New & Existing	1, 2, 5, 6, 8, 9, 10, 11, 13, 16, 18, 19	VCPWA Departments	Ventura County Departments, Cities, Special-Purpose Districts	High	WP Structural Revenues augmented by FEMA Grants (BRIC, HMGP) DWR, VCTC, Caltrans and County General Funds, as required	Long-term
Action VUC-18 —Complete project feasibility analyses, design engineering and CEQA work for the Ventura River Levee (VR-2) in the unincorporated community of Casitas Springs, and the Live Oak Acres Levee near the unincorporated community of Oak View required to evidence local compliance with Federal Levee Certification Regulations (44 CFR 65.10) (Coordinates with Action VCPWA-WP-6)						
<u>Hazards Mitigated:</u> Dam Failure, Earthquake, Flooding, Landslide, Sea Level Rise, Severe Storms, Severe Weather, Tsunami						
New & Existing	1, 2, 5, 6, 8, 9, 10, 11, 13, 16, 18, 19	VCPWA-WP	Ventura County Departments and Cities of Camarillo, Oxnard, and San Buenaventura	High	WP Structural Revenues augmented by FEMA Grants (BRIC and HMGP) DWR-LLAP Grants USACE, and County General Funds, as required	Long Term

Benefits New or Existing Assets	Objectives Met	Lead Agency	Support Agency	Estimated Cost	Sources of Funding	Timeline ^a
Action VUC-19 —Strengthen the unincorporated area's participation in the NFIP by maintaining a CRS Class 5 Rating; and pursue a renewed emphasis on the planning and implementation of flood mitigation projects for repetitive loss properties eligible for grant funding under FEMA's Building Resilient Infrastructure and Communities (BRIC) program with the goal of reducing the number of repetitive loss properties in Ventura County. (Coordinates with Action VCPWA-WP-7)						
<u>Hazards Mitigated:</u> Flooding, Landslide, Sea Level Rise, Severe Storms, Severe Weather, Tsunami						
New & Existing	1, 2, 4, 6, 9, 10, 11, 12, 13, 16, 18, 19	VCPWA-WP	Ventura County Departments, DWR, FEMA	High	WP Structural Revenues augmented by Grants (FMA, BRIC, HMGP) and County General Funds, as required	Ongoing
Action VUC-20 —Partner with the Nature Conservancy, Santa Clara River Conservancy, Ojai Valley Land Conservancy, and other NGOs in cooperative efforts to acquire floodplain properties, carry out restoration projects, and enhance resiliency to natural disasters with green design elements included in hazard mitigation projects where feasible. (Coordinates with Action VCPWA-WP-8)						
<u>Hazards Mitigated:</u> Dam Failure, Drought, Flooding, Landslide, Sea Level Rise, Severe Storms, Severe Weather, Tsunami, and Wildfire						
New & Existing	1, 2, 5, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18	VCPWA-WP	Ventura County Departments, TNC, SCRC, OVLC, DWR, CDFW, State Coastal Conservancy	High	WP Structural Revenues augmented by Grants (FMA, BRIC, HMGP, DWR, SCC, etc.) and County General Funds, as required	Ongoing
Action VUC-21 —Advance planning, feasibility analyses, preliminary design, and ultimate construction of multi-benefit stormwater capture projects through a regionally collaborative approach; as well as pursue strategies to maximize stormwater as a resource (enhance recycled water, stormwater capture and sanitary system diversion, and groundwater recharge) where possible in infrastructure planning and implementation of WP stormwater capital projects. (Coordinates with Action VCPWA-WP-9)						
<u>Hazards Mitigated:</u> Drought, Flooding, Sea Level Rise, Severe Storms, Severe Weather						
New	1, 2, 9, 10, 11, 12, 14, 15, 16, 17, 18, 19	VCPWA-WP	Ventura County Departments, SWRCB, LARWQCB, DWR, SGMAs, NGOs and Private Landowners	High	WP Structural Revenues augmented by FEMA Grants (BRIC & HMGP) DWR, IRWM, LARWQB, SWRCB) and County General Funds, as required	Ongoing
Action VUC-22 —Coordinate with FEMA Region IX to proactively address flood plain management and flood risk mapping issues that could adversely impact local hazard mitigation project planning and implementation efforts which may arise from updates to the Countywide DFIRMs, Community Assistance Visits, and/or other risk mapping initiatives. (Coordinates with Action VCPWA-WP-10)						
<u>Hazards Mitigated:</u> Flooding, Sea Level Rise, Severe Storms, Severe Weather						
New & Existing	1, 2, 4, 6, 8, 9, 10, 11, 12, 16, 17, 18, 19	VCPWA-WP	Ventura County Departments, DWR, FEMA, Cities, NGOs, and Private Landowners	Medium	WP Structural Revenues augmented by FEMA Grants (BRIC & HMGP) DWR, and County General Funds, as required	Ongoing
Action VUC-23 —Work closely with CA Division of Safety of Dams (DSOD), County Sheriff Office of Emergency Services (OES), and other Federal, State, and local agencies to update and refine the Emergency Action Plans (EAPs) for the state size dams owned by the County. (Coordinates with Action VCPWA-WP-11)						
<u>Hazards Mitigated:</u> Dam Failure, Flooding, Earthquake, Severe Storms, Severe Weather						
New & Existing	1, 2, 4, 7, 8, 12, 17, 18	VCPWA-WP	Ventura County Departments, FEMA, DWR, Cities, NGOs, and Private Landowners	Medium	WP Structural Revenues augmented by FEMA Grants (BRIC), DWR, and County General Funds, as required	Short-Term

Benefits New or Existing Assets	Objectives Met	Lead Agency	Support Agency	Estimated Cost	Sources of Funding	Timeline ^a
Action VUC-24 —Complete project feasibility analyses, design engineering, CEQA, and implementation of the removal of Matilija Dam, reconstruction of the Camino Cielo Bridge crossing, and work with the Casitas Municipal Water District to reconstruct the Robles Diversion, as well as complete the construction of flood protection projects in the unincorporated community of Meiners Oaks in compliance with DSOD requirements. (Coordinates with Action VCPWA-WP-12)						
Hazards Mitigated: Dam Failure, Drought, Earthquake, Flooding, Severe Storms, Severe Weather						
New & Existing	1, 2, 4, 6, 8, 9, 10, 11, 12, 13, 14, 15, 17, 18, 19	VCPWA-WP	Ventura County Departments, Casitas Municipal Water District, Bureau of Reclamation, Caltrans, CDFW, DSOD, DWR, FEMA, USACE, NGOs	High	WP Structural Revenues augmented by FEMA Grants (BRIC & HMGP) CDFW, DWR, NFWF, NRCS, SCC, WCB, and NGO's and County and Casitas General Funds, as required	Long-Term
Action VUC-25 —Collaborate with the City of Oxnard, Nature Conservancy, and State Coastal Conservancy to advance planning, design, and implementation of the Ormond Beach Restoration and Access Plan (OBRAP), particularly those components alleviating flooding along the Ormond Lagoon Waterway and creating public access along <i>tšumaš</i> Creek. (Coordinates with Action VCPWA-WP-13 and supports the City of Oxnard Action OXN-12)						
Hazards Mitigated: Drought, Flooding, Severe Weather, Severe Storms, Sea Level Rise, Tsunami						
New & Existing	1, 2, 3, 9, 12, 13, 14, 15, 17, 18, 19	City of Oxnard	VCPWA-WP	High	City Structural Revenues augmented by FEMA Grants (BRIC), CDFG	Ongoing
Action VUC-26 —Coordinate efforts to plan, develop, and ultimately construct multi-benefit, flood resiliency and other risk hazard mitigation projects with the Watershed Coalition of Ventura County (OBRAP) 3-Watershed Councils, its Disadvantaged Community Committee, and nonprofit partners by increasing outreach and engagement with disadvantaged and socially vulnerable communities and tribal groups to better understand their unique community-lifeline vulnerabilities, facilitate the development of flood hazard mitigation multi-benefit projects, and align and leverage advocacy efforts to optimize grant funding opportunities. (Coordinates with Action VCPWA-WP-14)						
Hazards Mitigated: Flooding, Severe Weather, Severe Storms, Severe Weather, Sea Level Rise, Tsunami						
New & Existing	1, 2, 4, 8, 9, 10, 11, 12, 14, 15, 16, 17, 18, & 19	VCPWA-WP	County of Ventura Departments, Cities, Special-Purpose Districts, community and tribal leaders, community councils, WCVVC, and NGOs	Medium	WP Structural Revenues augmented by FEMA Grants (BRIC & HMGP) DWR, IRWM, and City and County General Funds as required	Ongoing

a. Short-term = Completion within 5 years; Long-term = Completion within 10 years; Ongoing= Continuing new or existing program with no completion date

Acronyms used here are defined at the beginning of this volume.

Table 1-16. Mitigation Action Priority

Action #	# of Objectives Met	Benefits	Costs	Do Benefits Equal or Exceed Cost?	Is Project Grant-Eligible?	Can Project Be Funded Under Existing Programs/ Budgets?	Implementation Priority ^a	Grant Pursuit Priority ^a
VUC-1	7	High	High	Yes	Yes	No	Medium	High
VUC-2	12	Medium	Low	Yes	No	Yes	High	Low
VUC-3	17	Low	Low	Yes	No	Yes	High	Low
VUC-4	12	Medium	Low	Yes	No	Yes	High	Low
VUC-5	19	Medium	Low	Yes	No	Yes	High	Medium
VUC-6	3	High	High	Yes	Yes	No	Medium	High
VUC-7	2	High	High	Yes	Yes	No	Medium	High
VUC-8	7	Low	Medium	No	No	Yes	Low	Low
VUC-9	9	High	Medium	Yes	Yes	Yes	High	High
VUC-10	12	High	Medium	Yes	Yes	Yes	High	High
VUC-11	5	Medium	Low	Yes	No	Yes	High	Low
VUC-12	3	Medium	High	No	No	No	Low	Low
VUC-13	5	Medium	High	No	Yes	No	Low	Medium
VUC-14	4	Medium	High	No	Yes	No	Low	Medium
VUC-15	14	Medium	Low	Yes	Yes	Yes-only at a level that is "Minimally Necessary to Comply"	Medium	Medium
VUC-16	8	Medium	Medium	Yes	Yes	Yes-only at a level that is "Minimally Necessary to Comply"	Medium	Medium
VUC-17	12	High	High	Yes	Yes	No	Medium	High
VUC-18	12	Medium	High	Yes	Yes	No	High	High
VUC-19	12	Medium	High	Yes	Yes	Maintaining Class 5-CRS Rating: Yes. Reducing Severe Repetitive Loss Property Exposure: No	Low	Medium
VUC-20	13	High	High	Yes	Yes	Establishing Partnerships with NGOs: Yes Acquiring flood plain properties, carrying out restoration projects, and including green design elements: No	Low	Medium
VUC-21	12	High	High	Yes	Yes	Advance planning and feasibility analysis: Yes Perform Final Design and Construction: No	Medium	High
VUC-22	13	Medium	Medium	Yes	Yes	Coordination with FEMA: Yes New Hazard Mitigation Project Planning and Execution: No	Medium	Medium
VUC-23	8	High	Medium	Yes	Yes	Coordination with FEMA, DWR, and DSOD: Yes Emergency Action Plan Refinements: No	Medium	High
VUC-24	15	High	High	Yes	Yes	No	Medium	High
VUC-25	11	High	High	Yes	Yes	Collaboration with City of Oxnard: Yes OBRAP Flood Mitigation Project Design and Implementation Actions: No	Medium	High

Action #	# of Objectives Met	Benefits	Costs	Do Benefits Equal or Exceed Cost?	Is Project Grant-Eligible?	Can Project Be Funded Under Existing Programs/ Budgets?	Implementation Priority ^a	Grant Pursuit Priority ^a
VUC-26	14	High	Medium	Yes	Yes	Coordination efforts with WVCV, its DAC, and NGOs: Yes Flood Mitigation Project Design and Implementation Actions: No	Medium	High

a. See the introduction to this volume for explanation of priorities.

Table 1-17. Analysis of Mitigation Actions

Hazard Type	Action Addressing Hazard, by Mitigation Type ^a							
	Prevention	Property Protection	Public Education & Awareness	Natural Resource Protection	Emergency Services	Structural Projects	Climate Resilience	Community Capacity Building
High-Risk Hazards								
Landslides	VUC-2	VUC-1	VUC-3, 16	VUC-20	VUC-11, 14	VUC-17, 18		VUC-3, 11, 12, 14, 15
Wildfire	VUC-2, 9, 10	VUC-1, 9, 10	VUC-3, 9, 10	VUC-9, 10, 20	VUC-6, 7, 9, 10, 14		VUC-5, 9, 10	VUC-3, 5, 9, 10, 12, 14, 15
Earthquake	VUC-2, 13, 23	VUC-1	VUC-3, 8		VUC-6, 7, 23	VUC-17, 18		VUC-3, 8, 12, 13, 15
Severe Storms	VUC-2, 4, 22, 23	VUC-1, 19	VUC-3, 4, 16	VUC-20, 21	VUC-6, 7, 16, 23	VUC-17, 18, 24	VUC-5, 17, 18, 20	VUC-3, 4, 5, 11, 12, 15, 22
Severe Weather	VUC-2, 22, 23	VUC-1, 19	VUC-3, 16	VUC-20, 21	VUC-6, 7, 16, 23	VUC-17, 18, 24	VUC-5, 17, 18, 20	VUC-3, 5, 11, 12, 15, 22
Dam Failure	VUC-2, 4, 23	VUC-1, 19	VUC-3, 4	VUC-20	VUC-6, 7, 14, 16, 23	VUC-17, 18, 24	VUC-17, 18, 20	VUC-3, 4, 11, 12, 14, 15
Flooding	VUC-2, 4, 22, 23	VUC-1, 19	VUC-3, 4, 16	VUC-20, 21	VUC-6, 7, 14, 23	VUC-17, 18, 24	VUC-5, 17, 18, 20	VUC-3, 4, 5, 11, 12, 14, 15, 22
Low-Risk Hazards								
Sea Level Rise	VUC-2, 4, 22	VUC-1, 19	VUC-3, 4, 16	VUC-20, 21		VUC-17, 18	VUC-5, 20	VUC-3, 4, 5, 11, 12, 15, 22
Tsunami	VUC-2	VUC-1, 19	VUC-3, 16	VUC-20	VUC-6, 7	VUC-17, 18		VUC-3, 11, 12, 15
Drought	VUC-2		VUC-3	VUC-20, 21		VUC-24	VUC-5, 20	VUC-3, 5, 15

a. See the introduction to this volume for explanation of mitigation types.

1.9 INFORMATION SOURCES USED FOR THIS ANNEX

The following technical reports, plans, and regulatory mechanisms were reviewed to provide information for this annex.

- **Ventura County Ordinance**—The ordinance code was reviewed for the full capability assessment and for identifying opportunities for action plan integration.
- **2040 General Plan**—This document was reviewed to identify opportunities for hazard plan integration.

- **Coastal and Noncoastal Zoning Ordinances**—These documents were reviewed to identify opportunities for hazard plan integration.
- **Ventura County Subdivision Ordinance, 2020**—This document was reviewed to identify opportunities for hazard plan integration.
- **Initial Study Assessment Guidelines, 2011**
- **Sea Level Rise Vulnerability Assessment, 2018**
- **Sea Level Rise Adaptation Report, 2019**
- **VCPWA-WP's Integrated Watershed Protection Plan Project Prioritization Process**—Explored possible opportunities to better integrate the development of multi-benefit flood protection project partnerships with public and private sector agencies and organizations aimed at improving community resiliency to flood hazard risk, flood plain management, groundwater conservation, stormwater capture, environmental protection, and helping to secure a sustainable water supply for agricultural and urban users.
- **VCPWA-WP 5 Year Capital Improvement Projects Plan, Annual Update**—Confirmed inclusion of flood protection projects in WP's current 5-year portfolio which address a mix of high, medium, and low hazard risks found in WP's current Jurisdiction Annex, keying-up those projects as entries in WP's new 5-year Action Plan portfolio, including seven levee rehabilitation projects which when completed will ultimately result in local compliance with Federal Levee Certification regulations found in 44CFR65.10.
- **Ventura County Flood Mitigation and Safety Plans**—Consulted current plan documents to identify opportunities of alignment and optimization of WP's new 5-Year Action Plan submittal with the baseline framework found in these historical County flood mitigation and safety plan documents.
- **VCPWA-WP's Preparation of Annual Recertifications and Cycle Verification of Class V Rating for Unincorporated Ventura County under FEMA's Community Rating System Program**—Consulted the current Class 5 Rating program performance and reporting requirements to ensure continuation of this rating, as well as identified opportunities for renewed emphasis on the planning and implementation of flood mitigation projects for repetitive loss properties eligible for grant funding under FEMA's Building Resilient Infrastructure and Communities (BRIC) program with the goal of reducing the number of repetitive loss properties in Ventura County.
- **Ventura County Emergency Services Planning Documents**—Reviewed emergency services planning documents prepared by the Ventura County Sheriff's Office of Emergency Services to gain a better understanding of how best to facilitate appropriate development of WP's new 5-year Action Plan submittal by complementing and supplementing countywide risk hazard emergency planning rubric defined by County's Emergency Action Plan, as well as refine Emergency Action Plans for the state-sized dams owned by the County.
- **Ventura County Integrated Regional Water Management Plan (IRWMP) Updates and DAC Public Outreach Engagement Initiative**—Explored framing potential opportunities to better coordinate joint efforts to plan, develop, and ultimately construct multi-benefit, flood resiliency and other risk hazard mitigation projects contained in WP's new 5-Year Action Plan submittal by increasing outreach and engagement with disadvantaged and socially vulnerable communities and tribal groups to better understand their unique community-lifeline vulnerabilities, facilitate

the development of flood hazard mitigation multi-benefit projects, and align and leverage advocacy efforts to optimize grant funding opportunities.

The following outside resources and references were reviewed:

- **Hazard Mitigation Plan Annex Development Toolkit**—The toolkit was used to support the identification of past hazard events and noted vulnerabilities, the risk ranking, and the development of the mitigation action plan.
- **BEACON Regional Sediment Management Plan**
- **General Services Agency, Energy Action Plan, April 2010**
- **Climate Protection Plan for Government Operations, April 2012**
- **Los Padres National Forest Land Management Plan, 2005**

The following website resources were used to document natural hazard event damage assessment:

- <https://www.vcstar.com/story/news/2019/11/12/ventura-county-avocado-lemon-growers-blame-losses-power-shut-offs/4171383002/>
- <https://gro-intelligence.com/insights/articles/volatile-california-avocado-crop-keeps-market-on-edge>
- <https://www.vcstar.com/story/news/2019/08/03/ventura-county-california-agriculture/1859539001/>
- http://www.coastalview.com/news/2019-avocado-market-rundown-volumes-down-and-prices-up/article_1a24b732-da67-11e9-9fdf-43ac94face0a.html
- <https://goldrushcam.com/sierrasuntimes/index.php/news/local-news/18925-2018-heat-reduces-volume-of-2019-avocado-crop-california-farm-bureau-federation-reports>
- <https://www.cnbc.com/2018/07/23/heatwave-hits-california-lemons-sending-prices-soaring.html>
- <https://grist.org/article/so-howd-those-avocados-handle-the-searing-heatwave/>
- https://www.rdniehaus.com/app/uploads/2019/08/RDN_Montecito_Mudslides_Impacts-1.pdf
- <https://www.kclu.org/local-news/2016-04-27/battered-south-coast-pier-set-to-reopen-after-1-4-million-in-repairs>
- <http://archive.vcstar.com/news/local/ventura/much-of-the-ventura-pier-remains-closed-this-week-26f4a712-45e6-0d4b-e053-0100007ffddb-362537201.html>
- <http://archive.vcstar.com/news/local/ventura/ventura-pier-closed-due-to-high-surf-26a2626c-d797-40f2-e053-0100007f22a3-361574741.html>
- <https://archive.vcstar.com/news/waves-generated-by-hurricane-marie-threaten-pier-close-campground-beaches-ep-579996262-351261691.html/>
- https://migration.ucdavis.edu/rmn/more.php?id=1194_0_2_0
- https://tdn.com/business/freeze-destroys-70-percent-of-california-orange-crop/article_de49ab3e-0d14-5b06-b53e-ea2dbcd115ce.html
- <https://www.dailynews.com/2007/02/04/despite-freeze-hopes-are-high-for-spring-harvest/>
- <https://www.montereyherald.com/2007/09/13/not-all-is-lost-for-state-farmers-caught-in-freeze/>

The following website resources were used to document other noted vulnerabilities:

- <https://www.vcnewschannel.com/news/480-county-homeless-encampments-efforts-update>
- <https://www.conejo Guardian.org/2021/09/23/county-fails-for-years-to-clear-illegal-riverbed-encampment/>
- <https://housefarmworkers.org/wp-content/uploads/2017/01/FAQs-about-ag.pdf>
- <https://www.vcstar.com/story/news/2020/11/15/california-coronavirus-covid-19-ventura-county-financial-assistance-farmworkers/6265780002/>
- <https://housefarmworkers.org/wp-content/uploads/2017/01/FAQs-about-ag.pdf>
- <https://www.kqed.org/news/11363886/deportation-threats-worry-farmworkers-and-owners>

2. CITY OF CAMARILLO

2.1 LOCAL HAZARD MITIGATION PLANNING TEAM

Primary Point of Contact

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Table 2-1 lists the members of the local hazard mitigation planning team that developed this annex.

Table 2-1. Local Mitigation Planning Team Members

Name	Title	Name	Title
Tali Tucker	Assistant Director of Public Works/City Engineer	Kristen Madary	Finance/Accounting Manager
David Moe	Assistant Comm. Development Director	Roger Pichardo	Senior Management Analyst
Jaclyn Lee	Principal Planner	Carmen Nichols	Assistant City Manager
Tom Magdaleno	GIS Specialist	Michelle D’Anna	Community Relations Officer
Tom Juzwiak	Deputy Building Official	Wendy Milligan	Terra Firma Enterprises (Consultant)

2.2 JURISDICTION PROFILE

2.2.1 Location and Features

Camarillo encompasses 19.86 square miles in west Ventura County at the base of the Conejo Grade, within the Oxnard Plain. The City is some eight miles from the ocean and the Pt. Mugu entrance to Naval Base Ventura County. Homes along the City’s northern border are nestled among rolling hills and citrus groves; the northernmost boundary traverses the Las Posas Country Club. Pleasant Valley Road designates much of Camarillo’s southern border, though the southernmost point is on Howard Road, near the southeast corner of the City. The eastern edge of Camarillo is situated partially up the Conejo Grade, along the Ventura Freeway (Hwy 101). Camarillo’s furthest point west is at the end (cul-de-sac) of Del Norte Road, just north of Hwy 101.

2.2.2 History

The City of Camarillo was incorporated in 1964. In 1837, a large expanse of what would be the Conejo and Pleasant Valleys was established through a Mexican land grant, which Juan Camarillo purchased in 1875. Juan's sons, Adolfo and Juan, Jr., would govern the 10,000-acre Rancho Calleguas for many years. Adolfo oversaw the development of the Camarillo House and Ranch in 1892, and his brother would have a prominent role in the construction of the St. Mary Magdalen Chapel in 1913.

In 1899, a line of the Southern Pacific Railroad was extended from Somis to Oxnard. At the time, a businessman named John Sebastian relocated a store and post office that were displaced from an area called Springville by the new rail line. When asked to provide a name for the new location of the store and post office, Sebastian suggested Calleguas, though the post office representative felt that name was confusing. Sebastian then proposed calling the area Camarillo, and by 1901 it was the official name for the settlement.

For years, from horse-drawn wagons to early automobiles, the route from Thousand Oaks north down the Conejo Grade involved 24 switchbacks. The journey was quite a trek, especially during warmer days. As travelers looked down the grade toward present day Camarillo, they often commented on it being such a pleasant valley.

Eventually, the region from Somis south to Pt. Mugu became known as Pleasant Valley and would be an integral part of the larger farming industry in Ventura County.

In 1942, with America involved in World War II, Naval Base Ventura County was commissioned, and a military airfield was built near Camarillo. In 1945, the airfield was officially known as Oxnard Air Force Base. The County of Ventura purchased the site in 1976 and began the transformation of the base to what is now Camarillo Airport.

In the early 1960s, a movement by the City of Oxnard to annex Camarillo galvanized community leaders, who organized a push for cityhood. In September 1964, cityhood was approved by voters and the following month Camarillo was officially recognized as an incorporated city. At the time, the City had approximately 12,000 residents, and an area of 5.5 square miles.

2.2.3 Governing Body

Camarillo is a general law city. The five-member City Council is the governing body with the responsibility of adopting the HMP. The responsibility for implementing the plan is shared by the Office of the City Manager, and the Community Development and Public Works Departments.

2.3 CURRENT TRENDS

2.3.1 Population

Camarillo has an estimated population of 70,261 (California Department of Finance estimate 2020). Camarillo is currently growing at a rate of 1.42% annually (<https://worldpopulationreview.com>).

2.3.2 Development

Table 2-2 summarizes development trends in the period since the preparation of the previous hazard mitigation plan, as well as expected future development trends.

Table 2-2. Recent and Expected Future Development Trends

Criterion	Response					
Has your jurisdiction annexed any land since the preparation of the previous hazard mitigation plan?	Yes					
If yes, give the estimated area annexed and estimated number of parcels or structures.	Annexations since the County's last HMP update included a 3-acre parcel, initiated by the City, for the Camarillo LDS Church (n/e corner of Las Posas Road and Camino Alvarez); also, properties near the n/w corner of Lewis (Hwy 34) and Las Posas Roads were annexed for the development of the City's new desalter plant. Construction is underway, and the desalter could be operational by early 2022. The City annexed 7.81-acres for the project from the Ventura Co. Resource Conservation District, 4.5-acres of which is under the purview of the Camarillo Sanitary District.					
Is your jurisdiction expected to annex any areas during the performance period of this plan?	No					
Are any areas targeted for development or major redevelopment in the next five years?	Yes. Over the past five years Camarillo has had significant residential construction activity, which is expected to continue for several years. A prominent commercial development is also underway just south of the 101 Freeway, and a steady progression of reuse and new industrial projects is anticipated.					
If yes, briefly describe, including whether any of the areas are in known hazard risk areas	The primary natural hazard concerns for Camarillo include earthquakes and liquefaction, and wildland fires. Ongoing drought and dry vegetation continue to pose an elevated risk for fires, though the main areas of concern are in existing hillside communities in the northern portions of the City. The main faults in/near Camarillo include the Bailey, Simi-Santa Rosa, and Wright Faults. While these faults have limited intersection with properties proposed for development, major ruptures along the state's larger fault lines could generate substantial ground movement -- though to what extent is difficult to forecast. As is the case in much of Ventura County, liquefaction is a potential threat connected to earthquakes. Approximately 25% of Camarillo's soil is identified as being in liquefaction zones, primarily in the southeast and southwest sections of the City.					
Permits for new construction issued since the preparation of the previous hazard mitigation plan. (For single-family, each residence equals one permit; for multi-fam., the numbers are total units. Multi-fam. refers to apartments, townhomes, and duplexes. A permit for one apartment building may include 20 units.)		2016	2017	2018	2019	2020
Single Family	90	78	37	2	11	
Multi-Family	67	821	619	199	53	
Other (commercial, mixed use, etc.)	4	9	8	6	2	
Total	161	908	664	207	66	

Criterion	Response
Provide the number of new-construction permits for each hazard area or provide a qualitative description of where development has occurred.	• Special Flood Hazard Areas: 0 • Landslide: 0 • High Liquefaction Areas: 0 • Tsunami Inundation Area: 0 • Wildfire Risk Areas: Please see clarification below. Of the considerable residential development in Camarillo over the past 5+ years, no units have been built, or are currently under construction within a 100-year flood zone. During this period, approximately 350 residences (low-medium-high density) have been built in 500-yr. areas, and another high-density project (385 units) is pending approval. There is a low-income project (75 units) proposed for a 2.5-acre site that is owned by the City; if these apartments are ultimately constructed, the project would likely require flood mitigation measures (100-yr.). As noted, areas of greatest concern for wildland fire, and those most involved in PSPS events, are in the northwest section of Camarillo, and parts outside (north of) the City. A large project with 281 homes (single-family and duplexes) is under construction approximately 0.8-miles west of a high fire risk zone, with a very-high zone just beyond. This development, for persons 55 years and older, is located east of Hwy 34, on the north side of Upland Road. Another project that is currently under review would result in 248 low-medium density homes in a section of the Camarillo Springs Golf Course, which lies in a very-high fire risk zone.
Describe the level of buildout in the jurisdiction, based on your jurisdiction's buildable lands inventory. If no such inventory exists, provide a qualitative description.	Under current zoning, and considering sites under construction or entitled for building, about 60-acres of land is under review for potential housing projects. Over 150-acres are proposed for changes in zoning for industrial projects. There are also 46-acres of commercially-zoned land just off (south of) the 101 Freeway, at Las Posas Road. This site has the potential for 325,000 sq. ft. of retail, though internet sales have changed the brick/mortar outlook for many retailers. Additionally, another 25-acres of vacant land could be considered for recreational uses (ice rinks, bowling, etc.) in the future.

2.4 CAPABILITY ASSESSMENT

This section describes an assessment of existing capabilities for implementing hazard mitigation strategies. The introduction at the beginning of this volume of the hazard mitigation plan describes the components included in the capability assessment and their significance for hazard mitigation planning.

Findings of the capability assessment were reviewed to identify opportunities to expand, initiate or integrate capabilities to further hazard mitigation goals and objectives. Where such opportunities were identified and determined to be feasible, they are included in the action plan. The "Analysis of Mitigation Actions" table in this annex identifies these as community capacity building mitigation actions. The findings of the assessment are presented as follows:

- An assessment of planning and regulatory capabilities is presented in Table 2-3.
- Development and permitting capabilities are presented in Table 2-4.
- An assessment of fiscal capabilities is presented in Table 2-5.
- An assessment of administrative and technical capabilities is presented in Table 2-6.
- An assessment of education and outreach capabilities is presented in Table 2-7.
- Information on National Flood Insurance Program (NFIP) compliance is presented in Table 2-8.
- Classifications under various community mitigation programs are presented in Table 2-9.
- The community's adaptive capacity for the impacts of climate change is presented in Table 2-10.

Table 2-3. Planning and Regulatory Capability

	Local Authority	Other Jurisdiction Authority	State Mandated	Integration Opportunity?
Codes, Ordinances, & Requirements				
Building Code	Yes	No	Yes	Yes
<i>Comment: 2019 CA Building Code, as amended by the City of Camarillo (Ord. 1167), adopted Oct. 23, 2019</i>				
Zoning Code	Yes	No	No	Yes
<i>Comment: Title 19 of the Camarillo Municipal Code, as amended by the City of Camarillo (Ordinance 9), adopted February 10, 1965, including subsequent amendments.</i>				
Subdivisions	Yes	Yes	Yes	No
<i>Comment: Camarillo Municipal Code Title 18, Subdivisions (Ord. 570), adopted May 23, 1984 including subsequent additions and amendments</i>				
Stormwater Management	Yes	Yes	Yes	Yes
<i>Comment: Camarillo Municipal Code Chapter 9.32, Stormwater Quality (Ord. 1074), adopted December 12, 2012 including subsequent additions and amendments</i>				
Post-Disaster Recovery	No	No	No	No
<i>Comment:</i>				
Real Estate Disclosure	No	Yes	Yes	No
<i>Comment: California Civil Code §1102</i>				
Growth Management	Yes	No	No	Yes
<i>Comment: Title 20 of the Camarillo Municipal Code, as amended by the City of Camarillo (Ordinance 497), effective July 2, 1981, including subsequent amendments and extensions. The City reviews all residential projects of five or more dwelling units through the Residential Development Evaluation Board process in which the City Council may award up to 400 residential units per year to projects that meet the evaluation criteria with exemptions allowed for low-income units. SB 330 became effective January 1, 2020 and prevents the City from enforcing Title 20 until January 1, 2025. SB 8 was signed into law and extends the term of SB 330 five years from January 1, 2025, to January 1, 2030.</i>				
Site Plan Review	Yes	No	No	Yes
<i>Comment: Title 19 of the Camarillo Municipal Code, as amended by the City of Camarillo (Ordinance 9), adopted February 10, 1965, including subsequent amendments.</i>				
Environmental Protection	No	No	Yes	Yes
<i>Comment: California Environmental Quality Act, signed into law by the State of California in 1970.</i>				
Flood Damage Prevention	Yes	Yes	No	Yes
<i>Comment: Camarillo Municipal Code Chapter 16.34, Flood Damage Protection (Ord 616), adopted August 27, 1986 including subsequent additions and amendments</i>				
Emergency Management	Yes	Yes	Yes	Yes
<i>Comment: Camarillo Municipal Code, Chapter 2.32—Emergency Management Systems, 2004</i>				
Climate Change	Yes	No	No	Yes
<i>Comment: The City currently does not have any adopted ordinance related to Climate Change, however the City is planning on developing a Climate Action Plan in the near future.</i>				
Planning Documents				
General Plan	Yes	No	Yes	Yes
<i>Is the plan compliant with Assembly Bill 2140? No</i>				
<i>Comment: The City is currently updating its Safety Element, in compliance with AB 2140.</i>				
Capital Improvement Plan	Yes	No	No	Yes
<i>How often is the plan updated? Every 5 years</i>				
<i>Comment: City of Camarillo FY 2021-2026 Capital Improvement Programs, adopted 6/23/21</i>				
Disaster Debris Management Plan	No	No	No	No
<i>Comment:</i>				

	Local Authority	Other Jurisdiction Authority	State Mandated	Integration Opportunity?
Floodplain or Watershed Plan	Yes	Yes	No	Yes
<i>Comment: FEMA Flood Insurance Rate Maps, first Effective September 29, 1986 including subsequent additions and amendments</i>				
Stormwater Plan	Yes	Yes	Yes	Yes
<i>Comment: Ventura County Technical Guidance Manual, approved July 13, 2011 by LARWQCB. The manual provides guidance on the Planning and Land Development requirements in the Ventura County MS4 Permit, adopted July 8, 2010 by LA Regional Water Quality Control Board. City catch basin program prioritizes maintenance of catch basins as required by the VC MS4 Permit, adopted July 8, 2010.</i>				
Urban Water Management Plan	Yes	Yes	Yes	Yes
<i>Comment: City of Camarillo 2020 Urban Water Management Plan, adopted June 23, 2021.</i>				
Habitat Conservation Plan	Yes	Yes/ Federal	No	Yes
<i>Comment: A habitat conservation plan is required as part of an application for an incidental take permit under the Endangered Species Act, however the City does not currently have any habitat conservation plans.</i>				
Economic Development Plan	Yes	No	No	No
<i>Comment: City of Camarillo Economic Development Strategic Plan, September 5, 2018</i>				
Shoreline Management Plan	No	No	No	No
<i>Comment: No shoreline</i>				
Community Wildfire Protection Plan	No	Yes	No	Yes
<i>Comment: Ventura County Community Wildfire Protection Plan, 2010</i>				
Forest Management Plan	No	Yes	No	No
<i>Comment: City of Camarillo does have a Comprehensive Tree Plan and Approved Street List.</i>				
Climate Action Plan	Yes	No	No	Yes
<i>Comment: The City currently does not have a Climate Action Plan, however the City is planning on developing one in the near future.</i>				
Comprehensive Emergency Management Plan	Yes	Yes	Yes	Yes
<i>Comment: The City Manager's Office oversees emergency management and our EOC. We are currently updating the emergency operations plan (EOP). Section Eight-Hazard Summary for City of Camarillo presents a summary of all the hazards the City is subject to and references the Ventura County Multi-Hazard Mitigation Plan for more specific information. This Plan was approved October 13, 2021.</i>				
Threat & Hazard Identification & Risk Assessment (THIRA)	No	No	No	Yes
<i>Comment:</i>				
Post-Disaster Recovery Plan	No	No	No	Yes
<i>Comment:</i>				
Continuity of Operations Plan	No	No	No	No
<i>Comment:</i>				
Public Health Plan	No	Yes	Yes	No
<i>Comment: Ventura County Public Health Emergency Response Plan, 2019</i>				
Other				
<i>Comment:</i>				

Table 2-4. Development and Permitting Capability

Criterion	Response
Does your jurisdiction issue development permits?	Yes
<i>If no, who does? If yes, which department?</i>	Planning, and the Building/Safety Divisions.
Does your jurisdiction have the ability to track permits by hazard area?	No
Does your jurisdiction have a buildable lands inventory?	Yes

Table 2-5. Fiscal Capability

Financial Resource	Accessible or Eligible to Use?
Community Development Block Grants	Yes
Capital Improvements Project Funding	Yes
Authority to Levy Taxes for Specific Purposes	Yes
User Fees for Water, Sewer, Gas or Electric Service	Yes
<i>If yes, specify: Public Works user fees pertain to sewer and water connection.</i>	
Incur Debt through General Obligation Bonds	Yes
Incur Debt through Special Tax Bonds	Yes
Incur Debt through Private Activity Bonds	Yes
Withhold Public Expenditures in Hazard-Prone Areas	Yes
State-Sponsored Grant Programs	Yes
Development Impact Fees for Homebuyers or Developers	Yes

Table 2-6. Administrative and Technical Capability

Staff/Personnel Resource	Available?
Planners or engineers with knowledge of land development and land management practices	Yes
<i>If Yes, Department /Position:</i> Community Development Department (Planning + Building and Safety), and Public Works (engineers in land development).	
Engineers or professionals trained in building or infrastructure construction practices	Yes
<i>If Yes, Department /Position:</i> Building and Safety Division, and Public Works for infrastructure projects (streets, sewer, water, storm drains).	
Planners or engineers with an understanding of natural hazards	Yes
<i>If Yes, Department /Position:</i> Community Development and Public Works, though consultants are also hired for certain projects.	
Staff with training in benefit-cost analysis	Yes
<i>If Yes, Department /Position:</i> Building and Safety, and Public Works for infrastructure projects (streets, sewer, water, storm drains). Again, consultants are hired for certain projects.	
Surveyors	No
Personnel skilled or trained in GIS applications	Yes
<i>If Yes, Department /Position:</i> Administrative Services, GIS Specialist	
Scientist familiar with natural hazards in local area	No
Emergency manager	Yes
<i>If Yes, Department /Position:</i> The Sr. Management Analyst in the City Manager's Office serves as the EOC Coordinator.	
Grant writers	Yes
<i>If Yes, Department /Position:</i> Sr. Management Analyst, City Manager's Office.	
Other	Yes
<i>If Yes, Department /Position:</i> Civil Engineer, Public Works Dept.	

Table 2-7. Education and Outreach Capability

Criterion	Response
Do you have a public information officer or communications office?	Yes
Do you have personnel skilled or trained in website development?	Yes
Do you have hazard mitigation information available on your website? <i>If yes, briefly describe:</i> Links to several emergency preparedness websites are available on the City's website (https://www.ci.camarillo.ca.us/departments/fire/emergencies.php).	Yes
Do you use social media for hazard mitigation education and outreach? <i>If yes, briefly describe:</i> City of Camarillo Government Facebook, Instagram, Twitter, LinkedIn.	Yes
Do you have any citizen boards or commissions that address issues related to hazard mitigation? <i>If yes, briefly describe:</i> The City has an active Community Emergency Response Team.	Yes
Do you have any other programs in place that could be used to communicate hazard-related information? <i>If yes, briefly describe:</i> VC Alert, City "Notify Me!" Emergency Email Distribution, City website (www.cityofcamarillo.org)	Yes
Do you have any established warning systems for hazard events? <i>If yes, briefly describe:</i> VC Alert	Yes

Table 2-8. National Flood Insurance Program Compliance

Criterion	Response
What local department is responsible for floodplain management?	Public Works
Who is your floodplain administrator? (department/position)	City Engineer (Public Works)
Are any certified floodplain managers on staff in your jurisdiction?	Yes
What is the date that your flood damage prevention ordinance was last amended?	1993
Does your floodplain management program meet or exceed minimum requirements?	Meets
When was the most recent Community Assistance Visit or Community Assistance Contact?	September 2018
Does your jurisdiction have any outstanding NFIP compliance violations that need to be addressed?	No
Are any RiskMAP projects currently underway in your jurisdiction?	No
Do your flood hazard maps adequately address the flood risk within your jurisdiction?	Yes
Does your floodplain management staff need any assistance or training to support its floodplain management program?	No
Does your jurisdiction participate in the Community Rating System (CRS)? <i>If no, is your jurisdiction interested in joining the CRS program?</i> Yes	No
How many flood insurance policies are in force in your jurisdiction? ^a <i>What is the insurance in force?</i> \$203,471,400 <i>What is the premium in force?</i> \$534,728	664
How many total loss claims have been filed in your jurisdiction? ^a <i>What were the total payments for losses?</i> \$1,135,612	21

a. According to FEMA statistics as of March 31, 2021

Table 2-9. Community Classifications

	Participating?	Classification	Date Classified
FIPS Code	Yes	111-10046	
DUNS #	Yes	070207006	
Community Rating System	No		
Building Code Effectiveness Grading Schedule	Yes	Grading Class-2	
Public Protection	Yes	03/3X	12/21/2018
Storm Ready	No		
Firewise	No		
Tsunami Ready	No		

Table 2-10. Adaptive Capacity for Climate Change

Criterion	Jurisdiction Rating ^a
Technical Capacity	
Jurisdiction-level understanding of potential climate change impacts <i>Comment: To be further evaluated in the Climate Action Plan that the City is planning on developing in the near future.</i>	Medium
Jurisdiction-level monitoring of climate change impacts <i>Comment: To be further evaluated in the Climate Action Plan that the City is planning on developing in the near future.</i>	Medium
Technical resources to assess proposed strategies for feasibility and externalities <i>Comment: To be further evaluated in the Climate Action Plan that the City is planning on developing in the near future.</i>	Medium
Jurisdiction-level capacity for development of greenhouse gas emissions inventory <i>Comment: To be further evaluated in the Climate Action Plan that the City is planning on developing in the near future.</i>	Medium
Capital planning and land use decisions informed by potential climate impacts <i>Comment: To be further evaluated in the Climate Action Plan that the City is planning on developing in the near future.</i>	Medium
Participation in regional groups addressing climate risks <i>Comment: To be further evaluated in the Climate Action Plan that the City is planning on developing in the near future.</i>	Medium
Implementation Capacity	
Clear authority/mandate to consider climate change impacts during public decision-making processes <i>Comment: To be further evaluated in the Climate Action Plan that the City is planning on developing in the near future.</i>	Medium
Identified strategies for greenhouse gas mitigation efforts <i>Comment: To be further evaluated in the Climate Action Plan that the City is planning on developing in the near future.</i>	Medium
Identified strategies for adaptation to impacts <i>Comment: To be further evaluated in the Climate Action Plan that the City is planning on developing in the near future.</i>	Medium
Champions for climate action in local government departments <i>Comment: To be further evaluated in the Climate Action Plan that the City is planning on developing in the near future.</i>	Medium
Political support for implementing climate change adaptation strategies <i>Comment: To be further evaluated in the Climate Action Plan that the City is planning on developing in the near future.</i>	Medium
Financial resources devoted to climate change adaptation <i>Comment: To be further evaluated in the Climate Action Plan that the City is planning on developing in the near future.</i>	Low
Local authority over sectors likely to be negative impacted <i>Comment: To be further evaluated in the Climate Action Plan that the City is planning on developing in the near future.</i>	Medium
Public Capacity	
Local residents' knowledge of and understanding of climate risk <i>Comment: To be further evaluated in the Climate Action Plan that the City is planning on developing in the near future.</i>	Medium
Local residents' support of adaptation efforts <i>Comment: To be further evaluated in the Climate Action Plan that the City is planning on developing in the near future.</i>	Medium

Criterion	Jurisdiction Rating ^a
Local residents' capacity to adapt to climate impacts <i>Comment: To be further evaluated in the Climate Action Plan that the City is planning on developing in the near future.</i>	Medium
Local economy current capacity to adapt to climate impacts <i>Comment: To be further evaluated in the Climate Action Plan that the City is planning on developing in the near future.</i>	Medium
Local ecosystems capacity to adapt to climate impacts <i>Comment: To be further evaluated in the Climate Action Plan that the City is planning on developing in the near future.</i>	Medium

a. High = Capacity exists and is in use; Medium = Capacity may exist but is not used or could use some improvement; Low = Capacity does not exist or could use substantial improvement; Unsure= Not enough information is known to assign a rating.

2.5 INTEGRATION REVIEW

For hazard mitigation planning, “integration” means that hazard mitigation information is used in other relevant planning mechanisms, such as general planning and capital facilities planning, and that relevant information from those sources is used in hazard mitigation. This section identifies where such integration is already in place, and where there are opportunities for further integration in the future. Resources listed at the end of this annex were used to provide information on integration. The progress reporting process described in Volume 1 of the hazard mitigation plan will document the progress of hazard mitigation actions related to integration and identify new opportunities for integration.

2.5.1 Existing Integration

Some level of integration has already been established between local hazard mitigation planning and the following other local plans and programs:

- **City of Camarillo General Plan, Safety Plan, Policy SAF-1.1a**– Incorporate new and updated hazards information relevant to the City of Camarillo into the Safety Element, Emergency Operations Plan, and/or Local Hazard Mitigation Plan, as appropriate.
- **City of Camarillo, Emergency Operations Plan (EOP), 2021 (pending approval)**—Section Eight-Hazard Summary for City of Camarillo presents a summary of all the hazards the City is subject to and references the Ventura County Multi-Hazard Mitigation Plan for more specific information.
- **Capital Improvement Plan**—The capital improvement plan includes projects that can help mitigate potential hazards. The City will act to ensure consistency between the hazard mitigation plan and the current and future capital improvement plans. The hazard mitigation plan may identify new possible funding sources for capital improvement projects and may result in modifications to proposed projects based on results of the risk assessment.
- **Building Code, Title 16, Chapter 16.34.340, Hazard Mitigation Plan**—Identifies that the planning commission shall consider whether proposed development is in or affects a known floodplain, practical alternatives to the proposed development if in a floodplain, impacts of the project on the floodplain and plans to mitigate the impact of the development on the floodplain.

2.5.2 Opportunities for Future Integration

The capability assessment in this annex indicates opportunities to integrate this mitigation plan with other jurisdictional planning/regulatory capabilities. Capabilities were identified as integration opportunities if they can support or enhance the actions identified in this plan or be supported or enhanced by components of this plan. The capability assessment identified the following plans and programs that do not currently integrate hazard mitigation information but provide opportunities to do so in the future:

- **Climate Action Plan**—The Climate Action Plan is a comprehensive roadmap that outlines the specific activities that an agency will undertake to reduce greenhouse gas emissions. Currently, the City does not have a Climate Action Plan but is planning to develop one in the near future.
- **Capital Improvement Projects**—Capital improvement project proposals may take into consideration hazard mitigation potential as a means of evaluating project prioritization.
- **Post-Disaster Recovery Plan**—The City does not have a recovery plan but may consider developing one as a mitigation planning action if funds become available. The plan will build on the goals and objectives identified in the hazard mitigation plan.

Taking action to integrate each of these programs with the hazard mitigation plan was considered as a mitigation action to include in the action plan in this annex.

2.6 RISK ASSESSMENT

2.6.1 Jurisdiction-Specific Natural Hazard Event History

Table 2-11 lists past occurrences of natural hazards for which specific damage was recorded in this jurisdiction. Other hazard events that broadly affected the entire planning area, including this jurisdiction, are listed in the risk assessments in Volume 1 of this hazard mitigation plan.

Table 2-11. Past Natural Hazard Events

Type of Event	FEMA Disaster #	Date	Damage Assessment
COVID-19 Pandemic	DR-4482	January 20, 2020 and continuing	City did not experience any property damages from COVID19 just emergency protective measures response related costs total approximately \$30,176.
Maria Fire	FM-5302	November 1, 2019	City was not directly impacted by this fire, however, The Arc of Ventura County opened a community shelter at the Camarillo Community Center.
Wildfires, Flooding, Mudflows, and Debris Flows (Thomas Fire)	DR-4353	December 4, 2017- January 31, 2018	Although this fire burned 281,893 acres in both Ventura County and Santa Barbara County, the City was only indirectly impacted by smoke.
Camarillo Springs Mudflow		November 1 and December 12, 2014	Nov. 1 -Twenty homes were evacuated, including two homes that were severely damaged. Dec. 12. Sixteen homes were damaged, including 10 homes that were red-tagged
Springs Fire	FM-5024	May 2 – 11, 2013	24,251 acres burned; 10 outbuildings destroyed; 6 commercial properties and 6 outbuildings damaged.

Type of Event	FEMA Disaster #	Date	Damage Assessment
Wildfires, Flooding, Mudflows, and Debris Flows	DR-1731	October 21 – March 31, 2008	Although Ventura County was impacted by the Ranch Fire, the City of Camarillo was not directly impacted except for heavy smoke.
Severe Freeze	DR-1689	January 11 – 17, 2007	This disaster impacted mainly the citrus and avocado crops throughout Ventura County, but no crops in the City were impacted.
Shekell Fire	FM-2681	December 3 – 6, 2006	This fire burned in Fillmore and Moorpark. Camarillo had no direct impacts from the fire only indirectly from smoke.
Day Fire	FM-2677	September 25 – 30, 2006	City of Camarillo was not directly impacted except for heavy smoke.
Topanga Fire	FM-2583	September 28 – October 10, 2005	City of Camarillo was not directly impacted except for smoke.
Severe Storms, Flooding, Landslides, and Mud and Debris Flows	DR-1585	February 16 – 23, 2005	City experienced localized flooding. No significant losses were documented.
Severe Storms, Flooding, Debris Flows, and Mudslides	DR-1577	December 27, 2004 – January 11, 2005	Water and mudslides damaged at least two homes after debris jammed a city storm drain.
Wildfires, Flooding, Mudflow and Debris Flow	DR-1498	October 21, 2003 – March 31, 2004	City of Camarillo was not directly impacted from the fires in Piru and Fillmore except for heavy smoke. Flooding caused downed trees and blocked roads.
Severe Winter Storms and Flooding	DR-1203	February 2 – April 30, 1998	Channel at Las Posas Rd. and Ventura Blvd. damaged (\$500,000), clogged storm drains. Camarillo Springs Golf course was damaged. It took 31 men about 10 full days of work to bring the course back to playability. Backed up storm drains impacted several homes. City Hall flooded.
Severe Winter Storms, Flooding, Landslides, Mud Flows	DR-1046	February 13 – April 19, 1995	Large agricultural losses. Localized flooding and clogged storm drains. No major impact to the City of Camarillo.
Severe Winter Storms, Flooding, Landslides, Mud Flows	DR-1044	January 3 – February, 1995	Localized flooding and clogged storm drains. No major impact to the City of Camarillo.
Northridge Earthquake	DR-1008	January 17 – November 30, 1994	Drywall sustained large cracks; exterior concrete block walls sustained hairline cracks; a few chimneys were cracked; a few windows cracked; several small objects overturned and fell; light furniture overturned; heavy furniture was displaced; hanging objects and doors swung violently; many items were thrown from store shelves; masonry fences or retaining walls were partially fallen; underground pipes were broken.
Fires, Mud & Landslides, Soil Erosion, Flooding	DR-1005	October 26 – April 22, 1994	Multiple fires around Ventura County and subsequent flooding. Camarillo was not directly impacted except for smoke from the surrounding fires and backed up storm drains.
Severe Storm, Winter Storm, Mud & Landslides, Flooding	DR-979	January 5 – March 20, 1993	Camarillo trailer park flooded (Casa del Norte). Localized street flooding.
Snow Storm, Heavy Rain, High Winds, Flooding, Mudslide	DR-935	February 10 – 19, 1992	Countywide agricultural damages. City experienced localized street flooding.

Type of Event	FEMA Disaster #	Date	Damage Assessment
Severe Freeze	DR-894	December 19, 1990 – January 3, 1991	Countywide agricultural damages. Agricultural crops within the City suffered losses to their crops. More than \$100 million worth of avocados, oranges, strawberries and other fruits were destroyed.
Grass, Wildlands, Forest Fires	DR-739	June 26 – July 19, 1985	City of Camarillo was not directly impacted except for heavy smoke.
Coastal Storms, Floods, Slides, Tornadoes	DR-677	January 21 – March 30, 1983	Countywide crop damage. Flood flows broke through the leveed banks of Calleguas Creek in the lower reach below U.S. 101 and caused an estimated \$21.5 million in damage to agricultural properties. The City estimate of damages was \$160,000.
Severe Storms, Mudslides, Flooding	DR-615	January 8, 1980	Flooding countywide. No significant damage in the City of Camarillo
Coastal Storms, Mudslides, Flooding	DR-547	February 15, 1978	Evacuation of Leisure Village (150 homes) due to weakened earthen catch basin. Fallen trees (65-75) throughout the City totalling \$500,000 loss.
Severe Storms, High Tides, Flooding	DR-364	February 8, 1973	Countywide rain and flooding. Minor damages in the City of Camarillo
Forest, Brush Fires	DR-295	September 29, 1970	5 dwellings destroyed in the Camarillo Hills area, historic structure Rancho Lomita mansion destroyed and 10-15 outbuildings.
Severe Storms, Flooding	DR-253	January 26, 1969	Downed trees. Flooded streets, bridge damage (Calleguas Road Bridge) curb and gutter damage. Flood Control damages estimated at \$2,150, roads, streets and bridges damage is estimated at \$110,979.
Heavy Rains, Flooding	DR-211	December 7, 1965	Countywide flooding, Minimal damage to City of Camarillo.

2.6.2 Hazard Risk Ranking

Table 2-12 presents a local ranking of all hazards of concern for which this hazard mitigation plan provides complete risk assessments. As described in detail in Volume 1, the ranking process involves an assessment of the likelihood of occurrence for each hazard, along with its potential impacts on people, property, and the economy. Mitigation actions primarily target hazards with high and medium rankings.

Table 2-12. Hazard Risk Ranking

Rank	Hazard	Risk Ranking Score	Risk Category
1	Earthquake	32	Medium
2	Severe Storms	24	Medium
3	Severe Weather	24	Medium
4	Dam Failure	22	Medium
5	Flooding	18	Medium
6	Landslide ^a	18	Medium
7	Wildfire	12	Medium
8	Drought	9	Low
9	Tsunami	0	Low
10	Sea Level Rise	0	Low

a. Landslide ranking is based only on the Very High susceptibility category.

2.6.3 Jurisdiction-Specific Vulnerabilities

Volume 1 of this hazard mitigation plan provides complete risk assessments for each identified hazard of concern. This section provides information on a few key vulnerabilities for this jurisdiction. Available jurisdiction-specific risk maps of the hazards are provided at the end of this annex.

Repetitive Loss Properties

Repetitive loss records are as follows:

- Number of FEMA-identified Repetitive-Loss Properties: 0
- Number of FEMA-identified Severe-Repetitive-Loss Properties: 0
- Number of Repetitive-Loss Properties or Severe-Repetitive-Loss Properties that have been mitigated: 0

Other Noted Vulnerabilities

The following jurisdiction-specific issues have been identified based on a review of the results of the risk assessment, public involvement strategy, and other available resources: N/A

Mitigation actions addressing these issues were prioritized for consideration in the action plan in this annex.

2.7 STATUS OF PREVIOUS PLAN ACTIONS

Table 2-13 summarizes the actions that were recommended in the previous version of the hazard mitigation plan and their implementation status at the time this update was prepared.

Table 2-13. Status of Previous Plan Actions

Action Item	Completed	Removed; No Longer Feasible	Carried Over to Plan Update Check if Yes	Action # in Update
OA 7—Develop a water conservation public outreach program to increase awareness about the drought, fines and penalties for overuse and solutions for conserving water.			✓	CAM-1
Comment: Ongoing. Water conservation information is on the City's website regarding the City's Stage 1 measures: Including a rebate program to retrofit indoor plumbing fixtures with water-efficient versions. • Rebates for landscaping controllers and replacement of hose nozzles. • Daily inspections throughout the City's water service area to ensure compliance with Stage 1 measures. • Best management tools for water conservation.				
OA 11—Develop and implement plans to increase the building owner's general knowledge of and appreciation for the value of seismic upgrading of the building's structural and nonstructural elements.			✓	CAM-2
Comment: Ongoing. For several years, the City has been contacting the owners of apartment complexes (and one hotel) regarding the importance of retrofitting their soft-story carports. In March 2021, the City applied to Cal OES to retrofit the carports at four of these properties. Unfortunately, the grant did not get funded, but staff has continued to reach out to the owners about future grant applications and financing options.				

Action Item	Completed	Removed; No Longer Feasible	Carried Over to Plan Update Check if Yes	Action # in Update
OA 13—Reinforce roads/bridges from flooding through protection activities, including elevating the roads/bridges and installing/widening culverts beneath the roads/bridges or upgrading storm drains. Comment: While no projects are currently planned, this may change in the near future.			✓	CAM-3
CA 1—Broaden outreach efforts to get as many residents as possible registered with the VC Alert system. Comment: Ongoing. The City continues to disseminate information on the VC Alert and Pulse-Point programs through our CityScene and CERT-Scene newsletters, on our government TV channel programming, via social media, and on our website.			✓	CAM-4
CA 2—Develop a vegetation restoration/enhancement program for areas that have shown to be susceptible to landslides. Comment: A vegetation restoration program was implemented for the hillsides above the Camarillo Springs communities. These efforts were in response to extensive damage caused first by the Springs Fire, and later by landslides that occurred in Camarillo Springs. No programs are currently planned for other sites in Camarillo.	✓			

2.8 HAZARD MITIGATION ACTION PLAN

Table 2-14 lists the identified actions, which make up the hazard mitigation action plan for this jurisdiction. Table 2-15 identifies the priority for each action. Table 2-16 summarizes the mitigation actions by hazard of concern and mitigation type.

Table 2-14. Hazard Mitigation Action Plan Matrix

Benefits New or Existing Assets	Objectives Met	Lead Agency	Support Agency	Estimated Cost	Sources of Funding	Timeline ^a
Action CAM-1—Develop a water conservation public outreach program to increase awareness about the drought, fines and penalties for overuse and solutions for conserving water. <u>Hazards Mitigated:</u> Drought						
New & Existing	1, 17	Public Works	None	Medium	Staff time and General Funds HMGP, BRIC	Ongoing
Action CAM-2—Develop and implement plans to increase the building owner's general knowledge of and appreciation for the value of seismic upgrading of the building's structural and nonstructural elements. <u>Hazards Mitigated:</u> Earthquake						
New & Existing	1, 9, 12, 16, 17	Community Development/ Building & Safety	None	Medium	Staff time and General Funds	Ongoing
Action CAM-3—Reinforce roads/bridges from flooding through protection activities, including elevating the roads/bridges and installing/widening culverts beneath the roads/bridges or upgrading storm drains. <u>Hazards Mitigated:</u> Flooding						
Existing	2, 6, 9	Public Works	None	High	Staff Time, General Funds, HMGP, BRIC, FMA	Ongoing

Benefits New or Existing Assets	Objectives Met	Lead Agency	Support Agency	Estimated Cost	Sources of Funding	Timeline ^a
Action CAM-4—Broaden outreach efforts to get as many residents as possible registered with the VC Alert system.						
<u>Hazards Mitigated:</u> Earthquake, Severe Storms, Severe Weather, Dam Failure, Flooding, Landslide, Wildfire, Tsunami, Drought, Sea Level Rise						
New & Existing	1, 7, 17	Community Relations Officer	None	Low	Staff Time, General Funds	Ongoing
Action CAM-5—Integrate the hazard mitigation plan into other plans, ordinances and programs that dictate land use decisions in the community.						
<u>Hazards Mitigated:</u> Earthquake, Flood, Wildfire, Landslide						
New	19	City Manager's Office	Community Development / Building and Safety, Public Works	Low	Staff Time, General Funds	Ongoing
Action CAM-6—Actively participate in the plan maintenance protocols outlined in Volume 1 of this hazard mitigation plan.						
<u>Hazards Mitigated:</u> Earthquake, Severe Storms, Severe Weather, Dam Failure, Flooding, Landslide, Wildfire, Tsunami, Drought, Sea Level Rise						
New & Existing	17, 19	City Manager's Office	Public Works/Community Development/ Building & Safety	Low	Staff Time, General Funds	Short-term
Action CAM-7—Continue to maintain good standing and compliance under the NFIP through implementation of floodplain management programs that, at a minimum, meet the NFIP requirements:						
• Enforce the flood damage prevention ordinance. • Participate in floodplain identification and mapping updates. • Provide public assistance/information on floodplain requirements and impacts.						
<u>Hazards Mitigated:</u> Flood						
New & Existing	1, 4, 17, 18	Public Works	FEMA	Low	Staff Time, General Funds	Ongoing
Action CAM-8—Identify and pursue strategies to increase adaptive capacity to climate change including developing a Climate Action Plan.						
<u>Hazards Mitigated:</u> Drought, Sea Level Rise, Severe Storms, Severe Weather, Flooding						
New & Existing	1, 2, 6, 12, 15, 17, 19	Community Development	Public Works	Medium	Staff Time, General Funds, HMGP, BRIC	Short-term
Action CAM-9—Purchase generators for critical facilities and infrastructure that lack adequate backup power, including City Hall, Library, Corporation Yard, Sanitation Plant.						
<u>Hazards Mitigated:</u> Earthquake, Severe Storms, Severe Weather, Dam Failure, Flooding, Landslide, Wildfire, Tsunami						
Existing	2, 6	Public Works	None	Medium	Staff Time, General Funds, HMGP, BRIC	Short-term
Action CAM-10—Analyze the feasibility of developing a Post-Disaster Recovery Plan and develop Plan should funds become available.						
<u>Hazards Mitigated:</u> Earthquake, Severe Storms, Severe Weather, Dam Failure, Flooding, Landslide, Wildfire, Tsunami						
New & Existing	2, 6, 8, 19	City Manager's Office		Low	HMGP, PDM, FMA	Short-term
Action CAM-11—Analyze the feasibility of developing a Debris Management Plan and develop Plan should funds become available.						
<u>Hazards Mitigated:</u> Earthquake, Severe Storms, Severe Weather, Dam Failure, Flooding, Landslide, Wildfire, Tsunami						
New & Existing	2, 8, 18	Public Works	None	Low	Staff Time, General Funds	Ongoing

Benefits New or Existing Assets	Objectives Met	Lead Agency	Support Agency	Estimated Cost	Sources of Funding	Timeline ^a
Action CAM-12—Analyze the feasibility of developing a Continuity of Operations Plan and develop Plan should funds become available.						
<u>Hazards Mitigated:</u>	Earthquake, Severe Storms, Severe Weather, Dam Failure, Flooding, Landslide, Wildfire, Tsunami					
New & Existing	8, 18	City Manager's Office		Low	Staff Time, General Funds	Short-term
Action CAM-13—Continue analyzing the cost/benefit of joining the Community Rating System program						
<u>Hazards Mitigated:</u>	Flooding					
New & Existing	1, 2, 4, 9, 10, 16, 17	Public Works	FEMA	Low	Staff Time, General Funds	Ongoing
Action CAM-14—Continue to participate in updating the County's Community Wildfire Protection Plan.						
<u>Hazards Mitigated:</u>	Wildfire					
New & Existing	2, 5, 8, 12, 17, 18	Ventura County Fire Protection District	Community Development	Low	Staff Time, General Funds	Ongoing
Action CAM-15—Update Building Code to reference better the HMP for building in all hazard areas.						
<u>Hazards Mitigated:</u>	Earthquake, Dam Failure, Flooding, Landslide, Wildfire, Tsunami					
New & Existing	4	Community Development/ Building & Safety	None	Low	Staff Time, General Funds	Short-term
Action CAM-16—Develop a Threat and Hazard Identification and Risk Assessment specific to the City should funds become available.						
<u>Hazards Mitigated:</u>	Earthquake, Severe Storms, Severe Weather, Dam Failure, Flooding, Landslide, Wildfire, Tsunami, Drought and Sea Level Rise					
New & Existing	1, 17	City Manager's Office	Community Development	Low/Medium	Staff Time, General Funds, HMGP, BRIC	Short-term
Action CAM-17—Analyze the feasibility of developing a City-specific Stormwater Management Plan.						
<u>Hazards Mitigated:</u>	Flooding, Severe Storms					
New & Existing	1, 2, 4, 6, 9, 15, 17, 18	Public Works	Ventura County Watershed Protection	Low	Staff Time, General Funds	Short-term
Action CAM-18—Where appropriate, support retrofitting, purchase or relocation of structures located in hazard areas, prioritizing those that have experienced repetitive losses and/or are located in high- or medium-risk hazard areas.						
<u>Hazards Mitigated:</u>	Earthquake, Flood, Wildfire, Landslide, Dam Failure					
Existing	9, 11	City Manager's Office	Community Development	High	HMGP, PDM, FMA	Short-term

a. Short-term = Completion within 5 years; Long-term = Completion within 10 years; Ongoing= Continuing new or existing program with no completion date

Acronyms used here are defined at the beginning of this volume.

Table 2-15. Mitigation Action Priority

Action #	# of Objectives Met	Benefits	Costs	Do Benefits Equal or Exceed Cost?	Is Project Grant-Eligible?	Can Project Be Funded Under Existing Programs/ Budgets?	Implementation Priority ^a	Grant Pursuit Priority ^a
1	2	Low	Medium	No	Yes	No	Low	Medium
2	5	Medium	Medium	Yes	No	No	Medium	Low
3	3	High	High	Yes	Yes	No	Medium	High
4	3	Medium	Low	Yes	No	Yes	High	Low

Action #	# of Objectives Met	Benefits	Costs	Do Benefits Equal or Exceed Cost?	Is Project Grant-Eligible?	Can Project Be Funded Under Existing Programs/ Budgets?	Implementation Priority ^a	Grant Pursuit Priority ^a
5	1	Medium	Low	Yes	No	No	Low	Low
6	2	Low	Low	Yes	No	Yes	Medium	Low
7	4	Low	Low	Yes	No	Yes	High	Low
8	7	Low	Medium	No	Yes	Yes	Low	Medium
9	2	High	Medium	Yes	Yes	No	Medium	High
10	4	Low	Low	Yes	Yes	No	Medium	Medium
11	3	Low	Low	Yes	No	No	Low	Low
12	2	Low	Low	Yes	No	No	Low	Low
13	7	Medium	Low	Yes	No	Yes	High	Low
14	6	Medium	Low	Yes	No	No	Low	Low
15	1	High	Low	Yes	No	Yes	High	Low
16	2	Low	Low	Yes	Yes	No	Medium	Medium
17	8	Low	Low	Yes	No	No	Low	Low
18	2	High	High	Yes	Yes	No	Medium	High

a. See the introduction to this volume for explanation of priorities.

Table 2-16. Analysis of Mitigation Actions

Hazard Type	Action Addressing Hazard, by Mitigation Type ^a							
	Prevention	Property Protection	Public Education & Awareness	Natural Resource Protection	Emergency Services	Structural Projects	Climate Resilience	Community Capacity Building ^b
High-Risk Hazards								
None								
Medium-Risk Hazards								
Earthquake	CAM-2, 5, 15	CAM-18	CAM-2, 4, 6		CAM-3, 4, 9			CAM-2, 6, 10, 11, 12, 16
Severe Storms	CAM-8	CAM-3	CAM-4, 6		CAM-4, 17, 9	CAM-3	CAM-8, 16	CAM-6, 8, 10, 11, 12, 16, 17
Severe Weather	CAM-8		CAM-4, 6	CAM-17	CAM-4, 9		CAM-8, 16	CAM-6, 8, 10, 11, 12, 16
Dam Failure	CAM-15	CAM-18	CAM-4, 6		CAM-4, 10, 9			CAM-6, 10, 11, 12, 16
Flooding	CAM-5, 7, 8, 13, 15	CAM-3, 18	CAM-4, 6, 7, 13	CAM-17	CAM-3, 4, 10, 9	CAM-3	CAM-8, 16	CAM-6, 7, 8, 10, 11, 12, 16, 17
Landslide	CAM-5, 15	CAM-18	CAM-4, 6		CAM-4, 10, 9			CAM-6, 10, 11, 12, 16
Wildfire	CAM-5, 14, 15	CAM-14, 18	CAM-4, 6, 14		CAM-4, 10, 9		CAM-8, 16	CAM-6, 10, 11, 12, 14, 16
Low-Risk Hazards								
Drought	CAM-1, 8		CAM-1, 4, 6				CAM-8, 16	CAM-6, 8, 16
Tsunami	CAM-15		CAM-4, 6		CAM-4, 9, 10			CAM-6, 10, 11, 12, 16
Sea Level Rise	CAM-8		CAM-4, 6				CAM-8, 16	CAM-6, 8, 16

a. See the introduction to this volume for explanation of mitigation types.

b. Note that the jurisdiction did not identify a need for expansion of financial capabilities, based on existing capabilities. The intent of this hazard mitigation plan is to expand the financial capability of the jurisdiction.

2.9 PUBLIC OUTREACH

Table 2-17 lists public outreach activities for this jurisdiction.

Table 2-17. Local Public Outreach

Local Outreach Activity	Date	Number of People Involved
CityScene newsletter (Hard-copy Print)	Quarterly	22,000 Households
CityScene newsletter (Email)	Quarterly	1,005
CERTScene Newsletter (Email)	Four issues per year	989
Cable TV channel	Ongoing	Unknown
Official City of Camarillo Government Website	Ongoing	Unknown
Social Media: Facebook	Ongoing/ As Needed	3,813 Followers
Social Media: Instagram	Ongoing/ As Needed	480 Followers
Social Media: LinkedIn	Ongoing/ As Needed	256 Followers
Social Media: Twitter	Ongoing/ As Needed	50 Followers
Marquee Sign (Carmen Drive/Paseo Camarillo)	Ongoing	Visible to Passersby

2.10 INFORMATION SOURCES USED FOR THIS ANNEX

The following technical reports, plans, and regulatory mechanisms were reviewed to provide information for this annex.

- **City of Camarillo Municipal Code**—The Municipal Code was reviewed for the full capability assessment and for identifying opportunities for HMP integration.
- **City of Camarillo General Plan, Safety Plan, Policy SAF-1.1a**—The Safety Plan was reviewed for identifying risk assessment information and for identifying opportunities for HMP integration.
- **City of Camarillo, Emergency Operations Plan (EOP)**—The EOP was used to gather risk assessment information and to assess the City's capabilities associated with response in addition to identifying opportunities for HMP integration.
- **City of Camarillo 2020 Urban Water Management Plan**—The Urban Water Management Plan was reviewed for the full capability assessment and for identifying opportunities for HMP integration.
- **City of Camarillo Economic Development Strategic Plan**—The Economic Development Strategic Plan was reviewed for the full capability assessment.
- **Capital Improvement Plan**—The Capital Improvement Plan was used to identify possible hazard mitigation actions to add to the HMP and to identify opportunities for HMP integration.
- https://www.cityofcamarillo.org/departments/administrative_services/gis_maps.php, accessed October 4, 2021—Used to document location and features for the Jurisdictional Profile.
- **City of Camarillo, Resolution to Accompany Application for State Aid Under the Emergency Flood Relief Law, Resolution 585, May 28, 1969** -- Used to document natural hazard event damage assessment.

- **City of Camarillo, Resolution to Accompany Application for State Aid Under the Emergency Flood Relief Law, Resolution 586, May 28, 1969**—Used to document natural hazard event damage assessment.

The following outside resources and references were reviewed:

- **Ventura County Fire Protection District, Unit Strategic Fire Plan, May 2020, page 6**—Used to document natural hazard event damage assessment.
- **Hazard Mitigation Plan Annex Development Toolkit**—The toolkit was used to support the identification of past hazard events and noted vulnerabilities, the risk ranking, and the development of the mitigation action plan.
- Levin, Charles, “Storm’s fury: flooding”, **Ventura County Star**, January 10, 2005, Main News, pg.1-- Used to document natural hazard event damage assessment.
- Dodge, Dani and Levin, Charles, “County gets a wet Christmas”, **Ventura County Star**, December 26, 2003, Main News, pg. 1-- Used to document natural hazard event damage assessment.
- Mansfield, Gregg, “Airport can see light at ditch’s end—Repairs on flood-damaged channel near completion EL NINO’S WAKE: Camarillo, county wrangle over who must come up with \$500,000 to pay for work”, **Ventura County Star**, March 19, 1998, News, A3-- Used to document natural hazard event damage assessment.
- Zintel, Ed, “Out of bounds on the fairway—RAIN: Pre-planning helps courses survive deluge”, **Ventura County Star**, March 18, 1998, Sports, B4-- Used to document natural hazard event damage assessment.
- Mansfield, Ed, “Camarillans say city lagged in dealing with severe flooding—Neighborhood angry: Residents complain to council, but city defends its handling of job, says it couldn’t be everywhere at once during last Friday’s downpour”, **Ventura County Star**, February 13, 1998, New, A3-- Used to document natural hazard event damage assessment.
- Dewey, James, et.al., **U.S. Department of the Interior U.S.Geological Survey, “Intensity Distribution and Iseismic Maps for the Northridge, California, Earthquake Of January 17,1994”**, 1995- Used to document natural hazard event damage assessment.
- Lozano, Carlos, “Storm Floods Camarillo Trailer Park : Weather: Rising water surrounds mobile home residents. Sheriff’s deputies airlift farm workers stranded in a field. More rain is expected”, **Los Angeles Times**, February 19, 1993, accessed digitally on October 18, 2021- Used to document natural hazard event damage assessment.
- Gorman, Gary, “1990 in Ventura County: Year in Review: Slow Economy: Freeze Ruins Crops”, **Los Angeles Times**, December 31, 1990, LA Times Archives- Used to document natural hazard event damage assessment.
- **Federal Emergency Management Agency, Flood Insurance Study, Volume 1 of 3**, Ventura County, California, January 20, 2010- Used to document natural hazard event damage assessment.
- Bevol, Steve. “Weary county cleans up”, **Camarillo Daily News**, February 12, 1978, p.A1- Used to document natural hazard event damage assessment.
- “Worst Fire in History Hits City”, **Camarillo Daily News** September 28, 1970, p.A1- Used to document natural hazard event damage assessment.

- Sacramento Associated Press, "President Johnson Declares County Disaster Area", **Camarillo Daily News**, December 9, 1965, p.A2- Used to document natural hazard event damage assessment.

Camarillo

Critical Facilities (1 of 2)

- Food, Water, Shelter
- Health and Medical
- Safety and Security

- Major Roads
- ▭ Selected City
- ▭ Incorporated Cities
- ▭ County Boundary

Data Sources: Ventura Co., VCFD, Casitas MWD, Calleguas MWD, City of Camarillo, CA Energy Commission, Cal Trans, EPA, HIFLD, Esri



0 0.5 1 2 Miles

Camarillo

Critical Facilities (1 of 2)

- Communications
- Energy
- Hazardous Material
- Transportation
- Major Roads
- Selected City
- Incorporated Cities
- County Boundary

Data Sources: Ventura Co., VCFD, Casitas MWD, Calleguas MWD, City of Camarillo, CA Energy Commission, Cal Trans, EPA, HIFLD, Esri



0 0.5 1 2 Miles

Camarillo

Dam Failure Inundation Areas

-  Combined Inundation Areas
-  Major Roads
-  Selected City
-  Incorporated Cities
-  County Boundary

Data Sources: Ventura Co.,
CA DWR, Esri



0 0.5 1 2 Miles

Camarillo

NEHRP Soil Class

- C (Dense soil/soft rock)
- D (Stiff soil)
- Major Roads
- Selected City
- Incorporated Cities
- County Boundary

Data Sources: Ventura Co.,
CGS, Esri



0 0.5 1 2 Miles

Camarillo

Liquefaction Susceptibility

-  Liquefaction zone
-  Major Roads
-  Selected City
-  Incorporated Cities
-  County Boundary

Data Sources: Ventura Co.,
Esri



0 0.5 1 2 Miles

Camarillo

100-Year Probabilistic Earthquake Scenario

Mercalli Intensity Scale

 VII (Very Strong/Moderate)

 Major Roads

 Selected City

 Incorporated Cities

 County Boundary

Intensity scale described as:
(perceived shaking / potential damage)

Data Sources: Ventura Co.,
USGS, Esri



0 0.5 1 2 Miles

Camarillo

Oak Ridge M7.16 Earthquake Scenario

Mercalli Intensity Scale

- VII (Very Strong/Moderate)
- VIII (Severe/Moderate-Heavy)

- Major Roads
- Selected City
- Incorporated Cities
- County Boundary

Intensity scale described as:
(perceived shaking / potential damage)

Data Sources: Ventura Co.,
USGS, Esri



0 0.5 1 2 Miles

Camarillo

Pitas Point M7.12 Earthquake Scenario

Mercalli Intensity Scale

- VI (Strong/Light)
- VII (Very Strong/Moderate)
- VIII (Severe/Moderate-Heavy)

- Major Roads
- Selected City
- Incorporated Cities
- County Boundary

Intensity scale described as:
(perceived shaking / potential damage)

Data Sources: Ventura Co.,
USGS, Esri



0 0.5 1 2 Miles

Camarillo

San Cayetano M7.16 Earthquake Scenario

Mercalli Intensity Scale

- VI (Strong/Light)
- VII (Very Strong/Moderate)
- Major Roads
- Selected City
- Incorporated Cities
- County Boundary

Intensity scale described as:
(perceived shaking / potential damage)

Data Sources: Ventura Co.,
USGS, Esri



0 0.5 1 2 Miles

Camarillo

S. San Andreas M8.03 Earthquake Scenario

Mercalli Intensity Scale

- VI (Strong/Light)
- Major Roads
- Selected City
- Incorporated Cities
- County Boundary

Intensity scale described as:
(perceived shaking / potential damage)

Data Sources: Ventura Co.,
USGS, Esri



0 0.5 1 2 Miles

Camarillo

FEMA Flood Hazard Areas

- 1% Annual Chance Flood (100-Year)
- 0.2% Annual Chance Flood (500-Year)
- Major Roads
- Selected City
- Incorporated Cities
- County Boundary

Data Sources: Ventura Co.,
FEMA, Esri



0 0.5 1 2 Miles

Camarillo

Susceptibility to Deep-Seated Landslides

- Low
- Moderate
- High
- Very High
- Major Roads
- Selected City
- Incorporated Cities
- County Boundary

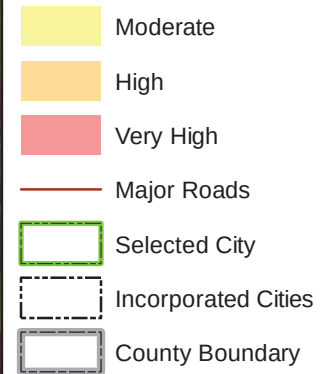
Data Sources: Ventura Co.,
CGS, Esri



0 0.5 1 2 Miles

Camarillo

Wildfire Hazard Severity Zones



Data Sources: Ventura Co.,
CAL FIRE, Esri



0 0.5 1 2 Miles

3. CITY OF FILLMORE

3.1 LOCAL HAZARD MITIGATION PLANNING TEAM

Primary Point of Contact

D. Keith Gurrola, Fire Chief
250 Central Ave
Fillmore, CA 93015
805-524-1500
keithg@fillmoreca.gov

Alternate Point of Contact

David Rowlands, City Manager
250 Central Ave
Fillmore, CA 93015
805-524-1500
drowlands@fillmoreca.gov

This annex was developed by the local hazard mitigation planning team, whose members are listed in Table 3-1.

Table 3-1. Local Mitigation Planning Team Members

Name	Title
D. Keith Gurrola	Fire Chief
David Rowlands	City Manager
Kevin McSweeney	City Planning Director
Ines Ebell	Planning Department Admin Assistant

3.2 JURISDICTION PROFILE

3.2.1 Location and Features

The City of Fillmore is in the western portion of the County of Ventura, California.

The current boundaries generally extend from the Santa Clara River going north, the Sespe Creek going east, slightly east of Pole Creek going west and the northern city boundary is the start of the foothills to the Los Padres National Forest. Fillmore is bordered on three sides by waterways, encompassing an area of 4.3 square miles.

Fillmore is located in the historic Santa Clara River Valley which is primarily all agricultural land, used to grow a wide variety of fair weather crops. As mentioned, the City is bordered by three separate waterways and open wildlands to the north.

3.2.2 History

The City of Fillmore was incorporated in 1914. The town was established in the late 1800s and was known primarily as a railroad stop for travelers. With its fertile soils, the town quickly became an agricultural community. Oil was discovered years later in the hills that surround the Community and Fillmore started supporting businesses associated with oil production and support services. With the decline of the oil industry, Fillmore was able to diversify with light industry. The agricultural image of Fillmore has never gone away and is still quite robust. Fillmore is now known as a “bedroom community” where the majority of its working class residents commute to other nearby cities to work.

3.2.3 Governing Body Format

The City of Fillmore is governed by a Council–Manager form of government.

The Fillmore City Council assumes responsibility for the adoption of this plan; the Fillmore City Manager will oversee its implementation through the oversight of the various City Departments.

3.3 CURRENT TRENDS

3.3.1 Population

According to the California Department of Finance, the population of the City of Fillmore as of January 2020 was 15,566. Since 2010, the population has grown at an average annual rate of 0.37 percent.

3.3.2 Development

General development, overall has been primarily single family dwellings with an occasional multi-family unit. An industrial business park has had only one project developed. Currently there are several plans for in-fill of multi-family structures.

Table 3-2 summarizes development trends in the period since the preparation of the previous hazard mitigation plan, as well as expected future development trends.

3.4 CAPABILITY ASSESSMENT

This section describes an assessment of existing capabilities for implementing hazard mitigation strategies. The introduction at the beginning of this volume of the hazard mitigation plan describes the components included in the capability assessment and their significance for hazard mitigation planning.

Findings of the capability assessment were reviewed to identify opportunities to expand, initiate or integrate capabilities to further hazard mitigation goals and objectives. Where such opportunities were identified and determined to be feasible, they are included in the action plan. The “Analysis of Mitigation Actions” table in this annex identifies these as community capacity building mitigation actions.

Table 3-2. Recent and Expected Future Development Trends

Criterion	Response					
Has your jurisdiction annexed any land since the preparation of the previous hazard mitigation plan?	Yes					
If yes, give the estimated area annexed and estimated number of parcels or structures.	3 acres, 0 structures					
Is your jurisdiction expected to annex any areas during the performance period of this plan?	No					
Are any areas targeted for development or major redevelopment in the next five years?	Yes					
If yes, briefly describe, including whether any of the areas are in known hazard risk areas	Industrial Park, no known hazard areas					
How many permits for new construction were issued in your jurisdiction since the preparation of the previous hazard mitigation plan?		2016	2017	2018	2019	2020
	Single Family	30	73	19	124	133
	Multi-Family	0	0	0	0	0
	Other (commercial, mixed use, etc.)	0	1	0	0	0
	Total	30	74	19	124	133
Provide the number of new-construction permits for each hazard area or provide a qualitative description of where development has occurred.	All of the permits issued were in the flood hazard area. There was no new development in the wildland-urban interface zone.					
Describe the level of buildout in the jurisdiction, based on your jurisdiction's buildable lands inventory. If no such inventory exists, provide a qualitative description.	85%					

The findings of the assessment are presented as follows:

- An assessment of planning and regulatory capabilities is presented in Table 3-3.
- Development and permitting capabilities are presented in Table 3-4.
- An assessment of fiscal capabilities is presented in Table 3-5.
- An assessment of administrative and technical capabilities is presented in Table 3-6.
- An assessment of education and outreach capabilities is presented in Table 3-7.
- Information on National Flood Insurance Program (NFIP) compliance is presented in Table 3-8.
- Classifications under various community mitigation programs are presented in Table 3-9.
- The community's adaptive capacity for the impacts of climate change is presented in Table 3-10.

Table 3-3. Planning and Regulatory Capability

	Local Authority	Other Jurisdiction Authority	State Mandated	Integration Opportunity?
Codes, Ordinances, & Requirements				
Building Code <i>Comment: 2019 CA Building Code, (Ord. No. 20-925, § 2, 1-28-2020)</i>	Yes	Yes	Yes	Yes
Zoning Code <i>Comment: Chapter 6.04, (Ord. No. 19-904, § 1, 3-26-2019)</i>	Yes	No	Yes	Yes
Subdivisions <i>Comment: Chapter 6.08, (Ord 467 § 1 (part), 1975)</i>	Yes	No	Yes	No
Stormwater Management <i>Comment: Chapter 8.06, (Ord. No. 14-845, §§ 2, 3, 2-25-2014)</i>	Yes	No	Yes	Yes
Post-Disaster Recovery <i>Comment: 1994 City of Fillmore Zoning Code, County of Ventura Disaster Management Plan</i>	Yes	No	Yes	Yes
Real Estate Disclosure <i>Comment: California State Civil Code 1102 requires full disclosure on natural hazard exposure of the sale/re-sale of any and all real property. 1994 City of Fillmore Zoning Code</i>	No	Yes	Yes	Yes
Growth Management <i>Comment: Chapter 6.09 (Ord. 509 § 1 (part), 1980), County Green Belt Agreement Ventura County Ordinance No. 4512 (Adopted November 7, 2017)</i>	Yes	Yes	No	Yes
Site Plan Review <i>Comment: Chapter 6.08, Title IV (Ord. 467 § 1 (part), 1975)</i>	Yes	No	Yes	Yes
Environmental Protection <i>Comment: Chapter 6.08.070 (Ord. 467 § 1 (part), 1975)</i>	Yes	No	Yes	Yes
Flood Damage Prevention <i>Comment: Chapter 6.16 (Ord. 602 § 1 (part), 1988)</i>	Yes	No	Yes	Yes
Emergency Management <i>Comment: Chapter 15.04.050 (Ord. 401 § 5, 1971)</i>	Yes	No	Yes	Yes
Climate Change <i>Comment: None</i>	No	No	No	No
Planning Documents				
General Plan <i>Is the plan compliant with Assembly Bill 2140? No</i> <i>Comment: 2003 Plan Needs Updating</i>	Yes	No	Yes	Yes
Capital Improvement Plan <i>How often is the plan updated? Every 5 Years</i> <i>Comment: City of Fillmore</i>	Yes	No	Yes	Yes
Disaster Debris Management Plan <i>Comment: Ventura County Disaster Recovery Plan, Adopted by BOS in April 2019</i>	No	Yes	Yes	Yes
Floodplain or Watershed Plan <i>Comment: City of Fillmore participates in the National Flood Insurance Program (NFIP)</i>	Yes	No	Yes	Yes
Stormwater Plan <i>Comment: None</i>	No	No	No	No
Urban Water Management Plan <i>Comment: City of Fillmore 2015 Urban Water Management Plan</i>	Yes	No	Yes	Yes
Habitat Conservation Plan <i>Comment: None</i>	No	No	No	No

	Local Authority	Other Jurisdiction Authority	State Mandated	Integration Opportunity?
Economic Development Plan <i>Comment: Economic Development Collaborative of Ventura County Partnership</i>	Yes	No	No	No
Shoreline Management Plan <i>Comment: N/A</i>	No	No	No	No
Community Wildfire Protection Plan <i>Comment: None</i>	No	No	No	No
Forest Management Plan <i>Comment: N/A</i>	No	No	No	No
Climate Action Plan <i>Comment: None</i>	No	No	No	No
Emergency Operations Plan <i>Comment: City of Fillmore Emergency Operations Plan (EOP)</i>	Yes	Yes	Yes	Yes
Threat & Hazard Identification & Risk Assessment (THIRA) <i>Comment: None</i>	No	No	No	No
Post-Disaster Recovery Plan <i>Comment: Covered in the EOP</i>	Yes	No	Yes	Yes
Continuity of Operations Plan <i>Comment: Covered in the EOP</i>	Yes	No	No	Yes
Public Health Plan <i>Comment: County of Ventura Health Care Agency Public Health Emergency Response Plan (ERP)</i>	No	Yes	Yes	Yes

Table 3-4. Development and Permitting Capability

Criterion	Response
Does your jurisdiction issue development permits? <i>If no, who does? If yes, which department?</i> Planning, Building, Fire	Yes
Does your jurisdiction have the ability to track permits by hazard area?	Yes
Does your jurisdiction have a buildable lands inventory?	Yes

Table 3-5. Fiscal Capability

Financial Resource	Accessible or Eligible to Use?
Community Development Block Grants	Yes
Capital Improvements Project Funding	Yes
Authority to Levy Taxes for Specific Purposes	Yes
User Fees for Water, Sewer, Gas or Electric Service <i>If yes, specify: All utilities</i>	Yes
Incur Debt through General Obligation Bonds	Yes
Incur Debt through Special Tax Bonds	Yes
Incur Debt through Private Activity Bonds	No
Withhold Public Expenditures in Hazard-Prone Areas	Yes
State-Sponsored Grant Programs	Yes
Development Impact Fees for Homebuyers or Developers	Yes
Other	Yes (Maintenance Assessment Districts)

Table 3-6. Administrative and Technical Capability

Staff/Personnel Resource	Available?
Planners or engineers with knowledge of land development and land management practices <i>If Yes, Department /Position:</i> Planning, Engineering	Yes
Engineers or professionals trained in building or infrastructure construction practices <i>If Yes, Department /Position:</i> Planning, Engineering	Yes
Planners or engineers with an understanding of natural hazards <i>If Yes, Department /Position:</i> Planning, Engineering	Yes
Staff with training in benefit-cost analysis <i>If Yes, Department /Position:</i> Planning, Engineering, Finance	Yes
Surveyors <i>If Yes, Department /Position:</i> Engineering	Yes
Personnel skilled or trained in GIS applications <i>If Yes, Department /Position:</i> Engineering	Yes
Scientist familiar with natural hazards in local area	No
Emergency manager <i>If Yes, Department /Position:</i> Fire	Yes
Grant writers <i>If Yes, Department /Position:</i> Finance, Fire	Yes

Table 3-7. Education and Outreach Capability

Criterion	Response
Do you have a public information officer or communications office?	Yes
Do you have personnel skilled or trained in website development?	Yes
Do you have hazard mitigation information available on your website? <i>If yes, briefly describe:</i> Both the Police and Fire Department websites contain information.	Yes
Do you use social media for hazard mitigation education and outreach? <i>If yes, briefly describe:</i> Yes, the major providers are all used for information sharing	Yes
Do you have any citizen boards or commissions that address issues related to hazard mitigation?	No
Do you have any other programs in place that could be used to communicate hazard-related information? <i>If yes, briefly describe:</i> The City participates with County OES to disseminate emergency information	Yes
Do you have any established warning systems for hazard events? <i>If yes, briefly describe:</i> Yes, we utilize County OES along with neighborhood notification via Police/Fire	Yes

Table 3-8. National Flood Insurance Program Compliance

Criterion	Response
What local department is responsible for floodplain management?	Engineering
Who is your floodplain administrator? (department/position)	Engineering
Are any certified floodplain managers on staff in your jurisdiction?	No
What is the date that your flood damage prevention ordinance was last amended?	1998
Does your floodplain management program meet or exceed minimum requirements?	Meets
When was the most recent Community Assistance Visit or Community Assistance Contact?	unknown

Criterion	Response
Does your jurisdiction have any outstanding NFIP compliance violations that need to be addressed? <i>If so, state what they are.</i>	No
Are any RiskMAP projects currently underway in your jurisdiction?	No
Do your flood hazard maps adequately address the flood risk within your jurisdiction? <i>If no, state why.</i>	Yes
Does your floodplain management staff need any assistance or training to support its floodplain management program?	No
Does your jurisdiction participate in the Community Rating System (CRS)? <i>If no, is your jurisdiction interested in joining the CRS program?</i>	No Unknown, would have to learn more
How many flood insurance policies are in force in your jurisdiction? ^a <i>What is the insurance in force?</i> \$22,517,800 <i>What is the premium in force?</i> \$34,315	74
How many total loss claims have been filed in your jurisdiction? ^a <i>What were the total payments for losses?</i> \$226,509	37

a. According to FEMA statistics as of March 31, 2021

Table 3-9. Community Classifications

	Participating?	Classification	Date Classified
FIPS Code	Yes	0611124092	N/A
DUNS #	Yes	363056201	N/A
Community Rating System	No	N/A	N/A
Building Code Effectiveness Grading Schedule	No	N/A	N/A
Public Protection	Yes	04/4X	2018
Storm Ready	No	N/A	N/A
Firewise	No	N/A	N/A
Tsunami Ready	No	N/A	N/A

Table 3-10. Adaptive Capacity for Climate Change

Criterion	Jurisdiction Rating ^a
Technical Capacity	
Jurisdiction-level understanding of potential climate change impacts <i>Comment: Members of City Staff participate in local, regional, state and national committees</i>	High
Jurisdiction-level monitoring of climate change impacts <i>Comment: Members of City Staff participate in local, regional, state and national committees</i>	High
Technical resources to assess proposed strategies for feasibility and externalities <i>Comment: Through committee contacts, unlimited to access via internet</i>	High
Jurisdiction-level capacity for development of greenhouse gas emissions inventory <i>Comment: Fillmore is a small geographical city with specifically known sources of emission</i>	High
Capital planning and land use decisions informed by potential climate impacts <i>Comment: Fillmore implements an extensive review process, the total number of projects are manageable</i>	High
Participation in regional groups addressing climate risks <i>Comment: City Staff participates at many levels</i>	High

Criterion	Jurisdiction Rating ^a
Implementation Capacity	
Clear authority/mandate to consider climate change impacts during public decision-making processes <i>Comment: Planning Commission and City Council advocate</i>	High
Identified strategies for greenhouse gas mitigation efforts <i>Comment: Currently addressing vehicle exhaust emissions</i>	Low
Identified strategies for adaptation to impacts <i>Comment: Costs effectiveness</i>	Medium
Champions for climate action in local government departments <i>Comment: Looking at opportunities for all new vehicles and equipment</i>	Medium
Political support for implementing climate change adaptation strategies <i>Comment: All levels of decision making are to embrace</i>	Medium
Financial resources devoted to climate change adaptation <i>Comment: Looking for grants, new purchases</i>	Medium
Local authority over sectors likely to be negative impacted <i>Comment: The City has full authority over all Departments</i>	High
Public Capacity	
Local residents' knowledge of and understanding of climate risk <i>Comment:</i>	Low
Local residents' support of adaptation efforts <i>Comment: General support, no negative reports</i>	Medium
Local residents' capacity to adapt to climate impacts <i>Comment: General support, no negative reports</i>	Medium
Local economy current capacity to adapt to climate impacts <i>Comment: Limited impact in short term</i>	Medium
Local ecosystems capacity to adapt to climate impacts <i>Comment: Limited impact in short term, some impact from agriculture</i>	Medium

a. High = Capacity exists and is in use; Medium = Capacity may exist, but is not used or could use some improvement;
Low = Capacity does not exist or could use substantial improvement; Unsure= Not enough information is known to assign a rating.

3.5 INTEGRATION REVIEW

For hazard mitigation planning, “integration” means that hazard mitigation information is used in other relevant planning mechanisms, such as general planning and capital facilities planning, and that relevant information from those sources is used in hazard mitigation. This section identifies where such integration is already in place, and where there are opportunities for further integration in the future. Resources listed at the end of this annex were used to provide information on integration. The progress reporting process described in Volume 1 of the hazard mitigation plan will document the progress of hazard mitigation actions related to integration and identify new opportunities for integration.

3.5.1 Existing Integration

Some level of integration has already been established between local hazard mitigation planning and the following other local plans and programs:

- Fillmore Municipal Code

- Developer Impact Fees
- 1994 City of Fillmore Zoning Code
- 2015 County of Ventura Disaster Management Plan
- General Plan Land Use Element 2005

3.5.2 Opportunities for Future Integration

The capability assessment in this annex indicates opportunities to integrate this mitigation plan with other jurisdictional planning/regulatory capabilities. Capabilities were identified as integration opportunities if they can support or enhance the actions identified in this plan or be supported or enhanced by components of this plan. The capability assessment identified the following plans and programs that do not currently integrate hazard mitigation information but provide opportunities to do so in the future:

- **Central Ventura County Regional Fire Safe Council Wildland Fire Mitigation Plan**—In future updates, the Wildfire Mitigation Plan may use or reference applicable wildfire hazard maps and risk data presented in this hazard mitigation plan.
- **City of Fillmore Capital Improvement Plan 2021**—Capital improvement project proposals may take into consideration hazard mitigation potential to evaluate project prioritization.

Taking action to integrate each of these programs with the hazard mitigation plan was considered as a mitigation action to include in the action plan in this annex.

3.6 RISK ASSESSMENT

3.6.1 Jurisdiction-Specific Natural Hazard Event History

Table 3-11 lists past occurrences of natural hazards for which specific damage was recorded in this jurisdiction. Other hazard events that broadly affected the entire planning area, including this jurisdiction, are listed in the risk assessments in Volume 1 of this hazard mitigation plan.

3.6.2 Hazard Risk Ranking

Table 3-12 presents a local ranking of all hazards of concern for which this hazard mitigation plan provides complete risk assessments. As described in detail in Volume 1, the ranking process involves an assessment of the likelihood of occurrence for each hazard, along with its potential impacts on people, property, and the economy. Mitigation actions primarily target hazards with high and medium rankings.

3.6.3 Jurisdiction-Specific Vulnerabilities

Volume 1 of this hazard mitigation plan provides complete risk assessments for each identified hazard of concern. This section provides information on a few key vulnerabilities for this jurisdiction. Available jurisdiction-specific risk maps of the hazards are provided at the end of this annex.

Table 3-11. Past Natural Hazard Events

Type of Event	FEMA Disaster #	Date	Damage Assessment
COVID-19 Pandemic	DR-4482	Jan 20, 2020-current	N/A
Thomas Fire	FM-5302	Dec 4, 2017-Jan 2018	No structural damage, but air quality issues and provided mutual aid. Opened evacuation centers at the high school and the recreation facility.
Guiberson Fire	FM-2839	Sept 2009	No structural damage, but air quality issues and provided mutual aid.
Day Fire	FM-2677	Sept 2006	No structural damage, but air quality issues and provided mutual aid.
Wildfires	DR-1498	Oct 2003	No structural damage, but air quality issues and provided mutual aid.
Severe Fires	EM-3120	Oct 1996	No structural damage, but air quality issues and provided mutual aid.
Winter Storm	DR-1046	Feb 1995	Economic impacts affecting agricultural packinghouses
Northridge Earthquake	DR-1008	Jan 1994	\$50 million in damage and building inspectors red-tagged about 200 buildings and homes as too dangerous to inhabit.
Severe Storm	DR-935	Feb, 1992	N/A
Severe Storm	DR-615	Jan 1980	N/A
Flooding	DR-547	Feb 1978	Evacuations
Sylmar Earthquake	N/A	Feb 9, 1971	N/A
Brush Fires	DR-295	Sept 1970	Packing house within the city limits burned, but may have been an arson of opportunity.
Flooding	DR-253	Jan 1969	Evacuations
Flooding	N/A	Numerous pre 1964	N/A
St Francis Dam Disaster		March 12, 1928	\$7 Million (1928)—Inundation of nearly the entire city, flooding, debris flows, destruction of infrastructure, high loss of life

Table 3-12. Hazard Risk Ranking

Rank	Hazard	Risk Ranking Score	Risk Category
1	Dam Failure	36	High
2	Earthquake	32	Medium
3	Severe Storm	24	Medium
4	Severe Weather	24	Medium
5	Wildfire	18	Medium
6	Flooding	18	Medium
7	Landslide	18	Medium
8	Drought	9	Low

Repetitive Loss Properties

Repetitive loss records are as follows:

- Number of FEMA-identified Repetitive-Loss Properties: 0
- Number of FEMA-identified Severe-Repetitive-Loss Properties: 0
- Number of Repetitive-Loss Properties or Severe-Repetitive-Loss Properties that have been mitigated: 0

Other Noted Vulnerabilities

The following jurisdiction-specific issues have been identified based on a review of the results of the risk assessment, public involvement strategy, and other available resources: N/A

- Two large-scale evacuations due to hazardous material fires. Both events triggered evacuations of 25 percent of the city's population.
- City recreation facility is used as an evacuation center but lacks showers.

Mitigation actions addressing these issues were prioritized for consideration in the action plan in this annex.

3.7 STATUS OF PREVIOUS PLAN ACTIONS

Table 3-13 summarizes the actions that were recommended in the previous version of the hazard mitigation plan and their implementation status at the time this update was prepared.

Table 3-13. Status of Previous Plan Actions

Action Item	Completed	Removed; No Longer Feasible	Carried Over to Plan Update	
			Check if Yes	Action # in Update
F 1—Construction of Pole Creek Debris Basin. The basin is awaiting Ventura County Watershed District approval for improvements to Final and to accept construction. The Basin will accept mud and debris flow from the Pole Creek watershed in a 100 year rain event and protect all future homes in the Heritage Valley Parks Specific Plan consisting of 750 residential units. The debris basin project includes levees, basin maintenance roads and water flow to the Santa Clara River. The Basin is proposed to be owned and operated by Ventura County Water Shed Protection District. Comment: The Basin was completed in 2009, it is maintained by the Developer until Ventura County Watershed accepts	✓			
F 2—Completion of the Heritage Valley Parks Levees. Over 1.5 miles of soil cement levee was constructed for protection of a 100 year storm and water flow from the Santa Clara River. Parks and streets about the levee in order to avoid any emergency conflict with proposed residential units. The Levee system protects the 750 proposed residential units in the Heritage Valley Parks Specific Plan and a proposed 110 condominium project proposed by KB Homes. Comment: The levee was completed in 2006 but not yet certified, awaiting final construction of the last few remaining residential units	✓			
F 3—Completion of the Lower Sespe Creek Levee. A ½ mile in length soil cement levee was constructed south of Hwy 23 to protect the newly constructed Water Recycling Plant and protect the future Business Park Master Plan. Comment: This levee was completed in 2008 from Hy 126 south to the City limits	✓			
F 4—Completion of the Central Avenue Storm Drain. A large storm drain was installed in Central Ave to protect the Central Business District from floods that historically threatened downtown. Comment: This storm drain project was completed in 2008 and drains into the Santa Clara River, improvements will be made on last 100 yards	✓			
F 5—Continue to monitor the need to demolish abandoned and dilapidated buildings. Comment: This is an ongoing project, numerous buildings have been demolished, looking for opportunities as they present themselves for additional structures	✓			

3.8 HAZARD MITIGATION ACTION PLAN

Table 3-14 lists the identified actions, which make up the hazard mitigation action plan for this jurisdiction. Table 3-15 identifies the priority for each action. Table 3-16 summarizes the mitigation actions by hazard of concern and mitigation type.

Table 3-14. Hazard Mitigation Action Plan Matrix

Benefits New or Existing Assets	Objectives Met	Lead Agency	Support Agency	Estimated Cost	Sources of Funding	Timeline ^a
Action FIL-1 —Where appropriate, support retrofitting, purchase or relocation of structures located in hazard areas, prioritizing those that have experienced repetitive losses and/or are located in high- or medium-risk hazard areas.						
<u>Hazards Mitigated:</u>	Dam Failure, Earthquake, Severe Storm, Severe Weather, Wildfire, Flooding, Landslide					
Existing	2, 6, 9, 10, 11	Public Works.	Community Development	High	Grant Funding-FEMA HMA (BRIC, FMA, HMGP)	Short-term
Action FIL-2 —Integrate the hazard mitigation plan into other plans, ordinances and programs that dictate land use decisions in the community.						
<u>Hazards Mitigated:</u>	Dam Failure, Earthquake, Severe Storm, Severe Weather, Wildfire, Flooding, Landslide, Drought					
New & Existing	1, 2, 3, 4, 5, 7, 8, 9, 10, 11, 12, 13, 14, 15, 17, 19	Community Development	Public Works	Low	Staff Time, General Funds	Ongoing
Action FIL-3 —Actively participate in the plan maintenance protocols outlined in Volume 1 of this hazard mitigation plan.						
<u>Hazards Mitigated:</u>	Dam Failure, Earthquake, Severe Storm, Severe Weather, Wildfire, Flooding, Landslide, Drought					
New & Existing	1, 2, 4, 6, 7, 8, 9, 11, 12, 13, 14, 15	Public Works	Community Development	Low	Staff Time, General Funds	Short-term
Action FIL-4 —Continue to maintain good standing and compliance under the NFIP through implementation of floodplain management programs that, at a minimum, meet the NFIP requirements: • Enforce the flood damage prevention ordinance. • Participate in floodplain identification and mapping updates. • Provide public assistance/information on floodplain requirements and impacts.						
<u>Hazards Mitigated:</u>	Flooding					
New & Existing	1, 2, 6, 7, 17	Public Works	Community Development	Low	Staff Time, General Funds	Ongoing
Action FIL-5 —Identify and pursue strategies to increase adaptive capacity to climate change.						
<u>Hazards Mitigated:</u>	Severe Storm, Severe Weather, Wildfire, Flooding, Drought					
New & Existing	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 19	Community Development	Public Works	Low	Staff Time, General Funds, Grant Funding-FEMA HMA (BRIC, FMA, HMGP)	Short-term
Action FIL-6 —Purchase generators for critical facilities and infrastructure that lack adequate backup power.						
<u>Hazards Mitigated:</u>	Dam Failure, Earthquake, Severe Storm, Severe Weather, Wildfire, Flooding, Landslide					
Existing	2, 19	Public Works	Community Development	High	Grant Funding-FEMA HMA (BRIC and HMGP)	Short-term
Action FIL-7 —Study feasibility of developing a resilience hub in the city to provide the resources residents need to enhance their own individual capacity while also supporting and strengthening the community before and during a disaster event.						
<u>Hazards Mitigated:</u>	Dam Failure, Earthquake, Severe Storm, Severe Weather, Wildfire, Flooding, Landslide					
New	2, 3, 7, 8, 12, 17	Community Development		High	Staff Time, General Funds, Grant Funding-FEMA HMA (BRIC, FMA, HMGP)	Short-term

Benefits New or Existing Assets	Objectives Met	Lead Agency	Support Agency	Estimated Cost	Sources of Funding	Timeline ^a
Action FIL-8—Study feasibility of developing an alternative Emergency Operations Center (EOC) location to use during a disaster.						
<u>Hazards Mitigated:</u> Earthquake, Severe Storm, Severe Weather, Wildfire, Flooding, Terrorism						
New	2, 3, 7, 8, 12, 17	Community Development		High	Staff Time, Grant Funding-FEMA HMA (BRIC, FMA, HMGP)	Long-term
Action FIL-9—Hardening of the City Water Delivery System and computerized upgrade.						
<u>Hazards Mitigated:</u> Dam Failure, Severe Storm, Severe Weather, Drought, Wildfire, Flooding, Terrorism						
New	2, 6, 9, 10, 11	Public Works		High	Staff Time, Grant Funding-FEMA HMA (BRIC, FMA, HMGP)	Short-term
Action FIL-10—Continue and enhance the public outreach program for wildfire education and prevention among school children and the general community.						
<u>Hazards Mitigated:</u> Wildfire						
New & Existing	2, 5, 7, 8, 10, 11, 12, 13, 14, 15, 17	Fillmore Fire Department	Fire Safe Council	Low	Staff Time, Fillmore Volunteer Firefighter Foundation, Grant Funding—Edison International Utility Grant	Ongoing
Action FIL-11—Maintain wildfire hazard fuel reduction program for areas that have been identified with overgrown or dead brush, trees and weeds to reduce the potential for tree-to-tree ignition. Ensure that a “maintenance now” component to provide continued fire resistance is part of the program. (Coordinates with VCFPD Action VFP-6)						
<u>Hazards Mitigated:</u> Wildfire						
New & Existing	2, 4, 5, 6, 8, 10, 11, 13, 14, 15, 18, 19	Fillmore Fire Department	CAL FIRE, Ventura County Fire Protection District, Fire Safe Council	Low	FEMA HMA (BRIC, FMAP and HMGP), Staff Time & General Funds	Ongoing

a. Short-term = Completion within 5 years; Long-term = Completion within 10 years; Ongoing= Continuing new or existing program with no completion date

Acronyms used here are defined at the beginning of this volume.

Table 3-15. Mitigation Action Priority

Action #	# of Objectives Met	Benefits	Costs	Do Benefits Equal or Exceed Cost?	Is Project Grant-Eligible?	Can Project Be Funded Under Existing Programs/ Budgets?	Implementation Priority ^a	Grant Pursuit Priority ^a
1	5	High	High	Yes	Yes	No	Medium	High
2	16	Medium	Low	Yes	No	Yes	High	Low
3	12	Low	Low	Yes	No	Yes	High	Low
4	5	Medium	Low	Yes	No	Yes	High	Low
5	17	Medium	Low	Yes	No	Yes	High	Medium
6	2	High	Medium	Yes	Yes	No	Medium	High
7	6	Medium	High	No	Yes	No	Low	Medium
8	6	Medium	High	No	Yes	No	Low	Medium
9	5	Medium	High	No	Yes	No	Low	Medium
10	11	Medium	Low	Yes	Yes	Yes	High	High
11	12	High	Low	Yes	Yes	Yes	High	High

a. See the introduction to this volume for explanation of priorities.

Table 3-16. Analysis of Mitigation Actions

Hazard Type	Action Addressing Hazard, by Mitigation Type ^a							
	Prevention	Property Protection	Public Education & Awareness	Natural Resource Protection	Emergency Services	Structural Projects	Climate Resilience	Community Capacity Building ^b
High-Risk Hazards								
Dam Failure	FIL-2	FIL-1, 9	FIL-3		FIL-6			FIL-2, 3, 7
Medium-Risk Hazards								
Earthquake	FIL-2	FIL-1	FIL-3		FIL-6			FIL-2, 3, 7, 8
Severe Storm	FIL-2	FIL-1, 9	FIL-3		FIL-6		FIL-5	FIL-2, 3, 7, 8
Severe Weather	FIL-2	FIL-1, 9	FIL-3		FIL-6		FIL-5	FIL-2, 3, 7, 8
Wildfire	FIL-2	FIL-1, 9	FIL-3, 10	FIL-10, 11	FIL-6		FIL-5	FIL-2, 3, 7, 8
Flooding	FIL-2, 4	FIL-1, 9	FIL-3, 4		FIL-6		FIL-5	FIL-2, 3, 4, 7, 8
Landslide	FIL-2	FIL-1	FIL-3		FIL-6			FIL-2, 3, 7
Low-Risk Hazards								
Drought	FIL-2	FIL-9	FIL-3				FIL-5	FIL-2, 3

a. See the introduction to this volume for explanation of mitigation types.

b. Note that the jurisdiction did not identify a need for expansion of financial capabilities, based on existing capabilities. The intent of this hazard mitigation plan is to expand the financial capability of the jurisdiction.

3.9 PUBLIC OUTREACH

Table 3-17 lists public outreach activities for this jurisdiction.

Table 3-17. Local Public Outreach

Local Outreach Activity	Date	Number of People Involved
Disaster preparedness	Every September	500
Earth Day	Every April	500
Hazardous vegetation chipping days	May & September	100
Fire department children education	10 times a year	10,000

3.10 INFORMATION SOURCES USED FOR THIS ANNEX

The following technical reports, plans, and regulatory mechanisms were reviewed to provide information for this annex.

- **City of Fillmore Municipal Code**—The municipal code was reviewed for the full capability assessment and for identifying opportunities for action plan integration.
- **City of Fillmore Flood Damage Prevention Ordinance**—The flood damage prevention ordinance was reviewed for compliance with the National Flood Insurance Program.
- **City of Fillmore General Plan**—The GP was reviewed for the capability assessment.
- **City of Fillmore Capital Improvement Program**—The CIP was reviewed for identifying opportunities for action plan integration.

The following outside resources and references were reviewed:

- **Hazard Mitigation Plan Annex Development Toolkit**—The toolkit was used to support the identification of past hazard events and noted vulnerabilities, the risk ranking, and the development of the mitigation action plan.

Fillmore

Critical Facilities (1 of 2)

- Food, Water, Shelter
- Safety and Security
- Major Roads
- ▭ Selected City
- - - Incorporated Cities
- ▭ County Boundary

Data Sources: Ventura Co., VCFD, Casitas MWD, Calleguas MWD, City of Camarillo, CA Energy Commission, Cal Trans, EPA, HIFLD, Esri



0 0.175 0.35 0.7 Miles

Fillmore

Critical Facilities (1 of 2)

- Communications
- Energy
- Hazardous Material
- Transportation
- Major Roads
- Selected City
- Incorporated Cities
- County Boundary

Data Sources: Ventura Co., VCFD, Casitas MWD, Calleguas MWD, City of Camarillo, CA Energy Commission, Cal Trans, EPA, HIFLD, Esri



0 0.175 0.35 0.7 Miles

Fillmore

Dam Failure Inundation Areas

-  Combined Inundation Areas
-  Major Roads
-  Selected City
-  Incorporated Cities
-  County Boundary

Data Sources: Ventura Co.,
CA DWR, Esri



0 0.175 0.35 0.7
Miles

Fillmore

NEHRP Soil Class

-  C (Dense soil/soft rock)
-  D (Stiff soil)
-  Major Roads
-  Selected City
-  Incorporated Cities
-  County Boundary

Data Sources: Ventura Co.,
CGS, Esri



0 0.175 0.35 0.7
Miles

Fillmore

Liquefaction Susceptibility

-  Liquefaction zone
-  Major Roads
-  Selected City
-  Incorporated Cities
-  County Boundary

Data Sources: Ventura Co.,
Esri



0 0.175 0.35 0.7
Miles

Fillmore

100-Year Probabilistic Earthquake Scenario

Mercalli Intensity Scale

 VII (Very Strong/Moderate)

 Major Roads

 Selected City

 Incorporated Cities

 County Boundary

Intensity scale described as:
(perceived shaking / potential damage)

Data Sources: Ventura Co.,
USGS, Esri



0 0.175 0.35 0.7
 Miles

Fillmore

Oak Ridge M7.16 Earthquake Scenario

Mercalli Intensity Scale

 VIII (Severe/Moderate-Heavy)

 Major Roads

 Selected City

 Incorporated Cities

 County Boundary

Intensity scale described as:
(perceived shaking / potential damage)

Data Sources: Ventura Co.,
USGS, Esri



0 0.175 0.35 0.7
 Miles

Fillmore

Pitas Point M7.12 Earthquake Scenario

Mercalli Intensity Scale

- VII (Very Strong/Moderate)
- VIII (Severe/Moderate-Heavy)

- Major Roads
- Selected City
- Incorporated Cities
- County Boundary

Intensity scale described as:
(perceived shaking / potential damage)

Data Sources: Ventura Co.,
USGS, Esri



0 0.175 0.35 0.7
Miles

Fillmore

San Cayetano M7.16 Earthquake Scenario

Mercalli Intensity Scale

 VIII (Severe/Moderate-Heavy)

 Major Roads

 Selected City

 Incorporated Cities

 County Boundary

Intensity scale described as:
(perceived shaking / potential damage)

Data Sources: Ventura Co.,
USGS, Esri



0 0.175 0.35 0.7
 Miles

Fillmore

S. San Andreas M8.03 Earthquake Scenario

Mercalli Intensity Scale

- VI (Strong/Light)
- Major Roads
- Selected City
- Incorporated Cities
- County Boundary

Intensity scale described as:
(perceived shaking / potential damage)

Data Sources: Ventura Co.,
USGS, Esri



0 0.175 0.35 0.7
Miles

Fillmore

FEMA Flood Hazard Areas

- 1% Annual Chance Flood (100-Year)
- 0.2% Annual Chance Flood (500-Year)
- Major Roads
- Selected City
- Incorporated Cities
- County Boundary

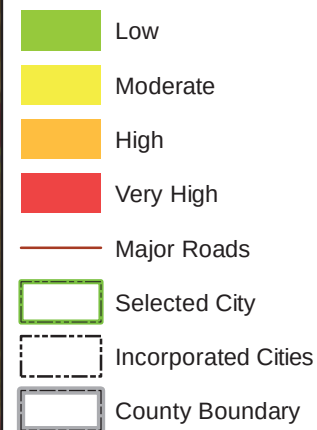
Data Sources: Ventura Co.,
FEMA, Esri



0 0.175 0.35 0.7 Miles

Fillmore

Susceptibility to Deep-Seated Landslides



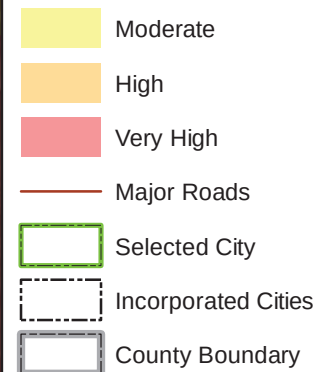
Data Sources: Ventura Co.,
CGS, Esri



0 0.175 0.35 0.7
Miles

Fillmore

Wildfire Hazard Severity Zones



Data Sources: Ventura Co.,
CAL FIRE, Esri



0 0.175 0.35 0.7 Miles

4. CITY OF MOORPARK

4.1 LOCAL HAZARD MITIGATION PLANNING TEAM

Primary Point of Contact

Mack Douglass, Program Manager
799 Moorpark Ave.
Moorpark, CA 93021
Telephone: 805-517-6241
e-mail Address: mdouglass@Moorparkca.gov

Alternate Point of Contact

Kambiz Borhani, Finance Director
799 Moorpark Ave.
Moorpark, CA 93021
Telephone: 805-517-6249
e-mail Address:
kborhani@Moorparkca.gov

This annex was developed by the local hazard mitigation planning team, whose members are listed in Table 4-1.

Table 4-1. Local Mitigation Planning Team Members

Name	Title
Mack Douglass	Program Manager, Emergency Management
Robert Valery	Parks and Facilities Supervisor
Leonard Mendez	Public Works Supervisor
PJ Gagajena	Assistant City Manager
Douglas Spondello	Interim Community Development Director

4.2 JURISDICTION PROFILE

4.2.1 Location and Features

Founded by Robert Poindexter in 1900 and incorporated in July 1983, the City of Moorpark is one of ten incorporated cities of Ventura County and is located in the eastern portion of the County. The City encompasses approximately 12.4 square miles and a population of 36,278 as of 2020. It is generally bounded by the City of Simi Valley to the east, the Tierra Rejada Valley and City of Thousand Oaks to the south, and unincorporated lands to the west and north. Lands west of the city are largely agricultural and protected from development by the Save Open Space and Agricultural Resources voter approved initiatives requiring the public's vote before any agricultural or open space lands are rezoned for development. Lands to the north of City's boundary are largely mountainous. It is connected to the region by two freeways, SR-118 to the east and SR-23 to the south, and Los Angeles Avenue (SR-118) to the west. Moorpark is home to Moorpark Community College, and is served by the Moorpark Unified School District for grades K-12.

Significant geographical features include the Arroyo Simi, which runs from east to west through central Moorpark. The City is also bisected by State Routes 118 and 23.

4.2.2 History

What is known about the settled history of Moorpark begins with the Chumash tribe of Native Americans, who lived and traded in the area prior to the arrival of Spanish explorers in the 16th century and missionaries in the centuries that followed. The Chumash village of Quimisac was located northeast of present-day Moorpark in the vicinity of what is now known as Happy Camp Canyon Park. Permanent settlement of the area can be traced back to successive eras of land ownership, starting with the gifting of the Rancho San Jose de Nuestra Señora de Altagarcia y Simi (Rancho Simi) to Francisco Javier Pico and his brothers by Governor Diego de Borica in 1795. When Moorpark was founded, the small farming communities of Fremontville and Epworth were already established in the area. In 1900, Robert W. and Madeleine Poindexter established a town site in anticipation of the arrival of the Southern Pacific Railroad and named it Moorpark, after the apricot variety that grew in the region. A depot was constructed that year, and several buildings originally constructed in Fremontville and Epworth were relocated to the burgeoning town. Growth began in earnest after 1904, when the railroad tunnels through the Santa Susana Mountains were completed to the east, connecting the area to the Los Angeles basin. Early development in Moorpark was concentrated in the downtown area along High Street, with the area south of the railroad tracks remaining largely farmland for many years.

The railroad and its connection to faraway markets facilitated the growth of the agriculture industry, the economic lifeblood of Moorpark. In the City's early years, dry land crops such as apricots, black-eyed beans, hay, and lima beans were the primary farming staples. Though agriculture remained an economic engine after World War II, the growth of turkey, chicken, and egg ranches fed the development of the poultry industry and a diversifying economy.

Moorpark became one of the first cities in the world to run off commercial nuclear power in 1957. Moorpark Community College opened on September 11, 1967.

Moorpark was incorporated as a city on July 1, 1983, marking the most dramatic period of growth of new homes and businesses in the City's history. This period saw a substantial shift in the Moorpark's center of activity, with large-scale development occurring in many areas that had heretofore been used for agriculture. High Street and the surrounding area remained the social and retail center of Moorpark through the 1980s until commercial activity began to shift to the south and suburban-style, multitenant retail centers grew along Los Angeles Avenue. Significant growth in home construction began in the late 1970s and accelerated through the 1980s as subdivisions such as Mountain Meadows and Peach Hill expanded the city's built footprint from the flatlands into the surrounding hillsides. Despite this growth, vestiges of the City's history still remain. Moorpark contains three locally significant resources, nine Points of Historic Interest, and one built environment resource listed in the California Register of Historical Resources (CRHR). Locally significant resources include the Taylor House, the First Southern Baptist Church and High Street's Pepper Trees. The highest level of significance conferred on a historical resource in the City is applied to Tanner's Corner, which is listed in the CRHR as an individual property.

4.2.3 Governing Body Format

The City of Moorpark operates under a council-manager form of government. The City Council assumes responsibility for the adoption of this plan; the City of Moorpark will oversee its implementation.

4.3 CURRENT TRENDS

4.3.1 Population

According to the California Department of Finance, the population of the City of Moorpark as of January 2020 was 36,278. Since 2010, the population has grown at an average annual rate of 0.54 percent. Moorpark's median age of 37.6 is close to the County median of 37.9, but younger than the neighboring cities. The percentage of the population under 18 years old is 23.1 percent, close to the state and County and higher than its three neighbors. Its percentage of population 65 years and above is lower than the state and County and substantially lower than the neighboring cities.

4.3.2 Development

Table 4-2 summarizes development trends in the period since the preparation of the previous hazard mitigation plan, as well as expected future development trends. Figure 4-1 describes the existing land uses and development characteristics within the City of Moorpark.

Table 4-2. Recent and Expected Future Development Trends

Criterion	Response					
Has your jurisdiction annexed any land since the preparation of the previous hazard mitigation plan?	No					
Is your jurisdiction expected to annex any areas during the performance period of this plan?	No					
Are any areas targeted for development or major redevelopment in the next five years? • If yes, briefly describe, including whether any of the areas are in known hazard risk areas	Yes There are several major development projects that have been entitled in various locations within Moorpark, including approximately 1,200 housing units, commercial and industrial projects. There are also several significant applications that are pending entitlement. Each site is unique but generally potential risks that have been assessed and mitigated with each project include areas of known liquefaction, potential flooding, and designated Very High Fire Hazard Severity Zones. The Moorpark Community Development Department maintains a list of pending development projects on the City's website.					
How many permits for new construction were issued in your jurisdiction since the preparation of the previous hazard mitigation plan?		2016	2017	2018	2019	2020
	Single Family	87	66	27	4	21
	Multi-Family	0	0	0	0	185
	Other (commercial, mixed use, etc.)	16	10	7	6	10
	Total	103	76	34	10	216

Criterion	Response
Provide the number of new-construction permits for each hazard area or provide a qualitative description of where development has occurred.	The majority of the City is within a designated Very High Fire Hazard Severity Zone. Many properties near the Arroyo Simi are also within a FEMA Special Flood Hazard Area. Large areas of the City are also vulnerable to liquefaction, primarily along the Arroyo Simi and tributary streams.
Describe the level of buildout in the jurisdiction, based on your jurisdiction's buildable lands inventory. If no such inventory exists, provide a qualitative description.	Moorpark is approaching build out, with infill and redevelopment projects comprising the bulk of our construction activity. Limited numbers of development projects located around the periphery of the City, such as Hitch Ranch are moving through the entitlement process, but may not break ground in the near future.

LAND USES BY ACREAGE		
Land Use	Acres	Percent
Residential	2,274	28%
• Single-Family	1,744	22%
• Multifamily	202	3%
• Mobile Home	41	.5%
• Rural Residential	287	4%
Right of Way	1,155	14%
Office	37	0.5%
Commercial and Services	152	2%
Public Facilities and Quasi-Public	101	1%
Education	296	4%
Industrial	280	4%
Transportation, Communications, and Utilities	217	3%
Open Space and Recreation	2,240	28%
Agriculture	29	.5%
Vacant	1,069	13%
Water	141	2%
TOTAL	7,991	100%
RESIDENTIAL BUILDOUT*		
Type	Dwelling Units	Percent
Single-Family Residential	9,859	86%
Multifamily Residential	1,412	12%
Mobile Homes	144	1%
TOTAL	11,415	100%

Source: SCAG and PlaceWorks 2020
*California Department of Finance, E-5 2020.

Figure 4-1. Moorpark Land Use and Development Characteristics

4.4 CAPABILITY ASSESSMENT

This section describes an assessment of existing capabilities for implementing hazard mitigation strategies. The introduction at the beginning of this volume of the hazard mitigation plan describes the components included in the capability assessment and their significance for hazard mitigation planning.

Findings of the capability assessment were reviewed to identify opportunities to expand, initiate or integrate capabilities to further hazard mitigation goals and objectives. Where such opportunities were identified and determined to be feasible, they are included in the action plan. The “Analysis of Mitigation Actions” table in this annex identifies these as community capacity building mitigation actions. The findings of the assessment are presented as follows:

- An assessment of planning and regulatory capabilities is presented in Table 4-3.
- Development and permitting capabilities are presented in Table 4-4.
- An assessment of fiscal capabilities is presented in Table 4-5.
- An assessment of administrative and technical capabilities is presented in Table 4-6.
- An assessment of education and outreach capabilities is presented in Table 4-7.
- Information on National Flood Insurance Program (NFIP) compliance is presented in Table 4-8.
- Classifications under various community mitigation programs are presented in Table 4-9.
- The community’s adaptive capacity for the impacts of climate change is presented in Table 4-10.

Table 4-3. Planning and Regulatory Capability

	Local Authority	Other Jurisdiction Authority	State Mandated	Integration Opportunity?
Codes, Ordinances, & Requirements				
Building Code <i>Comment: California Building Code, 2019 Edition, adopted in Moorpark Municipal Code, Chapter 15.08 Building Code (Ord. 474 § 3, 2019)</i>	Yes	Yes	Yes	Yes
Zoning Code <i>Comment: Moorpark Municipal Code Title 17, (Ord. 189 § 3 (8101-0), 1994)</i>	Yes	No	Yes	Yes
Subdivisions <i>Comment: Moorpark Municipal Code Title 16, (Ord. 334 § 1 Exh. A, 2006)</i>	Yes	No	Yes	Yes
Stormwater Management <i>Comment: Moorpark Municipal Code Title 8, (Ord. 240 § 2, 1997)</i>	Yes	No	No	Yes
Post-Disaster Recovery <i>Comment: City of Moorpark Emergency Operations Plan. Last updated 2015, update currently underway</i>	Yes	No	No	Yes
Real Estate Disclosure <i>Comment: California State Civil Code 1102 requires full disclosure on natural hazard exposure of the sale/re-sale of any and all real property.</i>	No	Yes	Yes	Yes
Growth Management <i>Comment: City of Moorpark General Plan. Last updated in 1992, comprehensive update is currently underway</i>	Yes	No	No	No
Site Plan Review <i>Comment: Moorpark Municipal Code Chapter 17.44 Application Review Procedures. (Ord. 297 Exh. A, 2003)</i>	Yes	No	No	Yes

	Local Authority	Other Jurisdiction Authority	State Mandated	Integration Opportunity?
Environmental Protection	Yes	Yes	Yes	No
<i>Comment: CEQA (California Code of Regulations Title 14, Division 6, Chapter 3) is implemented by the City for all land use impacts. On July 21, 2004, the City Council adopted Resolution Number 2004-2224 and on September 15, 2004, the Moorpark Redevelopment Agency adopted Resolution Number 2004-142, establishing Procedures of the City of Moorpark and Moorpark Redevelopment Agency to Implement the California Environmental Quality Act (CEQA). The ongoing Comprehensive General Plan Update will include a program EIR.</i>				
Flood Damage Prevention	Yes	Yes	Yes	Yes
<i>Comment: Moorpark Municipal Code Section 15.24 Floodplain Management (Ord. 279 § 1, 2002)</i>				
Emergency Management	Yes	Yes	Yes	Yes
<i>Comment: Moorpark Municipal Code Chapter 2.48 (Ord. 89-106 § 1, 1989)</i>				
Climate Change	Yes	Yes	Yes	Yes
<i>Comment: Comprehensive General Plan update will contain a climate change element.</i>				
Planning Documents				
General Plan	Yes	Yes	Yes	Yes
<i>Is the plan compliant with Assembly Bill 2140? Yes</i>				
<i>Comment: Comprehensive General Plan update is currently underway</i>				
Capital Improvement Plan	Yes	Yes	Yes	Yes
<i>How often is the plan updated? CIP is approved by City Council every seven years and updated by staff annually</i>				
<i>Comment: City of Moorpark Capital Improvement Program FY 2016/17-2022/23</i>				
Disaster Debris Management Plan	No	Yes	No	No
<i>Comment: Ventura County Disaster Recovery Plan, Adopted by BOS in April 2019</i>				
Floodplain or Watershed Plan	Yes	No	Yes	Yes
<i>Comment: Moorpark Municipal Code Section 15.24. This code is current through Ordinance 20-488 and the March 2021 code supplement. The City participates in the National Flood Insurance Program (NFIP)</i>				
Stormwater Plan	Yes	No	Yes	Yes
<i>Comment: Moorpark Municipal Code Section 8.52 This code is current through Ordinance 20-488 and the March 2021 code supplement.</i>				
Urban Water Management Plan	N/A	N/A	N/A	N/A
<i>Comment: City of Moorpark is not a water purveyor</i>				
Habitat Conservation Plan	No	No	No	No
<i>Comment:</i>				
Economic Development Plan	Yes	No	Yes	No
<i>Comment: Comprehensive General Plan update will contain an economic development chapter.</i>				
Shoreline Management Plan	N/A	N/A	N/A	N/A
<i>Comment: N/A</i>				
Community Wildfire Protection Plan	No	No	No	No
<i>Comment: The city does not have this plan</i>				
Forest Management Plan	N/A	N/A	N/A	N/A
<i>Comment: N/A</i>				
Climate Action Plan	Yes	No	Yes	Yes
<i>Comment: Climate Action Plan Element will be part of the ongoing General Plan Update</i>				
Emergency Operations Plan	Yes	No	Yes	Yes
<i>Comment: 2014 Moorpark Emergency Operations Plan. Comprehensive EOP Update currently underway.</i>				
Threat & Hazard Identification & Risk Assessment (THIRA)	No	Yes	No	No
<i>Comment: The city does not have this assessment</i>				
Post-Disaster Recovery Plan	Yes	No	No	Yes
<i>Comment: This is part of the City of Moorpark Emergency Operations Plan (EOP) 2014</i>				

	Local Authority	Other Jurisdiction Authority	State Mandated	Integration Opportunity?
Continuity of Operations Plan	Yes	No	Yes	Yes
<i>Comment: 2014 Moorpark Emergency Operations Plan. Comprehensive EOP Update currently underway.</i>				
Public Health Plan	No	Yes	Yes	No
<i>Comment: The General Plan Update will include an Element regarding Public Health however the City does not currently have a Public Health Plan. County of Ventura Health Care Agency Public Health Emergency Response Plan (ERP)</i>				

Table 4-4. Development and Permitting Capability

Criterion	Response
Does your jurisdiction issue development permits?	Yes
<i>If no, who does? If yes, which department?</i> Community Development	
Does your jurisdiction have the ability to track permits by hazard area?	No
Does your jurisdiction have a buildable lands inventory?	Yes

Table 4-5. Fiscal Capability

Financial Resource	Accessible or Eligible to Use?
Community Development Block Grants	Yes
Capital Improvements Project Funding	Yes
Authority to Levy Taxes for Specific Purposes	Yes
User Fees for Water, Sewer, Gas or Electric Service	No
Incur Debt through General Obligation Bonds	Yes
Incur Debt through Special Tax Bonds	Yes
Incur Debt through Private Activity Bonds	Yes
Withhold Public Expenditures in Hazard-Prone Areas	Yes
State-Sponsored Grant Programs	Yes
Development Impact Fees for Homebuyers or Developers	Yes

Table 4-6. Administrative and Technical Capability

Staff/Personnel Resource	Available?
Planners or engineers with knowledge of land development and land management practices	Yes
<i>If Yes, Department /Position:</i> Community Development and Public Works	
Engineers or professionals trained in building or infrastructure construction practices	Yes
<i>If Yes, Department /Position:</i> Public Works	
Planners or engineers with an understanding of natural hazards	Yes
<i>If Yes, Department /Position:</i> Community Development and Public Works	
Staff with training in benefit-cost analysis	Yes
<i>If Yes, Department /Position:</i> Finance	
Surveyors	No
Personnel skilled or trained in GIS applications	No
Scientist familiar with natural hazards in local area	No
Emergency manager	Yes
<i>If Yes, Department /Position:</i> Program Manager, Finance Department	
Grant writers	No

Table 4-7. Education and Outreach Capability

Criterion	Response
Do you have a public information officer or communications office?	Yes
Do you have personnel skilled or trained in website development?	Yes
Do you have hazard mitigation information available on your website?	No
Do you use social media for hazard mitigation education and outreach?	No
Do you have any citizen boards or commissions that address issues related to hazard mitigation?	No
Do you have any other programs in place that could be used to communicate hazard-related information?	Yes
<i>If yes, briefly describe:</i> Community Emergency Response Team	
Do you have any established warning systems for hazard events?	No
<i>If yes, briefly describe:</i>	

Table 4-8. National Flood Insurance Program Compliance

Criterion	Response
What local department is responsible for floodplain management?	Public Works
Who is your floodplain administrator? (department/position)	Public Works Director
Are any certified floodplain managers on staff in your jurisdiction?	No
What is the date that your flood damage prevention ordinance was last amended?	2002
Does your floodplain management program meet or exceed minimum requirements?	Meets
When was the most recent Community Assistance Visit or Community Assistance Contact?	Unknown
Does your jurisdiction have any outstanding NFIP compliance violations that need to be addressed?	No
Are any RiskMAP projects currently underway in your jurisdiction?	No
Do your flood hazard maps adequately address the flood risk within your jurisdiction?	Yes
Does your floodplain management staff need any assistance or training to support its floodplain management program?	No
Does your jurisdiction participate in the Community Rating System (CRS)?	No
<i>If no, is your jurisdiction interested in joining the CRS program?</i> No	
How many flood insurance policies are in force in your jurisdiction? ^a	117
<i>What is the insurance in force?</i> \$39,692,000	
<i>What is the premium in force?</i> \$114,239	
How many total loss claims have been filed in your jurisdiction? ^a	2
<i>What were the total payments for losses?</i> \$33,576	

a. According to FEMA statistics as of March 31, 2021

Table 4-9. Community Classifications

	Participating?	Classification	Date Classified
FIPS Code	Yes	0611149138	N/A
DUNS #	Yes	628053464	N/A
Community Rating System	No	N/A	N/A
Building Code Effectiveness Grading Schedule	No	N/A	N/A
Public Protection	No	N/A	N/A
Storm Ready	No	N/A	N/A
Firewise	No	N/A	N/A
Tsunami Ready	No	N/A	N/A

Table 4-10. Adaptive Capacity for Climate Change

Criterion	Jurisdiction Rating ^a
Technical Capacity	
Jurisdiction-level understanding of potential climate change impacts <i>Comment: Staff and elected officials understand potential climate change impacts.</i>	Medium
Jurisdiction-level monitoring of climate change impacts <i>Comment:</i>	Low
Technical resources to assess proposed strategies for feasibility and externalities <i>Comment:</i>	Low
Jurisdiction-level capacity for development of greenhouse gas emissions inventory <i>Comment:</i>	Low
Capital planning and land use decisions informed by potential climate impacts <i>Comment: General Plan Update will include a climate action plan element.</i>	High
Participation in regional groups addressing climate risks <i>Comment:</i>	Low
Implementation Capacity	
Clear authority/mandate to consider climate change impacts during public decision-making processes <i>Comment: City Council and the City Manager have the authority to consider and direct action to address potential climate change impacts</i>	High
Identified strategies for greenhouse gas mitigation efforts <i>Comment: City Council recently enacted an SB 1383 compliant ordinance, which will reduce GHG emissions from organic waste</i>	High
Identified strategies for adaptation to impacts <i>Comment:</i>	Low
Champions for climate action in local government departments <i>Comment:</i>	Unsure
Political support for implementing climate change adaptation strategies <i>Comment:</i>	Unsure
Financial resources devoted to climate change adaptation <i>Comment:</i>	Low
Local authority over sectors likely to be negative impacted <i>Comment:</i>	Low
Public Capacity	
Local residents' knowledge of and understanding of climate risk <i>Comment: Evidence of climate change is obvious in Moorpark and directly affects the lives of residents through sustained droughts, frequent wildfires, high wind events and Public Safety Power Shutoffs.</i>	Medium
Local residents' support of adaptation efforts <i>Comment:</i>	Unsure
Local residents' capacity to adapt to climate impacts <i>Comment:</i>	Unsure
Local economy current capacity to adapt to climate impacts <i>Comment:</i>	Low
Local ecosystems capacity to adapt to climate impacts <i>Comment:</i>	Unsure

- a. High = Capacity exists and is in use; Medium = Capacity may exist, but is not used or could use some improvement;
Low = Capacity does not exist or could use substantial improvement; Unsure= Not enough information is known to assign a rating.

4.5 INTEGRATION REVIEW

For hazard mitigation planning, “integration” means that hazard mitigation information is used in other relevant planning mechanisms, such as general planning and capital facilities planning, and that relevant information from those sources is used in hazard mitigation. This section identifies where such integration is already in place, and where there are opportunities for further integration in the future. Resources listed at the end of this annex were used to provide information on integration. The progress reporting process described in Volume 1 of the hazard mitigation plan will document the progress of hazard mitigation actions related to integration and identify new opportunities for integration.

4.5.1 Existing Integration

Some level of integration has already been established between local hazard mitigation planning and the following other local plans and programs:

- **County of Ventura Hazard Mitigation Plan**
- **City of Moorpark Emergency Operations Plan**
- **City of Moorpark General Plan, Safety Element (2001)**

4.5.2 Opportunities for Future Integration

The capability assessment in this annex indicates opportunities to integrate this mitigation plan with other jurisdictional planning/regulatory capabilities. Capabilities were identified as integration opportunities if they can support or enhance the actions identified in this plan or be supported or enhanced by components of this plan. The capability assessment identified the following plans and programs that do not currently integrate hazard mitigation information but provide opportunities to do so in the future:

- **City of Moorpark General Plan**—The City of Moorpark is engaged in a comprehensive update to the General Plan and zoning ordinance that will include a full evaluation of potential hazards, climate issues, and Program Environmental Impact Report.

Taking action to integrate each of these programs with the hazard mitigation plan was considered as a mitigation action to include in the action plan in this annex.

4.6 RISK ASSESSMENT

4.6.1 Jurisdiction-Specific Natural Hazard Event History

Table 4-11 lists past occurrences of natural hazards for which specific damage was recorded in this jurisdiction. Other hazard events that broadly affected the entire planning area, including this jurisdiction, are listed in the risk assessments in Volume 1 of this hazard mitigation plan.

Table 4-11. Past Natural Hazard Events

Type of Event	FEMA Disaster #	Date	Damage Assessment
COVID-19 Pandemic	DR-4482	January 20, 2020 and continuing	COVID-19 Pandemic
Maria Fire	FM-5302-CA	11/1/2019	\$6,199,112.56
Easy Fire	FM-5298-CA	10/30/2019	\$2,833,870.64
Heat Event	N/A	7/4/2018 to 7/6/2018	Extreme 2-day heat event broke records across the county.
Thomas Fire	FM-5224	December 4, 2017	Unknown
Winter Storms	N/A	2/17/2017 to 2/18/2017	Rainfall amounts from 2 to 6 inches across coastal areas with up to around 10 inches in the local mountains produced numerous reports of flash flooding as well as mud and debris flows. Strong southerly winds with gusts up to 70 mph reported in some areas.
Guiberson Fire	FM-2839-CA	9/22/2009	\$8,033,270.01
Flash Flood	N/A	January 25, 2008	California Highway Patrol reported heavy rain and flash flooding near the community of Moorpark. Reports indicated flash flooding along Tierra Rejada Drive at Hillside Drive.
Severe Freeze Event	DR-1689	1/11/2007 to 1/17/2007	4 nights of below freezing temperatures.
Shekell Fire	FM-2681-CA	12/3/2006	\$1,153,198.47
Winter Storms	DR1577	1/7/2005 to 1/11/2005	Major roads including Highways 101, 126, 33 and 150 were closed for more than a week due to severe flooding
Wildfires, Flooding, Mudflow and Debris Flow	DR-1498	October 21, 2003 – March 31, 2003	Unknown
1928 St. Francis Dam Failure	N/A	3/12/1928	>530 people died; bridges, orchards, farms, homes all eradicated in flood's path down the Santa Clara river valley to the Pacific Ocean.

4.6.2 Hazard Risk Ranking

Table 4-12 presents a local ranking of all hazards of concern for which this hazard mitigation plan provides complete risk assessments. As described in detail in Volume 1, the ranking process involves an assessment of the likelihood of occurrence for each hazard, along with its potential impacts on people, property, and the economy. Mitigation actions primarily target hazards with high and medium rankings.

Table 4-12. Hazard Risk Ranking

Rank	Hazard	Risk Ranking Score	Risk Category
1	Wildfire	36	High
1	Landslide	36	High
3	Earthquake	32	Medium
4	Dam Failure	26	Medium
5	Severe Weather	24	Medium
5	Severe Storms	24	Medium
7	Flooding	18	Medium
8	Drought	9	Low

4.6.3 Jurisdiction-Specific Vulnerabilities

Volume 1 of this hazard mitigation plan provides complete risk assessments for each identified hazard of concern. This section provides information on a few key vulnerabilities for this jurisdiction. Available jurisdiction-specific risk maps of the hazards are provided at the end of this annex.

Repetitive Loss Properties

Repetitive loss records are as follows:

- Number of FEMA-identified Repetitive-Loss Properties: 0
- Number of FEMA-identified Severe-Repetitive-Loss Properties: 0
- Number of Repetitive-Loss Properties or Severe-Repetitive-Loss Properties that have been mitigated: 0

Other Noted Vulnerabilities

The following jurisdiction-specific issues have been identified based on a review of the results of the risk assessment, public involvement strategy, and other available resources:

- Loss of power due to human action (PSPS).
 - At least 10 PSPS events affected the city during 2020, including several events that lasted for multiple days.
 - Traffic signals were affected.
 - City Hall itself was left on backup power for several days.
 - Police Service Facility has a lack of reliable power due to a faulty power switchover device.
 - City was unable to provide a cooling center to residents due to a lack of power.
 - A charity using a City Facility to conduct food bank operations is susceptible to loss of perishable items due to power outages.
- Frequent urban flooding at the intersection of Millard St. and Sherman Ave.

Mitigation actions addressing these issues were prioritized for consideration in the action plan in this annex.

4.7 STATUS OF PREVIOUS PLAN ACTIONS

Table 4-13 summarizes the actions that were recommended in the previous version of the hazard mitigation plan and their implementation status at the time this update was prepared.

Table 4-13. Status of Previous Plan Actions

Action Item	Completed	Removed; No Longer Feasible	Carried Over to Plan Update	
			Check if Yes	Action # in Update
OA 1—Integrate the hazard analysis and mitigation strategy with the General Plan's Safety Element. Comment: General Plan update including safety element is underway.			✓	MPK-2
OA 6—Develop a public outreach program that informs property owners located in the dam and levee failure inundation areas about voluntary flood insurance. Comment: Public Works requires additional staff resources to complete this Action.			✓	MPK-7
OA 7—Develop a water conservation public outreach program to increase awareness about the drought, fines and penalties for overuse and solutions for conserving water. Comment: Done in concert with Calleguas MWD. Most recently implemented a drought impact plan on 7/01/15.	✓			
OA 8—Adopt emergency water conservation measures and/or water conservation ordinance to limit irrigation. Comment: MMC 15.23.010 was amended most recently on 12/18/19.	✓			
OA 10—Seismically retrofit or upgrade seismically deficient government facilities and pre-identified shelter facilities. Comment: City Hall will likely be changing location to a seismically suitable facility in the near future			✓	MPK-1
OA 19—Maintain vegetation management program that provides vegetation management services to elderly, disabled, or low-income property owners who lack the resources to remove flammable vegetation from around their homes. Comment: City requires additional staff resources to complete this action item.			✓	MPK-8
MP 1—Generators: Purchase and install back-up generators for 3 facilities, one of which is often used by Ventura County Fire and Sheriff as an Incident Command Center and serves as an alternate Emergency Operation Center (EOC) for the City (Capital Improvement Project 7710) Comment: Completed in 2009.	✓			
MP 2—Hazardous Mitigation Planning: Modify current Neighborhood and Business Watch Programs with focus on electronic format including real-time information exchange between law enforcement and the community Comment: Completed in 2016.	✓			
MP 3—Wildfire Mitigation: Work with Ventura County Fire to consider siting/planning for a new fire station by Moorpark College (east end of City) Comment: Placement of new fire station under consideration by City and VCFPD.	✓			
MP 4—Mitigation Reconstruction: Reconstruct fire sprinkler system for the Community Center facility Comment: Use of Community Center Facility may be modified or discontinued when City Hall changes location so this action is no longer feasible.		✓		

4.8 HAZARD MITIGATION ACTION PLAN

Table 4-14 lists the identified actions, which make up the hazard mitigation action plan for this jurisdiction. Table 4-15 identifies the priority for each action. Table 4-16 summarizes the mitigation actions by hazard of concern and mitigation type.

Table 4-14. Hazard Mitigation Action Plan Matrix

Benefits New or Existing Assets	Objectives Met	Lead Agency	Support Agency	Estimated Cost	Sources of Funding	Timeline ^a
Action MPK-1 —Where appropriate, support retrofitting, purchase or relocation of structures located in hazard areas, prioritizing those that have experienced repetitive losses and/or are located in high- or medium-risk hazard areas.						
<u>Hazards Mitigated:</u> Wildfire, Landslide, Earthquake, Dam Failure, Severe Weather, Severe Storms, Flooding						
Existing	2, 6, 9, 10, 11	City of Moorpark	N/A	High	Grant Funding-FEMA HMA (BRIC, FMA, HMGP)	Short-term
Action MPK-2 —Integrate the hazard mitigation plan into other plans, ordinances and programs that dictate land use decisions in the community, including the City's Emergency Operations Plan and General Plan.						
<u>Hazards Mitigated:</u> Wildfire, Landslide, Flooding						
New & Existing	1, 2, 3, 4, 5, 7, 8, 9, 10, 11, 12, 13, 14, 15, 17, 19	City of Moorpark	N/A	Low	Staff Time, General Funds	Ongoing
Action MPK-3 —Actively participate in the plan maintenance protocols outlined in Volume 1 of this hazard mitigation plan.						
<u>Hazards Mitigated:</u> Wildfire, Landslide, Earthquake, Dam Failure, Severe Weather, Severe Storms, Flooding, Drought						
New & Existing	1, 2, 4, 6, 7, 8, 9, 11, 12, 13, 14, 15	City of Moorpark	N/A	Low	Staff Time, General Funds	Short-term
Action MPK-4 —Continue to maintain good standing and compliance under the NFIP through implementation of floodplain management programs that, at a minimum, meet the NFIP requirements: • Enforce the flood damage prevention ordinance. • Participate in floodplain identification and mapping updates. • Provide public assistance/information on floodplain requirements and impacts.						
<u>Hazards Mitigated:</u> Flooding, Dam Failure						
New & Existing	1, 2, 6, 7, 17	City of Moorpark	N/A	Low	Staff Time, General Funds	Ongoing
Action MPK-5 —Identify and pursue strategies to increase adaptive capacity to climate change including but not limited to the following: • Climate Action Element of General Plan Update. • Consider a goal or policy to establish Reach Building Codes with the General Plan Update • Consider inclusion of a Climate Action Plan following the General Plan Update						
<u>Hazards Mitigated:</u> Severe Weather, Severe Storms, Wildfire, Flooding, Drought						
New & Existing	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 19	City of Moorpark	N/A	Low	Staff Time, General Funds	Short-term
Action MPK-6 —Purchase generators for critical facilities and infrastructure that lack adequate backup power.						
<u>Hazards Mitigated:</u> Dam Failure, Earthquake, Flooding, Landslide, Severe Weather, Wildfire, Severe Storms						
Existing	2, 6, 19	City of Moorpark	N/A	Medium	Grant Funding-FEMA HMA (BRIC, HMGP), Staff Time, General Funds	Short-term
Action MPK-7 —Provide reliable back up power for the Police Service Facility.						
<u>Hazards Mitigated:</u> Wildfire, Landslide, Earthquake, Dam Failure, Severe Weather, Severe Storms, Flooding						
Existing	2, 6, 19	City of Moorpark	N/A	Medium	Grant Funding-FEMA HMA (BRIC, HMGP), Staff Time, General Funds	Short-term
Action MPK-8 —Develop a public outreach program that informs property owners located in the dam and levee failure inundation areas about voluntary flood insurance.						
<u>Hazards Mitigated:</u> Flooding						
New & Existing	7, 17	City of Moorpark	N/A	Low	Staff Time, General Funds	Ongoing

Benefits New or Existing Assets	Objectives Met	Lead Agency	Support Agency	Estimated Cost	Sources of Funding	Timeline ^a
Action MPK-9 —Maintain vegetation management program that provides vegetation management services to elderly, disabled, or low-income property owners who lack the resources to remove flammable vegetation from around their homes.						
<u>Hazards Mitigated:</u> Wildfire						
New & Existing	5, 10, 13, 17	City of Moorpark	VCFPD	Medium	Staff Time, General Funds	Ongoing
Action MPK-10 —Proceed with construction of a storm drain to address flooding issues at Millard St. and Sherman Ave (CIP #504)						
<u>Hazards Mitigated:</u> Flooding						
Existing	2, 6, 8	City of Moorpark	Caltrans	Medium	Grant Funding-FEMA HMA (BRIC, FMA, HMGP), Staff Time, General Funds	Long-term

a. Short-term = Completion within 5 years; Long-term = Completion within 10 years; Ongoing= Continuing new or existing program with no completion date

Acronyms used here are defined at the beginning of this volume.

Table 4-15. Mitigation Action Priority

Action #	# of Objectives Met	Benefits	Costs	Do Benefits Equal or Exceed Cost?	Is Project Grant-Eligible?	Can Project Be Funded Under Existing Programs/ Budgets?	Implementation Priority ^a	Grant Pursuit Priority ^a
1	5	High	High	Yes	Yes	No	Medium	High
2	16	Medium	Low	Yes	No	Yes	High	Low
3	12	Low	Low	Yes	No	Yes	High	Low
4	5	Medium	Low	Yes	No	Yes	High	Low
5	17	Medium	Low	Yes	No	Yes	High	Medium
6	3	High	Medium	Yes	Yes	No	Medium	High
7	3	High	Medium	Yes	Yes	No	Medium	High
8	2	Low	Low	Yes	No	Yes	High	Low
9	4	Medium	Medium	Yes	No	Yes	High	Low
10	3	Medium	Medium	Yes	Yes	Yes	High	Medium

a. See the introduction to this volume for explanation of priorities.

Table 4-16. Analysis of Mitigation Actions

Hazard Type	Action Addressing Hazard, by Mitigation Type ^a							
	Prevention	Property Protection	Public Education & Awareness	Natural Resource Protection	Emergency Services	Structural Projects	Climate Resilience	Community Capacity Building ^b
High-Risk Hazards								
Wildfire	MPK-2	MPK-1	MPK-2, 3	MPK-9	MPK-6, 7		MPK-5	MPK-2, 3, 5, 9
Landslide	MPK-2	MPK-1	MPK-2, 3		MPK-6, 7			MPK-2, 3
Medium-Risk Hazards								
Earthquake		MPK-1	MPK-3		MPK-6, 7			MPK-3
Dam Failure	MPK-4	MPK-1	MPK-3		MPK-6, 7			MPK-3, 4
Severe Weather		MPK-1	MPK-3		MPK-6, 7		MPK-5	MPK-3, 5
Severe Storms		MPK-1	MPK-3		MPK-6, 7		MPK-5	MPK-3, 5
Flooding	MPK-2, 4	MPK-1	MPK-2, 3, 8		MPK-6, 7	MPK-10	MPK-5	MPK-2, 3, 4, 5
Low-Risk Hazards								
Drought			MPK-3				MPK-5	MPK-3, 5

a. See the introduction to this volume for explanation of mitigation types.

b. Note that the jurisdiction did not identify a need for expansion of financial capabilities, based on existing capabilities. The intent of this hazard mitigation plan is to expand the financial capability of the jurisdiction.

4.9 PUBLIC OUTREACH

Table 4-17 lists public outreach activities for this jurisdiction.

Table 4-17. Local Public Outreach

Local Outreach Activity	Date	Number of People Involved
Community Emergency Response Team	Ongoing	10-20

4.10 INFORMATION SOURCES USED FOR THIS ANNEX

The following technical reports, plans, and regulatory mechanisms were reviewed to provide information for this annex.

- **Moorpark Municipal Code**—The municipal code was reviewed for the full capability assessment and for identifying opportunities for action plan integration.
- **Moorpark Flood Damage Prevention Ordinance**—The flood damage prevention ordinance was reviewed for compliance with the National Flood Insurance Program.
- **Moorpark Emergency Operations Plan**—the Emergency Operations plan was examined for consistency with the County EOP and this Hazard Mitigation Plan.

The following outside resources and references were reviewed:

- **Hazard Mitigation Plan Annex Development Toolkit**—The toolkit was used to support the identification of past hazard events and noted vulnerabilities, the risk ranking, and the development of the mitigation action plan.

Moorpark

Critical Facilities (1 of 2)

- Food, Water, Shelter
- Safety and Security
- Major Roads
- ▭ Selected City
- - - Incorporated Cities
- ▭ County Boundary

Data Sources: Ventura Co., VCFD, Casitas MWD, Calleguas MWD, City of Camarillo, CA Energy Commission, Cal Trans, EPA, HIFLD, Esri



0 0.325 0.65 1.3 Miles

Moorpark

Critical Facilities (1 of 2)

- Communications
- Energy
- Hazardous Material
- Transportation
- Major Roads
- Selected City
- Incorporated Cities
- County Boundary

Data Sources: Ventura Co., VCFD, Casitas MWD, Calleguas MWD, City of Camarillo, CA Energy Commission, Cal Trans, EPA, HIFLD, Esri



0 0.325 0.65 1.3 Miles

Moorpark

Dam Failure Inundation Areas

- Combined Inundation Areas
- Major Roads
- Selected City
- Incorporated Cities
- County Boundary

Data Sources: Ventura Co.,
CA DWR, Esri



0 0.325 0.65 1.3
Miles

Moorpark

NEHRP Soil Class

- C (Dense soil/soft rock)
- D (Stiff soil)
- Major Roads
- Selected City
- Incorporated Cities
- County Boundary

Data Sources: Ventura Co.,
CGS, Esri



0 0.325 0.65 1.3
Miles

Moorpark

Liquefaction Susceptibility

-  Liquefaction zone
-  Major Roads
-  Selected City
-  Incorporated Cities
-  County Boundary

Data Sources: Ventura Co.,
Esri



0 0.325 0.65 1.3
Miles

Moorpark

100-Year Probabilistic Earthquake Scenario

Mercalli Intensity Scale

 VII (Very Strong/Moderate)

 Major Roads

 Selected City

 Incorporated Cities

 County Boundary

Intensity scale described as:
(perceived shaking / potential damage)

Data Sources: Ventura Co.,
USGS, Esri



0 0.325 0.65 1.3
 Miles

Moorpark

Oak Ridge M7.16 Earthquake Scenario

Mercalli Intensity Scale

- VII (Very Strong/Moderate)
- VIII (Severe/Moderate-Heavy)

- Major Roads
- Selected City
- Incorporated Cities
- County Boundary

Intensity scale described as:
(perceived shaking / potential damage)

Data Sources: Ventura Co.,
USGS, Esri



0 0.325 0.65 1.3
Miles

Moorpark

Pitas Point M7.12 Earthquake Scenario

Mercalli Intensity Scale

- VI (Strong/Light)
- VII (Very Strong/Moderate)

- Major Roads
- Selected City
- Incorporated Cities
- County Boundary

Intensity scale described as:
(perceived shaking / potential damage)

Data Sources: Ventura Co.,
USGS, Esri



0 0.325 0.65 1.3
Miles

Moorpark

San Cayetano M7.16 Earthquake Scenario

Mercalli Intensity Scale

- VII (Very Strong/Moderate)
- VIII (Severe/Moderate-Heavy)

- Major Roads
- Selected City
- Incorporated Cities
- County Boundary

Intensity scale described as:
(perceived shaking / potential damage)

Data Sources: Ventura Co.,
USGS, Esri



0 0.325 0.65 1.3
Miles

Moorpark

S. San Andreas M8.03 Earthquake Scenario

Mercalli Intensity Scale

- VI (Strong/Light)
- Major Roads
- Selected City
- Incorporated Cities
- County Boundary

Intensity scale described as:
(perceived shaking / potential damage)

Data Sources: Ventura Co.,
USGS, Esri



0 0.325 0.65 1.3
Miles

Moorpark

FEMA Flood Hazard Areas

- 1% Annual Chance Flood (100-Year)
- 0.2% Annual Chance Flood (500-Year)
- Major Roads
- Selected City
- Incorporated Cities
- County Boundary

Data Sources: Ventura Co.,
FEMA, Esri



0 0.325 0.65 1.3
Miles

Moorpark

Susceptibility to Deep-Seated Landslides

- Low
- Moderate
- High
- Very High
- Major Roads
- Selected City
- Incorporated Cities
- County Boundary

Data Sources: Ventura Co.,
CGS, Esri



0 0.325 0.65 1.3
Miles

Moorpark

Wildfire Hazard Severity Zones

- Moderate
- High
- Very High
- Major Roads
- Selected City
- Incorporated Cities
- County Boundary

Data Sources: Ventura Co.,
CAL FIRE, Esri



0 0.325 0.65 1.3
Miles

5. CITY OF OJAI

5.1 LOCAL HAZARD MITIGATION PLANNING TEAM

Primary Point of Contact

James Vega, City Manager
401 S. Ventura Street
Ojai, CA 93023
Telephone: (805) 646-5581 ext. 102
e-mail Address: james.vega@ojai.ca.gov

Alternate Point of Contact

Alma Quezada, Interim Public Works
Director
408 S. Signal Street
Ojai, CA 93023
Telephone: (805) 646-5581 ext. 209
e-mail Address:
alma.quezada@ojai.ca.gov

This annex was developed by the local hazard mitigation planning team, whose members are listed in Table 5-1.

Table 5-1. Local Mitigation Planning Team Members

Name	Title
James Vega	City Manager
Lucas Seibert	Community Development Director
Alma Quezada	Interim Public Works Director
Andrea Mackey	Management Analyst
James Hahn	Technical Support Specialist
Juan Morales	Interim Public Works Supervisor

5.2 JURISDICTION PROFILE

5.2.1 Location and Features

The City of Ojai is located in the Ojai Valley. The current boundaries generally extend from Villanova Road to Boardman Road, encompassing an area of 4.37 square miles.

Ojai is a small town that is known as a tourist destination for its boutique hotels, recreation opportunities, hiking, and farmer’s market of local organic agriculture. It is home to the annual Ojai Music Festival and the Ojai Tennis Tournament.

5.2.2 History

City of Ojai was incorporated in 1921. The town was originally named Nordhoff in 1874 but was later changed to Ojai in 1917. Edward Libbey of Libbey Glass Company built the Spanish-style downtown Arcade and park that exist today.

5.2.3 Governing Body Format

The City of Ojai is a Council-Manager form of government with five Council members elected by district. The City consists of five departments: Community Development, Finance, Public Works, Recreation, and the City Manager's office. The City Council assumes responsibility for the adoption of this plan; the City Manager will oversee its implementation.

5.3 CURRENT TRENDS

5.3.1 Population

According to the California Department of Finance, the population of the City of Ojai as of January 2020 was 7,450. Since 2010, the population has grown at an average annual rate of 0.13 percent.

5.3.2 Development

Anticipated future development for the City of Ojai is low to moderate. Recent development has been mostly infill. There has been a focus on accessory dwelling units. Future growth in the City will be managed as identified in the City's upcoming General Plan. City Actions such as those relating to land use, annexations, zoning, subdivision and design review, redevelopment, and capital improvements, must be consistent with the plan.

Table 5-2 summarizes development trends in the period since the preparation of the previous hazard mitigation plan, as well as expected future development trends.

5.4 CAPABILITY ASSESSMENT

This section describes an assessment of existing capabilities for implementing hazard mitigation strategies. The introduction at the beginning of this volume of the hazard mitigation plan describes the components included in the capability assessment and their significance for hazard mitigation planning.

Findings of the capability assessment were reviewed to identify opportunities to expand, initiate or integrate capabilities to further hazard mitigation goals and objectives. Where such opportunities were identified and determined to be feasible, they are included in the action plan. The "Analysis of Mitigation Actions" table in this annex identifies these as community capacity building mitigation actions.

Table 5-2. Recent and Expected Future Development Trends

Criterion	Response				
Has your jurisdiction annexed any land since the preparation of the previous hazard mitigation plan?	No				
Is your jurisdiction expected to annex any areas during the performance period of this plan?	No				
Are any areas targeted for development or major redevelopment in the next five years? • If yes, briefly describe, including whether any of the areas are in known hazard risk areas	Yes Chaparral School site at 414 E. Ojai Avenue DESIGN CONCEPT Ojai Town Square development celebrates Ojai as the unique and special place that it is. The development responds to this character as a bookend to the Arcade and town center, enhancing the pedestrian neighborhood linked with outdoor spaces and surrounding public-oriented program uses. The architectural expression is inspired by historic structures on the site as well as the statement of theme defined by City Ordinance. The concept finds the balance of history and future in a way that is distinctly “of Ojai.” PROGRAM HIGHLIGHTS • Establish a ±200 room hotel. • Provide Residential Housing: Market Senior, Affordable. • Creating pedestrian-friendly gardens throughout the site. • Activate historic structures on Ojai Avenue for retail and restaurant use. • Provide ample parking to support the on-site activities. • Maintain the skate park as built • Provide additional community programming opportunities. • Maintain 35 height limit to new structures.				
How many permits for new construction were issued in your jurisdiction since the preparation of the previous hazard mitigation plan?	2016	2017	2018	2019	2020
	437	419	438	432	23
Provide the number of new-construction permits for each hazard area or provide a qualitative description of where development has occurred.	One replacement single-family dwelling, 22 Accessory Dwelling Units, 2 by new construction, 7 by conversion, 13 legalized through the Compliance program.				
Describe the level of buildout in the jurisdiction, based on your jurisdiction's buildable lands inventory. If no such inventory exists, provide a qualitative description.	The City is largely built out within city limits. The remaining pockets of infill land development opportunities within city limits are sprinkled throughout the City and respective zoning districts with smaller lots, which typically present some level of developable challenges.				

The findings of the capability assessment are presented as follows:

- Table 5-3 presents an assessment of planning and regulatory capabilities
- Table 5-4 presents development and permitting capabilities
- Table 5-5 presents an assessment of fiscal capabilities
- Table 5-6 presents an assessment of administrative and technical capabilities
- Table 5-7 presents an assessment of education and outreach capabilities
- Table 5-8 presents information on National Flood Insurance Program (NFIP) compliance
- Table 5-9 presents classifications under various community mitigation programs
- Table 5-10 presents the community's adaptive capacity for the impacts of climate change

Table 5-3. Planning and Regulatory Capability

	Local Authority	Other Jurisdiction Authority	State Mandated	Integration Opportunity?
Codes, Ordinances, & Requirements				
Building Code <i>Comment: OMC 9-1.102 (§ 1, Ord. 718, eff. April 25, 1997)</i>	Yes	No	Yes	Yes
Zoning Code <i>Comment: OMC 10-2.202 (§ 3, Ord. 771, eff. February 13, 2004, as amended by § 1, Ord. 787, eff. February 10, 2006, § 2, Ord. No. 827, eff. June 28, 2013)</i>	Yes	No	No	Yes
Subdivisions <i>Comment: OMC 10-3.301 (§ 2, Ord. 637, eff. January 9, 1986)</i>	Yes	Yes	Yes	No
Stormwater Management <i>Comment: OMC 5-12.101 Co-permittee with the Ventura County Flood Control District</i>	Yes	Yes	Yes	Yes
Post-Disaster Recovery <i>Comment: None</i>	No	No	No	No
Real Estate Disclosure <i>Comment: OMC 4-11.12 (§ 1, Ord. 738, eff. July 22, 1999, as amended by § 1, Ord. 744, eff. March 24, 2000, as renumbered by § 2, Ord. 800, eff. August 8, 2008)</i>	No	Yes	Yes	No
Growth Management <i>Comment: OMC 10-6.101 (§ 1, Ord. 769, eff. January 8, 2004)</i>	Yes	No	No	Yes
Site Plan Review <i>Comment: OMC 10-2.101 (§ 3, Ord. 771, eff. February 13, 2004)</i>	Yes	No	No	Yes
Environmental Protection <i>Comment: None</i>	No	No	No	No
Flood Damage Prevention <i>Comment: OMC 9-9.101 (§ 1, Ord. 655, eff. May 19, 1988, as amended by § 2, Ord. 914, eff. March 24, 2021)</i>	Yes	Yes	No	Yes
Emergency Management <i>Comment: OMC 3-1.01 (Part 2, Ord. 468, eff. March 29, 1973)</i>	Yes	Yes	Yes	Yes
Climate Change <i>Comment: None</i>	No	No	No	No
Planning Documents				
General Plan <i>Is the plan compliant with Assembly Bill 2140? No</i> <i>Comment: Currently being updated</i>	Yes	No	Yes	Yes
Capital Improvement Plan <i>How often is the plan updated? Annually</i> <i>Comment:</i>	Yes	No	No	Yes
Disaster Debris Management Plan <i>Comment: None</i>	No	No	No	No
Floodplain or Watershed Plan <i>Comment: The city participates in the NFIP.</i>	Yes	Yes	No	Yes
Stormwater Plan <i>Comment: Ventura Countywide Storm Water Quality Management Program to discharge wastes for municipal storm water and urban runoff discharges under waste discharge requirements contained in Order No. 94-082, adopted on July 27, 2000</i>	Yes	Yes	Yes	Yes
Urban Water Management Plan <i>Comment: Casitas Municipal Water District</i>	No	Yes	Yes	No
Habitat Conservation Plan <i>Comment: None</i>	No	No	No	No

	Local Authority	Other Jurisdiction Authority	State Mandated	Integration Opportunity?
Economic Development Plan <i>Comment: General Plan guides economic growth</i>	Yes	No	No	No
Shoreline Management Plan <i>Comment: None</i>	No	No	No	No
Community Wildfire Protection Plan <i>Comment: Ventura County Community Wildfire Protection Plan, 2010</i>	No	Yes	No	No
Forest Management Plan <i>Comment: City of Ojai Community Forest Management Plan</i>	Yes	No	No	No
Climate Action Plan <i>Comment: None</i>	No	No	No	No
Comprehensive Emergency Management Plan <i>Comment: Emergency Operations Plan (EOP), 2013</i>	Yes	Yes	Yes	Yes
Threat & Hazard Identification & Risk Assessment (THIRA) <i>Comment: Not a stand-alone plan, but addressed in the EOP</i>	No	No	No	No
Post-Disaster Recovery Plan <i>Comment: None</i>	No	No	No	No
Continuity of Operations Plan <i>Comment: Not a stand-alone plan, but addressed in the EOP</i>	No	No	No	No
Public Health Plan <i>Comment: Ventura County Public Health Emergency Response Plan, 2019</i>	No	Yes	Yes	No

Table 5-4. Development and Permitting Capability

Criterion	Response
Does your jurisdiction issue development permits? <i>If no, who does? If yes, which department?</i>	Yes Community Development Department
Does your jurisdiction have the ability to track permits by hazard area?	Yes
Does your jurisdiction have a buildable lands inventory?	No

Table 5-5. Fiscal Capability

Financial Resource	Accessible or Eligible to Use?
Community Development Block Grants	Yes
Capital Improvements Project Funding	Yes
Authority to Levy Taxes for Specific Purposes	Yes
User Fees for Water, Sewer, Gas or Electric Service	No
Incur Debt through General Obligation Bonds	No
Incur Debt through Special Tax Bonds	No
Incur Debt through Private Activity Bonds	No
Withhold Public Expenditures in Hazard-Prone Areas	No
State-Sponsored Grant Programs	Yes
Development Impact Fees for Homebuyers or Developers	Yes

Table 5-6. Administrative and Technical Capability

Staff/Personnel Resource	Available?
Planners or engineers with knowledge of land development and land management practices <i>If Yes, Department /Position: Community Development Dept./ City Planner</i>	Yes
Engineers or professionals trained in building or infrastructure construction practices <i>If Yes, Department /Position: Community Development Dept./ Building Official</i>	Yes
Planners or engineers with an understanding of natural hazards <i>If Yes, Department /Position: Community Development Dept. / City Planner</i>	Yes
Staff with training in benefit-cost analysis <i>If Yes, Department /Position: Finance Dept./ Finance Director</i>	Yes
Surveyors	No
Personnel skilled or trained in GIS applications	No
Scientist familiar with natural hazards in local area	No
Emergency manager <i>If Yes, Department /Position: City Manager's Office/ City Manager</i>	Yes
Grant writers	No
Other <i>If Yes, Department /Position:</i>	No

Table 5-7. Education and Outreach Capability

Criterion	Response
Do you have a public information officer or communications office?	No
Do you have personnel skilled or trained in website development?	No
Do you have hazard mitigation information available on your website? <i>If yes, briefly describe: ojai.ca.gov > emergency-preparedness</i>	Yes
Do you use social media for hazard mitigation education and outreach? <i>If yes, briefly describe: Post pertinent information as required</i>	Yes
Do you have any citizen boards or commissions that address issues related to hazard mitigation? <i>If yes, briefly describe: The City of Ojai Disaster Council</i>	Yes
Do you have any other programs in place that could be used to communicate hazard-related information? <i>If yes, briefly describe: City Website, City smart phone App, government access TV channel, AM radio station</i>	Yes
Do you have any established warning systems for hazard events? <i>If yes, briefly describe: City Website, City smart phone App, government access TV channel, AM radio station</i>	Yes

Table 5-8. National Flood Insurance Program Compliance

Criterion	Response
What local department is responsible for floodplain management?	Public Works Department
Who is your floodplain administrator? (department/position)	Public Works Dept. / Public Works Director
Are any certified floodplain managers on staff in your jurisdiction?	No
What is the date that your flood damage prevention ordinance was last amended?	3/24/2021
Does your floodplain management program meet or exceed minimum requirements?	Meet
When was the most recent Community Assistance Visit or Community Assistance Contact?	N/A

Criterion	Response
Does your jurisdiction have any outstanding NFIP compliance violations that need to be addressed?	No
Are any RiskMAP projects currently underway in your jurisdiction?	No
Do your flood hazard maps adequately address the flood risk within your jurisdiction?	Yes
Does your floodplain management staff need any assistance or training to support its floodplain management program?	Yes
<i>If so, what type of assistance/training is needed?</i> Ongoing training	
Does your jurisdiction participate in the Community Rating System (CRS)?	No
<i>If no, is your jurisdiction interested in joining the CRS program?</i> Possibly	
How many flood insurance policies are in force in your jurisdiction? ^a	79
<i>What is the insurance in force?</i> \$25,299,000	
<i>What is the premium in force?</i> \$41,007	
How many total loss claims have been filed in your jurisdiction? ^a	43
<i>What were the total payments for losses?</i> \$223,301	

a. According to FEMA statistics as of March 31, 2021

Table 5-9. Community Classifications

	Participating?	Classification	Date Classified
FIPS Code	Yes	0611153476	N/A
DUNS #	Yes	085921781	N/A
Community Rating System	No	N/A	N/A
Building Code Effectiveness Grading Schedule	No	N/A	N/A
Public Protection, contract with VCFPD	Yes	03/3X	12/21/2018
Storm Ready	No	N/A	N/A
Firewise	No	N/A	N/A
Tsunami Ready	No	N/A	N/A

Table 5-10. Adaptive Capacity for Climate Change

Criterion	Jurisdiction Rating ^a
Technical Capacity	
Jurisdiction-level understanding of potential climate change impacts <i>Comment: City is aware of current drought issues and potential wildfire issues</i>	High
Jurisdiction-level monitoring of climate change impacts <i>Comment:</i>	Low
Technical resources to assess proposed strategies for feasibility and externalities <i>Comment:</i>	Low
Jurisdiction-level capacity for development of greenhouse gas emissions inventory <i>Comment:</i>	Low
Capital planning and land use decisions informed by potential climate impacts <i>Comment:</i>	Low
Participation in regional groups addressing climate risks <i>Comment:</i>	Low

Criterion	Jurisdiction Rating ^a
Implementation Capacity	
Clear authority/mandate to consider climate change impacts during public decision-making processes <i>Comment:</i>	Low
Identified strategies for greenhouse gas mitigation efforts <i>Comment:</i>	Low
Identified strategies for adaptation to impacts <i>Comment:</i>	Low
Champions for climate action in local government departments <i>Comment:</i>	Low
Political support for implementing climate change adaptation strategies <i>Comment:</i>	Low
Financial resources devoted to climate change adaptation <i>Comment:</i>	Low
Local authority over sectors likely to be negative impacted <i>Comment:</i>	Low
Public Capacity	
Local residents' knowledge of and understanding of climate risk <i>Comment: Water use reduction due to drought</i>	High
Local residents' support of adaptation efforts <i>Comment: Installation and use of solar power</i>	High
Local residents' capacity to adapt to climate impacts <i>Comment: Water conservation</i>	High
Local economy current capacity to adapt to climate impacts <i>Comment:</i>	Low
Local ecosystems capacity to adapt to climate impacts <i>Comment:</i>	Unsure

- a. High = Capacity exists and is in use; Medium = Capacity may exist, but is not used or could use some improvement;
Low = Capacity does not exist or could use substantial improvement; Unsure= Not enough information is known to assign a rating.

5.5 INTEGRATION REVIEW

For hazard mitigation planning, “integration” means that hazard mitigation information is used in other relevant planning mechanisms, such as general planning and capital facilities planning, and that relevant information from those sources is used in hazard mitigation. This section identifies where such integration is already in place, and where there are opportunities for further integration in the future. Resources listed at the end of this annex were used to provide information on integration. The progress reporting process described in Volume 1 of the hazard mitigation plan will document the progress of hazard mitigation actions related to integration and identify new opportunities for integration.

5.5.1 Existing Integration

Some level of integration has already been established between local hazard mitigation planning and the following other local plans and programs:

- Building Code 9-1.102
- Capital Improvement Plan—Includes projects that can help mitigate potential hazards.

5.5.2 Opportunities for Future Integration

The capability assessment in this annex indicates opportunities to integrate this mitigation plan with other jurisdictional planning/regulatory capabilities. Capabilities were identified as integration opportunities if they can support or enhance the actions identified in this plan or be supported or enhanced by components of this plan. The capability assessment identified the following plans and programs that do not currently integrate hazard mitigation information but provide opportunities to do so in the future:

- **General Plan**—Consider new update to the Housing Element
- **Emergency Operations Plan (EOP), 2013**—Assesses threats from natural hazards that could impact the City.

Taking action to integrate each of these programs with the hazard mitigation plan was considered as a mitigation action to include in the action plan in this annex.

5.6 RISK ASSESSMENT

5.6.1 Jurisdiction-Specific Natural Hazard Event History

Table 5-11 lists past occurrences of natural hazards for which specific damage was recorded in this jurisdiction. Other hazard events that broadly affected the entire planning area, including this jurisdiction, are listed in the risk assessments in Volume 1 of this hazard mitigation plan.

Table 5-11. Past Natural Hazard Events

Type of Event	FEMA Disaster #	Date	Damage Assessment
COVID-19 Pandemic	DR-4482	1/20/2020 and continuing	\$3-4 million in lost revenue
Thomas Fire	FM-5224	12/4/2017	No structures lost, City activated Emergency Operation Center, major impact to City
Pine Fire		6/30/2016	Unknown
Severe Storms, Flooding, Debris Flows, and Mudslides	DR-1577	1/9/2005	Impacted City. Daly park and surrounding homes in neighborhood affected by mud
Wolf Fire		6/1/2002	Unknown
Lightning Strike		4/18/2000	One residential home struck
Flood/Landslide		2/20/2000	Unknown
Ranch Fire		12/21/1999	Unknown

5.6.2 Hazard Risk Ranking

Table 5-12 presents a local ranking of all hazards of concern for which this hazard mitigation plan provides complete risk assessments. As described in detail in Volume 1, the ranking process involves an assessment of the likelihood of occurrence for each hazard, along with its potential impacts on people, property, and the economy. Mitigation actions primarily target hazards with high and medium rankings. The drought hazard has been increased from low to high to match Casitas Municipal Water District, City of Ojai's water purveyor, and to better reflect local knowledge. The City is vulnerable to drought as it is dependent on Lake Casitas for water. As of October 2021, Lake Casitas is at 33% capacity—a Stage 3 drought. If lake level is reduced to 30% or less, CMWD would implement Stage 4.

Table 5-12. Hazard Risk Ranking

Rank	Hazard	Risk Ranking Score	Risk Category
1	Landslide	33	High
2	Earthquake	32	High
3	Drought	30	High
4	Severe Storms	24	Medium
5	Severe Weather	24	Medium
6	Wildfire	18	Medium
7	Flooding	18	Medium
8	Dam Failure	12	Low

5.6.3 Jurisdiction-Specific Vulnerabilities

Volume 1 of this hazard mitigation plan provides complete risk assessments for each identified hazard of concern. This section provides information on a few key vulnerabilities for this jurisdiction. Available jurisdiction-specific risk maps of the hazards are provided at the end of this annex.

Repetitive Loss Properties

Repetitive loss records are as follows:

- Number of FEMA-identified Repetitive-Loss Properties: 0
- Number of FEMA-identified Severe-Repetitive-Loss Properties: 0
- Number of Repetitive-Loss or Severe-Repetitive-Loss Properties that have been mitigated: 0

Other Noted Vulnerabilities

The following jurisdiction-specific issues have been identified based on a review of the results of the risk assessment, public involvement strategy, and other available resources:

- The City Recreation Department is the only Cooling Center in the City. If there is a Public Safety Power Shut-off (PSPS) then a generator is necessary.
- Urban flooding with storm drain issues

Mitigation actions addressing these issues were prioritized for consideration in the action plan in this annex.

5.7 STATUS OF PREVIOUS PLAN ACTIONS

Table 5-13 summarizes the actions that were recommended in the previous version of the hazard mitigation plan and their implementation status at the time this update was prepared.

Table 5-13. Status of Previous Plan Actions

Action Item	Completed	Removed; No Longer Feasible	Carried Over to Plan Update	
			Check if Yes	Action # in Update
OA 10—Seismically retrofit or upgrade seismically deficient government facilities and pre-identified shelter facilities. Comment: No action. Lack of funding			✓	OJC-1
OA 11—Develop and implement plans to increase the building owner's general knowledge of and appreciation for the value of seismic upgrading of the building's structural and nonstructural elements. Comment: No action. Lack of staffing			✓	OJC-2
OA 14—Acquire, relocate, or elevate residential structures, in particular those that have been identified as RL properties, within the 100-year floodplain. Comment: No action. Lack of funding/staff			✓	OJC-1
OA 21—Maintain hazards fuel treatment program for areas that have been identified with overgrown/dead brush/trees to reduce the potential for tree-to-tree ignition. Ensure that a "maintenance now" component to provide continued fire resistance is part of the program. Comment: Ongoing tree and brush clearing for fire abatement			✓	OJC-8

5.8 HAZARD MITIGATION ACTION PLAN

Table 5-14 lists the identified actions, which make up the hazard mitigation action plan for this jurisdiction. Table 5-15 identifies the priority for each action. Table 5-16 summarizes the mitigation actions by hazard of concern and mitigation type.

Table 5-14. Hazard Mitigation Action Plan Matrix

Benefits New or Existing Assets	Objectives Met	Lead Agency	Support Agency	Estimated Cost	Sources of Funding	Timeline ^a
Action OJC-1—Where appropriate, support retrofitting, purchase or relocation of structures located in hazard areas, prioritizing those that have experienced repetitive losses and/or are located in high- or medium-risk hazard areas.						
<u>Hazards Mitigated:</u> Landslide, Earthquake, Severe Storms, Severe Weather, Wildfire, Flooding, Dam Failure						
Existing	1, 2, 4, 6, 9, 10, 11, 16	Community Development Dept	Public Works Dept	High	FEMA HMA (BRIC, FMA, PDM and HMGP)	Short-term
Action OJC-2—Develop and implement plans to increase the building owner's general knowledge of and appreciation for the value of seismic upgrading of the building's structural and nonstructural elements.						
<u>Hazards Mitigated:</u> Earthquake						
Existing	1, 9, 12, 16, 17	Community Development Dept	Public Works Dept	Low	Staff Time, General Funds	Short-term
Action OJC-3—Integrate the hazard mitigation plan into other plans, ordinances and programs that dictate land use decisions in the community, including General Plan Update, Emergency Action Plan						
<u>Hazards Mitigated:</u> Landslide, Earthquake, Severe Storms, Severe Weather, Wildfire, Flooding, Dam Failure						
New & Existing	1, 2, 3, 4, 5, 7, 8, 9, 10, 11, 12, 13, 14, 15, 17, 19	Community Development Dept	Public Works Dept	Low	Staff Time, General Funds	Ongoing

Benefits New or Existing Assets	Objectives Met	Lead Agency	Support Agency	Estimated Cost	Sources of Funding	Timeline ^a
Action OJC-4—Actively participate in the plan maintenance protocols outlined in Volume 1 of this hazard mitigation plan.						
<u>Hazards Mitigated:</u> Landslide, Earthquake, Severe Storms, Severe Weather, Wildfire, Flooding, Dam Failure, Drought						
New & Existing	1, 2, 4, 6, 7, 8, 9, 11, 12, 13, 14, 15	City of Ojai	Community Development Dept	Low	Staff Time, General Funds	Short-term
Action OJC-5—Continue to maintain good standing and compliance under the NFIP through implementation of floodplain management programs that, at a minimum, meet the NFIP requirements:						
- Enforce the flood damage prevention ordinance. - Participate in floodplain identification and mapping updates. - Provide public assistance/information on floodplain requirements and impacts.						
<u>Hazards Mitigated:</u> Flooding						
New & Existing	1, 2, 6, 7, 17	Public Works Dept		Low	Staff Time, General Funds	Ongoing
Action OJC-6—Identify and pursue strategies to increase adaptive capacity to climate change.						
<u>Hazards Mitigated:</u> Severe Storms, Severe Weather, Wildfire, Flooding, Drought						
New & Existing	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 19	Enter Response	Enter Response	Low	FEMA HMA (BRIC, FMA, HMGP), Staff Time, General Funds	Short-term
Action OJC-7—Purchase generators for critical facilities and infrastructure that lack adequate backup power, including Public Works Dept. and Recreation Dept.						
<u>Hazards Mitigated:</u> Earthquake, Flooding, Landslide, Severe Weather, Wildfire						
Existing	2, 19	Public Works Dept	Enter Response	High	FEMA HMA (BRIC and HMGP), Staff Time, General Funds	Short-term
Action OJC-8—Maintain wildfire hazard fuel reduction program for areas that have been identified with overgrown or dead brush, trees and weeds to reduce the potential for tree-to-tree ignition. Ensure that a “maintenance now” component to provide continued fire resistance is part of the program. (Coordinates with VCFPD Action VFP-6)						
<u>Hazards Mitigated:</u> Wildfire						
New & Existing	2, 4, 5, 6, 8, 10, 11, 13, 14, 15, 18, 19	VCFPD	City of Ojai, CAL FIRE & USDA	Medium	FEMA HMA (BRIC, FMAP and HMGP), Staff Time & General Funds	Ongoing
Action OJC-9—Determine feasibility of the City of Ojai joining the Community Rating System (CRS) program to enhance public safety, reduce flood damage to property and infrastructure, and reduce flood insurance rates in the community.						
<u>Hazards Mitigated:</u> Flooding						
New & Existing	1, 2, 19	City of Ojai	None	Low	Staff Time & General Funds	Short-term

a. Short-term = Completion within 5 years; Long-term = Completion within 10 years; Ongoing= Continuing new or existing program with no completion date

Acronyms used here are defined at the beginning of this volume.

Table 5-15. Mitigation Action Priority

Action #	# of Objectives Met	Benefits	Costs	Do Benefits Equal or Exceed Cost?	Is Project Grant-Eligible?	Can Project Be Funded Under Existing Programs/ Budgets?	Implementation Priority ^a	Grant Pursuit Priority ^a
1	8	High	High	Yes	Yes	No	Medium	High
2	5	Medium	Low	Yes	No	Yes	High	Low
3	16	Medium	Low	Yes	No	Yes	High	Low
4	12	Low	Low	Yes	No	Yes	High	Low
5	5	Medium	Low	Yes	No	Yes	High	Low
6	17	Medium	Low	Yes	Yes	Yes	High	Medium
7	2	High	High	Yes	Yes	No	Medium	High
8	12	High	Medium	Yes	Yes	Yes	High	High
9	3	Medium	Low	Yes	No	Yes	High	Low

a. See the introduction to this volume for explanation of priorities.

Table 5-16. Analysis of Mitigation Actions

Hazard Type	Action Addressing Hazard, by Mitigation Type ^a							
	Prevention	Property Protection	Public Education & Awareness	Natural Resource Protection	Emergency Services	Structural Projects	Climate Resilience	Community Capacity Building ^b
High-Risk Hazards								
Landslide	OJC-3	OJC-1	OJC-4		OJC-7			OJC-4
Medium-Risk Hazards								
Earthquake	OJC-3	OJC-1	OJC-2, 4		OJC-7			OJC-4
Severe Storms	OJC-3	OJC-1	OJC-4				OJC-6	OJC-4
Severe Weather	OJC-3	OJC-1	OJC-4		OJC-7		OJC-6	OJC-4
Wildfire	OJC-3	OJC-1	OJC-4	OJC-8	OJC-7		OJC-6	OJC-4
Flooding	OJC-3, 5	OJC-1	OJC-4, 5		OJC-7		OJC-6	OJC-4, 5, 9
Low-Risk Hazards								
Dam Failure	OJC-3	OJC-1	OJC-4					OJC-4
Drought			OJC-4				OJC-6	OJC-4

a. See the introduction to this volume for explanation of mitigation types.

b. Note that the jurisdiction did not identify a need for expansion of financial capabilities, based on existing capabilities. The intent of this hazard mitigation plan is to expand the financial capability of the jurisdiction.

5.9 PUBLIC OUTREACH

Table 5-17 lists public outreach activities for this jurisdiction.

Table 5-17. Local Public Outreach

Local Outreach Activity	Date	Number of People Involved
Social Media	8/2020	1,000

5.10 INFORMATION SOURCES USED FOR THIS ANNEX

The following technical reports, plans, and regulatory mechanisms were reviewed to provide information for this annex.

- **City of Ojai Municipal Code**—The municipal code was reviewed for the full capability assessment and for identifying opportunities for action plan integration.
- **City of Ojai Flood Damage Prevention Ordinance**—The flood damage prevention ordinance was reviewed for compliance with the National Flood Insurance Program.
- **Capital Improvement Projects Program**—The municipal code was reviewed for the full capability assessment.

The following outside resources and references were reviewed:

- **Hazard Mitigation Plan Annex Development Toolkit**—The toolkit was used to support the identification of past hazard events and noted vulnerabilities, the risk ranking, and the development of the mitigation action plan.

Ojai

Critical Facilities (1 of 2)

- Food, Water, Shelter
- Health and Medical
- Safety and Security

- Major Roads
- ▭ Selected City
- - - Incorporated Cities
- ▭ County Boundary

Data Sources: Ventura Co., VCFD, Casitas MWD, Calleguas MWD, City of Camarillo, CA Energy Commission, Cal Trans, EPA, HIFLD, Esri



Ojai

Critical Facilities (1 of 2)

- Communications
- Energy
- Transportation
- Major Roads
- ▭ Selected City
- ▭ Incorporated Cities
- ▭ County Boundary

Data Sources: Ventura Co., VCFD, Casitas MWD, Calleguas MWD, City of Camarillo, CA Energy Commission, Cal Trans, EPA, HIFLD, Esri



0 0.175 0.35 0.7 Miles

Ojai

Dam Failure Inundation Areas

- Combined Inundation Areas
- Major Roads
- Selected City
- Incorporated Cities
- County Boundary

Data Sources: Ventura Co.,
CA DWR, Esri



0 0.175 0.35 0.7 Miles

Ojai

NEHRP Soil Class

- C (Dense soil/soft rock)
- D (Stiff soil)
- Major Roads
- Selected City
- Incorporated Cities
- County Boundary

Data Sources: Ventura Co.,
CGS, Esri



0 0.175 0.35 0.7 Miles

Ojai

Liquefaction Susceptibility

-  Liquefaction zone
-  Major Roads
-  Selected City
-  Incorporated Cities
-  County Boundary

Data Sources: Ventura Co.,
Esri



0 0.175 0.35 0.7 Miles

Ojai

100-Year Probabilistic Earthquake Scenario

Mercalli Intensity Scale

-  VII (Very Strong/Moderate)
-  Major Roads
-  Selected City
-  Incorporated Cities
-  County Boundary

Intensity scale described as:
(perceived shaking / potential damage)

Data Sources: Ventura Co.,
USGS, Esri



0 0.175 0.35 0.7 Miles

Ojai

Oak Ridge M7.16 Earthquake Scenario

Mercalli Intensity Scale

- VI (Strong/Light)
- VII (Very Strong/Moderate)
- Major Roads
- Selected City
- Incorporated Cities
- County Boundary

Intensity scale described as:
(perceived shaking / potential damage)

Data Sources: Ventura Co.,
USGS, Esri



0 0.175 0.35 0.7 Miles

Ojai

Pitas Point M7.12 Earthquake Scenario

Mercalli Intensity Scale

- VII (Very Strong/Moderate)
- VIII (Severe/Moderate-Heavy)
- Major Roads
- Selected City
- Incorporated Cities
- County Boundary

Intensity scale described as:
(perceived shaking / potential damage)

Data Sources: Ventura Co.,
USGS, Esri



0 0.175 0.35 0.7 Miles

Ojai

San Cayetano M7.16 Earthquake Scenario

Mercalli Intensity Scale

- VII (Very Strong/Moderate)
- VIII (Severe/Moderate-Heavy)
- Major Roads
- Selected City
- Incorporated Cities
- County Boundary

Intensity scale described as:
(perceived shaking / potential damage)

Data Sources: Ventura Co.,
USGS, Esri



0 0.175 0.35 0.7 Miles

Ojai

S. San Andreas M8.03 Earthquake Scenario

Mercalli Intensity Scale

- VI (Strong/Light)
- Major Roads
- Selected City
- Incorporated Cities
- County Boundary

Intensity scale described as:
(perceived shaking / potential damage)

Data Sources: Ventura Co.,
USGS, Esri



0 0.175 0.35 0.7 Miles

Ojai

FEMA Flood Hazard Areas

- 1% Annual Chance Flood (100-Year)
- 0.2% Annual Chance Flood (500-Year)
- Major Roads
- Selected City
- Incorporated Cities
- County Boundary

Data Sources: Ventura Co.,
FEMA, Esri



0 0.175 0.35 0.7 Miles

Ojai

Susceptibility to Deep-Seated Landslides

- Low
- Moderate
- High
- Very High
- Major Roads
- Selected City
- Incorporated Cities
- County Boundary

Data Sources: Ventura Co.,
CGS, Esri



0 0.175 0.35 0.7 Miles

Ojai

Wildfire Hazard Severity Zones

- Moderate
- High
- Very High
- Major Roads
- Selected City
- Incorporated Cities
- County Boundary

Data Sources: Ventura Co.,
CAL FIRE, Esri



0 0.175 0.35 0.7 Miles

6. CITY OF OXNARD

6.1 LOCAL HAZARD MITIGATION PLANNING TEAM

Primary Point of Contact

Scott Brewer, Emergency Services Manager
360 West Second Street
Oxnard, CA 93030
Telephone: 805-385-7717
e-mail Address: scott.brewer@oxnard.org

Alternate Point of Contact

Alexander Hamilton, Fire Chief
360 West Second Street
Oxnard, CA 93030
Telephone: 805-385-7700
e-mail Address:
alexander.hamilton@oxnard.org

This annex was developed by the local hazard mitigation planning team, whose members are listed in Table 6-1.

Table 6-1. Local Mitigation Planning Team Members

Name	Title
Alexander Nguyen	City Manager
Jason Benites	Police Chief
Eric Sonstegard	Assistant Police Chief
Alexander Hamilton	Fire Chief
John Colamarino	Assistant Fire Chief
Brian Yanez	Assistant Public Works Director
Mike More	Risk Manager
Scott Kolwitz	Planning Manager
Betsy George	Chief Financial Officer
Terrel Harrison	Cultural/Community Services Director
Stephen Fischer	City Attorney
Tatiana Arnaout	City Engineer/Floodplain Manager
Mike Shaffer	GIS Manager
Katie Casey	Communications Manager
Kathleen Mallory	Planning & Sustainability Manager
Scott Brewer	Emergency Services Manager

6.2 JURISDICTION PROFILE

6.2.1 Location and Features

The City is located about 60 miles northwest of Los Angeles along a beautiful stretch of the Pacific Ocean coastline. The largest city within Ventura County, Oxnard is the center of a regional agricultural industry and a progressive business center while, at the same time, a relaxed seaside destination with a variety of neighborhoods and community services. Bordered by mountains and the Pacific Ocean, West Ventura County provides a seaside environment with expansive mountain views. Oxnard incorporates both of these attributes through its pattern of relatively compact urban development focused on the downtown, coastline and harbor, and the Highway 101 corridor. The moderate Mediterranean climate, fertile topsoil, and generally adequate groundwater supply lead to year-round agricultural production in the surrounding Oxnard Plain.

The City of Oxnard is located in the County of Ventura. The current boundaries generally extend from the Santa Clara River on the west to Del Norte Blvd on the east, as well as just north of the Highway 101 to the Pacific Ocean on the South, encompassing an area of 27.12 square miles.

6.2.2 History

Oxnard Incorporated: The City Oxnard was incorporated in 1903 by the Ventura County Board of Supervisors, who officially named the city after the Oxnard brothers. The city grew steadily into what is now the largest city in Ventura County, with a population of just over 207,000 residents.

Oxnard History: In 1896, local farmers began experimenting with sugar beets in addition to barley and lima beans. A prominent local farmer, Albert Maulhardt, visited Henry T. Oxnard and his three brothers' American Beet Sugar factory in Chino, which led him to plant sugar beets for shipment to the plant. Maulhardt's success persuaded other ranchers to switch from grain to sugar beets.

Encouraged by a pledge of 18,000 acres of sugar beets from local farmers, the Oxnard brothers completed construction of a sugar beet factory adjacent to the beet fields in 1898 on what was then known as Rancho Colonia. The massive brick factory, with its 150-foot smokestacks, was located a few blocks northeast of a town-site that, five years later, would become the City of Oxnard.

The sugar beet factory was responsible for another significant event—bringing a spur line of the Southern Pacific Railroad to the plant site and passenger service to the community.

6.2.3 Governing Body Format

The City of Oxnard was incorporated as a general law city on June 30, 1903 and operates under a council-manager form of government. The City Council consists of the Mayor and six other Councilmembers. The term of office is four years for all elected officials, with elections held every two years for three City Council seats at a time. All Councilmembers are elected by district except for the Mayor, who is elected at large during presidential election years. The City Treasurer, who is elected Citywide at the same time as the Mayor, invests idle cash and manages the City's investment portfolio. The City Clerk, also elected Citywide at the same time as the Mayor and City Treasurer, manages the City Council and Committee meeting agenda process, official records, and elections.

The Oxnard City Council assumes responsibility for the adoption of this plan; the Oxnard Fire Department along with designated City departments will oversee its implementation.

6.3 CURRENT TRENDS

6.3.1 Population

According to the United States Census Bureau, the population of the City of Oxnard as of January 2020 was 207,887. Since 2010, the population has grown at an average annual rate of 0.48 percent.

6.3.2 Development

The Planning Division coordinates the City's review of residential, commercial, office, and industrial development projects. This includes working with property owners, developers, business owners, and residents to ensure that their development proposals conform to City policies and guidelines.

Table 6-2 summarizes development trends in the period since the preparation of the previous hazard mitigation plan, as well as expected future development trends.

Table 6-2. Recent and Expected Future Development Trends

Criterion	Response
Has your jurisdiction annexed any land since the preparation of the previous hazard mitigation plan? <i>If yes, give the estimated area annexed and estimated number of parcels or structures.</i>	Yes Local Agency Formation Commission 18-07, Ocean View School District: 5.31 Acres, 1 Parcel Local Agency Formation Commission 16-01, City of Oxnard Reorganization: 0.77 Acres, 1 Parcel
Is your jurisdiction expected to annex any areas during the performance period of this plan? <i>If yes, describe land areas and dominant uses.</i> <i>If yes, who currently has permitting authority over these areas?</i>	Yes Teal Club Annexation—990 single and multifamily dwelling units, 132,000 square-feet of business park, 60,000 square-feet of commercial space, 17.76 acres of parks and open space. The project also includes annexation of 11.4 acres that is pre-zoned for light manufacturing uses. Rio Urbana Annexation—The Rio Urbana annexation would allow the construction of a new mixed-use development that includes 182 condominium residential units and a 15,000-square-foot office building containing the Rio School District administrative offices. The County of Ventura currently has permitting authority over the Teal Club area and the Rio Urbana project site.
Are any areas targeted for development or major redevelopment in the next five years? <i>If yes, briefly describe, including whether any of the areas are in known hazard risk areas</i>	Yes Downtown adding up to 2800 units, The Village Specific Plan buildout, Northshore Development, Riverpark Specific Plan buildout, continued industrial development in Sakioka Farms Specific Plan. All areas are within city limits and all areas are in the liquefaction zone. One annexation approval with 167 housing units is expected in 2021. One large specific plan annexation (Teal Club) with 990 units is under consideration.

Criterion	Response					
How many permits for new construction were issued in your jurisdiction since the preparation of the previous hazard mitigation plan?		2016	2017	2018	2019	2020
	Single Family	140	86	36	59	19
	Multi-Family	26	27	18	34	42
	Other (commercial, mixed use, etc.)	17	12	10	7	7
	Total	183	125	64	100	68
Provide the number of new-construction permits for each hazard area or provide a qualitative description of where development has occurred.	• Special Flood Hazard Areas: 0—Based on FEMA National Flood Hazard Layer (NFHL) downloaded June 9, 2021 Using zones A, A99 , AE, AH, AO, & VE as SFHA and excluding zones X & D • Landslide: 0—Based on Webservice of Seismic Hazard Zone Maps for Landslides produced by the Seismic Hazards Program, California Geological Survey, California Department of Conservation and downloaded from open data site on June 17, 2021 • High Liquefaction Areas: 540—Based on information contained hereon was obtained from California Department of Conservation, Division of Mines and Geology via the County of Ventura GIS • Tsunami Inundation Area: 51—Based on information contained hereon was obtained from California Department of Conservation, Division of Mines and Geology via the County of Ventura GIS • Wildfire Risk Areas: 0					
Describe the level of buildout in the jurisdiction, based on your jurisdiction's buildable lands inventory. If no such inventory exists, provide a qualitative description.	Almost entire city (26 sq miles) is first or second generation construction. About 500 acres of farming remain within city limits in areas zoned for industrial or housing but not yet built. Planning capacity for about 8,000 units and 8 million sf industrial/commercial remains under the 2030 General Plan.					

6.4 CAPABILITY ASSESSMENT

This section describes an assessment of existing capabilities for implementing hazard mitigation strategies. The introduction at the beginning of this volume of the hazard mitigation plan describes the components included in the capability assessment and their significance for hazard mitigation planning.

Findings of the capability assessment were reviewed to identify opportunities to expand, initiate or integrate capabilities to further hazard mitigation goals and objectives. Where such opportunities were identified and determined to be feasible, they are included in the action plan. The "Analysis of Mitigation Actions" table in this annex identifies these as community capacity building mitigation actions. The findings of the assessment are presented as follows:

- An assessment of planning and regulatory capabilities is presented in Table 6-3.
- Development and permitting capabilities are presented in Table 6-4.
- An assessment of fiscal capabilities is presented in Table 6-5.
- An assessment of administrative and technical capabilities is presented in Table 6-6.
- An assessment of education and outreach capabilities is presented in Table 6-7.
- Information on National Flood Insurance Program (NFIP) compliance is presented in Table 6-8.
- Classifications under various community mitigation programs are presented in Table 6-9.
- The community's adaptive capacity for the impacts of climate change is presented in Table 6-10.

Table 6-3. Planning and Regulatory Capability

	Local Authority	Other Jurisdiction Authority	State Mandated	Integration Opportunity?
Codes, Ordinances, & Requirements				
Building Code	Yes	No	Yes	No
<i>Comment: 2019 California Building Code as adopted by the City of Oxnard Ordinance No. 2968</i>				
Zoning Code	Yes	No	Yes	No
<i>Comment: Chapter 16 (Inland Zoning Ordinance) and Chapter 17 (Coastal Zoning Ordinance) of the Oxnard City Code (OCC) Pursuant to the California Coastal Act (Public Resources Code Division 20, Chapter 6, Article 1, 30500), the City shall prepare a Local Coastal Program for the portion of the coastal zone within its jurisdiction. The LCP is comprised of a Land Use Plan and a Local Implementation Plan which is the Coastal Zoning Ordinance.</i>				
Subdivisions	Yes	No	Yes	No
<i>Comment: Chapter 15 of the OCC regulates and control the design and improvement of subdivisions of land within the city and supplement the provisions of the Subdivision Map Act of the State of California set forth at Government Code Section 66410 et seq. concerning the design, improvement and survey data of subdivisions, the form and content of all maps provided for by the Subdivision Map Act, and the procedure to be followed in securing the official approval of the City regarding the maps.</i>				
Stormwater Management	Yes	No	No	Yes
<i>Comment: Chapter 22, Article 12 implements the Federal Water Pollution Control Act (the Clean Water Act), 33 U.S.C. Section 1251 et seq., as amended, and Division 7 of the California Water Code by prohibiting the discharge of any pollutant to navigable waters of the United States from a point source unless the discharge is authorized by a permit issued pursuant to the Metropolitan required by Clean Water Act Section 402 (33 U.S.C. Section 1342), and by prohibiting non-storm water discharges into the storm drain system.</i>				
Post-Disaster Recovery	Yes	No	Yes	Yes
<i>Comment: The City of Oxnard does not have a separate disaster recovery plan, guidance and direction for disaster recovery is provided in the Oxnard Emergency Operations Plan (EOP)</i>				
Real Estate Disclosure	No	Yes	Yes	Yes
<i>Comment: California State Civil Code 1102 requires full disclosure on natural hazard exposure of the sale/re-sale of any and all real property. To be implemented by sellers and realtors. City of Oxnard Ordinance 2383 requires that at the time of entering into an agreement of sale or exchange of any building, the owner or authorized representative shall obtain from the city a report of the building record showing the regularly authorized use, occupancy and zoning classification of such property.</i>				
Growth Management	Yes	No	Yes	Yes
<i>Comment: California state law requires that every county and city prepare and adopt a comprehensive long-range plan to serve as a guide for community development. The General Plan for the City of Oxnard was amended and adopted in July 2011. The General Plan contains 10 elements that address many aspects of the community including: land use, housing, parks and open space, community design, circulation, infrastructure, safety, sustainability and conservation of resources. The General Plan is the City's overarching policy document. All City policies and ordinances must be consistent with the General Plan. The Planning Division is responsible for maintaining the General Plan and preparing amendments to the document as directed by the City Council. The City is preparing a Climate Action and Adaptation Plan consistent with SB39.</i>				
Site Plan Review	Yes	No	No	No
<i>Comment: Chapter 15 of the OCC regulates the form and contents, submittal and approval of tentative tract maps for the subdivision of five (5) or more parcels and tentative parcel maps for the subdivision of four (4) or fewer parcels shall be governed by the provisions of this chapter. Chapters 16 and 17 of the OCC identify allowed uses and provide development standards that regulate development within the City.</i>				

	Local Authority	Other Jurisdiction Authority	State Mandated	Integration Opportunity?
Environmental Protection	Yes	No	Yes	Yes
<i>Comment: The California Environmental Quality Act (CEQA) requires state and local agencies to identify the significant environmental impacts of their actions and to avoid or mitigate those impacts, if feasible. On June 28, 2017, the City Council adopted Resolution 15,040 approving an update to the California Environmental Quality Act (CEQA) Guidelines.</i> <i>Chapter 22 ,Article 12 implements the Federal Water Pollution Control Act (the Clean Water Act), 33 U.S.C. Section 1251 et seq., as amended, and Division 7 of the California Water Code by prohibiting the discharge of any pollutant to navigable waters of the United States from a point source unless the discharge is authorized by a permit issued pursuant to the National Pollutant Discharge Elimination System required by the Clean Water Act Section 402 (33 U.S.C. Section 1342), and by prohibiting non-storm water discharges into the storm drain system.</i> <i>Chapter 18, Article 4 recently updated in December 2020 with the authority conferred by Cal. Gov't Code sections 65302, 65560 and 65800 to adopt regulations designed to promote the public health, safety, and general welfare.</i>				
Flood Damage Prevention	Yes	No	Yes	Yes
<i>Comment: Chapter 18, Article 4 recently updated in December 2020 with the authority conferred by Cal. Gov't Code sections 65302, 65560 and 65800 to adopt regulations designed to promote the public health, safety and general welfare.</i>				
Emergency Management	Yes	No	Yes	Yes
<i>Comment: Oxnard Emergency Operations Plan—City Ordinance No. 2916</i>				
Climate Change	Yes	No	Yes	Yes
<i>Comment: The City is currently preparing a Climate Action and Adaptation Plan which intends to be comprehensive, robust and innovative to help the City plan for future climate goals and develop vision for how sustainability should be implemented in the City. The Climate Action and Adaptation Plan is anticipated to culminate with adoption by the City Council in mid/late-2022.</i>				
Planning Documents				
General Plan	Yes	No	Yes	Yes
<i>Is the plan compliant with Assembly Bill 2140? Yes</i> <i>Comment: The City's current 2030 General Plan contains Safety Element that includes goals and policies that address liquefaction and subsidence risk; coastline and beach preservation; emergency preparedness; and hazardous materials and uses.</i>				
Capital Improvement Plan	Yes	No	Yes	Yes
<i>How often is the plan updated? Once a year</i> <i>Comment: The City Council adopts a 5-year Capital Improvement Plan with the City Council making amendments on an annual basis.</i>				
Disaster Debris Management Plan	Yes	Yes	Yes	Yes
<i>Comment: Ventura County Disaster Recovery Plan, Adopted by BOS in April 2019</i>				
Floodplain or Watershed Plan	Yes	No	Yes	No
<i>Comment: Chapter 18, Article 4 recently updated in December 2020 with the authority conferred by Cal. Gov't Code sections 65302, 65560 and 65800 to adopt regulations designed to promote the public health, safety and general welfare. The City participates in the National Flood Insurance Program (NFIP) Community Rating System (CRS)Class 7</i>				
Stormwater Plan	Yes	No	Yes	Yes
<i>Comment: The City is developing the Public Works Integrated Master Plan to develop long-term recommendations for policies, programs, and projects that successfully address and respond to immediate drought conditions while also planning for long-term water needs, reducing dependence upon costly imported water, addressing aging infrastructure and reliability concerns, pursuing aggressive goals for energy efficiency and sustainable solutions, maintaining compliance with changing regulatory requirements, and the ongoing loss of seasoned staff and personnel.</i>				

	Local Authority	Other Jurisdiction Authority	State Mandated	Integration Opportunity?
Urban Water Management Plan <i>Comment: The City has an adopted Urban Water Management Plan. The plan details long-term resource planning to ensure that adequate water supplies are available to meet existing and future water needs. In conjunction with the Urban Water Management Plan, a separate Water Shortage Contingency Plan, is also being prepared. The Water Shortage Contingency Plan outlines how an urban water supplier will respond to various stages of a drought or a prolonged shortage caused by other events.</i>	Yes	No	Yes	Yes
Habitat Conservation Plan <i>Comment: Not applicable for the City of Oxnard</i>	No	No	No	No
Economic Development Plan <i>Comment: The City's 2030 General Plan contains an Economic Development Chapter within the Community Development Element. The City created a draft strategic plan which was presented to the Housing and Economic Development Committee and the Chamber of Commerce in 2020 before the pandemic. However, given that COVID significantly impacted the business landscape, staff will be working on a new strategic plan to emphasize business retention, workforce development, and site-based development.</i>	Yes	No	Yes	No
Shoreline Management Plan <i>Comment: The City of Oxnard is currently updating the City's Local Coastal Program to address Sea Level Rise and coastal hazards.</i>	Yes	No	Yes	No
Community Wildfire Protection Plan <i>Comment: Not applicable for the City of Oxnard</i>	No	No	No	No
Forest Management Plan <i>Comment: Not applicable for the City of Oxnard</i>	No	Yes	No	Yes
Climate Action Plan <i>Comment: The City is currently preparing a Climate Action and Adaptation Plan which intends to be comprehensive, robust and innovative to help the City plan for future climate goals and develop vision for how sustainability should be implemented in the City. The Climate Action and Adaptation Plan is anticipated to culminate with adoption by the City Council in mid 2022.</i>	Yes	No	Yes	Yes
Emergency Operations Plan <i>Comment: Oxnard Emergency Operations Plan</i>	Yes	No	Yes	Yes
Threat & Hazard Identification & Risk Assessment (THIRA) <i>Comment: We are currently evaluating the need to complete a THIRA for the City of Oxnard.</i>	No	Yes	No	Yes
Post-Disaster Recovery Plan <i>Comment: Disaster Recovery Operations are covered in the Oxnard Emergency Operations Plan</i>	Yes	No	Yes	Yes
Continuity of Operations Plan <i>Comment: Continuity of Government—Section within the Oxnard Emergency Operation Plan</i>	Yes	No	Yes	Yes
Public Health Plan <i>Comment: County of Ventura Health Care Agency Public Health Emergency Response Plan (ERP)</i>	No	Yes	Yes	Yes
Other—Countywide Tsunami Plan <i>Comment: The County of Ventura has an existing plan that describes each City's role and has been adopted locally. A revision of this document is required within the coming year.</i>	No	Yes	Yes	Yes

Table 6-4. Development and Permitting Capability

Criterion	Response
Does your jurisdiction issue development permits? <i>If no, who does? If yes, which department?</i>	Yes Building and Safety Division of the Community Development Department
Does your jurisdiction have the ability to track permits by hazard area?	No The City does not currently track building permits issued by hazard area.
Does your jurisdiction have a buildable lands inventory?	No

Table 6-5. Fiscal Capability

Financial Resource	Accessible or Eligible to Use?
Community Development Block Grants	Yes
Capital Improvements Project Funding	Yes
Authority to Levy Taxes for Specific Purposes	No. Requires a vote of the people
User Fees for Water, Sewer, Gas or Electric Service	Yes
<i>If yes, specify:</i> Water and Sewer	
Incur Debt through General Obligation Bonds	No. Requires a vote of the people
Incur Debt through Special Tax Bonds	Yes
Incur Debt through Private Activity Bonds	Yes
Withhold Public Expenditures in Hazard-Prone Areas	Yes
State-Sponsored Grant Programs	Yes
Development Impact Fees for Homebuyers or Developers	Yes
Other	Yes
<i>If yes, specify:</i> Federal-sponsored grant programs	

Table 6-6. Administrative and Technical Capability

Staff/Personnel Resource	Available?
Planners or engineers with knowledge of land development and land management practices	Yes
<i>If Yes, Department /Position:</i> Community Development, all Planners) Public Works—City Engineer; Supervising Civil Engineer	
Engineers or professionals trained in building or infrastructure construction practices	Yes
<i>If Yes, Department /Position:</i> Public Works—City Engineer; Supervising Civil Engineer; Project Manager; Senior Civil Engineer; Construction Inspector; Project Coordinator; Engineering Tech	
Planners or engineers with an understanding of natural hazards	Yes
<i>If Yes, Department /Position:</i> Public Works—City Engineer	
Staff with training in benefit-cost analysis	Yes
<i>If Yes, Department /Position:</i> Public Works—Transportation Planner and Grants Coordinator	
Surveyors	Yes
<i>If Yes, Department /Position:</i> Public Works (Consultant)	
Personnel skilled or trained in GIS applications	Yes
<i>If Yes, Department /Position:</i> Information Technology—GIS Manager, GIS Technician III, GIS Systems Analyst, GIS Programmer Analyst	
Scientist familiar with natural hazards in local area	No
<i>If Yes, Department /Position:</i> None	
Emergency manager	Yes
<i>If Yes, Department /Position:</i> Fire Department—City Emergency Services Manager	
Grant writers	Yes
<i>If Yes, Department /Position:</i> Public Works—Grants Coordinator and Transportation Planner	

Table 6-7. Education and Outreach Capability

Criterion	Response
Do you have a public information officer or communications office?	Yes
Do you have personnel skilled or trained in website development?	Yes
Do you have hazard mitigation information available on your website?	Yes
<i>If yes, briefly describe:</i> City website has disaster preparedness and fire prevention information in English and Spanish	
Do you use social media for hazard mitigation education and outreach?	Yes
<i>If yes, briefly describe:</i> We have in the past used social media to address specific hazard mitigation issues.	
Do you have any citizen boards or commissions that address issues related to hazard mitigation?	Yes
<i>If yes, briefly describe:</i> Yes, the Fire Chief has an advisory "Team" that address emergency preparedness and hazard reduction issues. Organized "Neighborhood Councils" are also used to disseminate emergency preparedness and hazard mitigation information.	
Do you have any other programs in place that could be used to communicate hazard-related information?	Yes
<i>If yes, briefly describe:</i> Community events such as: neighborhood fairs, emergency preparedness fairs, CERT training, neighborhood council meetings, homeowners' association meetings are all used to disseminate emergency preparedness and hazard mitigation information.	
Do you have any established warning systems for hazard events?	Yes
<i>If yes, briefly describe:</i> "Alert and Warning" procedures as described in the Oxnard Emergency Operations Plan and the VC Alert System	

Table 6-8. National Flood Insurance Program Compliance

Criterion	Response
What local department is responsible for floodplain management?	Public Works
Who is your floodplain administrator? (department/position)	City Engineer
Are any certified floodplain managers on staff in your jurisdiction?	No
What is the date that your flood damage prevention ordinance was last amended?	December 2020
Does your floodplain management program meet or exceed minimum requirements?	Meets
<i>If exceeds, in what ways?</i>	
When was the most recent Community Assistance Visit or Community Assistance Contact?	2017 Community Assistance Visit
Does your jurisdiction have any outstanding NFIP compliance violations that need to be addressed?	No
<i>If so, state what they are.</i>	
Are any RiskMAP projects currently underway in your jurisdiction?	Yes
<i>If so, state what they are.</i> RiskMAP, Ventura County Levees	
Do your flood hazard maps adequately address the flood risk within your jurisdiction?	Yes
<i>If no, state why.</i>	
Does your floodplain management staff need any assistance or training to support its floodplain management program?	Yes
<i>If so, what type of assistance/training is needed?</i> Admin training	
Does your jurisdiction participate in the Community Rating System (CRS)?	Yes, Class 7
<i>If yes, is your jurisdiction interested in improving its CRS Classification?</i> No	
<i>If no, is your jurisdiction interested in joining the CRS program?</i> N/A	
How many flood insurance policies are in force in your jurisdiction? ^a	497
<i>What is the insurance in force?</i> \$166,210,700	
<i>What is the premium in force?</i> \$323,235	
How many total loss claims have been filed in your jurisdiction? ^a	71
<i>What were the total payments for losses?</i> \$244,574	

a. According to FEMA statistics as of March 31, 2021

Table 6-9. Community Classifications

	Participating?	Classification	Date Classified
FIPS Code	Yes	06-111-54652	N/A
DUNS #	Yes	081790214	N/A
Community Rating System	Yes	7	N/A
Building Code Effectiveness Grading Schedule	Yes	Residential: 3 Commercial Industrial: 2	2015/2016
Public Protection	Yes	02/2X	December 1, 2017
Storm Ready	Yes	N/A	July 2021
Firewise	No	N/A	N/A
Tsunami Ready	Yes	N/A	July 2021

Table 6-10. Adaptive Capacity for Climate Change

Criterion	Jurisdiction Ratings
Technical Capacity	
Jurisdiction-level understanding of potential climate change impacts <i>Comment: The City is preparing a Climate Action and Adaptation Plan (CAAP). Community engagement has highlighted interest in and knowledge of climate impacts.</i>	Medium
Jurisdiction-level monitoring of climate change impacts <i>Comment: The CAAP will establish programs and monitoring protocols.</i>	Low
Technical resources to assess proposed strategies for feasibility and externalities <i>Comment: Documentation prepared for CAAP and SLR and vulnerability study</i>	Low
Jurisdiction-level capacity for development of greenhouse gas emissions inventory <i>Comment: Through the CAAP this has occurred.</i>	High
Capital planning and land use decisions informed by potential climate impacts <i>Comment: This will come out of the CAAP.</i>	Medium
Participation in regional groups addressing climate risks <i>Comment: Professional planner and focused position</i>	High
Implementation Capacity	
Clear authority/mandate to consider climate change impacts during public decision-making processes <i>Comment: This will come out of CAAP implementation.</i>	Medium
Identified strategies for greenhouse gas mitigation efforts <i>Comment: The CAAP includes this information including strategies</i>	High
Identified strategies for adaptation to impacts <i>Comment: The CAAP includes this information including strategies</i>	High
Champions for climate action in local government departments <i>Comment: The CAAP includes this information including strategies</i>	High
Political support for implementing climate change adaptation strategies <i>Comment: Financial support for CAAP study.</i>	High
Financial resources devoted to climate change adaptation <i>Comment: The CAAP includes this information including strategies</i>	Low
Local authority over sectors likely to be negative impacted <i>Comment: Addressed in CAAP engagement</i>	Medium

Criterion	Jurisdiction Ratings
Public Capacity	
Local residents' knowledge of and understanding of climate risk <i>Comment: Addressed in CAAP engagement</i>	Medium
Local residents' support of adaptation efforts <i>Comment: Addressed through CAAP engagement</i>	Medium
Local residents' capacity to adapt to climate impacts <i>Comment: Input provided during sea level rise engagement and CAAP efforts</i>	Low
Local economy current capacity to adapt to climate impacts <i>Comment:</i>	Low
Local ecosystems capacity to adapt to climate impacts <i>Comment:</i>	Low

- a. High = Capacity exists and is in use; Medium = Capacity may exist, but is not used or could use some improvement; Low = Capacity does not exist or could use substantial improvement; Unsure= Not enough information is known to assign a rating.

6.5 INTEGRATION REVIEW

For hazard mitigation planning, “integration” means that hazard mitigation information is used in other relevant planning mechanisms, such as general planning and capital facilities planning, and that relevant information from those sources is used in hazard mitigation. This section identifies where such integration is already in place, and where there are opportunities for further integration in the future. Resources listed at the end of this annex were used to provide information on integration. The progress reporting process described in Volume 1 of the hazard mitigation plan will document the progress of hazard mitigation actions related to integration and identify new opportunities for integration.

6.5.1 Existing Integration

Some level of integration has already been established between local hazard mitigation planning and the following other local plans and programs:

- **Oxnard Emergency Operations Plan (EOP)**—The Emergency Operations Plan addresses the City of Oxnard’s planned response to extraordinary emergency situations associated with natural disasters, technological incidents, and national security emergencies.
- **Ventura County Mass Care and Shelter Plan**—This document is intended for use during the preparedness phase to help guide care and shelter planning. It provides all the planning information and guidelines that are relevant for government’s consideration before opening disaster shelters. This document is intended to help cities plan for shelter operations, while also providing an overview of the complete scope of care and shelter services.
- **Ventura County Operational Area Emergency Operations Plan**—The County of Ventura Emergency Operations Plan (EOP) provides the structure and processes that all key partner agencies within the county use to respond to, and initially recover from, a major emergency or disaster event.
- **California Tsunami Evacuation Playbook (Ventura County, City of Oxnard)**—This playbook is designed to help the emergency managers with tsunami evacuation and

response activities. The goal is to protect the residents within the local Tsunami Inundation Zone by providing guidance for early warning and coordinated evacuations.

- **2030 City of Oxnard General Plan**—The General plan contains a Safety Element that includes goals and policies that address liquefaction and subsidence risk; coastline and beach preservation; emergency preparedness; and hazardous materials and uses.

6.5.2 Opportunities for Future Integration

The capability assessment in this annex indicates opportunities to integrate this mitigation plan with other jurisdictional planning/regulatory capabilities. Capabilities were identified as integration opportunities if they can support or enhance the actions identified in this plan or be supported or enhanced by components of this plan. The capability assessment identified the following plans and programs that do not currently integrate hazard mitigation information but provide opportunities to do so in the future:

- **2030 City of Oxnard General Plan:** The 2030 General Plan should be revised to address hazard mitigation plan elements as needed in the 2022 HMP program and consider integration opportunities by adopting relevant policies in future Safety Element. updates
- **Local Coastal Program (LCP) Update:** The City is in the process of a comprehensive LCP update. One of the goals of the City's LCP update is to consider and address Sea Level Rise (SLR) and to ensure that policies to implement adaptation options occur in a way that protects the City's coastal economic vitality, community character, public and private property, coastal resources and public safety.

Taking action to integrate each of these programs with the hazard mitigation plan was considered as a mitigation action to include in the action plan in this annex.

6.6 RISK ASSESSMENT

6.6.1 Jurisdiction-Specific Natural Hazard Event History

Table 6-11 lists past occurrences of natural hazards for which specific damage was recorded in this jurisdiction. Other hazard events that broadly affected the entire planning area, including this jurisdiction, are listed in the risk assessments in Volume 1 of this hazard mitigation plan.

6.6.2 Hazard Risk Ranking

Table 6-12 presents a local ranking of all hazards of concern for which this hazard mitigation plan provides complete risk assessments. As described in detail in Volume 1, the ranking process involves an assessment of the likelihood of occurrence for each hazard, along with its potential impacts on people, property, and the economy. Mitigation actions primarily target hazards with high and medium rankings.

Table 6-11. Past Natural Hazard Events

Type of Event	FEMA Disaster #	Date	Damage Assessment
Rain and High Wind Event		January 19, 2021	Trees down, road closures, power outages, damage to structures
Pandemic Influenza COVID-19	4482-DR-CA	January 20, 2020 Continuing	Ongoing
Atmospheric River Storm System	CA Disaster 109	January/February 2019	Local stream and street flooding, trees down, power outages
Wildfires, Flooding, Mudflows, and Debris Flows	DR-4353	December 4, 2017- January 31, 2018	Post Thomas Fire debris flows in local rivers, large deposits of debris on local beaches, road closures
Thomas Fire	4224-DR-CA	December 4, 2017	Public Health issues due to smoke, power outages, sewage spill due to power outage
February Winter Storm	CA Disaster 77.1	February 2017	Local stream and street flooding, trees down, power outages, debris deposits in local stream and on beaches
January Winter Storm	CA Disaster 77	January 2017	Local stream and street flooding, trees down, power outages, debris deposits in local stream and on beaches
Extreme Windstorm		February 2016	Trees down, power outages, street closures, damage to structures, debris
Erratic Weather (frost, heat, drought)		Winter 2013	Damage to crops, economic loss
Tsunami (7.1 earthquake in Japan)		March 11, 2011	Damage to local harbors, marinas and docks
Tsunami (8.8 Quake in Chile)		February 27, 2010	Damage to local harbors, marinas and docks
Storm and Flood		January 18 – 22, 2010.	Local stream and street flooding, trees down, power outages
Wildfires, Flooding, Mudflows, and Debris Flows	DR-1731	October 21 – March 31, 2008	Post burn, flooding, debris and mud flows.
Severe Storm	DR-1267	January 7 – 11, 2005	Flooding and debris flows
“El Nino” Storm and Flood		February 1998	Street and stream flooding, debris flows
Storms and Floods		January and March, 1995	Unknown
Northridge Earthquake	DR-1008	January 17 – November 30, 1994	Power and communications disruptions, damage to structures
Storm and Flood		February 10-15, 1992	Street and stream flooding, debris flows
Earthquake (Whittier Narrows Earthquake)		October 1, 1987	Unknown
Storm and Flood		February 25-March 3, 1983	Street and stream flooding, debris flows
Storm and Flood		February 13-22, 1980	Street and stream flooding, debris flows
Sespe Creek Flood		March 4, 1978	Street and stream flooding, debris flows
Storms and Floods (Calleguas Creek Flood)		February 28-March 5, 1978	Street and stream flooding, debris flows
St Francis Dam Disaster		March 12, 1928	\$7 Million (1928)—Inundation of nearly the entire city, flooding, debris flows, destruction of infrastructure, high loss of life

Table 6-12. Hazard Risk Ranking

Rank	Hazard	Risk Ranking Score	Risk Category
1	Dam Failure	36	High
2	Earthquake	32	Medium
3	Severe Storm	24	Medium
4	Severe Weather	24	Medium
5	Flooding	18	Medium
6	Landslide	18	Medium
7	Sea Level Rise	18	Medium
8	Tsunami	12	Low
9	Drought	9	Low
10	Wildfire	0	Low

6.6.3 Jurisdiction-Specific Vulnerabilities

Volume 1 of this hazard mitigation plan provides complete risk assessments for each identified hazard of concern. This section provides information on a few key vulnerabilities for this jurisdiction. Available jurisdiction-specific risk maps of the hazards are provided at the end of this annex.

Repetitive Loss Properties

Repetitive loss records are as follows:

- Number of FEMA-identified Repetitive-Loss Properties: 7
- Number of FEMA-identified Severe-Repetitive-Loss Properties: N/A
- Number of Repetitive-Loss or Severe-Repetitive-Loss Properties that have been mitigated: N/A

Other Noted Vulnerabilities

The following jurisdiction-specific issues have been identified based on a review of the results of the risk assessment, public involvement strategy, and other available resources:

- **Unreinforced Masonry and Soft Story Structures**—Oxnard has numerous unreinforced masonry and soft story buildings within the city limits. These buildings are subject to severe damage or structural collapse during a moderate to severe earthquake.
- **Homeless Population**—A significant number of persons commonly defined as “Homeless” live in the Santa Clara River and other undeveloped areas. During wildland fires, storms and flooding these individuals are at great risk.
- **Street and Urban Flooding**—There are numerous areas of the city that flood to varying degrees during periods of high rain. The effects of this flooding range from street closures to damage to property, vehicles and buildings.
- **Power Outages/Emergency Power**—Local power outages have resulted from high winds and storm conditions as well as from the effects of wildland fire in the region. Many key city buildings including the Main City Hall and Council Chambers buildings have no back-up power or emergency generators.

- **Debris Flows**—Following heavy rains and winter storms, substantial debris flows have occurred in the Santa Clara River as well as other local streams and culverts. Debris flows following wildland fires are particularly bad and can require removal of material from streams, streets, culverts and beaches.
- **Liquefaction Potential**—Nearly the entire City of Oxnard is located in a “Liquefaction Zone”. The effects and damage caused by seismic activities can be amplified resulting in increased damage to buildings and infrastructure.
- **Tsunami Awareness and Notification**—Oxnard has a large visitor and tourist population who may not be aware of the tsunami risk.
- **Sea Level Rise (SLR)**—SLR is an identified flooding threat to the future of the City of Oxnard. Therefore, planning for local adaptation and resiliency is an identified City Council priority and part of the Local Coastal Program update. It is a complex and difficult issue that will require strong coordination at the federal, State, and local level over the long term to effectively plan for and adapt to changing variables over time. Adaptation strategies are based upon various SLR projections anticipated to occur in years 2030, 2060, and 2100.
- **Drought**—Much of California, Ventura County and the City of Oxnard has been experiencing a multiyear drought. Continued drought can directly impact land use, development options, as well as economic development in the city. This includes negatively impacting business development, including expansion and retention and support for agricultural resources and industries. More prolonged and severe drought conditions could potentially impact potable water supplies to the point of creating a public health and safety emergency.
 - For background: The City of Oxnard purchases 40-50% of its total water supply from Calleguas Municipal Water District. This water is State Water Project water supplied by Metropolitan Water District. In addition to State water, the City of Oxnard supplements its remaining water needs from groundwater that is pumped by the City (20-30%) and by the United Water Conservation District (20-30%). According to the 2021 Groundwater Sustainability Plan (GSP), the Oxnard Subbasin water has experienced drier than average conditions since 2015 and anticipates little change to the water elevation level due to the current drought. The subbasin is currently at a level categorized as being in overdraft per the GSP.

Mitigation actions addressing these issues were prioritized for consideration in the action plan in this annex.

6.7 STATUS OF PREVIOUS PLAN ACTIONS

The following table summarizes the actions that were recommended in the previous version of the hazard mitigation plan and their implementation status at the time this update was prepared.

Table 6-13. Status of Previous Plan Actions

Action Item	Completed	Removed; No Longer Feasible	Carried Over to Plan Update	
			Check if Yes	Action # in Update
OX 3—Increase participation in the NFIP by maintaining a CRS rating Class 9, which through enhanced floodplain management activities would allow property owners to receive a discount on their flood insurance. Comment: Increased participation by upgrading CRS rating from Class 9 to Class 7. The City will continue to maintain CRS rating Class 7.	✓			
OX 4—Develop a tool to collect and analyze post-flood disaster risk assessment information to allow the City of Oxnard to analyze the effects of the flood and implement future mitigation projects. Information to be collected will include: number and location of structures, including RL properties, flooded; identification of flooded areas outside of the SFHA and floodwater heights at these locations; number and location of failed gages; etc. Comment: Information is being collected as required by CRS program. The tool is to be developed once funding is available. Funding was requested in FY 21-22 for this purpose			✓	OXN-19
OX 5—Continue to participate in the NWS TsunamiReady Program through continued implementation of Guideline 4: Community Preparedness measures, including public outreach material and curriculum. Comment: Oxnard continues to participate in the TsunamiReady Program and will be updating and renewing its application again this year. This is an ongoing program.			✓	OXN-10
OX 6—Evaluate Santa Clara Levees 1, 2 and 3 for upgrade and construction. Comment: Evaluations have been completed by the County of Ventura. Levees are County-owned.	✓			
OX 7—Construct a Mandalay Beach storm drainage system to the Channel Islands Harbor. During rain events, stormwater accumulation along Mandalay Beach Road is caused by wind and sand blocking the drainage to the ocean outfall. Comment: This is currently being mitigated with a dedicated portable pump that is deployed and turned on during storm events. Pump station construction is estimated at \$30M+ and has not been completed due to lack of funding.			✓	OXN-20
OX 8—Construct a permanent lift station for Ventura Road @ Wagon Wheel Road. Water in the low point in the roadway must be manually pumped with each rain event. Comment: The improvements are currently in the design phase. Wagon Wheel Development conditioned to construct.	✓			
OX 9—Construct a stormwater lift station at Perkins Road. Flooding occurs at the point in Perkins Road which is caused by an undersized sump pump. The proposed stormwater lift system will transport stormwater to the Advanced Water Purification Facility and recycle the storm water for agricultural use along Hueneme Road. Comment: Currently being mitigated with a portable pump that is turned on during storm events. Pump station has not been completed due to lack of funding. The discharge location may change so discharge location is not included in the updated action plan.			✓	OXN-20
OX 10—Construct a permanent flood protection pump station at Dodge Road. Flooding occurs at the low point in Dodge Road at the intersection with Maulhardt Road. Comment: Currently being mitigated with a portable pump that is turned on during storm events. Pump station has not been completed due to lack of funding.			✓	OXN-20

Action Item	Completed	Removed; No Longer Feasible	Carried Over to Plan Update	
			Check if Yes	Action # in Update
OX 11—As part of the Memorandum of Agreement / Memorandum of Understanding with The Nature Conservancy (TNC): continue to partner with TNC on acquisition, restoration and mitigation planning processes; partner on grant proposals; participate in negotiations with land use owners; carry-out restoration projects; hold titles to floodplain properties as appropriate; and hold or co-hold with TNC multipurpose easements.			✓	OXN-21
Comment: In 2016, the California State Coastal Conservancy, City of Oxnard, and The Nature Conservancy (collectively known as the Ormond Beach Partners) entered into a Memorandum of Understanding to actively coordinate and collaborate across the Ormond Beach Partners' respective properties that total over 630 acres in order to protect, manage, and restore the Ormond Beach Area. The Project Partners are leading the Ormond Beach Restoration and Public Access Plan (OBRAP), with the goals of restoring the natural ecosystem and habitats and improving public access and enjoyment of Ormond Beach while protecting nature. The Ormond Beach Partners have held two public outreach meetings soliciting public input on the OBRAP in 2017 and 2019. The Ormond Beach Partners will conduct a public outreach meeting in 2021 to highlight the Preferred Alternative and Preliminary Design. The next phases of the OBRAP will be the environmental review, gap assessment, final design, permitting, funding and construction.				

6.8 HAZARD MITIGATION ACTION PLAN

Table 6-14 lists the identified actions, which make up the hazard mitigation action plan for this jurisdiction. Table 6-15 identifies the priority for each action. Table 6-16 summarizes the mitigation actions by hazard of concern and mitigation type.

Table 6-14. Hazard Mitigation Action Plan Matrix

Benefits New or Existing Assets	Objectives Met	Lead Agency	Support Agency	Estimated Cost	Sources of Funding	Timeline
Action OXN-1 —Where appropriate, support retrofitting, purchase or relocation of structures located in hazard areas, prioritizing those that have experienced repetitive losses and/or are located in high- or medium-risk hazard areas.						
<u>Hazards Mitigated:</u> Dam Failure, Earthquake, Flooding, Landslide, Sea Level Rise, Tsunami						
Existing	2, 6, 9, 10, 11	Public Works.	Community Development	High	HMGP, PDM, FMA	Short-term
Action OXN-2 —Amend General Plan Safety and Hazard Element text and as needed hazard maps, to reflect updated mapping of hazard areas identified by this Hazard Mitigation Plan, FEMA, Cal Fire, or the CA Seismic Hazard Mapping Program, in addition to background data associated with Local Coastal Plan update and background work associated with the City's Climate Action and Adaptation Plan (CAAP)						
<u>Hazards Mitigated:</u> Dam Failure, Drought, Earthquake, Flooding, Sea Level Rise, Severe Weather, Tsunami, Wildfire						
New & Existing	1, 2, 3, 4, 5, 7, 8, 9, 10, 11, 12, 13, 14, 15, 17, 19	Community Development	Public Works	\$500,000	Staff Time, General Fund, Grant Funding, FEMA HMA, BRICK, Pre and Post Disaster Mitigation Grant Funding	Short-term
Action OXN-3 —Actively participate in the plan maintenance protocols outlined in Volume 1 of this Hazard Mitigation Plan.						
<u>Hazards Mitigated:</u> Dam Failure, Drought, Earthquake, Flooding, Sea Level Rise, Severe Weather, Tsunami, Wildfire						
New & Existing	1, 2, 4, 6, 7, 8, 9, 11, 12, 13, 14, 15	Public Works	Community Development	Low	Staff Time, General Funds	Short-term

Benefits New or Existing Assets	Objectives Met	Lead Agency	Support Agency	Estimated Cost	Sources of Funding	Timeline
Action OXN-4 —Continue to maintain good standing and compliance under the National Flood Insurance Program (NFIP) through implementation of floodplain management programs that, at a minimum, meet the NFIP requirements: • Enforce the flood damage prevention ordinance. • Participate in floodplain identification and mapping updates. • Provide public assistance/information on floodplain requirements and impacts.						
<u>Hazards Mitigated:</u> New & Existing	Dam Failure, Severe Storm, Severe Weather, Flooding 1, 2, 6, 7, 17	Public Works	Community Development	Low	Staff Time, General Funds	Short term and ongoing
Action OXN-5 —Develop, approve, and implement the City's Climate Action and Adaptation Plan (CAAP); including adaptive strategies to address hazards.						
<u>Hazards Mitigated:</u> New & Existing	Sea Level Rise, Flooding, Wildfire, Severe Storms, Severe Weather, Drought 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 19	Community Development	Public Works	High	Staff Time, General Funds	Short-term and on going
Action OXN-6 —Purchase generators for critical facilities and infrastructure that lack adequate backup power, & as recommended by the City's CAAP .						
<u>Hazards Mitigated:</u> New & Existing	Dam Failure, Earthquake, Flooding, Landslide, Severe Weather, Tsunami, Wildfire 2, 19	Public Works	Community Development	Estimated: \$500,000 per generator (avg.)	Staff Time, General Funds, Enterprise Funds, HMGP, PDM	Short-term
Action OXN-7 —Retrofit existing Seawalls at Mandalay Bay in order to withstand seismic events per the latest provisions in the California Building Code (CBC, 2019)						
<u>Hazards Mitigated:</u> Existing	Earthquake 2, 4, 6, 9, 11, 19	Public Works	Community Development	Estimated: \$200,000,000	Staff Time, General Funds, HMGP, PDM, FMA	Short-term
Action OXN-8 —Replace existing 45-inch diameter water transmission main that is critical as a lifeline for residents, industry, and national defense, including the region's military base. This project will prevent seismic-related failure of the transmission line of State Water Project water that provides potable water to a population of approximately 245,000. This pipeline supplies 60% of the City of Oxnard's water and 50% of the City of Port Hueneme's water which is then purveyed to Naval Base Ventura County's Point Mugu and Port Hueneme installations.						
<u>Hazards Mitigated:</u> Existing	Earthquake 2, 4, 6, 9, 11, 19	City of Oxnard	City of Port Hueneme	Estimated: \$50,000,000	Staff Time, Enterprise Funds, HMGP, PDM, FMA	Short-term
Action OXN-9 —Develop a comprehensive Sea Level Rise (SLR) Adaptation Plan to be implemented in the four identified coastal planning areas located within the City's coastal zone to adopt long term adaptation policies and strategies to identify, manage, and reduce SLR impacts on coastal resources, private property and critical City facilities. The SLR adaptation policies and strategies included in the Local Coastal Program update would also be coordinated with the Climate Action and Adaptation Plan to address SLR vulnerabilities.						
<u>Hazards Mitigated:</u> New & Existing	Sea Level Rise Enter Response 1, 2, 4, 5, 6, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19	Public Works	Community Development; County of Ventura and Harbor Department; City of Port Hueneme; U.S. Department of Defense (Navy)	High	Grant State Federal	Long Term

Benefits New or Existing Assets	Objectives Met	Lead Agency	Support Agency	Estimated Cost	Sources of Funding	Timeline
Action OXN-10 —Continue to participate in the NWS TsunamiReady Program through continued implementation of Guidelines for Community Preparedness measures, including public outreach material and curriculum. In 2021 Oxnard updated its application and has received approval from the NWS as a TsunamiReady Community. This is an ongoing program						
<u>Hazards Mitigated:</u> Tsunami						
New & Existing	1, 2, 6, 7, 8, 12, 17, 18, 19	Emergency Services Manager	Oxnard Fire and Public Works Departments	Low	Staff Time, Enterprise Funds, EMPG, DHS	Ongoing
Action OXN-11 —Construction of Aquifer Storage and Recovery (ASR) wells in order to ensure future reliable and affordable supply of high-quality water for the Oxnard Plain.						
<u>Hazards Mitigated:</u> Drought						
Existing	2, 4, 6, 9, 11, 19	City of Oxnard	State Division of Drinking Water	High	Staff Time, Enterprise Funds, HMGP, PDM, FMA	Short-term
Action OXN-12 —Develop and implement a resident and visitor tsunami awareness and safety public education and outreach program. Provide tsunami awareness, hazard, safety, and evacuation information at visitor locations including hotels, vacation rentals, campgrounds and day use recreational areas. Program would include signs, posters, handouts and public presentations.						
<u>Hazards Mitigated:</u> Tsunami						
New	1, 2, 7, 8, 10, 12, 17, 18, 19	Oxnard Police and Fire Departments	Oxnard Community Development	Low	Staff Time, Enterprise Funds, EMPG, DHS	Short-term
Action OXN-13 —Engage in a study to determine the best methods and strategies to communicate hazards and warnings to the city's homeless population, particularly those living in undeveloped areas such as fields, creeks and riverbeds. Warnings would include notification of impending or immediate dangers.						
<u>Hazards Mitigated:</u> Dam Failure, Earthquake, Flooding, Landslide, Severe Weather, Tsunami, Wildfire						
New	1, 2, 7, 8, 10, 12, 17, 18, 19	City of Oxnard		High	Grant Funding-FEMA HMA (BRIC, FMA, HMGP), Staff Time, Enterprise Funds	Short-Term
Action OXN-14 —Engage in a feasibility study to determine if Oxnard Fire Station 6 can be retrofitted, replaced or relocated due to seismic and tsunami hazards.						
<u>Hazards Mitigated:</u> Earthquake, Tsunami						
Existing	1, 2, 6, 7, 8, 9, 18, 19	Oxnard Fire Department	City Planning Department	High	Grant Funding-FEMA HMA (BRIC, HMGP), Staff Time, Enterprise Funds	Short-Term
Action OXN-15 —Engage in a feasibility study to determine if Oxnard Fire Stations 2, 3, 4 & 5 can be retrofitted, replaced or relocated due to seismic hazards.						
<u>Hazards Mitigated:</u> Earthquake						
Existing	1, 2, 6, 7, 8, 9, 18, 19	Oxnard Fire Department	City Planning Department	High	Grant Funding-FEMA HMA (BRIC, HMGP), Staff Time, Enterprise Funds	Short-Term
Action OXN-16 —Implement the findings of the feasibility studies with retrofits to, relocation of, or replacement of existing City Fire Stations including, Stations # 2, 3, 4, 5, 6. These stations were built between 1954 and 1978 prior to current building standards. Damage to these stations could seriously impact fire, rescue and EMS service within the City.						
<u>Hazards Mitigated:</u> Earthquake, Tsunami						
Existing	1, 2, 6, 7, 8, 9, 18, 19	Oxnard Fire Department	City Planning Department	High	Grant Funding-FEMA HMA (BRIC, HMGP), Staff Time, Enterprise Funds	Short-Term

Benefits New or Existing Assets	Objectives Met	Lead Agency	Support Agency	Estimated Cost	Sources of Funding	Timeline
Action OXN-17 —Engage in a feasibility study to determine if the Oxnard Police Headquarters building, including the Dispatch facility, can be retrofitted or should be replaced due to seismic hazards.						
<u>Hazards Mitigated:</u> Earthquake						
New	1, 2, 7, 8, 10, 12, 17, 18, 19	City of Oxnard	Oxnard Police Department	High	Grant Funding-FEMA HMA (BRIC, HMGP), Staff Time, Enterprise Funds	Short-Term
Action OXN-18 —Implement the findings of the feasibility study by retrofitting or replacing Oxnard Police Headquarters building. This will include expansion of the Dispatch facility to accommodate equipment for the radio and data traffic needed to support disaster response communications.						
<u>Hazards Mitigated:</u> Earthquake, Tsunami, Severe Storms, Dam Failure, Wildfires, Flooding						
Existing	1, 2, 6, 7, 8, 9, 18, 19	Oxnard Police Department	Oxnard Fire Department	High	Grant Funding-FEMA HMA (BRIC, HMGP), Staff Time, Enterprise Funds	Short-Term
Action OXN-19 —Develop a tool to collect and analyze post-flood disaster risk assessment information to allow the City of Oxnard to analyze the effects of the flood and implement future mitigation projects. Information to be collected will include: number and location of structures, including RL properties, flooded; identification of flooded areas outside of the SFHA and floodwater heights at these locations; number and location of failed gages; etc.						
<u>Hazards Mitigated:</u> Flooding						
New & Existing	1, 2, 17	City of Oxnard		High	Grant Funding-FEMA HMA (BRIC, FMA, HMGP), Staff Time, Enterprise Funds	Short-Term
Action OXN-20 —Construct pump stations for roadway areas affected by chronic flooding including, but not limited to: - Mandalay Beach storm drainage system to the Channel Islands Harbor. During rain events, stormwater accumulation along Mandalay Beach Road is caused by wind and sand blocking the drainage to the ocean outfall. - Construct a stormwater lift station at Perkins Road. Flooding occurs at the point in Perkins Road which is caused by an undersized sump pump. - Construct a permanent flood protection pump station at Dodge Road. Flooding occurs at the low point in Dodge Road at the intersection with Maulhardt Road.						
<u>Hazards Mitigated:</u> Flooding, Severe Storms						
Existing	2, 6, 10, 11	Public Works		High	Grant Funding-FEMA HMA (BRIC, FMA, HMGP), Staff Time, Enterprise Funds	Short-Term

Benefits New or Existing Assets	Objectives Met	Lead Agency	Support Agency	Estimated Cost	Sources of Funding	Timeline
Action OXN-21 —As part of the Memorandum of Agreement / Memorandum of Understanding with The Nature Conservancy (TNC): - Continue to partner with TNC on acquisition, restoration and mitigation planning processes - Partner on grant proposals - Participate in negotiations with land use owners - Carry-out restoration projects - Hold titles to floodplain properties as appropriate - Hold or co-hold with TNC multipurpose easements. Secure a Consolidated Coastal Development Permit to cover conservation and preservation activities over the next five years (2021-2026) that consist of the following: - Nesting shorebird protection activities - Invasive plant removal activities - Access road and trail maintenance activities - Field data collection and research. Collaborate with Ventura County Public Works Agency-Watershed Protection, TNC, and State Coastal Conservancy to advance planning, design, and implementation of the Ormond Beach Restoration and Access Plan (OBRAP), particularly those components alleviating flooding along the Ormond Lagoon Waterway and creating public access along tšumaš Creek. This supports the VCPWA-WP Action VCPWA-13.						
<u>Hazards Mitigated:</u>	Drought, Flood, Severe Weather, Severe Storms, Sea Level Rise, Tsunami					
Existing and New	1, 2, 3, 9, 12, 13, 14, 15, 17, 18, 19	City of Oxnard	VCPWA-WP	Medium	Staff Time, Enterprise Funds, FEMA Grants (BRIC), CDFG	Ongoing

a. Short-term = Completion within 5 years; Long-term = Completion within 10 years; Ongoing= Continuing new or existing program with no completion date

Acronyms used here are defined at the beginning of this volume.

Table 6-15. Mitigation Action Priority

Action #	# of Objectives Met	Benefits	Costs	Do Benefits Equal or Exceed Cost?	Is Project Grant-Eligible?	Can Project Be Funded Under Existing Programs/ Budgets?	Implementation Priority	Grant Pursuit Priority
OXN 1	5	High	High	Yes	Yes	No	Medium	High
OXN 2	16	Medium	Low	Yes	No	Yes	High	Low
OXN 3	12	Low	Low	Yes	No	Yes	High	Low
OXN 4	5	Medium	Low	Yes	No	Yes	High	Low
OXN 5	17	Medium	Low	Yes	No	Yes	High	Medium
OXN 6	2	High	Medium	Yes	Yes	No	Medium	High
OXN 7	6	High	High	Yes	Yes	No	High	High
OXN 8	6	High	High	Yes	Yes	No	High	High
OXN 9	17	Medium	High	No	Yes	No	Low	Medium
OXN 10	9	High	Low	Yes	Yes	Yes	High	Low
OXN 11	6	High	High	Yes	Yes	No	High	High
OXN 12	9	High	Low	Yes	Yes	No	High	High
OXN 13	9	Low	Medium	Yes	Yes	No	Medium	High
OXN 14	8	Medium	Medium	Yes	Yes	No	Medium	High
OXN 15	8	Medium	Medium	Yes	Yes	No	Medium	High

Action #	# of Objectives Met	Benefits	Costs	Do Benefits Equal or Exceed Cost?	Is Project Grant-Eligible?	Can Project Be Funded Under Existing Programs/ Budgets?	Implementation Priority	Grant Pursuit Priority
OXN 16	8	High	High	Yes	Yes	No	Medium	High
OXN 17	9	Medium	Medium	Yes	Yes	No	Medium	High
OXN 18	8	High	High	Yes	Yes	No	Medium	High
OXN 19	3	Medium	High	No	Yes	No	Medium	Medium
OXN 20	4	High	High	Yes	Yes	No	Medium	High
OXN 21	11	Medium	Medium	Yes	Yes	Yes	High	Medium

a. See the introduction to this volume for an explanation of priorities.

Table 6-16. Analysis of Mitigation Actions

Hazard Type	Action Addressing Hazard, by Mitigation Types ^a							
	Prevention	Property Protection	Public Education & Awareness	Natural Resource Protection	Emergency Services	Structural Projects	Climate Resilience	Community Capacity Building
High-Risk Hazards								
Dam Failure	OXN-1, 2, 3, 4, 6	OXN-1, 2, 3, 4, 6, 18	OXN-2, 3, 4, 13	OXN-1, 2, 3, 4, 6	OXN-2, 3, 4, 6, 13, 18	OXN-1, 2, 3, 4, 6, 18	OXN-1, 2, 3, 4, 6	OXN-4, 13, 18
Medium-Risk Hazards								
Earthquake	OXN-2, 3, 6, 8, 14, 15, 16	OXN-2, 3, 6, 8, 14, 15, 16, 17, 18	OXN-2, 3, 8, 13	OXN-2, 3, 6	OXN-2, 3, 6, 8, 16, 17, 18	OXN-3, 6, 14, 15, 16, 17, 18	OXN-2, 6	OXN-8, 13, 14, 15, 16, 17, 18
Severe Storm	OXN-1, 2, 3, 4, 20, 21	OXN-1, 2, 3, 4, 5, 18, 20	OXN-2, 3, 4, 5, 21	OXN-1, 2, 3, 4, 5, 20, 21	OXN-1, 2, 3, 4, 5, 18, 20	OXN-1, 2, 3, 18, 20	OXN-1, 2, 4, 5, 20, 21	OXN-4, 5, 18, 21
Severe Weather	OXN-1, 2, 3, 4, 5, 6, 21	OXN-1, 2, 3, 4, 5, 6	OXN-3, 4, 5, 6, 21	OXN-1, 2, 3, 4, 5, 6, 21	OXN-1, 2, 3, 4, 6	OXN-1, 3, 5	OXN-1, 2, 3, 4, 5, 6, 21	OXN-4, 5, 6, 21
Flooding	OXN-1, 2, 3, 4, 5, 6, 7, 20, 21	OXN-1, 2, 3, 4, 5, 6, 7, 18, 20, 21	OXN-2, 3, 4, 5, 6, 7, 13, 19	OXN-1, 2, 3, 4, 5, 6, 7, 20, 21	OXN-1, 2, 3, 4, 5, 6, 18, 20	OXN-1, 2, 3, 4, 7, 18, 20	OXN-1, 2, 3, 4, 5, 6, 20, 21	OXN-4, 5, 6, 7, 13, 15, 18, 19, 21
Sea Level Rise	OXN-1, 2, 5, 9, 21	OXN-1, 2, 3, 5, 9, 21	OXN-1, 2, 3, 5, 9	OXN-1, 2, 3, 5, 9, 21	OXN-2, 3	OXN-1, 2, 3, 5, 9	OXN-1, 2, 3, 5, 9, 21	OXN-1, 2, 3, 5, 9, 21
Low-Risk Hazards								
Drought	OXN-5, 11, 21	OXN-21	OXN-2, 5	OXN-2, 5, 11, 21	OXN-5		OXN-2, 3, 5, 11, 21	OXN-2, 3, 5, 11, 21
Wildfire	OXN-1, 2, 3, 6	OXN-1, 2, 3, 6	OXN-2, 3, 5, 6, 20	OXN-2, 3, 5, 6	OXN-2, 5, 6, 13		OXN-2, 3, 5, 6	OXN-2, 3, 5, 6, 13
Tsunami	OXN-1, 2, 3, 6, 10, 14, 16, 21	OXN-1, 2, 3, 6, 10, 14, 16, 18, 21	OXN-1, 2, 3, 6, 10, 12, 13	OXN-1, 2, 3, 6, 10, 21	OXN-1, 2, 3, 6, 10, 13, 14, 16, 18	OXN-1, 2, 3, 10, 14, 16, 18	OXN-1, 2, 3, 6, 10, 21	OXN-1, 2, 3, 6, 10, 13, 14, 16, 18, 21

a. See the introduction to this volume for an explanation of mitigation types.

6.9 PUBLIC OUTREACH

Table 6-17 lists public outreach activities for this jurisdiction.

Table 6-17. Local Public Outreach

Local Outreach Activity	Date	Number of People Involved
Virtual Emergency Preparedness Workshop	September 16, 2021	70
Adaptation Plan, outreach		
Sea Level Rise Vulnerability Assessment Report Results and Adaptation Strategies Workshop	August 9, 2017	Approximately 25
Sea Level Rise Adaptation Strategy Results & Conceptual Policies	March 14, 2018	Approximately 25

6.10 INFORMATION SOURCES USED FOR THIS ANNEX

The following technical reports, plans, and regulatory mechanisms were reviewed to provide information for this annex.

- **City of Oxnard Municipal Code**—The municipal code was reviewed for the full capability assessment and for identifying opportunities for action plan integration.
- **City of Oxnard Flood Damage Prevention Ordinance**—The flood damage prevention ordinance was reviewed for compliance with the National Flood Insurance Program.
- **City of Oxnard 2021-2026 Five Year Capital Improvement Program (CIP)**—The CIP was reviewed for identifying opportunities for action plan integration.
- **Flood Info Community Rating System Website (Ventura County):**
<https://www.vcfloodinfo.com/programs/flooding-and-flood-risk/vc-flood-history>
- **City of Oxnard Sea Level Rise Atlas:** As required by the adopted California Coastal Commission Sea Level Rise Guidance Policy, a risk and vulnerability assessment using the best-available information and science regarding coastal erosion, flooding, wave impacts, tidal inundation and tsunamis is needed to identify potential physical impacts in the City's coastal zone. In this way, the City can determine what areas are vulnerable to impacts from these five coastal hazards individually and combined, and with projected sea level rise.
<https://www.oxnard.org/wp-content/uploads/2021/06/OXNARD-FINAL-LCP-Sea-Level-Rise-Map-Atlas-Task-2.pdf>
- **Sea Level Rise Vulnerability Assessment and Fiscal Impact Report:** This study included a cost-benefit analysis of the adaptation strategies to allow comparison. The aim of the economic analysis was to provide a common metric against which the trade-offs between the costs and benefits of each adaptation strategy may be evaluated. The analysis accounts for the physical changes, economic benefits, and damages associated with each adaptation strategy, including th
- **City of Oxnard Emergency Operations Plan (EOP)**—The EOP was used to obtain the listing of official natural hazards that can impact the City, reference materials such as tsunami and dam inundation maps as well emergency management priorities, and public alert and warning procedures.

The following outside resources and references were reviewed:

- **Hazard Mitigation Plan Annex Development Toolkit**—The toolkit was used to support the identification of past hazard events and noted vulnerabilities, the risk ranking, and the development of the mitigation action plan.

6.11 FUTURE NEEDS TO BETTER UNDERSTAND RISK/VULNERABILITY

The City of Oxnard Fire Department is currently developing a Strategic Plan composed of numerous elements including a community risk analysis, infrastructure assessment, and community planning prioritization process. These elements are being created with significant input from key stakeholders including Fire Department personnel, City departments, external agencies, and the residential and business communities. It is anticipated that the Department's Strategic Plan, anticipated for release in 2022, will strengthen the City's understanding of risk and vulnerabilities and serve as a foundation for additional hazard mitigation project development during the next planning cycle.

Oxnard

Critical Facilities (1 of 2)

- Food, Water, Shelter
- Health and Medical
- Safety and Security
- Major Roads
- ▭ Selected City
- ▭ Incorporated Cities
- ▭ County Boundary

Data Sources: Ventura Co., VCFD, Casitas MWD, Calleguas MWD, City of Camarillo, CA Energy Commission, Cal Trans, EPA, HIFLD, Esri



Oxnard

Critical Facilities (1 of 2)

- Communications
- Energy
- Hazardous Material
- Transportation
- Major Roads
- Selected City
- Incorporated Cities
- County Boundary

Data Sources: Ventura Co., VCFD, Casitas MWD, Calleguas MWD, City of Camarillo, CA Energy Commission, Cal Trans, EPA, HIFLD, Esri

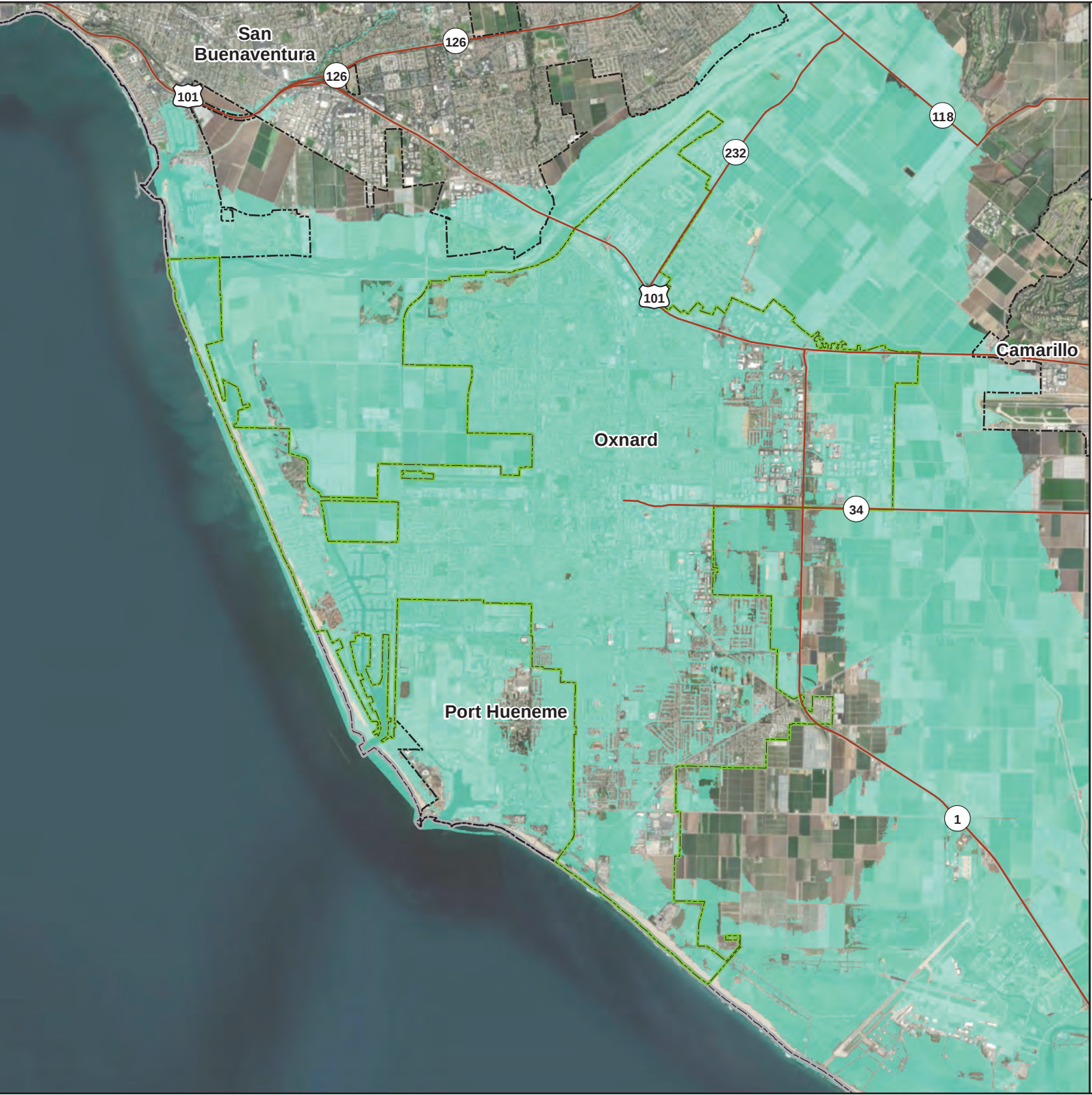


Oxnard

**Dam Failure
Inundation Areas**

-  Combined Inundation Areas
-  Major Roads
-  Selected City
-  Incorporated Cities
-  County Boundary

Data Sources: Ventura Co.,
CA DWR, Esri



Oxnard
NEHRP Soil Class

- C (Dense soil/soft rock)
- D (Stiff soil)
- E (Soft clay)
- Major Roads
- Selected City
- Incorporated Cities
- County Boundary

Data Sources: Ventura Co.,
CGS, Esri



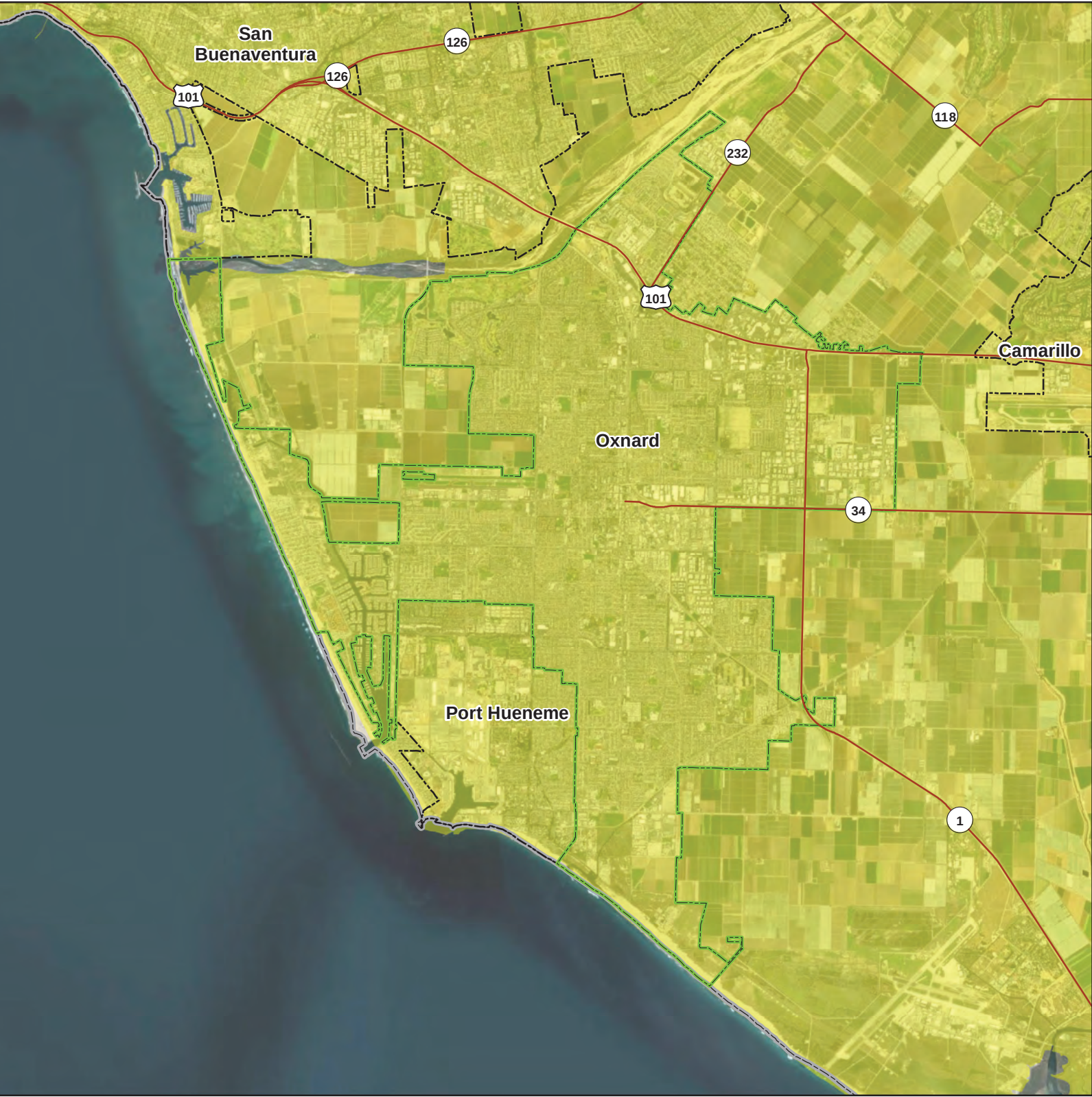
Oxnard

Liquefaction Susceptibility

-  Liquefaction zone
-  Major Roads
-  Selected City
-  Incorporated Cities
-  County Boundary

Data Sources: Ventura Co., Esri





Oxnard

100-Year Probabilistic Earthquake Scenario

Mercalli Intensity Scale

- VII (Very Strong/Moderate)
- Major Roads
- Selected City
- Incorporated Cities
- County Boundary

Intensity scale described as:
(perceived shaking / potential damage)

Data Sources: Ventura Co.,
USGS, Esri



0 0.5 1 2 Miles

Oxnard

Oak Ridge M7.16 Earthquake Scenario

Mercalli Intensity Scale

- VII (Very Strong/Moderate)
- VIII (Severe/Moderate-Heavy)

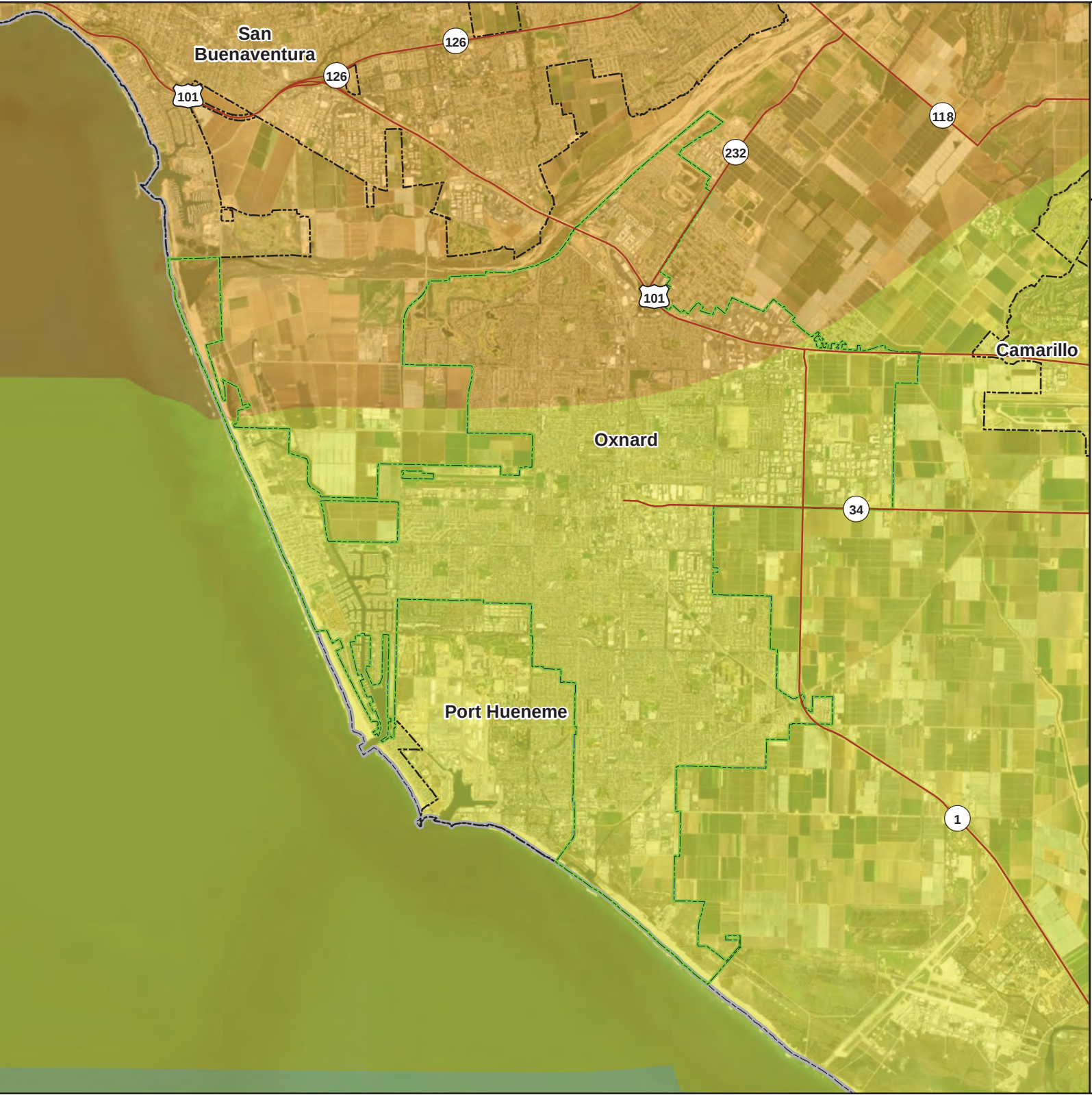
- Major Roads
- Selected City
- Incorporated Cities
- County Boundary

Intensity scale described as:
(perceived shaking / potential damage)

Data Sources: Ventura Co.,
USGS, Esri



0 0.5 1 2 Miles



Oxnard

**Pitas Point M7.12
Earthquake Scenario**

Mercalli Intensity Scale

- VI (Strong/Light)
- VII (Very Strong/Moderate)
- VIII (Severe/Moderate-Heavy)

- Major Roads
- Selected City
- Incorporated Cities
- County Boundary

Intensity scale described as:
(perceived shaking / potential damage)

Data Sources: Ventura Co.,
USGS, Esri



Oxnard

San Cayetano M7.16 Earthquake Scenario

Mercalli Intensity Scale

- V (Moderate/Very Light)
- VI (Strong/Light)
- VII (Very Strong/Moderate)

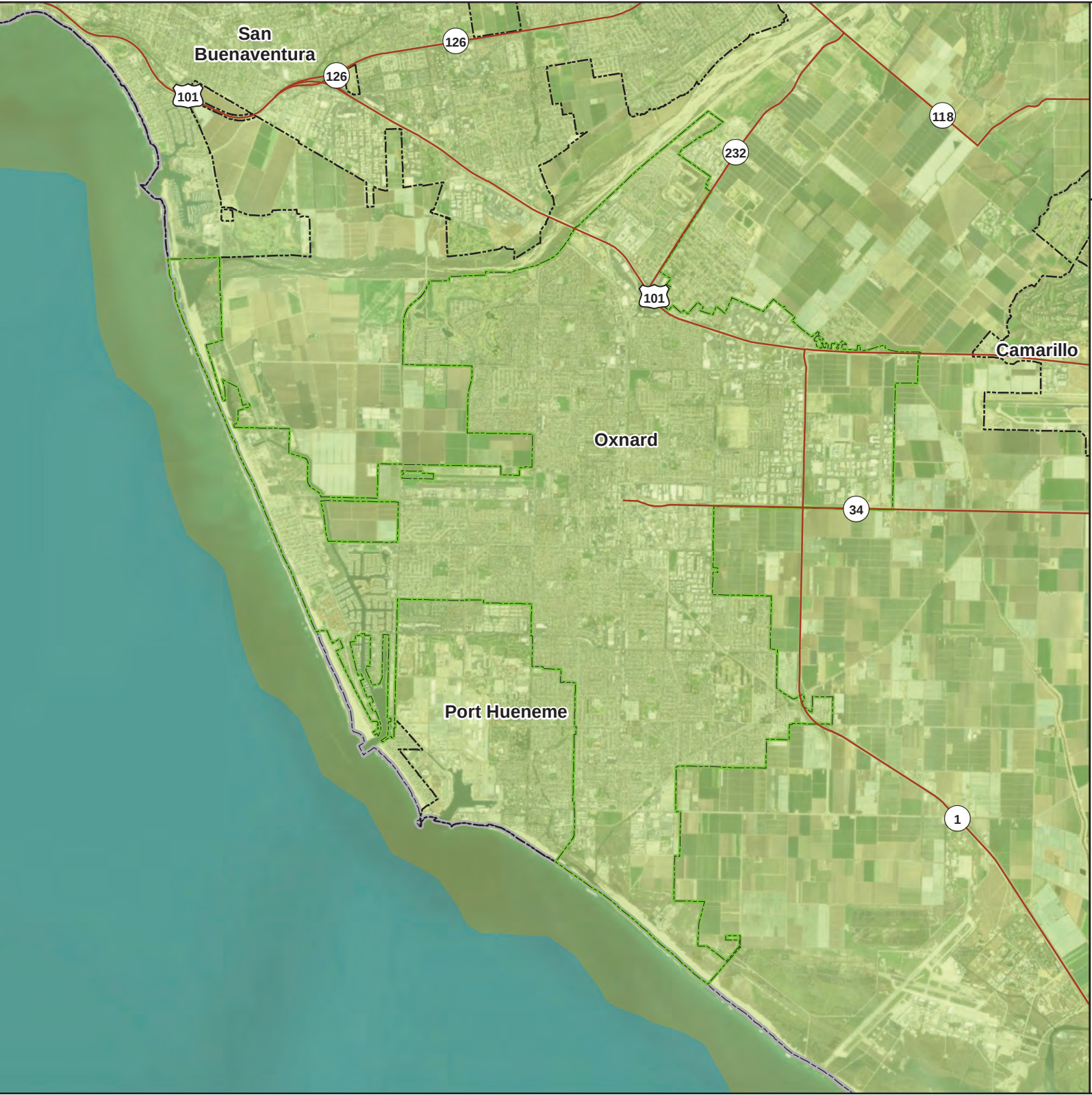
- Major Roads
- Selected City
- Incorporated Cities
- County Boundary

Intensity scale described as:
(perceived shaking / potential damage)

Data Sources: Ventura Co.,
USGS, Esri



0 0.5 1 2 Miles



Oxnard

**S. San Andreas M8.03
Earthquake Scenario**

Mercalli Intensity Scale

 V (Moderate/Very Light)

 VI (Strong/Light)

 Major Roads

 Selected City

 Incorporated Cities

 County Boundary

Intensity scale described as:
(perceived shaking / potential damage)

Data Sources: Ventura Co.,
USGS, Esri



Oxnard

FEMA Flood Hazard Areas

- 1% Annual Chance Flood (100-Year)
- 0.2% Annual Chance Flood (500-Year)
- Major Roads
- Selected City
- Incorporated Cities
- County Boundary

Data Sources: Ventura Co.,
FEMA, Esri



0 0.5 1 2 Miles

Oxnard

Susceptibility to Deep-Seated Landslides

- Low
- Moderate
- High
- Very High
- Major Roads
- Selected City
- Incorporated Cities
- County Boundary

Data Sources: Ventura Co.,
CGS, Esri



0 0.5 1 2 Miles

Oxnard

Sea Level Rise
of 25 cm (9.8 in.)

- Sea Level Rise Inundation Area
- Major Roads
- Selected City
- Incorporated Cities
- County Boundary

Data Sources: Ventura Co.,
OCOF, Esri





Oxnard

Sea Level Rise
of 100 cm (39.4 in.)

- Sea Level Rise Inundation Area
- Major Roads
- Selected City
- Incorporated Cities
- County Boundary

Data Sources: Ventura Co.,
OCOF, Esri



0 0.5 1 2 Miles

Oxnard

Tsunami Inundation Zones

-  Inundation Zones
-  Major Roads
-  Selected City
-  Incorporated Cities
-  County Boundary

Data Sources: Ventura Co.,
CGS, Esri



7. CITY OF PORT HUENEME

7.1 LOCAL HAZARD MITIGATION PLANNING TEAM

Primary Point of Contact

Brad Conners, City Manager
250 N. Ventura Road
Port Hueneme, CA 93041
Telephone: 805-986-6501
e-mail Address: BConners@ci.port-hueneme.ca.us

Alternate Point of Contact

Charles Peretz, Deputy City Manager
250 N. Ventura Road
Port Hueneme, CA 93041
Telephone: 805-986-6501
e-mail Address: CPeretz@ci.port-hueneme.ca.us

This annex was developed by the local hazard mitigation planning team, whose members are listed in Table 7-1.

Table 7-1. Local Mitigation Planning Team Members

Name	Title
Don Villafana	Public Works Director
Lupe Acero	Deputy Finance Director
Andrew Salinas	Chief of Police
Tony Stewart	Director of Community Development
Scott Matalon	Emergency Preparedness Manager
Brad Conners	City Manager
Charles Peretz	Deputy City Manager

7.2 JURISDICTION PROFILE

7.2.1 Location and Features

Port Hueneme is a small coastal town located in Ventura County, just south of the City of Oxnard and east of Channel Islands Harbor. The City is home to Naval Base Ventura County (NBVC) and the Port of Hueneme and about five miles to the south is Naval Air Station Point Mugu. Port Hueneme is primarily built out and has a total land area of 4.5 square miles with a population of 23,647 people. Regional access to the City is provided by Highway 101 and State Route 1. The City also includes beach front properties, parks, and public beaches visited from residents and non-residents alike.

7.2.2 History

The City of Port Hueneme was incorporated on March 24, 1948. The City of Port Hueneme (pronounced “Why-nee-mee”) is a unique community along Ventura County’s Gold Coast just south of the City of Oxnard and Channel Islands Harbor. Port Hueneme is unique because of its rich history, culture, and traditions, dating back to the Chumash Indians who made their home here for centuries and because of its long-established, close relationship with the U.S. Navy’s Port Hueneme and Point Mugu naval facilities.

7.2.3 Governing Body Format

The City of Port Hueneme is governed by a five-member city council. The City consists of six departments: Finance, Housing and Facilities, Community Development, Public Works, Police, and the City Manager’s Office. The City has 2 commissions which report to the City Council. The City currently employs a total of 170 employees (full-time equivalent).

The City Council assumes responsibility for the adoption of this plan; the City Manager will oversee its implementation.

7.3 CURRENT TRENDS

7.3.1 Population

According to the California Department of Finance, the population of the City of Port Hueneme as of January 2020 was 23,607. Since 2010, the population has grown at an average annual rate of 0.85 percent.

7.3.2 Development

Anticipated future development for Port Hueneme includes creating and sustaining a strong, viable economic base for the City. The City encourages development of diversified housing types that will meet our community’s needs. This includes establishing a mix of housing types in local neighborhoods to avoid economic stratification and enhance community diversity. Future growth in the City will be managed as identified in the City’s 2045 general plan. City actions, such as those relating to land use, annexations, zoning, subdivision and design review, redevelopment, and capital improvements, must be consistent with the plan.

Table 7-2 summarizes development trends in the period since the preparation of the previous hazard mitigation plan, as well as expected future development trends.

7.4 CAPABILITY ASSESSMENT

This section describes an assessment of existing capabilities for implementing hazard mitigation strategies. The introduction at the beginning of this volume of the hazard mitigation plan describes the components included in the capability assessment and their significance for hazard mitigation planning.

Findings of the capability assessment were reviewed to identify opportunities to expand, initiate or integrate capabilities to further hazard mitigation goals and objectives. Where such opportunities were

identified and determined to be feasible, they are included in the action plan. The “Analysis of Mitigation Actions” table in this annex identifies these as community capacity building mitigation actions.

Table 7-2. Recent and Expected Future Development Trends

Criterion	Response					
Has your jurisdiction annexed any land since the preparation of the previous hazard mitigation plan?	No					
Is your jurisdiction expected to annex any areas during the performance period of this plan?	No					
Are any areas targeted for development or major redevelopment in the next five years? • If yes, briefly describe, including whether any of the areas are in known hazard risk areas	Yes Parcel located Victoria and Channel Islands, not in hazard area.					
How many permits for new construction were issued in your jurisdiction since the preparation of the previous hazard mitigation plan?		2016	2017	2018	2019	2020
	Single Family	0	0	0	0	0
	Multi-Family	0	0	0	0	0
	Other (commercial, mixed use, etc.)	0	0	0	0	0
	Total	0	0	0	0	0
Provide the number of new-construction permits for each hazard area or provide a qualitative description of where development has occurred.	From 2016 to current, there have been zero new permits issued as the City of Port Hueneme is built out to capacity.					
Describe the level of buildout in the jurisdiction, based on your jurisdiction's buildable lands inventory. If no such inventory exists, provide a qualitative description.	99.5%					

The findings of the assessment are presented as follows:

- An assessment of planning and regulatory capabilities is presented in Table 7-3.
- Development and permitting capabilities are presented in Table 7-4.
- An assessment of fiscal capabilities is presented in Table 7-5.
- An assessment of administrative and technical capabilities is presented in Table 7-6.
- An assessment of education and outreach capabilities is presented in Table 7-7.
- Information on National Flood Insurance Program (NFIP) compliance is presented in Table 7-8.
- Classifications under various community mitigation programs are presented in Table 7-9.
- The community's adaptive capacity for the impacts of climate change is presented in Table 7-10.

Table 7-3. Planning and Regulatory Capability

	Local Authority	Other Jurisdiction Authority	State Mandated	Integration Opportunity?
Codes, Ordinances, & Requirements				
Building Code	Yes	Yes	Yes	Yes
<i>Comment: Article 8 Municipal Code starting 8001. (Ord. 637 § 5 Exh. A (part), 2001) "California Building Code", the "California Residential Building Code", and the "California Green Building Standards Code", 2019 Editions</i>				
Zoning Code	Yes	Yes	Yes	Yes
<i>Comment: Article 10 Section 10,000 (Ord. 579 § 6 (1), 1992)</i>				
Subdivisions	Yes	Yes	Yes	Yes
<i>Comment: Article 9, Section 9,000 (Ord. 579 § 5 (1), 1992)</i>				
Stormwater Management	Yes	Yes	Yes	Yes
<i>Comment: Follow County's Reports</i>				
Post-Disaster Recovery	No	Yes	Yes	Yes
<i>Comment: No Official plan</i>				
Real Estate Disclosure	Yes	Yes	Yes	Yes
<i>Comment: Report of Building Records. California State Civil Code 1102 requires full disclosure on natural hazard exposure of the sale/re-sale of any and all real property. To be implemented by sellers and realtors.</i>				
Growth Management	No	No	No	No
<i>Comment: City is built out</i>				
Site Plan Review	Yes	No	No	Yes
<i>Comment: Section 10350</i>				
Environmental Protection	Yes	Yes	Yes	Yes
<i>Comment: The California Environmental Quality Act (CEQA) requires state and local agencies to identify the significant environmental impacts of their actions and to avoid or mitigate those impacts, if feasible.</i>				
Flood Damage Prevention	Yes	Yes	Yes	Yes
<i>Comment: Section 10590</i>				
Emergency Management	Yes	Yes	Yes	Yes
<i>Comment: Police Department Emergency Manager</i>				
Climate Change	No	Yes	Yes	Yes
<i>Comment: In Development</i>				
Planning Documents				
General Plan	Yes	No	Yes	Yes
<i>Is the plan compliant with Assembly Bill 2140? 1998 Not Compliant</i>				
<i>Comment: 2045 Will Be set for October 2021 Release</i>				
Capital Improvement Plan	Yes	No	Yes	Yes
<i>How often is the plan updated? 5 years</i>				
<i>Comment: Under Development</i>				
Disaster Debris Management Plan	No	Yes	Yes	Yes
<i>Comment:</i>				
Floodplain or Watershed Plan	No	Yes	Yes/No	No
<i>Comment: The Ventura County Watershed Protection creates and maintains countywide plans</i>				
Stormwater Plan	Yes	No	Yes	Yes
<i>Comment: Ordinance #775</i>				
Urban Water Management Plan	Yes	No	Yes	Yes
<i>Comment: City of Port Hueneme Urban Water Management Plan</i>				

	Local Authority	Other Jurisdiction Authority	State Mandated	Integration Opportunity?
Habitat Conservation Plan <i>Comment: Local Costal Program</i>	Yes	No	Yes	Yes
Economic Development Plan <i>Comment: No Official</i>	No	No	No	No
Shoreline Management Plan <i>Comment: General Plan</i>	No	No	No	No
Community Wildfire Protection Plan <i>Comment: Not in wildfire area, no current plan</i>	No	Yes	Yes	No
Forest Management Plan <i>Comment: Urban Forestry</i>	No	Yes	No	No
Climate Action Plan <i>Comment: In Process for General Plan 2045</i>	Yes	No	No	Yes
Comprehensive Emergency Management Plan <i>Comment: EOP Plan Scheduled to finished 12/21</i>	Yes	Yes	Yes	Yes
Threat & Hazard Identification & Risk Assessment (THIRA) <i>Comment: The County of Ventura has performed a THIRA within the past 5 years. We are currently assessing the timing and requirements for the City of Ventura.</i>	No	Yes	No	No
Post-Disaster Recovery Plan <i>Comment: EOP December 2021</i>	Yes	No	Yes	Yes
Continuity of Operations Plan <i>Comment: EOP December 2021</i>	No	Yes/No	Yes/No	Yes/No
Public Health Plan <i>Comment: County of Ventura Public Health Department has a plan</i>	No	Yes	No	No
Other: Tsunami Plan <i>Comment: The County of Ventura has an existing plan that describes each City role and has been adopted locally. A revision of this document is required within the coming year 2022.</i>	No	Yes	Yes	Yes

Table 7-4. Development and Permitting Capability

Criterion	Response
Does your jurisdiction issue development permits? <i>If no, who does? If yes, which department?</i> Community Development	Yes
Does your jurisdiction have the ability to track permits by hazard area?	No
Does your jurisdiction have a buildable lands inventory?	Yes

Table 7-5. Fiscal Capability

Financial Resource	Accessible or Eligible to Use?
Community Development Block Grants	Yes
Capital Improvements Project Funding	Yes
Authority to Levy Taxes for Specific Purposes	Yes
User Fees for Water, Sewer, Gas or Electric Service	Yes
<i>If yes, specify:</i> Water/Sewer	
Incur Debt through General Obligation Bonds	Yes
Incur Debt through Special Tax Bonds	No
Incur Debt through Private Activity Bonds	No
Withhold Public Expenditures in Hazard-Prone Areas	No
State-Sponsored Grant Programs	Yes
Development Impact Fees for Homebuyers or Developers	No

Table 7-6. Administrative and Technical Capability

Staff/Personnel Resource	Available?
Planners or engineers with knowledge of land development and land management practices	Yes
<i>If Yes, Department /Position:</i> Community Development	
Engineers or professionals trained in building or infrastructure construction practices	Yes
<i>If Yes, Department /Position:</i> Public Works, Charles Cable, Don Villafana	
Planners or engineers with an understanding of natural hazards	Yes
<i>If Yes, Department /Position:</i> Community Development and Don Villafana	
Staff with training in benefit-cost analysis	Yes
<i>If Yes, Department /Position:</i> City Contractor	
Surveyors	No
Personnel skilled or trained in GIS applications	No
Scientist familiar with natural hazards in local area	No
Emergency manager	Yes
<i>If Yes, Department /Position:</i> Emergency and Communications Manager, Police Department	
Grant writers	No

Table 7-7. Education and Outreach Capability

Criterion	Response
Do you have a public information officer or communications office?	Yes
Do you have personnel skilled or trained in website development?	Yes
Do you have hazard mitigation information available on your website?	No
Do you use social media for hazard mitigation education and outreach?	Yes
<i>If yes, briefly describe:</i> Facebook Postings	
Do you have any citizen boards or commissions that address issues related to hazard mitigation?	Yes
<i>If yes, briefly describe:</i> Currently re-developing our CERT team.	
Do you have any other programs in place that could be used to communicate hazard-related information?	Yes
<i>If yes, briefly describe:</i> VC Alert, Everbridge, email, Door Knocking, Website	
Do you have any established warning systems for hazard events?	Yes
<i>If yes, briefly describe:</i> VC Alert	

Table 7-8. National Flood Insurance Program Compliance

Criterion	Response
What local department is responsible for floodplain management?	Community Dev, PW
Who is your floodplain administrator? (department/position)	Tony Stewart, Charles Cable
Are any certified floodplain managers on staff in your jurisdiction?	No
What is the date that your flood damage prevention ordinance was last amended?	1/21
Does your floodplain management program meet or exceed minimum requirements?	Meets
When was the most recent Community Assistance Visit or Community Assistance Contact?	Not had one
Does your jurisdiction have any outstanding NFIP compliance violations that need to be addressed?	No
Are any RiskMAP projects currently underway in your jurisdiction?	No
Do your flood hazard maps adequately address the flood risk within your jurisdiction? <i>If no, state why.</i>	Yes
Does your floodplain management staff need any assistance or training to support its floodplain management program?	No
Does your jurisdiction participate in the Community Rating System (CRS)? <i>If no, is your jurisdiction interested in joining the CRS program?</i> Yes	No
How many flood insurance policies are in force in your jurisdiction? ^a <i>What is the insurance in force?</i> \$17,732,000 <i>What is the premium in force?</i> \$37,235	57
How many total loss claims have been filed in your jurisdiction? ^a <i>What were the total payments for losses?</i> \$846	7

a. According to FEMA statistics as of March 31, 2021

Table 7-9. Community Classifications

	Participating?	Classification	Date Classified
FIPS Code	Yes	0611158296	N/A
DUNS #	Yes	157675430	N/A
Community Rating System	No	N/A	N/A
Building Code Effectiveness Grading Schedule	No	N/A	N/A
Public Protection	Yes	03/3X	12/21/2018
Storm Ready	Yes	N/A	N/A
Firewise	No	N/A	N/A
Tsunami Ready	Yes	N/A	N/A

Table 7-10. Adaptive Capacity for Climate Change

Criterion	Jurisdiction Rating ^a
Technical Capacity	
Jurisdiction-level understanding of potential climate change impacts <i>Comment: Addressed in 2045 Plan</i>	Low
Jurisdiction-level monitoring of climate change impacts <i>Comment: No current ability / Port of Hueneme itself conducts studies and publishes results to public</i>	Low
Technical resources to assess proposed strategies for feasibility and externalities <i>Comment: No resources identified at this time.</i>	Low
Jurisdiction-level capacity for development of greenhouse gas emissions inventory <i>Comment: None available at this time</i>	Low
Capital planning and land use decisions informed by potential climate impacts <i>Comment: Community Development/Public Works</i>	Medium
Participation in regional groups addressing climate risks <i>Comment: Public Works / Environmental Sustainability</i>	Low
Implementation Capacity	
Clear authority/mandate to consider climate change impacts during public decision-making processes <i>Comment: Considerations outlined in General Plan</i>	Low
Identified strategies for greenhouse gas mitigation efforts <i>Comment: Continued research for adoption is needed for General Plan</i>	Low
Identified strategies for adaptation to impacts <i>Comment: The current update to the General plan has addressed strategies for adaptation to impacts.</i>	High
Champions for climate action in local government departments <i>Comment: Local non-profits and groups address issues</i>	Low
Political support for implementing climate change adaptation strategies <i>Comment: City Council is supportive as well as many local organizations</i>	Medium
Financial resources devoted to climate change adaptation <i>Comment: Non identified, however grants could be looked into</i>	Low
Local authority over sectors likely to be negative impacted <i>Comment: None that we are aware of at this time</i>	Low
Public Capacity	
Local residents' knowledge of and understanding of climate risk <i>Comment: Many environmentalists in our community who monitor and report</i>	Low
Local residents' support of adaptation efforts <i>Comment: Local residences are concerned with issues and are generally supportive</i>	Low
Local residents' capacity to adapt to climate impacts <i>Comment: High likelihood to adapt based on our environmental position</i>	Medium
Local economy current capacity to adapt to climate impacts <i>Comment: None seen.</i>	Low
Local ecosystems capacity to adapt to climate impacts <i>Comment: Not a lot of ecosystems</i>	Medium

- a. High = Capacity exists and is in use; Medium = Capacity may exist, but is not used or could use some improvement;
Low = Capacity does not exist or could use substantial improvement; Unsure= Not enough information is known to assign a rating.

7.5 INTEGRATION REVIEW

For hazard mitigation planning, “integration” means that hazard mitigation information is used in other relevant planning mechanisms, such as general planning and capital facilities planning, and that relevant information from those sources is used in hazard mitigation. This section identifies where such integration is already in place, and where there are opportunities for further integration in the future. Resources listed at the end of this annex were used to provide information on integration. The progress reporting process described in Volume 1 of the hazard mitigation plan will document the progress of hazard mitigation actions related to integration and identify new opportunities for integration.

7.5.1 Existing Integration

Some level of integration has already been established between local hazard mitigation planning and the following other local plans and programs:

- **City of Port Hueneme:** General Plan
- **City of Port Hueneme:** Emergency Operations Plan (EOP)
- **Ventura County:** Operational Area Emergency Operations Plan

7.5.2 Opportunities for Future Integration

The capability assessment in this annex indicates opportunities to integrate this mitigation plan with other jurisdictional planning/regulatory capabilities. Capabilities were identified as integration opportunities if they can support or enhance the actions identified in this plan or be supported or enhanced by components of this plan. The capability assessment identified the following plans and programs that do not currently integrate hazard mitigation information but provide opportunities to do so in the future:

- **City of Port Hueneme: General Plan**—This comprehensive effort is underway and will be integrated into this effort to be compliant with AB2140.
- **City of Port Hueneme: Citizen Emergency Response Team (CERT)**—This effort will be a collaboration between the following: CERT volunteers, City staff, community-based organizations, with the existing CERT team manual.

Taking action to integrate each of these programs with the hazard mitigation plan was considered as a mitigation action to include in the action plan in this annex.

7.6 RISK ASSESSMENT

7.6.1 Jurisdiction-Specific Natural Hazard Event History

Table 7-11 lists past occurrences of natural hazards for which specific damage was recorded in this jurisdiction. Other hazard events that broadly affected the entire planning area, including this jurisdiction, are listed in the risk assessments in Volume 1 of this hazard mitigation plan.

Table 7-11. Past Natural Hazard Events

Type of Event	FEMA Disaster #	Date	Damage Assessment
Erosion Events	N/A	Biennially, 2021 most recent	Every two years 2 million cubic yards of sand is dredged from the Port of Hueneme and deposited onto the east side of the Port. This erosion is ongoing and threatens roads and other infrastructure and leads to habitat disruption of local species of birds.
Pandemic COVID-19	4482-DR	January 20, 2020 Continuing	Ongoing
High Wind	N/A	2020	Strong surface high pressure in the Great Basin along with strong north to northeast flow aloft generated strong Santa Ana winds across Ventura and Los Angeles counties. North to northeast wind gusts up to 83 mph were reported in the mountains while gusts to 59 mph were reported across the coastal plain.
Wind Event	N/A	2018	Strong surface high pressure building in the Great Basin generated strong and gusty Santa Ana winds across sections of Ventura and Los Angeles counties.
Winter Storm	N/A	2018	Strong surface high pressure in the Great Basin helped to generate a moderate Santa Ana wind event across Southern California. Strong northeast winds were reported across the mountains and valleys of Ventura and Los Angeles Counties.
Tornado	N/A	2018	A powerful winter storm brought significant rain, snow and wind to the area. Rainfall totals ranged from 1 to 2 inches across coastal and valleys areas with 2 to 4 inches in the foothills and mountains. With snow levels dropping to between 2500 and 3500 feet, significant snowfall was reported in the mountains (up to 1 to 2 feet) and even the Antelope Valley (4 to 8 inches). Numerous road closures due to winter storm conditions were reported, including Interstate 5 through the Grapevine as well as Highways 14 and 138. Additionally, thunderstorms generated a waterspout over the coastal waters as well as a very weak tornado over Ventura Harbor.
Flash Flood	N/A	2018	High pressure over the four-corners region resulted in an extended monsoonal flow pattern across Southern California. For several days, strong thunderstorms produced heavy rain, flash flooding and large hail across parts of Southern California.
Debris Flow	N/A	2018	A powerful early-season winter storm moves across Southwestern California on Halloween night. The storm produced some significant rainfall with amounts in the coastal areas ranging from 0.25 to 1.50 while the mountains received up to 2.00. In the Camarillo area, near the Springs burn scar, a mud/debris flow occurred. Otherwise just some minor nuisance flooding was reported.
Thunderstorm	N/A	2017	A powerful winter storm brought heavy rain and snow, flash flooding and gusty winds to the area. Rainfall totals from this storm generally ranged between 2 and 6 inches with locally higher amounts in some foothill areas. With such rainfall amounts, there was significant snowfall totals in the local mountains with up to 28 inches of snow reported at the resort level. Additionally, the heavy rain did generate several flash flooding events including several mud and debris flows.
High Surf	N/A	4/2014	High tides and strong surf damaged the pier, beach and local streets causing road damage, pipe damage and damage to the pier.
Tsunami		March 11, 2011	7.1 earthquake in Japan. Damage to local harbors, marinas and docks
Tsunami		February 27, 2010	8.8 Quake in Chile. Damage to local harbors, marinas and docks
Northridge Earthquake	DR-1008	January 17 – November 30, 1994	Power and communications disruptions, damage to structures
St Francis Dam Disaster		March 12, 1928	\$7 Million (1928)—Inundation of nearly the entire city, flooding, debris flows, destruction of infrastructure, high loss of life

7.6.2 Hazard Risk Ranking

Table 7-12 presents a local ranking of all hazards of concern for which this hazard mitigation plan provides complete risk assessments. As described in detail in Volume 1, the ranking process involves an assessment of the likelihood of occurrence for each hazard, along with its potential impacts on people, property, and the economy. Mitigation actions primarily target hazards with high and medium rankings.

Table 7-12. Hazard Risk Ranking

Rank	Hazard	Risk Ranking Score	Risk Category
1	Dam Failure	36	High
2	Earthquake	32	Medium
3	Severe Storms	24	Medium
4	Severe Weather	24	Medium
5	Landslide	18	Medium
6	Flooding	15	Low
7	Tsunami	14	Low
8	Drought	9	Low
9	Sea Level Rise	6	Low

7.6.3 Jurisdiction-Specific Vulnerabilities

Volume 1 of this hazard mitigation plan provides complete risk assessments for each identified hazard of concern. This section provides information on a few key vulnerabilities for this jurisdiction. Available jurisdiction-specific risk maps of the hazards are provided at the end of this annex.

Repetitive Loss Properties

Repetitive loss records are as follows:

- Number of FEMA-identified Repetitive-Loss Properties: 0
- Number of FEMA-identified Severe-Repetitive-Loss Properties: 0
- Number of Repetitive-Loss Properties or Severe-Repetitive-Loss Properties that have been mitigated: 0

Other Noted Vulnerabilities

The following jurisdiction-specific issues have been identified based on a review of the results of the risk assessment, public involvement strategy, and other available resources:

- **Street and Urban Flooding**—There are numerous areas of the city that flood to varying degrees during periods of high rain. The effects of this flooding range from street closures to damage to property, vehicles and buildings.
- **Power Outages/Emergency Power**—Local power outages have resulted from high winds and storm conditions as well as from the effects of wildland fire in the region. Many key city buildings including the Main City Hall and Council Chambers buildings have no backup power or emergency generators.

- **Debris Flows-** Following heavy rains and winter storms, substantial debris flows have occurred in the Santa Clara River, Ventura River, as well as local streams and culverts. Debris flows following wildland fires are particularly bad and can require removal of material from streams, streets, culverts and beaches.
- **Liquefaction Potential**—Nearly the entire City of Port Hueneme is in a “Liquefaction Zone”. The effects and damage caused by seismic activities can be amplified resulting in increased damage to buildings and infrastructure.
- **Homeless Population-** A significant number of persons commonly defined as “Homeless” live on and around our local beach. During high tides and significant tidal pushes, the homeless are at greater risk.
- **Tsunami Awareness and Notification**—Port Hueneme has many visitors to its beach who may not be aware of the tsunami risk. The City does not have tsunami warning sirens.
- **Wildfire Smoke**—During wildfire events in the region the air quality in the City can become hazardous, especially when the Santa Ana winds push wildfire smoke toward the coast. Wildfire can trigger PSPS events, which amplify the hazard when city buildings lacking backup power cannot operate air conditioning systems.

Actions addressing these issues were prioritized for consideration in the action plan in this annex.

7.7 STATUS OF PREVIOUS PLAN ACTIONS

Table 7-13 summarizes the actions that were recommended in the previous version of the hazard mitigation plan and their implementation status at the time this update was prepared.

Table 7-13. Status of Previous Plan Actions

Action Item	Completed	Removed; No Longer Feasible	Carried Over to Plan Update	
			Check if Yes	Action # in Update
OA 6—Develop a public outreach program that informs property owners located in the dam and levee failure inundation areas about voluntary flood insurance. <i>Comment: Action status unknown due to staff turnover</i>			✓	PHE-7
OA 10—Seismically retrofit or upgrade seismically deficient government facilities and pre-identified shelter facilities. <i>Comment: Not completed due to lack of funding and staff capacity</i>			✓	PHE-1
OA 11—Develop and implement plans to increase the building owner’s general knowledge of and appreciation for the value of seismic upgrading of the building’s structural and nonstructural elements. <i>Comment: Action status unknown due to staff turnover</i>			✓	PHE-9
OA 13—Reinforce roads/bridges from flooding through protection activities, including elevating the roads/bridges and installing/widening culverts beneath the roads/bridges or upgrading storm drains. <i>Comment: City does not have bridges but storm drain upgrades are in process in the location of the beach. Continued work needs to continue on other parts of the city.</i>			✓	PHE-10
OA 18—Continue to participate in the NWS TsunamiReady Program through continued implementation of Guideline 4: Community Preparedness measures, including public outreach material and curriculum. <i>Comment: Continued participation in the program</i>			✓	PHE-11

7.8 HAZARD MITIGATION ACTION PLAN

Table 7-14 lists the identified actions, which make up the hazard mitigation action plan for this jurisdiction. Table 7-15 identifies the priority for each action. Table 7-16 summarizes the mitigation actions by hazard of concern and mitigation type.

Table 7-14. Hazard Mitigation Action Plan Matrix

Benefits New or Existing Assets	Objectives Met	Lead Agency	Support Agency	Estimated Cost	Sources of Funding	Timeline ^a
Action PHE-1—Mitigate beach erosion to protect shoreline roads, properties, harbor facilities, and the natural habitat, including endangered species.						
<u>Hazards Mitigated:</u> Flooding, Sea Level Rise, Tsunami, Severe Storms						
New & Existing	2, 13, 14, 18	USACE	Public Works	Medium	General Funds, FEMA HMA (BRIC, FMA, HMGP)	Ongoing
Action PHE-2—Where appropriate, support retrofitting, purchase or relocation of structures located in hazard areas, prioritizing those that have experienced repetitive losses and/or are located in high- or medium-risk hazard areas.						
<u>Hazards Mitigated:</u> Landslide, Earthquake, Severe Storms, Severe Weather, Flooding, Wildfire, Dam Failure, Sea Level Rise, Tsunami						
Existing	1, 4, 6, 9, 10, 11, 16	Public Works	Community Development	High	FEMA HMA (BRIC, FMA, HMGP)	Short-term
Action PHE-3—Integrate the hazard mitigation plan into other plans, ordinances and programs that dictate land use decisions in the community, including shoreline development.						
<u>Hazards Mitigated:</u> Landslide, Earthquake, Severe Storms, Severe Weather, Flooding, Wildfire, Dam Failure, Sea Level Rise, Tsunami, Drought						
New & Existing	1, 2, 10, 11, 12, 15, 16, 19	Community Development	Public Works	Low	Staff Time, General Funds	Ongoing
Action PHE-4—Actively participate in the plan maintenance protocols outlined in Volume 1 of this hazard mitigation plan.						
<u>Hazards Mitigated:</u> Landslide, Severe Storms, Severe Weather, Flooding, Wildfire, Dam Failure, Sea Level Rise, Tsunami, Drought						
New & Existing	1, 2, 3, 4, 6, 10, 15, 17, 19	Community Development	Public Works	Low	Staff Time, General Funds	Short-term
Action PHE-5—Continue to maintain good standing and compliance under the NFIP through implementation of floodplain management programs that, at a minimum, meet the NFIP requirements: • Enforce the flood damage prevention ordinance. • Participate in floodplain identification and mapping updates. • Provide public assistance/information on floodplain requirements and impacts.						
<u>Hazards Mitigated:</u> Severe Storms, Severe Weather, Flooding, Dam Failure, Sea Level Rise, Tsunami						
New & Existing	1, 2, 4, 6, 9, 10, 11, 13, 14, 15, 17, 18, 19	Public Works		Low	Staff Time, General Funds	Ongoing
Action PHE-6—Identify and pursue strategies to increase adaptive capacity to climate change including but not limited to the following: • Adopt a Climate Action Plan to reflect new State legislation, changing priorities, and environmental sustainability and greenhouse gas (GHG) reduction policies and goals. • Adopt modifications to existing plans and procedures to meet climate change issues and impacts.						
<u>Hazards Mitigated:</u> Landslide, Severe Storms, Severe Weather, Flooding, Wildfire, Dam Failure, Sea Level Rise, Tsunami, Drought						
New & Existing	1, 3, 4, 9, 10, 13, 14, 15, 16, 17, 19	Community Development	Public Works	Low	Staff Time, General Funds	Short-term
Action PHE-7—Purchase generators for critical facilities and infrastructure that lack adequate backup power, including the Emergency Operations Center and other critical facilities throughout the city.						
<u>Hazards Mitigated:</u> Dam Failure, Earthquake, Flooding, Landslide, Severe Weather, Tsunami, Wildfire						
Existing	1, 2, 7, 10	Public Works	City Manager	Medium	General Funds, FEMA HMA (BRIC, HMGP)	Long-term

Benefits New or Existing Assets	Objectives Met	Lead Agency	Support Agency	Estimated Cost	Sources of Funding	Timeline ^a
Action PHE-8 —Develop a public outreach program that informs property owners located in the dam and levee failure inundation areas about voluntary flood insurance.						
<u>Hazards Mitigated:</u>	Severe Storms, Severe Weather, Flooding, Dam Failure, Sea Level Rise, Tsunami					
Existing	1, 2, 7, 10, 17, 19	Community Development		Low	Staff Time/ General Funds	Short-Term
Action PHE-9 — Develop and implement plans to increase the building owner's general knowledge of and appreciation for the value of seismic upgrading of the building's structural and nonstructural elements.						
<u>Hazards Mitigated:</u>	Earthquake					
Existing	1, 2, 7, 10, 17, 19	Community Development	Public Works	Low	Staff Time / General Fund	Short-Term
Action PHE-10 —Reinforce roads from flooding through protection activities, including elevating the roads and installing/widening culverts beneath the roads/bridges or upgrading storm drains.						
<u>Hazards Mitigated:</u>	Severe Storms, Severe Weather, Flood, Sea Level Rise, Tsunami					
Existing	2, 4, 6, 9, 11	Public Works		Medium	FEMA HMA (BRIC, FMA, HMGP)	Long-Term
Action PHE-11 —Continue to participate in the NWS TsunamiReady and StormReady Programs through continued implementation of Guideline 4: Community Preparedness measures, including public outreach material and curriculum.						
<u>Hazards Mitigated:</u>	Severe Storms, Severe Weather, Flood, Sea Level Rise, Tsunami					
New & Existing	1, 2, 6, 7, 8, 12, 17, 18, 19	Public Works		Low	General Funds	Ongoing
Action PHE-12 —Install City tsunami warning siren network.						
<u>Hazards Mitigated:</u>	Tsunami					
New & Existing	1, 2, 7	Public Works		Medium	FEMA HMA (BRIC, FMA, HMGP)	Short-Term

a. Short-term = Completion within 5 years; Long-term = Completion within 10 years; Ongoing= Continuing new or existing program with no completion date

Acronyms used here are defined at the beginning of this volume.

Table 7-15. Mitigation Action Priority

Action #	# of Objectives Met	Benefits	Costs	Do Benefits Equal or Exceed Cost?	Is Project Grant-Eligible?	Can Project Be Funded Under Existing Programs/ Budgets?	Implementation Priority ^a	Grant Pursuit Priority ^a
1	4	High	Medium	Yes	Yes	Yes	High	High
2	7	High	High	Yes	Yes	No	Medium	High
3	8	Medium	Low	Yes	No	Yes	High	Low
4	9	Medium	Low	Yes	No	Yes	High	Low
5	13	Medium	Low	Yes	No	Yes	High	Low
6	11	Medium	Low	Yes	No	Yes	High	Medium
7	4	High	Medium	Yes	Yes	No	Medium	High
8	6	Low	Low	Yes	No	Yes	High	Low
9	6	Low	Low	Yes	No	Yes	High	Low
10	5	High	Medium	Yes	Yes	No	Medium	High
11	9	Medium	Low	Yes	No	Yes	High	Medium
12	3	Medium	Medium	Yes	Yes	No	Medium	Medium

a. See the introduction to this volume for explanation of priorities.

Table 7-16. Analysis of Mitigation Actions

Hazard Type	Action Addressing Hazard, by Mitigation Type ^a							
	Prevention	Property Protection	Public Education & Awareness	Natural Resource Protection	Emergency Services	Structural Projects	Climate Resilience	Community Capacity Building ^b
High-Risk Hazards								
Dam Failure	PHE-5	PHE-2	PHE-8		PHE-7		PHE-6	PHE-3, 4, 5, 6
Medium-Risk Hazards								
Earthquake		PHE-2	PHE-9		PHE-7		PHE-6	PHE-3, 4, 6
Severe Storms	PHE-5	PHE-2, 10	PHE-8	PHE-1		PHE-10	PHE-6	PHE-3, 4, 5, 6, 11
Severe Weather	PHE-5	PHE-2, 10	PHE-8		PHE-7	PHE-10	PHE-6	PHE-3, 4, 5, 6, 11
Landslide		PHE-2			PHE-7		PHE-6	PHE-3, 4, 6
Low-Risk Hazards								
Flooding	PHE-5	PHE-2, 10	PHE-8	PHE-1	PHE-7	PHE-10	PHE-6	PHE-3, 4, 5, 6, 11
Tsunami	PHE-5, 12	PHE-2, 10	PHE-8, 12	PHE-1	PHE-7, 12	PHE-10	PHE-6	PHE-3, 4, 5, 6, 11
Drought		PHE-2					PHE-6	PHE-3, 4, 6
Sea Level Rise	PHE-5	PHE-2, 10	PHE-8	PHE-1			PHE-6	PHE-3, 4, 5, 6, 11

a. See the introduction to this volume for explanation of mitigation types.

b. Note that the jurisdiction did not identify a need for expansion of financial capabilities, based on existing capabilities. The intent of this hazard mitigation plan is to expand the financial capability of the jurisdiction.

7.9 PUBLIC OUTREACH

Table 7-17 lists public outreach activities for this jurisdiction.

Table 7-17. Local Public Outreach

Local Outreach Activity	Date	Number of People Involved
Social media and website (in coordination with General Plan)	9-02	45

7.10 INFORMATION SOURCES USED FOR THIS ANNEX

The following technical reports, plans, and regulatory mechanisms were reviewed to provide information for this annex.

- **City of Port Hueneme Municipal Code**—The municipal code was reviewed for the full capability assessment and for identifying opportunities for action plan integration.
- **City of Port Hueneme General Plan**—The General Plan is under revision and had been aligned to be compliant with AB2140. It was reviewed for the capability assessment and action plan development.

The following outside resources and references were reviewed:

Hazard Mitigation Plan Annex Development Toolkit—The toolkit was used to support the identification of past hazard events and noted vulnerabilities, the risk ranking, and the development of the mitigation action plan.

Port Hueneme

Critical Facilities (1 of 2)

-  Food, Water, Shelter
-  Safety and Security
-  Selected City
-  Incorporated Cities
-  County Boundary

Data Sources: Ventura Co., VCFD, Casitas MWD, Calleguas MWD, City of Camarillo, CA Energy Commission, Cal Trans, EPA, HIFLD, Esri



0 0.175 0.35 0.7 Miles

Port Hueneme

Critical Facilities (1 of 2)

- Communications
- Energy
- Hazardous Material
- Transportation
- Selected City
- Incorporated Cities
- County Boundary

Data Sources: Ventura Co., VCFD, Casitas MWD, Calleguas MWD, City of Camarillo, CA Energy Commission, Cal Trans, EPA, HIFLD, Esri



0 0.175 0.35 0.7 Miles

Port Hueneme

Dam Failure Inundation Areas

- Combined Inundation Areas
- Selected City
- Incorporated Cities
- County Boundary

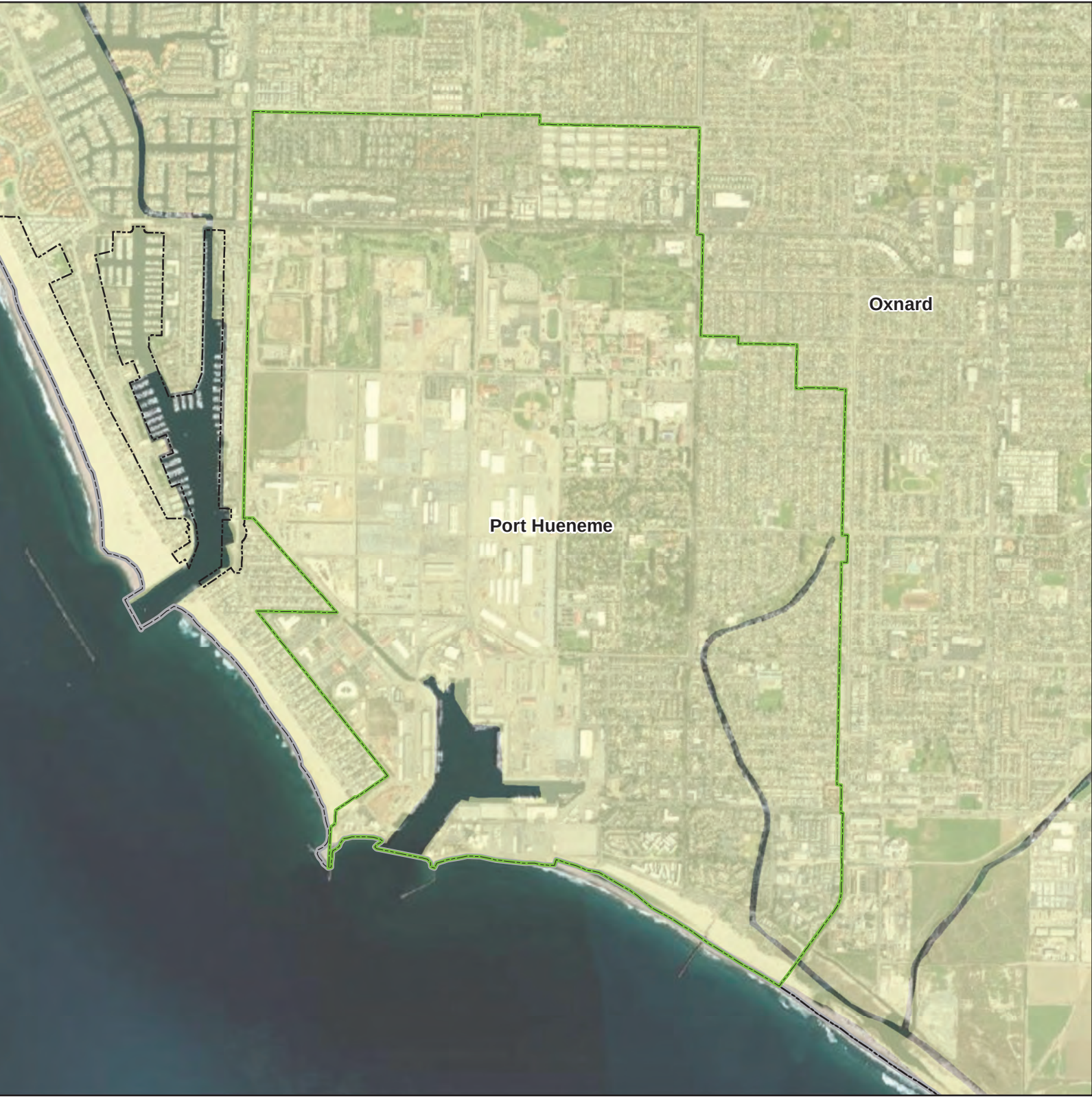
Data Sources: Ventura Co.,
CA DWR, Esri



0 0.175 0.35 0.7
Miles

Port Hueneme

NEHRP Soil Class



-  D (Stiff soil)
-  Selected City
-  Incorporated Cities
-  County Boundary

Data Sources: Ventura Co.,
CGS, Esri



0 0.175 0.35 0.7
 Miles

Port Hueneme

Liquefaction Susceptibility

-  Liquefaction zone
-  Selected City
-  Incorporated Cities
-  County Boundary

Data Sources: Ventura Co.,
Esri



0 0.175 0.35 0.7
 Miles

Port Hueneme

100-Year Probabilistic Earthquake Scenario

Oxnard

Port Hueneme

Mercalli Intensity Scale

- VII (Very Strong/Moderate)
- Selected City
- Incorporated Cities
- County Boundary

Intensity scale described as:
(perceived shaking / potential damage)

Data Sources: Ventura Co.,
USGS, Esri



0 0.175 0.35 0.7 Miles

Port Hueneme

Oak Ridge M7.16 Earthquake Scenario

Mercalli Intensity Scale

- VII (Very Strong/Moderate)
- VIII (Severe/Moderate-Heavy)

- Selected City
- Incorporated Cities
- County Boundary

Intensity scale described as:
(perceived shaking / potential damage)

Data Sources: Ventura Co.,
USGS, Esri



0 0.175 0.35 0.7 Miles

Port Hueneme

Pitas Point M7.12 Earthquake Scenario

Oxnard

Port Hueneme

Mercalli Intensity Scale

VII (Very Strong/Moderate)

Selected City

Incorporated Cities

County Boundary

Intensity scale described as:
(perceived shaking / potential damage)

Data Sources: Ventura Co.,
USGS, Esri



0 0.175 0.35 0.7
Miles

Port Hueneme

San Cayetano M7.16 Earthquake Scenario

Mercalli Intensity Scale

- VI (Strong/Light)
- Selected City
- Incorporated Cities
- County Boundary

Intensity scale described as:
(perceived shaking / potential damage)

Data Sources: Ventura Co.,
USGS, Esri



0 0.175 0.35 0.7 Miles

Port Hueneme

S. San Andreas M8.03 Earthquake Scenario

Oxnard

Port Hueneme

Mercalli Intensity Scale

V (Moderate/Very Light)

VI (Strong/Light)

Selected City

Incorporated Cities

County Boundary

Intensity scale described as:
(perceived shaking / potential damage)

Data Sources: Ventura Co.,
USGS, Esri



0 0.175 0.35 0.7
Miles

Port Hueneme

FEMA Flood Hazard Areas

- 1% Annual Chance Flood (100-Year)
- 0.2% Annual Chance Flood (500-Year)
- Selected City
- Incorporated Cities
- County Boundary

Data Sources: Ventura Co.,
FEMA, Esri



0 0.175 0.35 0.7 Miles

Port Hueneme

**Susceptibility to
Deep-Seated Landslides**

- Low
- Moderate
- High
- Very High
- Selected City
- Incorporated Cities
- County Boundary

Data Sources: Ventura Co.,
CGS, Esri



0 0.175 0.35 0.7
Miles

Port Hueneme

Sea Level Rise
of 25 cm (9.8 in.)

- Sea Level Rise Inundation Area
- Selected City
- Incorporated Cities
- County Boundary

Data Sources: Ventura Co.,
OCOF, Esri



0 0.175 0.35 0.7 Miles

Port Hueneme

Sea Level Rise
of 100 cm (39.4 in.)

- Sea Level Rise Inundation Area
- Selected City
- Incorporated Cities
- County Boundary

Data Sources: Ventura Co.,
OCOF, Esri



0 0.175 0.35 0.7 Miles

Port Hueneme

Tsunami Inudation Zones

-  Inundation Zones
-  Selected City
-  Incorporated Cities
-  County Boundary

Data Sources: Ventura Co.,
CGS, Esri



0 0.175 0.35 0.7
 Miles

8. CITY OF SANTA PAULA

8.1 LOCAL HAZARD MITIGATION PLANNING TEAM

Primary Point of Contact

Scott Varner, Support Services Commander
214 S. 10th Street
Santa Paula, CA 93060
805-525-4474 ext. 105
svarner@spcity.org

Alternate Point of Contact

Kate Bader, CSO
214 S. 10th Street
Santa Paula, CA 93060
805-525-4474 ext. 113
kbader@spcity.org

This annex was developed by the local hazard mitigation planning team, whose members are listed in Table 8-1.

Table 8-1. Local Mitigation Planning Team Members

Name	Title
Dan Singer	City Manager
James Mason	Community & Economic Development Director
Jeff Mitchem	Planning Manager
Tom Tarantino	Associate Planner
Alexander Wallsten	Administrative Analyst

8.2 JURISDICTION PROFILE

8.2.1 Location and Features

The City of Santa Paula is in Ventura County, California, United States.

The current boundaries generally extend out from 34.3542° N, 119.0593° W, encompassing an area of 5.69 square miles.

The City of Santa Paula, California is located 65 miles northwest of Los Angeles and 14 miles east of Ventura and the coastline of the Pacific Ocean. Santa Paula is near the geographical center of Ventura County, situated in the rich agricultural Santa Clara River Valley. The City is surrounded by rolling hills and rugged mountain peaks in addition to orange, lemon, and avocado groves. In fact, Santa Paula is referred to as the “Citrus Capital of the World.”

8.2.2 History

The city of Santa Paula was incorporated in 1902. The original community that has become known as Santa Paula was established by the Chumash Indians as the villages of Mupu and Srswa. The land was later given away as part of a Spanish land grant to Rancho Santa Paula and Saticoy in 1840. In the 1860s the area was subdivided into small farms. In 1880, oil was discovered in Santa Paula leading to the formation of the Union Oil Company in 1890. The City of Santa Paula was incorporated on April 22, 1902. In the early 1900s Santa Paula was considered the pre-Hollywood film capital, the “Queen of the Silver Screen.” Even today, Santa Paula is noted for its movie personalities (silent and sound) who resided in and adjacent to the city and a TV or movie crew is not an unusual sight in the community.

8.2.3 Governing Body Format

The City of Santa Paula assumes responsibility for the adoption of this plan; the City Manager will oversee its implementation.

The City of Santa Paula is governed by a five-member city council. The City consists of eight departments: Administration, City Clerk, Community and Economic Development, Finance, Human Resources, Parks & Recreation, Police, and Public Works. The city has 10 commissions and task forces, which report to the City Council. The City currently employs a total of 126 employees, 98 of which are full-time.

8.3 CURRENT TRENDS

8.3.1 Population

According to the California Department of Finance, the population of the Santa Paula as of January 2020 was 30,389. Since 2010, the population has grown at an average annual rate of 0.27 percent.

8.3.2 Development

Development interest in Santa Paula has greatly increased in recent years, particularly since construction began on the highly visible East Area 1 / Harvest at Limoneira project. As Santa Paula is surrounded by a mix of greenbelt and urban curb restrictions, the majority of development proposals are for infill and adaptive reuse projects—areas where Santa Paula offers numerous opportunities. Recent legislation aimed at streamlining the entitlement process for housing projects has also generated a great deal of interest from developers.

Table 8-2 summarizes development trends in the period since the preparation of the previous hazard mitigation plan, as well as expected future development trends.

Table 8-2. Recent and Expected Future Development Trends

Criterion	Response					
Has your jurisdiction annexed any land since the preparation of the previous hazard mitigation plan?	No					
Is your jurisdiction expected to annex any areas during the performance period of this plan? <i>If yes, describe land areas and dominant uses.</i>	Yes, Santa Paula West Business Park The Santa Paula West Business Park is located on 53 acres of agricultural land, currently zoned AE-40 (Agricultural Exclusive, 40 acre minimum parcel size) in the County of Ventura, on the southwestern boundary of the City of Santa Paula. It is bound to the north by Telegraph Road and residential property (zoned MHP and R-2), to the east by existing industrial and commercial development (zoned CG and C-LI), to the south by agriculture (zoned AE 40 in the County of Ventura) and to the west by the Adams Creek and agriculture (zoned AE-40 in the County of Ventura). The area is identified as SP-6, West Area 2 in the City of Santa Paula's General Plan. It is within the Sphere of Influence and the city urban restriction boundary of the City of Santa Paula with frontage along State Route 126 and Telegraph Road and is bisected by the railroad right-of-way. While it is just west of the Santa Paula City limits, the area is outside of the Santa Paula -Ventura Greenbelt. Annexation of the Santa Paula West Business Park into the City of Santa Paula has been approved by the City Council, and is currently under review by Ventura County LAFCo.					
<i>If yes, who currently has permitting authority over these areas?</i>	County of Ventura					
Are any areas targeted for development or major redevelopment in the next five years? <i>If yes, briefly describe, including whether any of the areas are in known hazard risk areas</i>	Yes Santa Paula West Business Park (SP-6/West Area 2), see above. East Area 1 / Harvest at Limoneira—500-acres on eastern end of the City. Remaining 1,100 homes (of approved 1,500) to be constructed under adopted Specific Plan, along with commercial areas and park facilities. Hazard mitigation included in EA1 Specific Plan (SP-3)/EIR.					
How many permits for new construction were issued in your jurisdiction since the preparation of the previous hazard mitigation plan?		2016	2017	2018	2019	2020
	Single Family	4	10	2	41	174
	Multi-Family	8	0	11	0	0
	Other (commercial, mixed use, etc.)	1	2	1	1	0
	Total	13	12	14	42	174
Provide the number of new-construction permits for each hazard area or provide a qualitative description of where development has occurred.	Hillside residences along northerly city boundary are either within or abutting high-fire risk areas as defined by CAL FIRE/VCFPD. Residences and businesses, including a portion of those in the new East Area 1/Harvest at Limoneira development, on the east end of the city are within FEMA flood hazard areas of Santa Paula Creek and/or Santa Clara River. These flood/liquefaction hazards have been mitigated by requirements of applicable Specific Plan(s) or development conditions.					
Describe the level of buildout in the jurisdiction, based on your jurisdiction's buildable lands inventory. If no such inventory exists, provide a qualitative description.	Santa Paula is largely built-out within city limits. Remaining pockets of developable land within city limits are situated near the southeast and southwest corners. These areas either have development proposals (with hazard mitigation) under review, or an adopted Specific Plan (also including hazard mitigation).					

8.4 CAPABILITY ASSESSMENT

This section describes an assessment of existing capabilities for implementing hazard mitigation strategies. The introduction at the beginning of this volume of the hazard mitigation plan describes the components included in the capability assessment and their significance for hazard mitigation planning.

Findings of the capability assessment were reviewed to identify opportunities to expand, initiate or integrate capabilities to further hazard mitigation goals and objectives. Where such opportunities were identified and determined to be feasible, they are included in the action plan. The “Analysis of Mitigation Actions” table in this annex identifies these as community capacity building mitigation actions. The findings of the assessment are presented as follows:

- An assessment of planning and regulatory capabilities is presented in Table 8-3.
- Development and permitting capabilities are presented in Table 8-4.
- An assessment of fiscal capabilities is presented in Table 8-5.
- An assessment of administrative and technical capabilities is presented in Table 8-6.
- An assessment of education and outreach capabilities is presented in Table 8-7.
- Information on National Flood Insurance Program (NFIP) compliance is presented in Table 8-8.
- Classifications under various community mitigation programs are presented in Table 8-9.
- The community’s adaptive capacity for the impacts of climate change is presented in Table 8-10.

Table 8-3. Planning and Regulatory Capability

	Local Authority	Other Jurisdiction Authority	State Mandated	Integration Opportunity?
Codes, Ordinances, & Requirements				
Building Code <i>Comment: 2019 California Building Code</i>	Yes	No	Yes	No
Zoning Code <i>Comment: COSP Municipal Code, Chapter 16</i>	Yes	No	Yes	Yes
Subdivisions <i>Comment: State Subdivision Map Act COSP Municipal Code, Chapter 16.80 Subdivision Regulations</i>	Yes	No	Yes	Yes
Stormwater Management <i>Comment: COSP Municipal Code, Chapter 54</i>	Yes	No	Yes	No
Post-Disaster Recovery <i>Comment: COSP Municipal Code, Chapter 150</i>	Yes	No	Yes	Yes
Real Estate Disclosure <i>Comment: COSP Municipal Code, Chapter 156.043</i>	Yes	No	Yes	No
Growth Management <i>Comment: COSP Municipal Code, Chapter 16.106 (7-19-04)</i>	Yes	No	Yes	No
Site Plan Review <i>Comment: COSP Municipal Code, Chapter 16.226</i>	Yes	No	Yes	Yes
Environmental Protection <i>Comment: COSP Municipal Code, Chapter</i>	Yes	No	Yes	No

	Local Authority	Other Jurisdiction Authority	State Mandated	Integration Opportunity?
Flood Damage Prevention <i>Comment: COSP Municipal Code, Chapter 151</i>	Yes	No	Yes	Yes
Emergency Management <i>Comment: COSP Emergency Operations Plan 2019</i>	Yes	No	Yes	Yes
Climate Change <i>Comment: COSP 2040 General Plan 4-6 Environmental and Cultural Resources, C. Air Quality and Greenhouse Gases</i>	Yes	No	Yes	No
Planning Documents				
General Plan <i>Is the plan compliant with Assembly Bill 2140? Yes</i> <i>Comment: COSP 2040 General Plan</i>	Yes	No	Yes	Yes
Capital Improvement Plan <i>How often is the plan updated? Annually (Five Years)</i> <i>Comment: California Government Code §65103(c); COSP 2040 General Plan</i>	Yes	No	Yes	Yes
Disaster Debris Management Plan <i>Comment: Ventura County Disaster Recovery Plan, Adopted by BOS in April 2019</i>	Yes	Yes	Yes	Yes
Floodplain or Watershed Plan <i>Comment: The City participates in the National Flood Insurance Program (NFIP)</i>	Yes	No	Yes	Yes
Stormwater Plan <i>Comment: Ventura County Storm Water Quality Management Program, COSP 2024 General Plan 4-6 Environmental and Cultural Resources, H. Water Quality</i>	Yes	No	Yes	No
Urban Water Management Plan <i>Comment: COSP 2020 Urban Water Management Plan</i>	Yes	No	Yes	No
Habitat Conservation Plan <i>Comment: N/A</i>	No	No	No	Yes
Economic Development Plan <i>Comment: City Council Strategic Goals Approved July 2021//Economic Development Strategic Plan under development</i>	Yes	No	No	Yes
Shoreline Management Plan <i>Comment: N/A</i>	No	No	No	No
Community Wildfire Protection Plan <i>Comment: COSP Emergency Operations Plan 2019, Section 8, Threat Assessments 8—Wildland Fire</i>	Yes	Yes	Yes	Yes
Forest Management Plan <i>Comment: No forest area, unknown on plans or jurisdiction if required.</i>	No	Unknown	Unknown	Yes
Climate Action Plan <i>Comment: N/A</i>	No	Unknown	Unknown	Yes
Comprehensive Emergency Management Plan <i>Comment: COSP Emergency Operations Plan 2019</i>	Yes	No	Yes	No
Threat & Hazard Identification & Risk Assessment (THIRA) <i>Comment: COSP Emergency Operations Plan 2019 Section 8, Threat Summary and Assessments</i>	Yes	No	Yes	No
Post-Disaster Recovery Plan <i>Comment: COSP Emergency Operations Plan 2019</i>	Yes	Yes	Yes	Yes
Continuity of Operations Plan <i>Comment: COSP Emergency Operations Plan 2019 Part one-35</i>	Yes	Yes	Yes	Yes
Public Health Plan <i>Comment: COSP Emergency Operations Plan 2019 addressed Public Health Emergencies, County of Ventura Health Care Agency Public Health Emergency Response Plan (ERP)</i>	No	Yes	Yes	Yes

Table 8-4. Development and Permitting Capability

Criterion	Response
Does your jurisdiction issue development permits? <i>If no, who does? If yes, which department?</i> Building and Safety	Yes
Does your jurisdiction have the ability to track permits by hazard area?	Yes
Does your jurisdiction have a buildable lands inventory?	Currently being developed

Table 8-5. Fiscal Capability

Financial Resource	Accessible or Eligible to Use?
Community Development Block Grants	Yes
Capital Improvements Project Funding	Yes
Authority to Levy Taxes for Specific Purposes	Yes
User Fees for Water, Sewer, Gas or Electric Service <i>If yes, specify:</i> Water and Sewer	Yes
Incur Debt through General Obligation Bonds	Yes
Incur Debt through Special Tax Bonds	Yes
Incur Debt through Private Activity Bonds	No
Withhold Public Expenditures in Hazard-Prone Areas	No
State-Sponsored Grant Programs	Yes
Development Impact Fees for Homebuyers or Developers	Yes

Table 8-6. Administrative and Technical Capability

Staff/Personnel Resource	Available?
Planners or engineers with knowledge of land development and land management practices <i>If Yes, Department /Position:</i> Public Works/Assistant City Engineer/Community Development /Director & Manager	Yes
Engineers or professionals trained in building or infrastructure construction practices <i>If Yes, Department /Position:</i> Public Works/City Engineer	Yes
Planners or engineers with an understanding of natural hazards	No
Staff with training in benefit-cost analysis	No
Surveyors	No
Personnel skilled or trained in GIS applications <i>If Yes, Department /Position:</i> Planning Department / Associate Planner	Yes
Scientist familiar with natural hazards in local area	No
Emergency manager <i>If Yes, Department /Position:</i> Scott Varner, Commander, Santa Paula PD	Yes
Grant writers	No

Table 8-7. Education and Outreach Capability

Criterion	Response
Do you have a public information officer or communications office?	Yes
Do you have personnel skilled or trained in website development?	Yes
Do you have hazard mitigation information available on your website? <i>If yes, briefly describe:</i> Will be in development	No
Do you use social media for hazard mitigation education and outreach? <i>If yes, briefly describe:</i> In process of developing education	Yes
Do you have any citizen boards or commissions that address issues related to hazard mitigation? <i>If yes, briefly describe:</i> Although not a decision making body, the Citizen Corp meets monthly	Yes
Do you have any other programs in place that could be used to communicate hazard-related information? <i>If yes, briefly describe:</i> Social Media, Nixle	Yes
Do you have any established warning systems for hazard events? <i>If yes, briefly describe:</i> 1610 AM, Social Media, County reverse 911, Nixle	Yes

Table 8-8. National Flood Insurance Program Compliance

Criterion	Response
What local department is responsible for floodplain management?	Public Works
Who is your floodplain administrator? (department/position)	Public Works/Public Works Director
Are any certified floodplain managers on staff in your jurisdiction?	No
What is the date that your flood damage prevention ordinance was last amended?	May 4, 2009
Does your floodplain management program meet or exceed minimum requirements? <i>If exceeds, in what ways?</i> Enter Response	Meets
When was the most recent Community Assistance Visit or Community Assistance Contact?	June 18, 2018
Does your jurisdiction have any outstanding NFIP compliance violations that need to be addressed? <i>If so, state what they are.</i> Enter Response	No
Are any RiskMAP projects currently underway in your jurisdiction? <i>If so, state what they are.</i> Enter Response	No
Do your flood hazard maps adequately address the flood risk within your jurisdiction? <i>If no, state why.</i> The current FIRM's received from FEMA are being appealed for a variety of reasons, including significant A99 zones within the City's jurisdictional boundary. The City will be conducting its own flood study in the coming months.	No
Does your floodplain management staff need any assistance or training to support its floodplain management program? <i>If so, what type of assistance/training is needed?</i> Enter Response	No
Does your jurisdiction participate in the Community Rating System (CRS)? <i>If no, is your jurisdiction interested in joining the CRS program?</i> Yes	No
How many flood insurance policies are in force in your jurisdiction? ^a <i>What is the insurance in force?</i> \$306,954,400 <i>What is the premium in force?</i> \$604,233	1,021
How many total loss claims have been filed in your jurisdiction? ^a <i>What were the total payments for losses?</i> \$134,387	63

a. According to FEMA statistics as of March 31, 2021

Table 8-9. Community Classifications

	Participating?	Classification	Date Classified
FIPS Code	Yes	0611170042	N/A
DUNS #	Yes	085937027	N/A
Community Rating System	No	N/A	N/A
Building Code Effectiveness Grading Schedule	Yes	Unknown	Unknown
Public Protection	Yes	03/3X	12/21/2018
Storm Ready	N/A	N/A	N/A
Firewise	N/A	N/A	N/A
Tsunami Ready	N/A	N/A	N/A

Table 8-10. Adaptive Capacity for Climate Change

Criterion	Jurisdiction Rating ^a
Technical Capacity	
Jurisdiction-level understanding of potential climate change impacts	Medium
<i>Comment: City's General Plan acknowledges understanding of potential climate change impacts. The City does not currently have an adaptation plan. However, per the General Plan, the City has policies and procedures that will be in force for future developments, entailing strict rules that will not allow for development or construction in high risk wildfire and flood areas, respectively (HPS 2.1 & 3.1). The City's Storm Drain Master Plan was also created to address deficiencies in existing drainage systems and identify proposed facilities needed to address deficiencies. The City also participates in the National Flood Insurance Program (HPS 2.2) which covers over 1,000 residences and has CIPs addressing potential climate change hazards such as the Water Recycling Facility Floodwall, project #9039, funded through SB1.</i>	
Jurisdiction-level monitoring of climate change impacts	Low
<i>Comment: City itself does not have a committee or task force that monitors climate change impacts. The City does however make informed decisions based on risk zones identified by external sources, such as FEMA, CAL Fire, Ventura County Fire, and USGS. The City updates risk zones as new data is supplied by these external sources and applies the updated information to future decision-making and land use.</i>	
Technical resources to assess proposed strategies for feasibility and externalities	Low
<i>Comment: City does not have any resources specifically dedicated to climate change impacts. City works in collaboration with Ventura County Watershed Protection to protect watercourses, public highways, life, and property from damage or destruction from floodwaters, and Ventura County Fire District in efforts to mitigate future fire risks as guided by the Ventura County Unit Strategic Fire Plan.</i>	
Jurisdiction-level capacity for development of greenhouse gas emissions inventory	Low
<i>Comment: City does not have resources dedicated to greenhouse gas inventory. City would cooperate with Ventura County Air Pollution Control District under guidelines imposed by AB 617 to develop and implement emissions reporting, monitoring, and reduction plans and measures.</i>	
Capital planning and land use decisions informed by potential climate impacts	Medium
<i>Comment: City's General Plan outlines policies and procedures that will be in force for future development that bars construction in designated high risk zones, and for other developments outside those zones requires current Federal, State, and City parameters be met during construction (HPS 2.1 & 3.1). The City has been informed of risk zones as have been identified in FEMA's Flood Hazard Zones map (2018), Ventura County's Countywide Dam Failure Inundation Areas map (2014), Santa Paula Safety Element Fire History map (2015) detailing Wildland Fire History, and CAL Fire's Wildland Fire Hazard Areas (2020) detailing fire risk zones in the Santa Paula area.</i>	
Participation in regional groups addressing climate risks	Low
<i>Comment: City complies with Ventura County ordinances and participates in the Ventura County Watershed Protection Program to protect watercourses and property from damage or destruction from floodwaters and the Ventura County Unit Strategic Fire Plan to mitigate future fire risks.</i>	

Criterion	Jurisdiction Rating ^a
Implementation Capacity	
Clear authority/mandate to consider climate change impacts during public decision-making processes <i>Comment: City does not have a direct mandate that states decision-making must consider climate change impacts. Notwithstanding, the City's General Plan outlines policies and procedures for future development and CIPs that take into account and seek to mitigate climate change hazards. City Council meets every other week and is open to the public to vote on city budgetary and CIP related issues. The Public Works Director is present to provide and inform Council and the public of climate related information as it pertains to project proposals and budget dispensations.</i>	Low
Identified strategies for greenhouse gas mitigation efforts <i>Comment: City is in the process of exploring EV technology options and allowing third party alternative energy companies licenses to operate to install and maintain EV charging stations and solar panels.</i>	Low
Identified strategies for adaptation to impacts <i>Comment: City General Plan outlines risk zones and policies for development going forward. Land use policies outlined will bar new development in areas deemed high risk flood zones or high risk wildfire zones (HPS 2.1 & 3.1). The General Plan outlines CIPs to be developed and funded that address climate induced hazards related to flooding (HPS 2.c), programs to be .</i>	Medium
Champions for climate action in local government departments <i>Comment: City does not have a dedicated department or staff to climate action initiatives. Although there are no direct committees dedicated to this task, Public Works is focused on complying with federal, state, and county regulations. PW has developed a General Plan that acknowledges and plans around known risk zones with the goal of mitigating future hazards and restricting further development into high risk zones.</i>	Low
Political support for implementing climate change adaptation strategies <i>Comment: City Council is on board with climate change adaptation projects if they are projects that would reduce energy usage and increase energy efficiency. An Energy Efficiency Program will go before Council in Dec 2021 to vote on energy programs to implement. Council members are supportive of projects and initiatives if they will provide the community with a measurable return value or if they will directly aid further development of the city.</i>	Medium
Financial resources devoted to climate change adaptation <i>Comment: City does not allocate resources specifically to climate change adaptation projects. Portions of the budget may be spent on future CIPs related to climate change adaptation.</i>	Low
Local authority over sectors likely to be negative impacted <i>Comment: City has emergency shelters in place that have basic resources that have been used in the recent past during the Thomas Fire. Santa Paula Police have developed evacuation protocols that are enacted when necessary and in coordination with Ventura County Office of Emergency Services and Ventura County Human Services Agency.</i>	Medium
Public Capacity	
Local residents' knowledge of and understanding of climate risk <i>Comment: The City does not currently send out informational media content related to climate risks. City residents pay into the National Flood Insurance Program and are aware of the potential flood risks in their area.</i>	Medium
Local residents' support of adaptation efforts <i>Comment: Residents are supportive of adaptation efforts that directly benefit them. Residents may not be as supportive if these adaptation efforts were to take funding from projects that would impact them in a short term time frame, such as repaving of streets that are in a state of disrepair.</i>	Medium
Local residents' capacity to adapt to climate impacts <i>Comment: The City's per capita income is 68% of the national, and the poverty rate is greater than the national average at 14.2% (Census Bureau). Residents have a limited capacity for adaptation and are reliant upon the city to make preparations and fund projects that would mitigate climate induced hazards such as floods or wildfires.</i>	Low
Local economy current capacity to adapt to climate impacts <i>Comment: Scope of climate impact will dictate the economy's capacity to adapt. Based on FEMA's updated Ventura County flood maps for communities along Santa Clara River the base floodplain level has risen and portions of the city south of Hwy 126 now exist in a FEMA identified base floodplain zone. Significant portions of the city to the west and east of Santa Paula Creek as well as to the north of Hwy 126 fall within a federally protected A99 zone having met specific requirements. The breaking of the one of four dams located northeast of the city could incur significant cost damages. Also the breaking of a levee could incur damages and rebuilding of said levee would require significant public funding that may not be readily reallocated.</i>	Low

Criterion	Jurisdiction Rating ^a
Local ecosystems capacity to adapt to climate impacts <i>Comment: The local ecosystem consists largely of the Santa Clara River watershed which is protected in cooperation with Ventura County Watershed Protection. Wildfires have burned through the foothills to the north and east of the city, including the Thomas Fire (2017) and Simi Fire (2003), respectively. Extensive research and study has not been conducted to ascertain the long-term ecosystem damage or recovery of the region.</i>	Low
a. High = Capacity exists and is in use; Medium = Capacity may exist, but is not used or could use some improvement; Low = Capacity does not exist or could use substantial improvement; Unsure= Not enough information is known to assign a rating.	

8.5 INTEGRATION REVIEW

For hazard mitigation planning, “integration” means that hazard mitigation information is used in other relevant planning mechanisms, such as general planning and capital facilities planning, and that relevant information from those sources is used in hazard mitigation. This section identifies where such integration is already in place, and where there are opportunities for further integration in the future. Resources listed at the end of this annex were used to provide information on integration. The progress reporting process described in Volume 1 of the hazard mitigation plan will document the progress of hazard mitigation actions related to integration and identify new opportunities for integration.

8.5.1 Existing Integration

Some level of integration has already been established between local hazard mitigation planning and the following other local plans and programs:

- **2040 General Plan**—four-year update process recently completed (late 2021).
- **Draft Urban Water Management Plan (UWMP) and Water Shortage Contingency Plan**—updated documents in final stages of review.

8.5.2 Opportunities for Future Integration

The capability assessment in this annex indicates opportunities to integrate this mitigation plan with other jurisdictional planning/regulatory capabilities. Capabilities were identified as integration opportunities if they can support or enhance the actions identified in this plan or be supported or enhanced by components of this plan. The capability assessment identified the following plans and programs that do not currently integrate hazard mitigation information but provide opportunities to do so in the future:

- **2029 Housing Element**—draft HE Update currently under review w/CA HCD

Taking action to integrate each of these programs with the hazard mitigation plan was considered as a mitigation action to include in the action plan in this annex.

8.6 RISK ASSESSMENT

8.6.1 Jurisdiction-Specific Natural Hazard Event History

Table 8-11 lists past occurrences of natural hazards for which specific damage was recorded in this jurisdiction. Other hazard events that broadly affected the entire planning area, including this jurisdiction, are listed in the risk assessments in Volume 1 of this hazard mitigation plan.

Table 8-11. Past Natural Hazard Events

Type of Event	FEMA Disaster #	Date	Damage Assessment
Thomas Fire	FM-5224	2017	281,893 acres burned over the course of 38 days across the Santa Barbara and Ventura Counties. 280 structures were damaged and 1,063 structures were destroyed. Residents were evacuated and significant smoke covered the area. A hazard shelter was set up with basic resources in Santa Paula for evacuees.
Simi Fire	N/A	2003	108,204 acres burned over the course of 10 days in the Simi Valley. Significant smoke billowed over the valley. 11 structures were damaged, 315 structures destroyed, 21 injuries. No property damages in Santa Paula.
Maria Fire	FM-5302	November 1, 2019	9,999 acres burned over 5 days. 4 structures were destroyed. Residents were evacuated and diverted by Santa Paula PD. Significant smoke lingering causing respiratory irritation.
Flash Flood	N/A	January 4, 2008	Rainfall totals between January 4th and 6th ranged from 5 to 11 inches in the foothills and mountains. The total amount of rainfall, combined with rainfall rates around 1 inch per hour, produced numerous reports of flooding as well as mud and debris flows.
SC River Flood/SP Airport	DR-1585	2005	Flooding closed all ingress and egress from the city. Santa Paula airport was closed for several months due to flood damage to the runway--southern portion of the airport and runway was washed away by flood waters.
Flash Flood	N/A	November 30, 2002	An intense thunderstorm produced heavy rain and flash flooding near the community of Santa Paula. Law enforcement officials reported the intersection of Foothill Boulevard and Briggs Road as well as the intersection of Telegraph Road and Briggs Road were inundated with over 2 feet of water.
Wildfire	N/A	December 25, 2000	Gusty Santa Ana winds fueled a wildfire in the hills between the cities of Santa Paula and Somis. The fire, which burned over 360 acres, was started by downed power lines.
Northridge Earthquake	DR-1008	1994	6.7 magnitude earthquake centered in Northridge. 57 fatalities reported during caused by earthquake with injuries over the thousands. Damages caused were over \$20 billion in costs with double that in economic loss. Marked the costliest earthquake in U.S. history.
SC River Flood	DR-253	1969	13 reported deaths. 5 bridge crossings destroyed. Property damage was estimated at \$60 million.
St. Francis Dam Flood	N/A	1928	Countywide, more than 530 people died; bridges, orchards, farms, homes all eradicated in flood's path down the Santa Clara river valley to the Pacific Ocean.

8.6.2 Hazard Risk Ranking

Table 8-12 presents a local ranking of all hazards of concern for which this hazard mitigation plan provides complete risk assessments. As described in detail in Volume 1, the ranking process involves an assessment of the likelihood of occurrence for each hazard, along with its potential impacts on people, property, and the economy. Mitigation actions primarily target hazards with high and medium rankings.

Table 8-12. Hazard Risk Ranking

Rank	Hazard	Risk Ranking Score	Risk Category
1	Flooding	48	High
2	Dam Failure	36	High
3	Earthquake	32	Medium
4	Severe Storms	24	Medium
5	Severe Weather	24	Medium
6	Landslide	18	Medium
7	Wildfire	12	Low
8	Drought	9	Low

8.6.3 Jurisdiction-Specific Vulnerabilities

Volume 1 of this hazard mitigation plan provides complete risk assessments for each identified hazard of concern. This section provides information on a few key vulnerabilities for this jurisdiction. Available jurisdiction-specific risk maps of the hazards are provided at the end of this annex.

Repetitive Loss Properties

Repetitive loss records are as follows:

- Number of FEMA-identified Repetitive-Loss Properties: 3
- Number of FEMA-identified Severe-Repetitive-Loss Properties: 0
- Number of Repetitive-Loss Properties or Severe-Repetitive-Loss Properties that have been mitigated: 0

Other Noted Vulnerabilities

No jurisdiction-specific issues were identified by the results of the risk assessment, public involvement strategy, or other available resources.

8.7 STATUS OF PREVIOUS PLAN ACTIONS

Table 8-13 summarizes the actions that were recommended in the previous version of the hazard mitigation plan and their implementation status at the time this update was prepared.

8.8 HAZARD MITIGATION ACTION PLAN

Table 8-14 lists the identified actions, which make up the hazard mitigation action plan for this jurisdiction. Table 8-15 identifies the priority for each action. Table 8-16 summarizes the mitigation actions by hazard of concern and mitigation type.

Table 8-13. Status of Previous Plan Actions

Action Item	Completed	Removed; No Longer Feasible	Carried Over to Plan Update	
			Check if Yes	Action # in Update
OA 6—Develop a public outreach program that informs property owners located in the dam and levee failure inundation areas about voluntary flood insurance. Comment: Ongoing initiative, Public Works			✓	SP-4
OA 7—Develop a water conservation public outreach program to increase awareness about the drought, fines and penalties for overuse and solutions for conserving water. Comment: Ongoing initiative, Public Works			✓	SP-11
OA 11—Develop and implement plans to increase the building owner's general knowledge of and appreciation for the value of seismic upgrading of the building's structural and nonstructural elements. Comment: Ongoing initiative, Building & Safety / Public Works			✓	SP-1
OA 14—Acquire, relocate, or elevate residential structures, in particular those that have been identified as RL properties, within the 100-year floodplain. Comment: Ongoing initiative, Public Works			✓	SP-1

Table 8-14. Hazard Mitigation Action Plan Matrix

Benefits New or Existing Assets	Objectives Met	Lead Agency	Support Agency	Estimated Cost	Sources of Funding	Timeline ^a
Action SP-1—Where appropriate, support retrofitting, purchase or relocation of structures located in hazard areas, prioritizing those that have experienced repetitive losses and/or are located in high- or medium-risk hazard areas.						
<u>Hazards Mitigated:</u> Flooding, Dam Failure, Earthquake, Severe Storms, Severe Weather, Landslide, Wildfire						
Existing	2, 6, 9, 10, 11	City of Santa Paula	None	High	FEMA HMA (BRIC, FMA, PDM and HMGP)	Short-term
Action SP-2—Integrate the hazard mitigation plan into other plans, ordinances and programs that dictate land use decisions in the community, including the East Area 1 development.						
<u>Hazards Mitigated:</u> Flooding, Dam Failure, Earthquake, Severe Storms, Severe Weather, Landslide, Wildfire, Drought						
New & Existing	1, 2, 3, 4, 5, 7, 8, 9, 10, 11, 12, 13, 14, 15, 17, 19	City of Santa Paula	None	Low	Staff Time, General Funds	Ongoing
Action SP-3—Actively participate in the plan maintenance protocols outlined in Volume 1 of this hazard mitigation plan.						
<u>Hazards Mitigated:</u> Flooding, Dam Failure, Earthquake, Severe Storms, Severe Weather, Landslide, Wildfire, Drought						
New & Existing	1, 2, 4, 6, 7, 8, 9, 11, 12, 13, 14, 15	City of Santa Paula	None	Low	Staff Time, General Funds	Short-term
Action SP-4—Continue to maintain good standing and compliance under the NFIP through implementation of floodplain management programs that, at a minimum, meet the NFIP requirements:						
- Enforce the flood damage prevention ordinance. - Participate in floodplain identification and mapping updates. - Provide public assistance/information on floodplain requirements and impacts.						
<u>Hazards Mitigated:</u> Flooding						
New & Existing	1, 2, 6, 7, 17	City of Santa Paula	None	Low	Staff Time, General Funds	Ongoing

Benefits New or Existing Assets	Objectives Met	Lead Agency	Support Agency	Estimated Cost	Sources of Funding	Timeline ^a
Action SP-5—Identify and pursue strategies to increase adaptive capacity to climate change including but not limited to the following: Outlining floodplains and identifying areas under threat of liquefaction and subsidence that border the Santa Clara River						
<u>Hazards Mitigated:</u> Flooding, Severe Storms, Severe Weather, Wildfire, Drought						
New & Existing	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 19	City of Santa Paula	VCPWA-WP	Low	FEMA HMA (BRIC, FMA, HMGP), Staff Time, General Funds	Short-term
Action SP-6—Purchase generators for critical facilities and infrastructure that lack adequate backup power, including City Hall, Police Station, Community Center, City facilities yards, water pumping stations, sewer lift stations.						
<u>Hazards Mitigated:</u> Dam Failure, Earthquake, Flooding, Landslide, Severe Storms, Severe Weather, Wildfire						
Existing	2, 19	City of Santa Paula		High	FEMA HMA (BRIC and HMGP), Staff Time, General Funds	Short-term
Action SP-7—Policies and procedures (HPS 1.1-4 & HPS 1.a-i) to reduce severity and damage caused by geologic hazards, including seismic upgrade of unreinforced masonry buildings as required by State regulations, annual review of building codes to ensure State codes are used in reviewing development proposals, establishing of geotechnical investigation standards and requirements to be followed by development applicants						
<u>Hazards Mitigated:</u> Earthquake						
New & Existing	1, 2, 4, 6, 9, 10, 11, 12, 16	City of Santa Paula	None	Medium	FEMA HMA (BRIC, HMGP), Staff Time & General Funds	Ongoing
Action SP-8—Policies and procedures (HPS 2.1-6 & HPS 2.a-f) to address dam failure and storm water flood hazards, including but not limited to flood hazard mitigation planning that locates development areas where such risk can be mitigated to acceptable levels, locating development for any new public or emergency facilities outside flood hazard zones, participation in the National Flood Insurance Program and the Community Rating System to ensure the city is incentivized to reduce risk of damage from flooding and improve flood preparedness, support of flood control projects on the Santa Clara River, Santa Paula Creek, and other waterways, inter-agency cooperation with Army Corps of Engineers and VCPWA-WP						
<u>Hazards Mitigated:</u> Flooding, Dam Failure						
New & Existing	1, 2, 4, 6, 9, 10, 11, 12, 16	City of Santa Paula	VCPWA-WP	Medium	FEMA HMA (BRIC, FMA, HMGP), Staff Time & General Funds	Ongoing
Action SP-9—Policies and procedures (HPS 3.1-4 & HPS 3.a-i) to address risk of wildland fire including but not limited to locating development in areas where wildland fire risks can be mitigated to an acceptable level, locating new public and emergency facilities outside high fire hazard zones, enforcement of new State fire safe and defensible space regulations and standards (Public Resource Code Sec. 4290-4291 and Government Code Sec. 51182), ensuring adequate water supply for firefighting is available in all new development, consideration of a future fire station along the urban wildland interface along State Route 150, identification of effective methods to establish buffer zones separating residential development in foothills from chaparral and other native vegetation.						
<u>Hazards Mitigated:</u> Wildfire						
New & Existing	1, 2, 4, 5, 6, 9, 10, 11, 12, 16	City of Santa Paula	Ventura County	Medium	FEMA HMA (BRIC, FMAP and HMGP), Staff Time & General Funds	Ongoing
Action SP-10—Maintain wildfire hazard fuel reduction program for areas that have been identified with overgrown or dead brush, trees and weeds to reduce the potential for tree-to-tree ignition. Ensure that a “maintenance now” component to provide continued fire resistance is part of the program. (Coordinates with VCFPD Action VFP-6)						
<u>Hazards Mitigated:</u> Wildfire						
New & Existing	2, 4, 5, 6, 8, 10, 11, 13, 14, 15, 18, 19	VCFPD	City of Santa Paula, CAL FIRE & USDA	Medium	FEMA HMA (BRIC, FMAP and HMGP), Staff Time & General Funds	Ongoing

Benefits New or Existing Assets	Objectives Met	Lead Agency	Support Agency	Estimated Cost	Sources of Funding	Timeline ^a
Action SP-11—Continue developing the water conservation public outreach program to increase awareness about the drought, fines and penalties for overuse and solutions for conserving water.						
<u>Hazards Mitigated:</u>	Drought					
New & Existing	2, 12, 14, 16, 17	City of Santa Paula	None	Low	Staff Time & General Funds	Ongoing
Action SP-12—Determine feasibility of the City of Santa Paula joining the Community Rating System (CRS) program to enhance public safety, reduce flood damage to property and infrastructure, and reduce flood insurance rates in the community.						
<u>Hazards Mitigated:</u>	Flooding					
New & Existing	1, 2, 19	City of Santa Paula	None	Low	Staff Time & General Funds	Short-term
Action SP-13—Water Recycling Facility Floodwall. Construct a Floodwall to protect the Water Recycling Facility, as required by FEMA. The project will cost an estimated \$550,000 with funds fully secured from the Sewer budget.						
<u>Hazards Mitigated:</u>	Flooding					
Existing	2, 6, 11	City of Santa Paula	None	High	FEMA HMA (BRIC, FMA, HMGP), Staff Time & General Funds	Short-term
Action SP-14—Water Main Replacement Program. Replace water mains deficient in capacity and not up to current seismic standards, as outlined in the City's Potable Water System Master Plan.						
<u>Hazards Mitigated:</u>	Earthquake, Flooding, Severe Storms					
Existing	2, 6, 9, 11, 19	City of Santa Paula	None	Low	Sewer Budget, FEMA HMA (BRIC, FMA, HMGP)	Ongoing
Action SP-15—Construct an Advanced Reverse Osmosis Treatment Facility. The project is part of a mandate by the Los Angeles Area Regional Water Quality Board to construct a recycled water delivery system to be completed no later than May 1, 2022. A Water Discharge Permit was issued to the city Feb. 8, 2019, covering a 10-year period with mandated milestones. The City completed infrastructure design, CEQA/Permitting, and additional Administrative/Financing in the amount of \$1,490,000 in FY 2019/2020 for the proposed transmission line, as required by the LARWQCB in the Waste Discharge Requirements and Cease and Desist Order. Funding partially (43%) secured through Sewer budget.						
<u>Hazards Mitigated:</u>	Drought					
New & Existing	2, 3, 8, 14	City of Santa Paula	None	Medium	Sewer Budget, FEMA HMA (BRIC, FMA, HMGP)	Short-term
Action SP-16—Well Rehabilitation Program. Rehabilitate groundwater wells [18, 11, 12, 13, 14] as recommended by the City's Potable Water System Master Plan. The Decant Pump will require rebuilding or replacement of one well per year. Funding is fully secured through Water Department budget from FY 2021/2022 to FY 2025/2026.						
<u>Hazards Mitigated:</u>	Drought					
Existing	2, 3, 14, 19	City of Santa Paula	None	Low	Sewer Budget, FEMA HMA (BRIC, FMA, HMGP)	Short-term
Action SP-17—Water Recycling Facility Capital Expenditures. Replacement of or plant improvements to critical equipment for the Water Recycling Facility. Past emergency events have identified a need to upgrade and raise elevation of the motor control center and improve water pump and wastewater processing operation sustainability during emergency events and power outage. Funding is fully secured through Sewer budget.						
<u>Hazards Mitigated:</u>	Flooding, Drought					
Existing	2, 3, 11, 14	City of Santa Paula	None	Low	Sewer Budget, FEMA HMA (BRIC, FMA, HMGP)	Ongoing

Benefits New or Existing Assets	Objectives Met	Lead Agency	Support Agency	Estimated Cost	Sources of Funding	Timeline ^a
Action SP-18—FEMA Floodplain Restudy. Develop alternative floodplain study with associated hydrologic and hydraulic analysis to address deficiencies in current FEMA study in key areas of the City. This project will take 6 months to complete and will provide specific detail that builds upon the more general countywide study that was performed by Ventura County.						
<u>Hazards Mitigated:</u> Flooding						
New & Existing	1, 8, 19	City of Santa Paula	None	High	FEMA HMA (BRIC, FMA, HMGP), Staff Time & General Funds	Short-term
Action SP-19—Foothill/Cameron Drainage Improvements. Construct drainage and retaining wall improvements to address safety issues at intersection. Construct: approximately 75' of a 6' maximum height retaining wall to match existing adjacent wall along Foothill Dr; debris inlet and associated piping to address drainage and debris flows from steep adjacent agricultural property. Remove existing concrete barrier from roadway and restore two-way vehicular travel. This area has been identified as a critically affected area during flooding events.						
<u>Hazards Mitigated:</u> Flooding						
Existing	6, 11, 14, 18	City of Santa Paula	None	Low	FEMA HMA (BRIC, FMA, HMGP), Staff Time & General Funds	Short-term

a. Short-term = Completion within 5 years; Long-term = Completion within 10 years; Ongoing= Continuing new or existing program with no completion date

Acronyms used here are defined at the beginning of this volume.

Table 8-15. Mitigation Action Priority

Action #	# of Objectives Met	Benefits	Costs	Do Benefits Equal or Exceed Cost?	Is Project Grant-Eligible?	Can Project Be Funded Under Existing Programs/ Budgets?	Implementation Priority ^a	Grant Pursuit Priority ^a
1	5	High	High	Yes	Yes	No	Medium	High
2	16	Medium	Low	Yes	No	Yes	High	Low
3	12	Low	Low	Yes	No	Yes	High	Low
4	5	Medium	Low	Yes	No	Yes	High	Low
5	17	Medium	Low	Yes	Yes	Yes	High	Medium
6	2	High	High	Yes	Yes	No	Medium	High
7	9	High	Medium	Yes	Yes	Yes	High	High
8	9	High	Medium	Yes	Yes	Yes	High	High
9	10	High	Medium	Yes	Yes	Yes	High	High
10	12	High	Medium	Yes	Yes	Yes	High	High
11	5	Low	Low	Yes	No	Yes	High	Low
12	3	Medium	Low	Yes	No	Yes	High	Low
13	3	High	High	Yes	Yes	No	Medium	High
14	5	Medium	Low	Yes	Yes	Yes	High	Medium
15	4	High	Medium	Yes	Yes	No	Medium	High
16	4	Medium	Low	Yes	Yes	Yes	High	Medium
17	4	Medium	Low	Yes	Yes	Yes	High	Medium
18	3	Medium	High	Yes	Yes	No	Medium	High
19	4	High	Low	Yes	Yes	No	Medium	High

a. See the introduction to this volume for explanation of priorities.

Table 8-16. Analysis of Mitigation Actions

Hazard Type	Action Addressing Hazard, by Mitigation Type ^a							
	Prevention	Property Protection	Public Education & Awareness	Natural Resource Protection	Emergency Services	Structural Projects	Climate Resilience	Community Capacity Building ^b
High-Risk Hazards								
Flooding	SP-2, 4, 8	SP-1, 8, 17			SP-6	SP-8, 13, 14, 19	SP-5, 17	SP-2, 3, 4, 8, 12, 18
Dam Failure	SP-2, 8	SP-1, 8			SP-6	SP-8		SP-2, 3, 8
Medium-Risk Hazards								
Earthquake	SP-2, 7	SP-1, 7			SP-6	SP-14		SP-2, 3, 7
Severe Storms	SP-2	SP-1			SP-6	SP-14	SP-5	SP-2, 3
Severe Weather	SP-2	SP-1			SP-6		SP-5	SP-2, 3
Landslide	SP-2	SP-1			SP-6			SP-2, 3
Low-Risk Hazards								
Wildfire	SP-2, 9	SP-1		SP-9, 10	SP-6		SP-5	SP-2, 3, 9
Drought	SP-2		SP-11			SP-15	SP-5, 15, 16, 17	SP-2, 3

a. See the introduction to this volume for explanation of mitigation types.

b. Note that the jurisdiction did not identify a need for expansion of financial capabilities, based on existing capabilities. The intent of this hazard mitigation plan is to expand the financial capability of the jurisdiction.

8.9 PUBLIC OUTREACH

Table 8-17 lists public outreach activities for this jurisdiction.

Table 8-17. Local Public Outreach

Local Outreach Activity	Date	Number of People Involved
Seismic Upgrade Handouts/Guides, Building & Safety	Ongoing	Citywide
Water Conservation Handouts/Guides, Building & Safety	Ongoing	Citywide
Participant, California State 'Save Our Water' Program	Ongoing	Citywide

8.10 INFORMATION SOURCES USED FOR THIS ANNEX

The following technical reports, plans, and regulatory mechanisms were reviewed to provide information for this annex.

- **City of Santa Paula Municipal Code**—The municipal code was reviewed for the full capability assessment and for identifying opportunities for action plan integration.
- **City of Santa Paula Flood Damage Prevention Ordinance**—The flood damage prevention ordinance was reviewed for compliance with the National Flood Insurance Program.
- **City of Santa Paula 2040 General Plan**—The 2040 General Plan (focusing on Section 5, Hazards & Public Safety Element) was reviewed for opportunities for action plan integration. [2040-General-Plan-Section-5---Hazards-and-Public-Safety-Element \(spcity.org\)](https://www.spcity.org/2040-General-Plan-Section-5---Hazards-and-Public-Safety-Element)

- **City of Santa Paula Fiscal Year 2021/2022 & 2022/2023 Proposed Budget**—The budget was reviewed for capability assessment and for identifying opportunities for action plan integration.

The following outside resources and references were reviewed:

- **Hazard Mitigation Plan Annex Development Toolkit**—The toolkit was used to support the identification of past hazard events and noted vulnerabilities, the risk ranking, and the development of the mitigation action plan.
- **Census Bureau, Santa Paula** [U.S. Census Bureau QuickFacts: United States](#)
- **CAL FIRE Incidents** [Welcome to Stats & Events \(ca.gov\)](#)
- **Department of Conservation** [Northridge Earthquake, January 17, 1994 \(ca.gov\)](#)
- **Ventura County Public Works** [Santa Clara River, Ventura County Public Works Agency \(vcpublicworks.org\)](#)
- **Ventura County Flood Info** [VC Flood History \(vcfloodinfo.com\)](#)
- **Ventura County Community Air Protection AB 617, 2020 Annual Report** [Ventura County Air Pollution Control District Community Air Protection \(AB 617\)](#)
- **Tetra Tech Loss Matrix**—risk assessment spreadsheet provided by consultant.

Santa Paula

Critical Facilities (1 of 2)

- Food, Water, Shelter
- Health and Medical
- Safety and Security
- Major Roads
- ▭ Selected City
- ▭ Incorporated Cities
- ▭ County Boundary

Data Sources: Ventura Co., VCFD, Casitas MWD, Calleguas MWD, City of Camarillo, CA Energy Commission, Cal Trans, EPA, HIFLD, Esri



0 0.225 0.45 0.9 Miles

Santa Paula

Critical Facilities (1 of 2)

- Communications
- Energy
- Hazardous Material
- Transportation
- Major Roads
- Selected City
- Incorporated Cities
- County Boundary

Data Sources: Ventura Co., VCFD, Casitas MWD, Calleguas MWD, City of Camarillo, CA Energy Commission, Cal Trans, EPA, HIFLD, Esri



0 0.225 0.45 0.9 Miles

Santa Paula

Dam Failure Inundation Areas

-  Combined Inundation Areas
-  Major Roads
-  Selected City
-  Incorporated Cities
-  County Boundary

Data Sources: Ventura Co.,
CA DWR, Esri



0 0.225 0.45 0.9
Miles

Santa Paula

NEHRP Soil Class

-  C (Dense soil/soft rock)
-  D (Stiff soil)
-  Major Roads
-  Selected City
-  Incorporated Cities
-  County Boundary

Data Sources: Ventura Co.,
CGS, Esri



0 0.225 0.45 0.9
Miles

Santa Paula

Liquefaction Susceptibility

-  Liquefaction zone
-  Major Roads
-  Selected City
-  Incorporated Cities
-  County Boundary

Data Sources: Ventura Co.,
Esri



0 0.225 0.45 0.9
 Miles

Santa Paula

100-Year Probabilistic Earthquake Scenario

Mercalli Intensity Scale

 VII (Very Strong/Moderate)

 Major Roads

 Selected City

 Incorporated Cities

 County Boundary

Intensity scale described as:
(perceived shaking / potential damage)

Data Sources: Ventura Co.,
USGS, Esri



0 0.225 0.45 0.9
 Miles

Santa Paula

Oak Ridge M7.16 Earthquake Scenario

Mercalli Intensity Scale

 VIII (Severe/Moderate-Heavy)

 Major Roads

 Selected City

 Incorporated Cities

 County Boundary

Intensity scale described as:
(perceived shaking / potential damage)

Data Sources: Ventura Co.,
USGS, Esri



0 0.225 0.45 0.9
 Miles

Santa Paula

Pitas Point M7.12 Earthquake Scenario

Mercalli Intensity Scale

 VIII (Severe/Moderate-Heavy)

 Major Roads

 Selected City

 Incorporated Cities

 County Boundary

Intensity scale described as:
(perceived shaking / potential damage)

Data Sources: Ventura Co.,
USGS, Esri



0 0.225 0.45 0.9
 Miles

Santa Paula

San Cayetano M7.16 Earthquake Scenario

Mercalli Intensity Scale

- VII (Very Strong/Moderate)
- VIII (Severe/Moderate-Heavy)

- Major Roads
- Selected City
- Incorporated Cities
- County Boundary

Intensity scale described as:
(perceived shaking / potential damage)

Data Sources: Ventura Co.,
USGS, Esri



0 0.225 0.45 0.9
Miles

Santa Paula

S. San Andreas M8.03 Earthquake Scenario

Mercalli Intensity Scale

- VI (Strong/Light)
- Major Roads
- Selected City
- Incorporated Cities
- County Boundary

Intensity scale described as:
(perceived shaking / potential damage)

Data Sources: Ventura Co.,
USGS, Esri



0 0.225 0.45 0.9
Miles

Santa Paula

FEMA Flood Hazard Areas

-  1% Annual Chance Flood (100-Year)
-  0.2% Annual Chance Flood (500-Year)
-  Major Roads
-  Selected City
-  Incorporated Cities
-  County Boundary

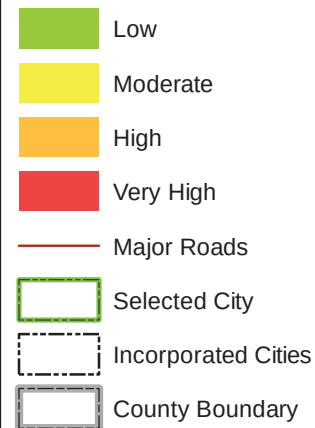
Data Sources: Ventura Co.,
FEMA, Esri



0 0.225 0.45 0.9
Miles

Santa Paula

Susceptibility to Deep-Seated Landslides



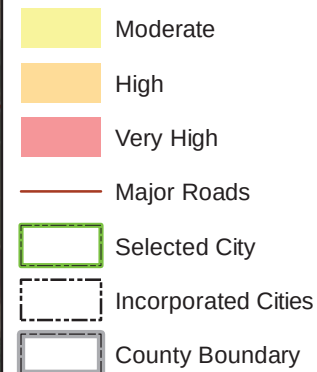
Data Sources: Ventura Co.,
CGS, Esri



0 0.225 0.45 0.9 Miles

Santa Paula

Wildfire Hazard Severity Zones



Data Sources: Ventura Co.,
CAL FIRE, Esri



0 0.225 0.45 0.9 Miles

9. CITY OF SIMI VALLEY

9.1 LOCAL HAZARD MITIGATION PLANNING TEAM

Primary Point of Contact

Eileen Connors, Emergency Services Manager
3901 Alamo Street
Simi Valley, CA 93063
Telephone: 805-583-6982
e-mail Address: econnors@simivalley.org

Alternate Point of Contact

Sean Gibson, Deputy ES Director/City Planner
2929 Tapo Canyon Rd.
Simi Valley, CA 93063
Telephone: 805-583-6383
email Address: sgibson@simivalley.org

This annex was developed by the local hazard mitigation planning team, whose members are listed in Table 9-1.

Table 9-1. Local Mitigation Planning Team Members

Name	Title
Chris Oberender	Deputy Public Works Director
Brent Siemer	Deputy Public Works Director
Samantha Argabrite	Deputy City Manager, City Manager's Office
Sean Gibson	Deputy ES Director/City Planner, Planning
Eileen Connors	Emergency Services Manager
Alison Phagan	Deputy Director, Administrative Services
Marvin Lopez	Administrative Services
Jeff Pike	Ventura County Fire Dept.

9.2 JURISDICTION PROFILE

9.2.1 Location and Features

The City of Simi Valley is in southeast Ventura County.

The current boundaries generally extend from the Santa Susana Mountains in the north to the Simi Hills in the south and east to the San Fernando Valley, encompassing an area of forty-two square miles.

Located just minutes from Los Angeles, Simi Valley offers a vibrant city full of cultural diversity, historical landmarks and beautiful rolling hills with the charm of a small town close to Southern California's most famous attractions. Simi Valley is Southern California's best kept secret, the perfect choice for a getaway, meeting, or wedding. The City is home to a variety of business industries,

including Aerospace, Commercial Aircraft, and Defense Manufacturing, software and technology, warehouse and distribution and auto and transportation.

9.2.2 History

The City of Simi Valley was incorporated in 1969 under the general laws of the State of California. It is believed that the name of the Chumash Indian Village “Shimiji” is the origin of the City’s name. Ta’apu is the origin of the names of Tapo Street and Tapo Canyon. The official City tree is the Coast Live Oak, whose acorns were used by the Chumash Indians for food. The official City flower is the California Wild Rose, from which the Chumash Indians ate vitamin-rich rosehips. In 1795, San José de Nuestra Señora de Altagracia y Simí was granted to Santiago Pico, one of 240 colonists from Mexico, by Spanish Governor Diego de Borica. This land grant, approximately 113,000 acres in size, was one of the largest ever made.

9.2.3 Governing Body Format

The City of Simi Valley operates under a General-Law/council-manager form of government.

The City Council of Simi Valley assumes responsibility for the adoption of this plan; the Emergency Services department will oversee its implementation.

9.3 CURRENT TRENDS

9.3.1 Population

According to the California Department of Finance, the population of the City of Simi Valley as of January 2020, was 125,115. Since 2010, the population has grown at an average annual rate of 0.06 percent.

9.3.2 Development

Early development in Simi Valley was agricultural in nature with a variety of crops and cattle grazing on much of the valley floor. As the City grew, development on the valley floor was characterized by a continuous pattern of suburban construction dominated by one and two-story buildings, schools, housing, shopping centers, community facilities, and places of employment, interspersed with parks and open spaces. As growth continued, available vacant land on the valley floor became more limited, and outward expansion of residential development into nearby hillsides occurred. Specific plans have been prepared for several larger-scale projects, in order to preserve the hillside areas as an important natural and visual resource and to provide for the orderly growth of these areas. Examples include the Wood Ranch Specific Plan, Runkle Canyon Specific Plan, and the Whiteface Specific Plan. Commercial development has also occurred in the community, the most recent being the region-serving Simi Valley Town Center.

The City has developed a region-serving shopping center, the Simi Valley Town Center, and a large residential development in the north-central part of the City called the Big Sky Ranch. Both projects incorporated significant hazard mitigation in the development process; they represent a major success story in the use of hazard mitigation policies to build a safe community. The North Simi Detention basin

was built to mitigate flooding in both developments, and in the process, removed downstream homes from the FEMA FIRM areas. The strict enforcement of building codes in the developments incorporated current seismic, fire, and flooding mitigation standards.

Simi Valley's land use pattern reflects the City's identity as a residential community with significant protected open space and parklands. Residential development represents the predominant land use in the City, making up more than 71 percent of its total land area. Parks and other public and semi-public uses such as schools, cemeteries, a regional landfill, and transportation rights-of-way make up just over 20 percent of the land uses. Industrial and commercial are the remaining land uses in the City, occupying approximately 5 percent and 3 percent, respectively, and represent the smallest component of the City's overall land use pattern.

Table 9-2 summarizes development trends in the period since the preparation of the previous hazard mitigation plan, as well as expected future development trends.

Table 9-2. Recent and Expected Future Development Trends

Criterion	Response					
Has your jurisdiction annexed any land since the preparation of the previous hazard mitigation plan?	No					
If yes, give the estimated area annexed and estimated number of parcels or structures.	N/A					
Is your jurisdiction expected to annex any areas during the performance period of this plan?	Yes					
If yes, describe land areas and dominant uses.	Approximately 486 acres of land spread across 447 parcels located on the north west of the City the north east of the City and around Sinaloa Lake. The uses in these areas include vacant and agricultural land as well as land improved with single family residences.					
If yes, who currently has permitting authority over these areas?	Ventura County					
Are any areas targeted for development or major redevelopment in the next five years?	Yes					
If yes, briefly describe, including whether any of the areas are in known hazard risk areas	The Lost Canyons Residential Development consisting of 364 single-family dwellings located on the northern outskirts of the City Limits is located in a Very High Fire Hazard Severity Zone and pockets of landslide and liquefaction hazards. These areas have been studied in the project's Environmental Impact Report and Mitigation Measures are in place to protect the public safety. The 210-unit North Canyons Ranch Project located adjacent to the northern City Boundary is located in a Very High Fire Hazard Severity Zone and small areas of landslide and liquefaction hazard areas. The project's EIR will address safety issues and mitigation measures to address these hazards					
How many permits for new construction were issued in your jurisdiction since the preparation of the previous hazard mitigation plan?		2016	2017	2018	2019	2020
	Single Family	101	87	91	51	53
	Multi-Family	35	8	29	27	3
	Other (commercial, mixed use, etc.)	16	5	6	5	3
	Total	152	100	126	83	59

Criterion	Response
Provide the number of new-construction permits for each hazard area or provide a qualitative description of where development has occurred.	• Special Flood Hazard Areas: 0 (New development is prohibited in the SFHA) • Landslide: * • High Liquefaction Areas: * • Tsunami Inundation Area: 0 • Wildfire Risk Areas: * *The City of Simi Valley includes substantial areas of earthquake-induced landscape and liquefaction areas, and wildfire-risk areas. Pursuant to the General Plan, Building Codes and geotechnical standards have been adopted to provide protection for new and renovated structures in these hazard areas. For Special Flood Hazard Areas, all new construction, substantial repair/improvements, and grading are prohibited. The City does not have any Tsunami Inundation Areas.
Describe the level of buildout in the jurisdiction, based on your jurisdiction's buildable lands inventory. If no such inventory exists, provide a qualitative description.	The City is virtually built out, with little undeveloped land remaining. The hillside open space areas surrounding the community are expected to remain substantially unchanged as development in these areas is regulated through the City's Hillside Performance Standards, which are designed to preserve the natural resources surrounding the community.

9.4 CAPABILITY ASSESSMENT

This section describes an assessment of existing capabilities for implementing hazard mitigation strategies. The introduction at the beginning of this volume of the hazard mitigation plan describes the components included in the capability assessment and their significance for hazard mitigation planning.

Findings of the capability assessment were reviewed to identify opportunities to expand, initiate or integrate capabilities to further hazard mitigation goals and objectives. Where such opportunities were identified and determined to be feasible, they are included in the action plan. The "Analysis of Mitigation Actions" table in this annex identifies these as community capacity building mitigation actions. The findings of the assessment are presented as follows:

- An assessment of planning and regulatory capabilities is presented in Table 9-3.
- Development and permitting capabilities are presented in Table 9-4.
- An assessment of fiscal capabilities is presented in Table 9-5.
- An assessment of administrative and technical capabilities is presented in Table 9-6.
- An assessment of education and outreach capabilities is presented in Table 9-7.
- Information on National Flood Insurance Program (NFIP) compliance is presented in Table 9-8.
- Classifications under various community mitigation programs are presented in Table 9-9.
- The community's adaptive capacity for the impacts of climate change is presented in Table 9-10.

Table 9-3. Planning and Regulatory Capability

	Local Authority	Other Jurisdiction Authority	State Mandated	Integration Opportunity?
Codes, Ordinances, & Requirements				
Building Code	Yes	No	Yes	Yes
<i>Comment: Simi Valley Municipal Code, Title 8, Simi Valley Building Code; California Building Codes, Title 24 of the California Code of Regulations</i>				
Zoning Code	Yes	No	Portions	Yes
<i>Comment: Simi Valley Municipal Code, Title 9, Planning and Zoning</i>				
Subdivisions	Yes	No	Yes	Yes
<i>Comment: Simi Valley Municipal Code, Title 9, Planning and Zoning/ State Subdivision Map Act (Govt. Code Sec. 66410-66499.58), Title 7, Chapter 5 Flood Damage Prevention</i>				
Stormwater Management	Yes	Yes	Yes	Yes
<i>Comment: Simi Valley Municipal Code, Title 7, Chapter 5 Flood Damage Prevention, National Flood Insurance Program (NFIP), NFIP Community Rating System, California State Water Quality Control Board MS4 Permit</i>				
Post-Disaster Recovery	Yes	No	Yes	Yes
<i>Comment: Mandated by CalOES and FEMA for funding.</i>				
Real Estate Disclosure	Yes	No	Yes	Yes
<i>Comment: SFHA & All-Hazards declaration (State, City)</i>				
Growth Management	Yes	No	Yes	Yes
<i>Comment: Simi Valley General Plan</i>				
Site Plan Review	Yes	Yes	No	Yes
<i>Comment: (Rancho Simi Recreation and Park District, VC Fire, VCPWA-WP) Simi Valley Municipal Code, Title 9, Planning and Zoning</i>				
Environmental Protection	Yes	Yes	Yes	Yes
<i>Comment: CEQA</i>				
Flood Damage Prevention	Yes	Yes	No	Yes
<i>Comment: Simi Valley Municipal Code, Title 7, Chapter 5 Flood Damage Prevention, National Flood Insurance Program (NFIP), NFIP Community Rating System SFHA (FEMA, City)</i>				
Emergency Management	Yes	No	Yes	Yes
<i>Comment: Mandated by CalOES and FEMA for funding.</i>				
Climate Change	Yes	Yes	Yes	Yes
<i>Comment: CEQA</i>				
Planning Documents				
General Plan	Yes	No	Yes	Yes
<i>Is the plan compliant with Assembly Bill 2140? Yes</i>				
<i>Comment: Once Safety Element is updated in October 2021, this will comply with AB2140.</i>				
Capital Improvement Plan	Yes	No	No	Yes
<i>How often is the plan updated? Every Year</i>				
<i>Comment: City of Simi Valley Proposed Five Year Capital Improvement Plan</i>				
Disaster Debris Management Plan	Yes	No	No	Yes
<i>Comment: Must meet requirements for CalOES and FEMA funding</i>				
Floodplain or Watershed Plan	No	No	No	Yes
<i>Comment: Both plans are in currently in conceptual form (FEMA, VCPWA-WP, City)</i>				
Stormwater Plan	Yes	No	No	No
<i>Comment: 2016 Master Plan of Drainage requires update (City)</i>				
Urban Water Management Plan	Yes	No	Yes	No
<i>Comment: 2020 Plan recently adopted</i>				

	Local Authority	Other Jurisdiction Authority	State Mandated	Integration Opportunity?
Habitat Conservation Plan <i>Comment: General Plan/CEQA addresses portions of this</i>	Yes	No	Yes	Yes
Economic Development Plan <i>Comment: City of Simi Valley Economic Development Plan</i>	Yes	No	No	Yes
Shoreline Management Plan <i>Comment: The City doesn't have shoreline.</i>	No	No	No	No
Community Wildfire Protection Plan <i>Comment: VCFPD's Ready, Set, Go! Wildfire Action Plan; Ventura County Fire Code Section W106- Fire Protection, Fuel Modification and Vegetation Management Plans and FHRP</i>	Yes	No	No	Yes
Forest Management Plan <i>Comment: The City doesn't have forests.</i>	No	No	No	No
Climate Action Plan <i>Comment: General Plan/CEQA addresses portions of this.</i>	Yes	No	Yes	Yes
Comprehensive Emergency Management Plan <i>Comment: Updating in 2022. Required by CalOES and FEMA for funding.</i>	Yes	No	Yes	Yes
Threat & Hazard Identification & Risk Assessment (THIRA) <i>Comment: The City relies on Ventura County's THIRA.</i>	Yes	No	No	Yes
Post-Disaster Recovery Plan <i>Comment: Opportunity to expand it in 2022 EOP update. Required by CalOES and FEMA for funding.</i>	Yes	No	Yes	Yes
Continuity of Operations Plan <i>Comment: Opportunity to expand it in 2022 EOP update. Required by CalOES and FEMA for funding.</i>	Yes	No	Yes	Yes
Public Health Plan <i>Comment: Opportunity to expand it in 2022 EOP update</i>	Yes	Yes	Yes	Yes

Table 9-4. Development and Permitting Capability

Criterion	Response
Does your jurisdiction issue development permits? <i>If no, who does? If yes, which department?</i>	Yes Public Works issues Flood Area Development Permits for development within the SFHA. Environmental Services.
Does your jurisdiction have the ability to track permits by hazard area?	No
Does your jurisdiction have a buildable lands inventory?	Yes

Table 9-5. Fiscal Capability

Financial Resource	Accessible or Eligible to Use?
Community Development Block Grants	Yes
Capital Improvements Project Funding	Yes
Authority to Levy Taxes for Specific Purposes	Yes
User Fees for Water, Sewer, Gas or Electric Service <i>If yes, specify: Water and Sewer Fees</i>	Yes
Incur Debt through General Obligation Bonds	Yes
Incur Debt through Special Tax Bonds	Yes
Incur Debt through Private Activity Bonds	Yes
Withhold Public Expenditures in Hazard-Prone Areas	Yes

Financial Resource	Accessible or Eligible to Use?
State-Sponsored Grant Programs	Yes
Development Impact Fees for Homebuyers or Developers	Yes
Other	Yes (Traffic Mitigation fees)

Table 9-6. Administrative and Technical Capability

Staff/Personnel Resource	Available?
Planners or engineers with knowledge of land development and land management practices <i>If Yes, Department /Position:</i> Public Works/Deputy Director (Development Services) Public Works/Senior Engineer (Development Services) Environmental Services/Planning Division	Yes
Engineers or professionals trained in building or infrastructure construction practices <i>If Yes, Department /Position:</i> Public Works/Deputy Director (Development Services) Public Works/Senior Engineer (Development Services)	Yes
Planners or engineers with an understanding of natural hazards <i>If Yes, Department /Position:</i> Public Works/Deputy Director (Development Services)	Yes
Staff with training in benefit-cost analysis <i>If Yes, Department /Position:</i> Public Works/Deputy Director (Development Services)	Yes
Surveyors <i>If Yes, Department /Position:</i> The City contracts surveying services with outside consultants.	Yes
Personnel skilled or trained in GIS applications <i>If Yes, Department /Position:</i> Public Works/GIS Coordinator, Police Dept/Emergency Services Manager	Yes
Scientist familiar with natural hazards in local area <i>If Yes, Department /Position:</i> Public Works/Deputy Director (Development Services)	Yes
Emergency manager <i>If Yes, Department /Position:</i> Police Dept/Emergency Services Manager	Yes
Grant writers <i>If Yes, Department /Position:</i> Police Dept/Emergency Services Manager. Administrative Services also contracts these services through an outside consultant	Yes

Table 9-7. Education and Outreach Capability

Criterion	Response
Do you have a public information officer or communications office?	Yes
Do you have personnel skilled or trained in website development?	Yes
Do you have hazard mitigation information available on your website? <i>If yes, briefly describe:</i> The City's 2015 Multi-Hazard Mitigation Plan is posted.	Yes
Do you use social media for hazard mitigation education and outreach? <i>If yes, briefly describe:</i> The City and SVPD use Twitter, Next Door and other outlets.	Yes
Do you have any citizen boards or commissions that address issues related to hazard mitigation? <i>If yes, briefly describe:</i> NFIP CRS Program for Public Information Program and Committee; CERT and Disaster Service Worker volunteer teams.	Yes
Do you have any other programs in place that could be used to communicate hazard-related information? <i>If yes, briefly describe:</i> NFIP CRS Program for Public Information Program and Committee; AM530 Radio; Portable digital signs and SVTV cable channel.	Yes
Do you have any established warning systems for hazard events? <i>If yes, briefly describe:</i> The County of Ventura uses VC Alert and we encourage residents to sign up.	Yes

Table 9-8. National Flood Insurance Program Compliance

Criterion	Response
What local department is responsible for floodplain management?	Public Works
Who is your floodplain administrator? (department/position)	Public Works/Public Works Director
Are any certified floodplain managers on staff in your jurisdiction?	Yes
What is the date that your flood damage prevention ordinance was last amended?	February 27, 2017
Does your floodplain management program meet or exceed minimum requirements? <i>If exceeds, in what ways?</i>	Exceeds All development within the SFHA, including fill, is prohibited. Additional higher regulatory design and construction standards have been codified in the SVMC.
When was the most recent Community Assistance Visit or Community Assistance Contact?	December 3, 2021
Does your jurisdiction have any outstanding NFIP compliance violations that need to be addressed?	No
Are any RiskMAP projects currently underway in your jurisdiction?	No
Do your flood hazard maps adequately address the flood risk within your jurisdiction? <i>If no, state why.</i>	No The Flood Insurance Study and FIRMS do not accurately represent true flood risk and are overly conservative. The City is working with FEMA Region 9 to identify funding for either a RiskMap to correct these mapping issues or a Flood Hazard Study to support a subsequent City sponsored mapping change application to FEMA.
Does your floodplain management staff need any assistance or training to support its floodplain management program? <i>If so, what type of assistance/training is needed?</i>	Yes City staff needs training in grant management (NDGrants) and the Mapping Information Platform (MIP) in order to pursue FEMA grant funding for mapping projects.
Does your jurisdiction participate in the Community Rating System (CRS)? <i>If yes, is your jurisdiction interested in improving its CRS Classification?</i>	Yes Yes
How many flood insurance policies are in force in your jurisdiction? <i>What is the insurance in force?</i> <i>What is the premium in force?</i>	1,624 \$425,325,500 \$1,337,947
How many total loss claims have been filed in your jurisdiction? <i>What were the total payments for losses?</i>	82 \$116,840

a. According to FEMA statistics as of March 31, 2021

Table 9-9. Community Classifications

	Participating?	Classification	Date Classified
FIPS Code	Yes	0611172016	N/A
DUNS #	Yes	076238211	N/A
Community Rating System	Yes	5	10/01/19
Building Code Effectiveness Grading Schedule	Yes	2	10/2/17
Public Protection	Yes	03/3X	12/21/2018
Storm Ready	No	N/A	N/A
Firewise	No	N/A	N/A
Tsunami Ready	N/A	N/A	N/A

Table 9-10. Adaptive Capacity for Climate Change

Criterion	Jurisdiction Rating
Technical Capacity	
Jurisdiction-level understanding of potential climate change impacts <i>Comment: The General Plan Safety & Noise Chapter update was adopted on October 25, 2021, and includes new Emergency Preparedness Goals and Policies to respond to climate change.</i>	Medium
Jurisdiction-level monitoring of climate change impacts <i>Comment: City of Simi Valley Climate Action Plan</i>	High
Technical resources to assess proposed strategies for feasibility and externalities <i>Comment: City of Simi Valley Greenhouse Gas Inventory Policy, Climate Action Plan; City of Sim Valley Green Community Action Plan</i>	High
Jurisdiction-level capacity for development of greenhouse gas emissions inventory <i>Comment: City of Simi Valley Climate Action Plan</i>	High
Capital planning and land use decisions informed by potential climate impacts <i>Comment: Appendix A of General Plan, Policies Addressing Climate Change</i>	High
Participation in regional groups addressing climate risks <i>Comment: Ventura County Fire Protection District, Ventura County Health Department, Ventura County OES</i>	Medium
Implementation Capacity	
Clear authority/mandate to consider climate change impacts during public decision-making processes <i>Comment: General Plan was adopted on October 25, 2021</i>	High
Identified strategies for greenhouse gas mitigation efforts <i>Comment: City of Simi Valley Climate Action Plan</i>	High
Identified strategies for adaptation to impacts <i>Comment: City of Simi Valley Climate Action Plan</i>	High
Champions for climate action in local government departments <i>Comment: Planning, Public Works and City Manager's Office staff through the implementation of the General Plan, Climate Action Plan and efforts to enhance resiliency of City Buildings.</i>	High
Political support for implementing climate change adaptation strategies <i>Comment: The City Council voted to join the Clean Power Alliance, a Community Choice Aggregator, focused On providing clean energy to communities in Southern California.</i>	High
Financial resources devoted to climate change adaptation <i>Comment: The City has undertaken a multi-million dollar project at the Wastewater Treatment Plant to Enhance the City's resiliency; has invested in solar, battery back-up systems for City facilities, LED lighting, and similar projects.</i>	High
Local authority over sectors likely to be negative impacted <i>Comment: Businesses must abide by the California Green Building Code, the City's General Plan. However, Many sectors are regulated by the State and Federal government.</i>	High
Public Capacity	
Local residents' knowledge of and understanding of climate risk <i>Comment: Staff does consistent outreach to the community regarding the need for water conservation due to Drought, preparation for PSPS events due to severe weather and possible Wildfire, but there is opportunity for improvement.</i>	Medium
Local residents' support of adaptation efforts <i>Comment: Some Simi Valley residents have adopted the use of solar panels to be less reliant on the grid but there are other opportunities that can be explored.</i>	Medium
Local residents' capacity to adapt to climate impacts <i>Comment: Residents have been installing solar panels and buying electric vehicles, but there are other opportunities that can be explored.</i>	Medium

Criterion	Jurisdiction Rating
Local economy current capacity to adapt to climate impacts <i>Comment: The City has a diversified economy, which can adapt to climate impacts, but much of the workforce needs training to stay current.</i>	Medium
Local ecosystems capacity to adapt to climate impacts <i>Comment: The City does not have the specialized staff and funding to revamp the ecosystem to be more resilient.</i>	Low
a. High = Capacity exists and is in use; Medium = Capacity may exist, but is not used or could use some improvement; Low = Capacity does not exist or could use substantial improvement; Unsure= Not enough information is known to assign a rating.	

9.5 INTEGRATION REVIEW

For hazard mitigation planning, “integration” means that hazard mitigation information is used in other relevant planning mechanisms, such as general planning and capital facilities planning, and that relevant information from those sources is used in hazard mitigation. This section identifies where such integration is already in place, and where there are opportunities for further integration in the future. Resources listed at the end of this annex were used to provide information on integration. The progress reporting process described in Volume 1 of the hazard mitigation plan will document the progress of hazard mitigation actions related to integration and identify new opportunities for integration.

9.5.1 Existing Integration

Some level of integration has already been established between local hazard mitigation planning and the following other local plans and programs:

- **2016 Master Plan of Drainage**—SVMC 7-5.605, Flood Damage Prevention, Standards for subdivisions and other proposed development.
- **NFIP CRS Program for Public Information**—NFIP CRS PPI Plan adopted by the City Council.
- **Emergency Operations Plan**—The EOP explains how the City will plan for, respond to and recover from hazards and disasters. Disaster Debris Management is included in the EOP.
- **Simi Valley General Plan**—Safety Element addresses integration of hazard mitigation into the overall development of the City’s and identifies policies and implantation programs.
- **Simi Valley Municipal Code, Title 9, Planning and Zoning**—Planning and Building Code integrate safe building and land use practices to mitigate risk.
- **California Environmental Quality Act**—Requires the assessment of wildlife risk, climate change impacts and environmental impacts on land development projects in the City of Simi Valley.

9.5.2 Opportunities for Future Integration

The capability assessment in this annex indicates opportunities to integrate this mitigation plan with other jurisdictional planning/regulatory capabilities. Capabilities were identified as integration opportunities if they can support or enhance the actions identified in this plan or be supported or enhanced by components of this plan. The capability assessment identified the following plans and

programs that do not currently integrate hazard mitigation information but provide opportunities to do so in the future:

- **Post-Disaster Recovery Plan**—The City can expand the 2015 HMP recovery plan into a more detailed version.
- **Continuity of Operations Plan**—The City can expand the current recovery plan to build on the goals and objectives identified in the hazard mitigation plan.
- **Public Health Plan**—The City can expand the current recovery plan to build on the goals and objectives identified in the hazard mitigation plan.
- **Economic Development Plan**—The City can look for mitigation opportunities in private sector partnerships.
- **Home Rehabilitation Program**—The City can investigate expanding the program to incorporate clean energy technology.

Taking action to integrate each of these programs with the hazard mitigation plan was considered as a mitigation action to include in the action plan in this annex.

9.6 RISK ASSESSMENT

9.6.1 Jurisdiction-Specific Natural Hazard Event History

Table 9-11 lists past occurrences of natural hazards for which specific damage was recorded in this jurisdiction. Other hazard events that broadly affected the entire planning area, including this jurisdiction, are listed in the risk assessments in Volume 1 of this hazard mitigation plan.

Table 9-11. Past Natural Hazard Events

Type of Event	FEMA Disaster #	Date	Damage Assessment
COVID-19 Pandemic	DR-4482	01/20/20 – continuing	N/A
Severe Weather	N/A	02/28/2021	Strong and gusty Santa Ana winds impacted the coastal valleys of Ventura County. Some peak north to northeast wind reports from the local mesonet included east Simi Valley (gust 61 mph).
Wildfire (Easy Fire)	FM-5298	10/30-11/2/2019	The three-day fire burned 1,806 acres in west Simi Valley and threatened the Reagan Presidential Library.
Wildfire (Woolsey Fire)	DR-4407	11/8-25/2018	This fire was active for 56 days in Ventura and LA counties. It burned over 96,000 acres south of Simi Valley and is the eighth most destructive fire in California history.
Wildfire (Peak Fire)	N/A	11/12/2018	This one-day fire burned 186 acres east of Simi Valley off Hwy 118 and Rocky Peak Road.
Wildfire, Flooding, Landslide	DR-4353	12/4/2017-1/31/2018	Wildfire, Mudflows and Debris Flows

Type of Event	FEMA Disaster #	Date	Damage Assessment
Wildfire (Thomas Fire)	FM-5224	12/4/2017	Rancho Simi Recreation and Park District \$4M, SVPD \$35K in SVPD overtime. This fire was active for 38 days in Ventura and Santa Barbara counties. It was started by power lines and burned over 280,000 acres and destroyed 1,063 structures. Rye Fire burned 12/5-12/2017 in Santa Clarita but didn't reach Simi Valley.
Wildfire (Kuehner Fire)	N/A	7/1/2016	This one-day fire burned 45 acres off Hwy 118 at Rocky Peak Road, northeast of Simi Valley.
Wildfire (Rustic Fire)	N/A	8/16/2015	This one-day fire threatened 500 homes in southwest Simi Valley before being extinguished. Residents were advised to prepare to evacuate their animals, especially livestock, but no evacuation orders were issued.
Flooding	N/A	12/12/2014	Heavy rain produced flash flooding and mud and debris flows in the community of Simi Valley. Law enforcement reported mud flows across Hwy 118 at Kuehner Drive.
Wildfire (Springs Fire)	FM-5024	5/2-11/2013	Impacted Ventura County.
Severe Storm and Flooding	N/A	1/18-22/2010	Heavy rain, gusty winds, and heavy snow were witnessed in Ventura County. Rainfall totals ranged from 4-8 inches over coastal areas to 8-16 inches in the foothills and mountains. Flash flood watches were issued in areas of Ventura County that were damaged by wildfires in 2008.
Wildfire, Flooding, Landslide	DR-1731	10/21/2007-3/31/2008	Minor flooding of streets; First Street bridge flooded, which is common with heavy rain. Los Angeles Ave/Madera Road intersection flooded. A blocked storm drain near Santa Susana Park at Katherine Road resulted in the flooding of a few homes.
Wildfire (Sesnon Fire)	N/A	10/13-18/2008	EOC activated 10/13-15/2008. Fire active from 10/13 – 18/2008.
Severe Weather	DR-1689	1/11-17/2007	Freeze.
Wildfire (Day Fire)	FM-2677	9/25-30/2006	Burned 162,000 acres over 28 days north of Simi Valley.
Wildfire (School Fire)	FM-2586	11/18-23/2005	Burned almost 4,000 acres over four days near the City of Ventura.
Wildfire (Topanga Fire)	FM-2583	9/28-10/10/2005	This Chatsworth-area fire burned along the LA/Ventura counties border for seven days, destroying over 24,000 acres.
Flooding	DR-1585	2/16-23/2005	Madera Rd/Los Angeles Ave flooded
Severe Storms and Flooding	DR-1577	12/27/2004-1/11/2005 (Simi Valley: 1/7-11/2005)	\$21,588. In January 2005, winter storms brought heavy rains to the region. The Ventura River reached a maximum stage of 17.5 feet and maximum discharge of 152,560 cfs. High water flows, scouring, and washouts in the Ventura River damaged several water wells and exposed water lines owned by the Ojai Valley Sanitary District. Severe erosion occurred along both embankments of the Ventura River. The Calleguas Creek topped its banks near the state hospital in Camarillo. Damage from the January 2005 storms totaled more than \$200 million.
Wildfire (Simi Fire)	FM-2504	10/24 – 11/11/2003	Per CAL FIRE: 108K acres burned, 315 structures destroyed, 11 structures damaged.
Wildfire	DR-1498	10/21/2003-3/31/2004	Impacted Ventura County.

Type of Event	FEMA Disaster #	Date	Damage Assessment
Severe Storms, Tornado, High Winds and Flooding	DR-1267	12/20-28/1998	Impacted Ventura County.
Severe Winter Storms and Flooding ("El Nino" winter)	DR-1203	2/2 – 4/30/1998	In this "El Nino" winter, Simi Valley received 17.2 inches of rain during February. The maximum flow in Calleguas Creek as recorded at the California State University Channel Islands was 21,600 ft ³ /s, which caused overtopping of the bridges at Pacific Coast Highway.
Wildfires (Calabasas/Malibu Fires)	EM-3120	10/21-31/1996	Impacted Ventura County.
Severe Storms and Flooding	DR-1046	2/13-4/19/1995 (Simi Valley: 1/3-10/1995; 3/10/1995)	Rainfall intensities in some locations were equivalent or greater than 100-year frequency precipitation. Significant local flooding occurred as a result of channels and local storm drains being overtaxed. On March 10, a cooler winter storm brought significant amounts of precipitation with damaging results due to the saturated soil conditions. The peak flow recorded on Calleguas Creek at the stream gauge above Highway 101 was 9,120 ft ³ /s and at the CSUCI gauge, it was 14,900 ft ³ /s.
Earthquake (Northridge)	DR-1008	1/17-11/30/1994	The Simi Valley Police station was badly damaged and eventually had to be abandoned. Hwy 118 was badly damaged and unusable for months. In the greater Los Angeles area, the 6.7 earthquake caused 57 deaths; 9,253 injuries and displaced over 20,000 people.
Wildfires, Mud & Landslides, Soil Erosion & Flooding	DR-1005	10/26-4/22/1994	Impacted Ventura County.
Severe Storm, Mud & Landslides, Flooding	DR-979	1/5-3/20/1993	Impacted Ventura County.
Severe Storm, Severe Weather, Flooding, Mud & Landslide	DR-935	2/10-19/1992	The storm lasted five days, leaving flood control structures damaged, full of debris, and vulnerable to future storms. Of primary concern in Ventura County was erosion of channels and removal of debris following flood flows. The seven-day depths in Ventura County ranged from 6 to 13 inches, which represented about 60-65 percent of the mean annual rainfall. Although the peak flow in Calleguas Creek was estimated to be about a 10-year event, approximately one million cubic yards of sediment was deposited in the channel system. Conejo Creek contributed much of the sediment, as it was running higher than Calleguas Creek at the confluence of the two streams. On Calleguas Creek, the Lewis Street bridge abutments were undermined and required stone placement on them to prevent further damage.
Severe Weather (Severe Freeze)	DR-894	12/19/1990-1/3/1991	Minor flooding of streets, including the First Street bridge and Los Angeles Ave/Madera Road.
Severe Storm and Flooding	DR-677	1/21-3/30/1983 (Ventura County: 2/25-3/3/1983)	With the ground wet from a January storm, heavy precipitation produced high flows in most creeks in southern California. On Collogues Creek, at the CSUCI stream gage, Madera St. stream gauge, and the stream gauge above Highway 101, the peak discharges of record occurred, 26,600 ft ³ /s, 10,570 ft ³ /s and 17,200 ft ³ /s, respectively. As in 1980, the Calleguas Creek levee was breached. The maximum peak discharge on Conejo Creek at the stream gauge above Highway 101 was 14,000 ft ³ /s.

Type of Event	FEMA Disaster #	Date	Damage Assessment
Severe Storm and Flooding	N/A	2/13-22/1980	A series of varying intensity fronts coming from the west soaked southern California with eight days of nearly continuous rain. Six storms moved through southern California during February 13-22. The strongest front passed the area midday on Saturday February 16, producing the second highest peak discharge of record on Calleguas Creek of 25,300 ft ³ /s at the CSUCI stream gauge, 9,310 ft ³ /s at the Madera St. stream gauge, and 14,000 ft ³ /s at the stream gauge above Highway 101. This storm caused a breach of the west levee of Calleguas Creek below Hueneme Road, with an estimated total of 24,000 acre-ft of water flowing through the breach before it was repaired. The maximum peak discharge on Conejo Creek at the stream gauge above Highway 101 was 11,800 ft ³ /s.
Severe Storms and Flooding	DR-547	2/15/1978 (Simi Valley: 2/28-3/5/1978)	Storms and accompanying flooding throughout February saturated the ground. A last front on March 4 brought heavy rain, thunderstorms and gale force winds. Measurements were 7,730 ft ³ /s at the Madera St. stream gauge and 8,600 ft ³ /s at the Moorpark stream gauge.
Severe Storms and Flooding	DR-364	2/8/1973	Impacted Ventura County.
Wildfire	DR-295	9/29/1970	Impacted Ventura County.

9.6.2 Hazard Risk Ranking

Table 9-12 presents a local ranking of all hazards of concern for which this hazard mitigation plan provides complete risk assessments. As described in detail in Volume 1, the ranking process involves an assessment of the likelihood of occurrence for each hazard, along with its potential impacts on people, property, and the economy. Mitigation actions primarily target hazards with high and medium rankings.

Table 9-12. Hazard Risk Ranking

Rank	Hazard	Risk Ranking Score	Risk Category
1	Wildfire	36	High
1	Landslide	36	High
3	Earthquake	32	Medium
4	Flooding	24	Medium
4	Severe Storms	24	Medium
4	Severe Weather	24	Medium
5	Dam Failure	22	Medium
6	Drought	9	Low

9.6.3 Jurisdiction-Specific Vulnerabilities

Volume 1 of this hazard mitigation plan provides complete risk assessments for each identified hazard of concern. This section provides information on a few key vulnerabilities for this jurisdiction. Available jurisdiction-specific risk maps of the hazards are provided at the end of this annex.

Repetitive Loss Properties

Repetitive loss records are as follows:

- Number of FEMA-identified Repetitive-Loss Properties: 0
- Number of FEMA-identified Severe-Repetitive-Loss Properties: 0
- Number of Repetitive-Loss Properties or Severe-Repetitive-Loss Properties that have been mitigated: 0

Other Noted Vulnerabilities

The following jurisdiction-specific issues have been identified based on a review of the results of the risk assessment, public involvement strategy, and other available resources:

- Water tanks and system could be attacked by terrorists using chemical, biological, radiological, nuclear, explosive or other weapons.
- Frequent wildfires along the 118 Freeway, mostly caused by humans.

Mitigation actions addressing these issues were prioritized for consideration in the action plan in this annex.

9.7 STATUS OF PREVIOUS PLAN ACTIONS

Table 9-13 summarizes the actions that were recommended in the previous version of the hazard mitigation plan and their implementation status at the time this update was prepared.

Table 9-13. Status of Previous Plan Actions

Action Item	Completed	Removed; No Longer Feasible	Carried Over to Plan Update	
			Check if Yes	Action # in Update
1.A.1 Modify the City's zoning ordinance as necessary to address development in hazard areas and reflect changes in the General Plan. <i>Comment: This is an ongoing process. Safety Element of the Simi Valley General Plan update was adopted in October, 2021. In the update, this action has been reworded for a broader application.</i>			✓	SIM-2
1.B.1 Modify local building codes to address development issues in hazard areas. <i>In the update, this action has been reworded for a broader application.</i> <i>Comment: This is an ongoing process. Ordinance 1268 was adopted in 2017 rewriting and significantly expanding the Flood Damage Prevention Ordinance to codify historic City policy and practice as higher regulatory standards for development citywide and particularly within the Special Flood Hazard Areas.</i>			✓	SIM-2
1.B.2 Actively participate in the state and national building code development groups to ensure that development issues in hazard areas are properly addressed. <i>Comment: This is an ongoing process. In the update, this action has been reworded for a broader application.</i>			✓	SIM-2
1.B.3 Require site-specific studies to evaluate specific hazards in hazard-prone areas and identify alternative site design criteria to mitigate hazards to the maximum extent possible. <i>Comment: Geotechnical, Soils, and Drainage studies are required for all development. The Planning process requires site-specific studies mostly through the CEQA process to evaluate hazards and promote alternative site design criteria. SVMC 9-64.100, Development Code, Geotechnical (Soils) Reports, SVMC 7-5.602, Flood Damage Prevention, Standards of Construction. This is an ongoing action. In the update, this action has been reworded for a broader application.</i>			✓	SIM-8

Action Item	Completed	Removed; No Longer Feasible	Carried Over to Plan Update	
			Check if Yes	Action # in Update
1.C.1 Review General Plan, Zoning Codes, Fire Codes, Subdivision Ordinance, and Building Code for consistency. <i>Comment: The municipal code is routinely reviewed to ensure consistency with NFIP and CRS standards and requirements along with current floodplain management state of practice. This is an ongoing action. In the update, this action has been reworded for a broader application.</i>			✓	SIM-2
1.C.2 Establish hazard mitigation training for development staff. <i>Comment: PW Development Services staff maintains competency in floodplain management through continual training and at least one staff member holds a Certified Floodplain Manager certificate from the American Society of Floodplain Managers. This is an ongoing action. In the update, this action has been reworded for a broader application.</i>			✓	SIM-8
1.D.1 Update databases/Geographic Information System (GIS), with particular attention to maintaining hazard overlay layers. <i>Comment: The City's NFIP SFHA GIS layers are updated whenever FEMA issues FIRM updates and on an ongoing basis. ESRI will perform annual maintenance on GIS system. In the update, this action has been reworded for a broader application.</i>			✓	SIM-8
2.A.1 Assist local mobile home parks with their community preparedness plans. <i>Comment: SVOES can conduct outreach via a preparedness campaign. Not completed due to lack of staff capacity. In the update, this action has been reworded for a broader application.</i>			✓	SIM-10
2.A.2 Develop and conduct a variety of community workshops to educate about earthquake preparedness and the benefits of retrofitting buildings for improved seismic performance. <i>In the update, this action has been reworded for a broader application.</i> <i>Comment: SVOES can conduct outreach via a preparedness campaign in partnership with Building & Safety. Not completed due to lack of staff capacity.</i>			✓	SIM-10
2.A.3 Increase awareness among at-risk populations of emerging earthquake damage mitigation techniques. <i>Comment: SVOES can conduct outreach via a preparedness campaign. Not completed due to lack of staff capacity. In the update, this action has been reworded for a broader application.</i>			✓	SIM-10
2.A.4 Develop a program that identifies the needs of senior citizens and assists them to meet those needs. <i>Comment: The County is responsible for keeping updated records on seniors who may need assistance evacuating in an emergency. This is not a responsibility of the City.</i>		✓		
2.B.1 Provide hazard mitigation links on the Chamber of Commerce's website and the City's website. <i>Comment: SVOES can conduct outreach via a preparedness campaign. Not completed due to lack of staff capacity. In the update, this action has been reworded for a broader application.</i>			✓	SIM-10
3.A.1 Promote the upgrade of buildings to provide acceptable performance during an earthquake and adopt cost-effective mitigation techniques for both structural and non-structural elements. <i>Comment: SVOES can conduct outreach via a preparedness campaign in partnership with Building & Safety. Not completed due to lack of staff capacity. In the update, this action has been reworded for a broader application.</i>			✓	SIM-1 SIM-9
3.A.2 Conduct a seismic safety survey/assessment of the City's facilities to ensure that heavy furniture and equipment are properly secured. <i>Comment: Ongoing as personnel are added and moved. In the update, this action has been reworded for a broader application.</i>			✓	SIM-9

Action Item	Completed	Removed; No Longer Feasible	Carried Over to Plan Update	
			Check if Yes	Action # in Update
3.A.3 Support legislative efforts to provide funding for hospital earthquake retrofit projects. <i>Comment: This is not currently in our Legislative Platform and would need to be included in order for the City to take action on legislation without going to the Council for approval first.</i>		✓		
3.B.1 Retrofit water system infrastructure to seismic safety standards. <i>Comment: A seismic evaluation of water system infrastructure was completed in 2021. The District will schedule projects to improve and replace facilities based on public safety and operational importance. In the update, this action has been reworded for a broader application.</i>			✓	SIM-9
3.B.2 Retrofit sanitation system infrastructure to seismic safety standards <i>Comment: The building seismic retrofit projects that were identified in the 2011 Sanitation Asset Reliability Assessment have been completed. In the update, this action has been reworded for a broader application.</i>	✓			SIM-1
3.B.3 Conduct seismic non-structural and structural retrofit of critical facilities and infrastructure. <i>Comment: Construction has begun on a project to repair and replace structural elements at the City's Public Services Center and Garage Facility. Anticipated completion is Spring 2022. In the update, this action has been reworded for a broader application.</i>			✓	SIM-1 SIM-9
3.C.1 Identify multi-unit buildings (e.g. soft story construction) that may suffer structural failures in earthquakes. <i>Comment: This is an opportunity for earthquake mitigation. Not completed due to lack of staff capacity and funding. In the update, this action has been reworded for a broader application.</i>			✓	SIM-9
4.A.1 Implement a fuel reduction program, such as the collection and disposal of dead fuel, within open spaces and around critical facilities and residential structures with high or very high wildfire zones. <i>Comment: VCFPD Ordinance 31 and Fire Hazard Reduction Program, which is an ongoing program. In the update, this action has been reworded for a broader application and to align with VCFPD's lead.</i>			✓	SIM-12
4.A.2 Create a vegetation management program that provides vegetation management services to the elderly, disabled, or low income property owners who lack the resources to remove flammable vegetation near their homes. <i>Comment: This is an opportunity for wildfire mitigation. Not completed due to lack of staff capacity. In the update, this action has been reworded for a broader application and to align with VCFPD's lead.</i>			✓	SIM-12
4.A.3 Implement a fuel modification program that includes maintenance requirements, plan submittal and approval process and enforcement. <i>Comment: Ventura County Fire Code Section W106- Fire Protection, Fuel Modification and Vegetation Management Plans and FHRP Ongoing program. In the update, this action has been reworded for a broader application and to align with VCFPD's lead.</i>	✓			SIM-12
5.A.1 Limit uses in floodways to those tolerant of occasional flooding, including but not limited to agriculture, outdoor recreation and natural resource areas. <i>Comment: Development within floodways is prohibited. Maintenance of open space as a natural resource area and/or for recreation and agriculture is encouraged. SVMC 7-5.601, Flood Damage Prevention, Prohibitions. Simi Valley General Plan Open Space Element. Ongoing. In the update, this action has been reworded for a broader application.</i>			✓	SIM-4
5. B.1 Discourage the disruption of natural flowage patterns and encourage the use of natural drainage ways in new development. <i>Comment: Disruption of natural flowage patterns is prohibited and maintenance of natural drainage ways within new development is enforced. SVMC 9-32.120, Development Code, Drainage Standards. Ongoing. In the update, this action has been reworded for a broader application.</i>			✓	SIM-4

Action Item	Completed	Removed; No Longer Feasible	Carried Over to Plan Update	
			Check if Yes	Action # in Update
5.C.1 Submit Letters of Map Revision/ Letters of Map Amendment to FEMA within a prescribed period of time upon completion of drainage improvements or flood-proofing. SVMC 7-5.605, Flood Damage Prevention, Standards for subdivisions and other proposed development <i>Comment: SVMC 7-5.605, Flood Damage Prevention, Standards for subdivisions and other proposed development. Ongoing. In the update, this action has been reworded for a broader application.</i>			✓	SIM-4
6.A.1 Create and maintain a mailing list of all addresses with dam inundation areas for mailings and public information documents. <i>Comment: Creation of the mailing list is pending CalOES approval of VCPWA-WP EAPs for each of the 3 State jurisdictional dams within the City. Inundation maps and EAPs for jurisdictional dams owned by the Calleguas Municipal Water District and the Sinaloa Lake homeowners' association are also pending. In the update, this action has been reworded for a broader application.</i>			✓	SIM-14
6.A.2 Create and maintain a special grouping for emergency notification system users within the dam inundation areas for emergency information delivery. <i>Comment: OES will leverage VC Alert. Ongoing. In the update, this action has been reworded for a broader application.</i>			✓	SIM-14
7.A.1 Increase field personnel's awareness of hazardous materials incidents and the proper response. <i>Comment: SVPD conducts regular trainings during briefings and will continue these. In the update, this action has been reworded for a broader application.</i>			✓	SIM-11
7.B.1 Establish and maintain relationships with operators and regulators involved in the transport, extraction, processing and use of hazardous materials. <i>Comment: City code Title 6 Chapter 10 addresses hazardous wastes. Title 9 Chapter 9-26.070 regulates industrial storage. Title 6 Chapter 13 describes the need for plans to prevent releases of hazardous materials/wastes into the sewer system. Dept. Of Transportation regulates rail cars. The Ventura County Certified Unified Program Agency regulates the storage of hazardous materials on commercial properties. Ongoing. In the update, this action has been reworded for a broader application.</i>			✓	SIM-11

9.8 HAZARD MITIGATION ACTION PLAN

Table 9-14 lists the identified actions, which make up the hazard mitigation action plan for this jurisdiction. Table 9-15 identifies the priority for each action. Table 9-16 summarizes the mitigation actions by hazard of concern and mitigation type.

Table 9-14. Hazard Mitigation Action Plan Matrix

Benefits New or Existing Assets	Objectives Met	Lead Agency	Support Agency	Estimated Cost	Sources of Funding	Timeline
Action SIM-1—Where appropriate, support retrofitting, purchase or relocation of structures located in hazard areas, prioritizing those that have experienced repetitive losses and/or are located in high- or medium-risk hazard areas.						
<i>Hazards Mitigated:</i> Wildfire, Landslide, Earthquake, Flooding, Severe Storms, Severe Weather, Dam Failure						
Existing	9, 10, 11, 16	City of Simi Valley	Ventura County OES	High	FEMA HMA (BRIC, FMA, PDM and HMGP)	Short-term
Action SIM-2—Integrate the hazard mitigation plan into other plans, ordinances and programs that dictate land use decisions in the community, including Simi Valley General Plan, Municipal Code, Zoning Ordinance.						
<i>Hazards Mitigated:</i> Wildfires, Landslides, Earthquakes, Flooding, Dam Failure						
New & Existing	1, 2, 4, 5, 6, 9, 10, 11, 13, 14, 15, 16	City of Simi Valley	Ventura County Fire Dept, VCSOES	Low	Staff Time, General Funds	Ongoing

Benefits New or Existing Assets	Objectives Met	Lead Agency	Support Agency	Estimated Cost	Sources of Funding	Timeline
Action SIM-3—Actively participate in the plan maintenance protocols outlined in Volume 1 of this hazard mitigation plan.						
<u>Hazards Mitigated:</u> Wildfire, Landslide, Earthquake, Flooding, Severe Storms, Severe Weather, Dam Failure, Drought						
New & Existing	1-19	City of Simi Valley	Ventura County Fire Dept, VCSOES	Low	Staff Time, General Funds	Short-term
Action SIM-4—Continue to maintain good standing and compliance under the NFIP through implementation of floodplain management programs that, at a minimum, meet the NFIP requirements:						
- Enforce the flood damage prevention ordinance. - Participate in floodplain identification and mapping updates. - Provide public assistance/information on floodplain requirements and impacts.						
<u>Hazards Mitigated:</u> Flooding, Dam Failure, Severe Storms						
New & Existing	1, 4, 11	City of Simi Valley	Public Works	Low	Staff Time, General Funds	Ongoing
Action SIM-5—Identify and pursue strategies to increase adaptive capacity to climate change including but not limited to the following:						
- Update the Climate Action Plan and other City plans, when necessary and applicable to remain in compliance and leverage opportunities. - Explore clean air technologies for City equipment and infrastructure.						
<u>Hazards Mitigated:</u> Wildfire, Landslide, Flooding, Drought						
New & Existing	1, 3, 4	City of Simi Valley	Interdepartmental	Low	Staff Time, General Funds	Short-term
Action SIM-6—Purchase generators for critical facilities and infrastructure that lack adequate backup power, including City Hall, Police Station and Senior Center.						
<u>Hazards Mitigated:</u> Wildfire, Landslide, Earthquake, Flooding, Severe Storms, Severe Weather, Dam Failure						
Existing	2, 6, 9	City Manager's Office	Public Works	High	Staff time, General and enterprise funds, HMGP, BRIC	Long-term
Action SIM-7—Develop evacuation routes and plans, partnering with neighboring cities and counties.						
<u>Hazards Mitigated:</u> Wildfire, Landslide, Earthquake, Flooding, Dam Failure						
Existing	1, 2, 8, 17	City of Simi Valley	Cities of Thousand Oaks & Moorpark; VCSOES; VCFPD	Low	Staff Time, CDBG20, FEMA HMA (BRIC, FMA, HMGP),	Short-term
Action SIM-8—Increase knowledge of hazard areas and understanding of vulnerability and risk to life and property in hazard-prone areas, including but not limited to these items:						
- Conduct site-specific studies to evaluate hazards and identify alternative site design criteria. - Continue ongoing training for development staff. - Update GIS hazard overlay layers. - Map new earth movement hazards and make information available to staff, developers, and residents so that soil types, slope percentage, drainage, or other critical factors are used to identify landslide prone areas - Develop flood-after-fire scenarios after wildland fires to identify risks and develop mitigation measures						
<u>Hazards Mitigated:</u> Earthquake, Wildfire, Landslide, Flooding, Dam Failure, Severe Storms, Severe Weather						
New & Existing	1, 2, 3, 5, 6, 7, 8, 9, 12, 14, 15, 16, 17, 19	Public Works	Environmental Services	Medium	General Fund/Staff time, HMGP, BRIC, FMA	Ongoing
Action SIM-9—Perform structure-specific, all-risk, vulnerability assessment of all City-owned critical facilities (including bridge, water, sanitation and storm drain infrastructure).						
Identify potentially vulnerable private utility systems including electric, gas, oil, water, sewer, communications and internet.						
<u>Hazards Mitigated:</u> Earthquake, Flooding, Severe Storms, Severe Weather, Dam Failure						
Existing	1, 2, 4, 6, 9, 18, 19	Building & Safety	Public Works	Low	General Fund/Staff time, HMGP, BRIC, FMA	Long-term

Benefits New or Existing Assets	Objectives Met	Lead Agency	Support Agency	Estimated Cost	Sources of Funding	Timeline
Action SIM-10 —Create and conduct hazard mitigation and emergency preparedness outreach campaigns for the low-to-moderate income and Spanish-speaking communities then adapt and expand these campaigns to other demographics and the whole community. <u>Hazards Mitigated:</u> Earthquake, Wildfire, Landslide, Flooding, Dam Failure, Severe Storms, Severe Weather						
Existing	1, 2, 4, 5, 7, 10, 12, 13, 14, 15, 16, 17, 18	SVOES	City of Simi Valley, VCSOES, VCFPD	Low	Staff Time, CDBG20, HMGP	Short-term, Ongoing
Action SIM-11 —The City shall continue to provide inspections, emergency response, and enforcement of hazardous materials and waste compliance procedures in the community. The City shall continue to work with relevant agencies regarding enforcement of hazardous materials regulations and continue to conduct household hazardous waste collection events. <u>Hazards Mitigated:</u> Earthquake, Wildfire, Flooding, Dam Failure						
Existing	1, 4, 16, 18, 19	Public Works	Ventura County Certified Unified Program Agency	Low	Staff Time	Ongoing
Action SIM-12 —Maintain wildfire hazard fuel reduction program for areas that have been identified with overgrown or dead brush, trees and weeds to reduce the potential for tree-to-tree ignition. Ensure that a “maintenance now” component to provide continued fire resistance is part of the program. (Coordinates with Ventura County Fire Protection District Action VFP-6) <u>Hazards Mitigated:</u> Wildfire						
New & Existing	2, 4, 5, 6, 8, 10, 11, 13, 14, 15, 18, 19	VCFPD	CAL FIRE & USDA	Medium	FEMA HMA (BRIC, FMAP and HMGP), Staff Time & General Funds	Ongoing
Action SIM-13 —The City shall amend the local building code to account for additional climate change-induced stressors on buildings, such as including flood proofing for intermittent inundation, building materials to reduce the impacts of high heat days, and fireproofing in preparation for increased wildfire risk. <u>Hazards Mitigated:</u> Wildfire, Flooding, Severe Storm, Severe Weather						
New & Existing	4, 9, 10, 11, 12, 16, 17	Environmental Services	Public Works	Low	Staff time, HMGP, BRIC, FMA	Ongoing
Action SIM-14 —Create a levee and dam failure element for the City’s emergency response plan, including but not limited to these items: Assess downstream impacts associated with dam incidents. Develop a public outreach program that informs property owners located in the dam and levee failure inundation areas about voluntary flood insurance. <u>Hazards Mitigated:</u> Dam Failure						
New & Existing	1, 7, 9, 17, 19	SVOES, Public Works	Calleguas Water, Ventura County Watershed Protection	Low	GF/Staff Time, HMGP, BRIC, FMA	Short-Term; Ongoing
Action SIM-15 —Assess and retrofit or upgrade City-owned facilities with identified risks, including but not limited to these items: Retrofit or upgrade at-risk and deficient government facilities and public utility systems to ensure the operation and timely restoration of essential systems to reasonable levels of service. Reinforce roads/bridges from flooding through protection activities, including elevating the roads/bridges and installing/widening culverts beneath the roads/bridges or upgrading storm drains. <u>Hazards Mitigated:</u> Earthquake, Flooding, Severe Storms, Severe Weather, Dam Failure						
New & Existing	1, 2, 4, 6, 9, 18, 19	Environmental Services, Public Works	FEMA, CalOES	High	General Fund, Staff Time, HMGP, BRIC, FMA	Long Term

a. Short-term = Completion within 5 years; Long-term = Completion within 10 years; Ongoing= Continuing new or existing program with no completion date

Acronyms used here are defined at the beginning of this volume.

Table 9-15. Mitigation Action Priority

Action #	# of Objectives Met	Benefits	Costs	Do Benefits Equal or Exceed Cost?	Is Project Grant-Eligible?	Can Project Be Funded Under Existing Programs/ Budgets?	Implementation Priority	Grant Pursuit Priority
1	4	High	High	Yes	Yes	No	Medium	High
2	12	Medium	Low	Yes	No	Yes	High	Low
3	19	Low	Low	Yes	No	Yes	High	Low
4	3	Medium	Low	Yes	No	Yes	High	Low
5	3	Medium	Low	Yes	No	Yes	High	Low
6	3	High	Medium	Yes	Yes	No	Low	Medium
7	4	Medium	Low	Yes	Yes	Yes	High	Medium
8	14	Medium	Low	Yes	Yes	Yes	High	Low
9	7	Medium	High	No	Yes	No	Low	Medium
10	13	Medium	Low	Yes	Yes	Yes	High	Medium
11	5	Medium	Low	Yes	No	Yes	High	Low
12	12	High	Medium	Yes	Yes	Yes	High	High
13	7	High	Medium	Yes	Yes	No	Medium	High
14	5	Medium	Low	Yes	Yes	Yes	High	Medium
15	7	High	High	Yes	Yes	No	Low	Medium

a. See the introduction to this volume for explanation of priorities.

Table 9-16. Analysis of Mitigation Actions

Hazard Type	Action Addressing Hazard, by Mitigation Type							
	Prevention	Property Protection	Public Education & Awareness	Natural Resource Protection	Emergency Services	Structural Projects	Climate Resilience	Community Capacity Building ^b
High-Risk Hazards								
Wildfire	SIM-1, 2, 3, 5, 10, 11, 12, 13	SIM-1, 2, 3, 5, 10, 11, 12, 13	SIM-2, 3, 5, 7, 10, 11, 12, 13	SIM-2, 3, 11	SIM-3, 6, 7, 10, 11, 12	SIM-1, 2, 3, 5, 13	SIM-3, 5, 13	SIM-2, 3, 5, 6, 7, 8, 10
Landslide	SIM-1, 2, 3, 5, 14	SIM-1, 2, 3, 5	SIM-2, 3, 5, 7	SIM-2, 3, 5	SIM-3, 6, 7	SIM-1, 2, 3, 5	SIM-3, 5	SIM-2, 3, 5, 7, 8
Medium-Risk Hazards								
Earthquake	SIM-1, 2, 3, 9, 10, 11, 15	SIM-1, 2, 3, 10, 11, 15	SIM-3, 7, 10, 11, 15	SIM-3, 11	SIM-3, 6, 7, 10, 11	SIM-1, 2, 3, 9, 15	SIM-3	SIM-2, 3, 6, 7, 8, 10, 15
Flooding	SIM-1, 2, 3, 4, 5, 9, 10, 11, 13, 15	SIM-1, 2, 3, 4, 5, 10, 11, 13, 15	SIM-3, 4, 5, 7, 10, 11, 13, 15	SIM-3, 5, 11	SIM-3, 6, 7, 10, 11	SIM-1, 2, 3, 4, 5, 9, 13, 15	SIM-3, 5	SIM-2, 3, 4, 5, 6, 7, 8, 10, 15
Severe Storms	SIM-3, 4, 9, 10, 13, 15	SIM-3, 4, 10, 13, 15	SIM-3, 4, 10, 13, 15	SIM-3	SIM-3, 6, 10	SIM-3, 4, 6, 9, 15	SIM-3	SIM-3, 4, 6, 8, 10, 15
Severe Weather	SIM-3, 9, 10, 13, 15	SIM-3, 10, 13, 15	SIM-3, 10, 13, 15	SIM-3	SIM-3, 6, 10	SIM-3, 6, 9, 15	SIM-3	SIM-3, 6, 8, 10, 15
Dam Failure	SIM-3, 4, 9, 10, 11, 14, 15	SIM-3, 4, 10, 11, 15	SIM-3, 4, 8, 10, 11, 14, 15	SIM-3, 11	SIM-3, 6, 7, 8, 10, 11, 14, 15	SIM-3, 4, 6, 9, 15	SIM-3	SIM-2, 3, 4, 6, 7, 8, 10, 14, 15

Hazard Type	Action Addressing Hazard, by Mitigation Type							
	Prevention	Property Protection	Public Education & Awareness	Natural Resource Protection	Emergency Services	Structural Projects	Climate Resilience	Community Capacity Building ^b
Low-Risk Hazards								
Drought	SIM-3, 5	SIM-3, 5	SIM-3, 5	SIM-3, 5	SIM-3, 5	SIM-3, 5	SIM-3, 5	SIM-3, 5

- a. See the introduction to this volume for explanation of mitigation types.
- b. Note that the jurisdiction did not identify a need for expansion of financial capabilities, based on existing capabilities. The intent of this hazard mitigation plan is to expand the financial capability of the jurisdiction.

9.9 PUBLIC OUTREACH

Table 9-17 lists public outreach activities for this jurisdiction.

Table 9-17. Local Public Outreach

Local Outreach Activity	Date	Number of People Involved
Presented at four Neighborhood Council meetings	9/9, 9/14, 9/16, 9/21	N/A
HMP info & survey link via SVPD Nixle sent to residents and posted on social media	7/27/21	N/A
HMP info & survey link via SVPD Tweet	8/17/21	N/A
HMP info & survey link sent to Neighborhood Councils 1-4 E-Notify List.	8/18/21	1, 400
Emergency Services Manager discussed HMP in radio interview	10/25/21	N/A

9.10 INFORMATION SOURCES USED FOR THIS ANNEX

The following technical reports, plans, and regulatory mechanisms were reviewed to provide information for this annex.

- **Simi Valley Municipal Code**—The municipal code was reviewed for the full capability assessment and for identifying opportunities for action plan integration.
- **City of Simi Valley Flood Damage Prevention Ordinance**—The flood damage prevention ordinance was reviewed for compliance with the National Flood Insurance Program.
- **2015 Hazard Mitigation Plan**—The mitigation strategy action items were used to assess planning and regulatory capabilities and for identifying opportunities for action plan integration.
- **2018 Emergency Operations Plan**—The EOP was reviewed for the full capability assessment and for identifying opportunities for action plan integration and improvement.
- **Simi Valley General Plan**—The General Plan was reviewed for the full capability assessment and for identifying opportunities for action plan integration

The following outside resources and references were reviewed:

- **Hazard Mitigation Plan Annex Development Toolkit**—The toolkit was used to support the identification of past hazard events and noted vulnerabilities, the risk ranking, and the development of the mitigation action plan.

- **FIPS Code**—<https://www.census.gov/geographies/reference-files/2018/demo/popest/2018-fips.html>
- **DUNS #**—<https://www.dnb.com/duns-number.html>
- **Community Rating System**—<https://www.fema.gov/floodplain-management/community-rating-system>
- **Building Code Effectiveness Grading Schedule**—<https://www.isomitigation.com/bcegs/iso-s-building-code-effectiveness-grading-schedule-bcegs.html>
- **Public Protection Classification**—<https://www.isomitigation.com/ppc/>
- **Storm Ready**—<https://www.weather.gov/stormready/communities>
- **Firewise**—<http://www.firewise.org/usa-recognition-program/map-of-active-participants.aspx>
- **Tsunami Ready**—<https://www.weather.gov/tsunamiready/communities>
- **CEQA statute** (Public Resources Code Section 21000 and following), the **CEQA Guidelines** (California Code of Regulations, Title 14, Section 15000 and following)
- **State Subdivision Map Act** (Govt. Code Sec. 66410-66499.58)

Simi Valley

Critical Facilities (1 of 2)

- Food, Water, Shelter
- Health and Medical
- Safety and Security

- Major Roads
- ▭ Selected City
- - - Incorporated Cities
- - - County Boundary

Data Sources: Ventura Co., VCFD, Casitas MWD, Calleguas MWD, City of Camarillo, CA Energy Commission, Cal Trans, EPA, HIFLD, Esri



0 0.5 1 2 Miles

Simi Valley

Critical Facilities (1 of 2)

- Communications
- Energy
- Hazardous Material
- Transportation

- Major Roads
- Selected City
- Incorporated Cities
- County Boundary

Data Sources: Ventura Co., VCFD, Casitas MWD, Calleguas MWD, City of Camarillo, CA Energy Commission, Cal Trans, EPA, HIFLD, Esri



0 0.5 1 2 Miles

Simi Valley

Dam Failure Inundation Areas

-  Combined Inundation Areas
-  Major Roads
-  Selected City
-  Incorporated Cities
-  County Boundary

Data Sources: Ventura Co.,
CA DWR, Esri



0 0.5 1 2 Miles

Simi Valley

NEHRP Soil Class

- C (Dense soil/soft rock)
- D (Stiff soil)
- Major Roads
- Selected City
- Incorporated Cities
- County Boundary

Data Sources: Ventura Co.,
CGS, Esri



0 0.5 1 2 Miles

Simi Valley

Liquefaction Susceptibility

-  Liquefaction zone
-  Major Roads
-  Selected City
-  Incorporated Cities
-  County Boundary

Data Sources: Ventura Co.,
Esri



0 0.5 1 2
Miles

Simi Valley

100-Year Probabilistic Earthquake Scenario

Mercalli Intensity Scale

 VII (Very Strong/Moderate)

 Major Roads

 Selected City

 Incorporated Cities

 County Boundary

Intensity scale described as:
(perceived shaking / potential damage)

Data Sources: Ventura Co.,
USGS, Esri



0 0.5 1 2 Miles

Simi Valley

Oak Ridge M7.16 Earthquake Scenario

Mercalli Intensity Scale

- VII (Very Strong/Moderate)
- VIII (Severe/Moderate-Heavy)

- Major Roads
- Selected City
- Incorporated Cities
- County Boundary

Intensity scale described as:
(perceived shaking / potential damage)

Data Sources: Ventura Co.,
USGS, Esri



0 0.5 1 2 Miles

Simi Valley

Pitas Point M7.12 Earthquake Scenario

Mercalli Intensity Scale

- VI (Strong/Light)
- VII (Very Strong/Moderate)

- Major Roads
- Selected City
- Incorporated Cities
- County Boundary

Intensity scale described as:
(perceived shaking / potential damage)

Data Sources: Ventura Co.,
USGS, Esri



0 0.5 1 2 Miles

Simi Valley

San Cayetano M7.16 Earthquake Scenario

Mercalli Intensity Scale

- VI (Strong/Light)
- VII (Very Strong/Moderate)
- VIII (Severe/Moderate-Heavy)

- Major Roads
- Selected City
- Incorporated Cities
- County Boundary

Intensity scale described as:
(perceived shaking / potential damage)

Data Sources: Ventura Co.,
USGS, Esri



0 0.5 1 2 Miles

Simi Valley

S. San Andreas M8.03 Earthquake Scenario

Mercalli Intensity Scale

- VI (Strong/Light)
- VII (Very Strong/Moderate)

- Major Roads
- Selected City
- Incorporated Cities
- County Boundary

Intensity scale described as:
(perceived shaking / potential damage)

Data Sources: Ventura Co.,
USGS, Esri



0 0.5 1 2 Miles

Simi Valley

FEMA Flood Hazard Areas

- 1% Annual Chance Flood (100-Year)
- 0.2% Annual Chance Flood (500-Year)
- Major Roads
- Selected City
- Incorporated Cities
- County Boundary

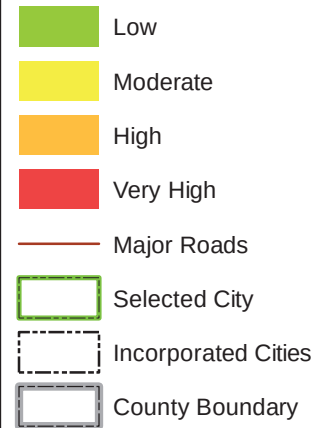
Data Sources: Ventura Co.,
FEMA, Esri



0 0.5 1 2 Miles

Simi Valley

Susceptibility to Deep-Seated Landslides



Data Sources: Ventura Co.,
CGS, Esri



0 0.5 1 2 Miles

Simi Valley

Wildfire Hazard Severity Zones

- Moderate
- High
- Very High
- Major Roads
- Selected City
- Incorporated Cities
- County Boundary

Data Sources: Ventura Co.,
CAL FIRE, Esri



0 0.5 1 2 Miles

10. CITY OF THOUSAND OAKS

10.1 LOCAL HAZARD MITIGATION PLANNING TEAM

Primary Point of Contact

Grahame Watts, Emergency Services Manager
2100 Thousand Oaks Blvd.
Thousand Oaks, CA 91362
805-449-2453
gwatts@toaks.org

Alternate Point of Contact

Nader Heydari, Deputy Public Works
Director
2100 Thousand Oaks Blvd.
Thousand Oaks, CA 91362
805-449-2392
nheydari@toaks.org

This annex was developed by the local hazard mitigation planning team, whose members are listed in Table 10-1.

Table 10-1. Local Mitigation Planning Team Members

Name	Title
Grahame Watts	Emergency Services Manager (Project Manager)
Jim Taylor	Senior Civil Engineer
John Brooks	Senior Analyst
Michael Devlahovich	Utilities Maintenance Supervisor
Kari Finley	Planning Division Manager
Iain Holt	Senior Planner
David Chavez	Landscape Maintenance Supervisor

10.2 JURISDICTION PROFILE

10.2.1 Location and Features

Thousand Oaks is the second-largest city in Ventura County and is 40 miles northwest of Downtown Los Angeles. The City is named after the many oak trees present in the area. The City forms the central populated core of the Conejo Valley and includes two-thirds of master-planned community of Westlake Village and most of Newbury Park, which were annexed by the city during the late 1960s and 1970s.

The City of Thousand Oaks has a population of 126,484 and is nearly built out, placing emphasis upon in-fill development, redevelopment and maintenance of aging infrastructure. The Downtown Core Master Plan provides the blueprint for a centralized, walkable shopping, dining and entertainment area adjacent to the Civic Arts Plaza/City Hall, and land use alternatives under the General Plan were

updated for increased density and mixed-use development along the Thousand Oaks Boulevard corridor.

10.2.2 History

Thousand Oaks was incorporated in 1964 and has evolved from a rural Ventura County settlement into an attractive and desirable Southern California city. Thousand Oaks offers the ideal mixture of commercial, industrial, residential and recreational space in an exceptional location.

The City's history dates to the Chumash Native Americans who dwelled in the Conejo Valley hundreds of years ago. In 1542, the area was discovered by Spanish explorer Juan Rodriguez Cabrillo, who claimed the land for his Spanish king. The area remained virtually unsettled until the early 1800s when the Spanish governor granted 48,671 acres of land grants to loyal soldiers—land which included the Conejo Valley (Conejo is the Spanish word for rabbit which are abundant in the area).

Throughout the 19th Century, early pioneers migrated to the area. The first post office was built in 1875, and the small settlement became a stop on the stagecoach route between Los Angeles and San Francisco. With the invention of the motor car and the construction of a highway between those two major cities, the Conejo Valley began to evolve.

10.2.3 Governing Body Format

Thousand Oaks is a General Law city with a Council/Manager form of government. This type of government structure designates the City Council as the policy making body, who appoint the City Manager to carrying out Council policy.

The Council consists of five members elected from residents at large. Council members serve four-year staggered terms. Municipal elections are held in November of even numbered years. The City Council annually selects a Mayor who serves as the presiding officer during City Council meetings that are scheduled on Tuesdays approximately two times per month.

The Thousand Oaks City Council is responsible for the adoption of this plan and the Public Works Department oversees its implementation.

10.3 CURRENT TRENDS

10.3.1 Population

According to the California Department of Finance, the population of the Thousand Oaks as of January 2020 was 126,484. Since 2010, the population has decreased at an average annual rate of 0.02 percent.

10.3.2 Development

The development mission of Thousand Oaks is to be stewards of the City's General Plan, and to assist the community with land development, housing, construction, code compliance, open space, and regional issues, all of which are balanced with the City's environment and resources.

Table 10-2 summarizes development trends in the period since the preparation of the previous hazard mitigation plan, as well as expected future development trends.

Table 10-2. Recent and Expected Future Development Trends

Criterion	Response					
Has the City annexed any land since the preparation of the previous hazard mitigation plan?	Yes					
If yes, give the estimated area annexed and estimated number of parcels or structures.	2015—Kelly Estates A & B: Parcel; "A" = 20.32 ac., Parcel "B" = 1.26 ac. (existing developed single-family lots in former County "island") 2021—Edward-Ventu Park Parcels A & B: Parcel "A" = 0.18 ac., Parcel "B" = 0.22 ac. (2- single-family lots)					
Is the City expected to annex any areas during the performance period of this plan?	No					
Are any areas targeted for development or major redevelopment in the next five years?	Yes					
If yes, briefly describe, including whether any of the areas are in known hazard risk areas	These areas primarily consist of larger scale residential projects along Thousand Oaks Boulevard as included in the Community Development Department's Development Activity Report (May 2021). Projects in the High Fire Severity Hazard Zone include The Lakes Residential, One Baxter Way residential and the Shapell Industrial Project (49.64 acres and 754,222 SF of building floor area) at northern section of Rancho Conejo Blvd..					
How many permits for new construction were issued in your jurisdiction since the preparation of the previous hazard mitigation plan?		2016	2017	2018	2019	2020
	Single Family	2,124	1,984	1,870	1,947	1,870
	Multi-Family	315	239	244	369	154
	Other (commercial, mixed use, etc.)	501	427	379	381	285
	Total	2,940	2,650	2,493	2,697	2,179
Provide the number of new-construction permits for each hazard area or provide a qualitative description of where development has occurred.	- Special Flood Hazard Areas: 75 - Landslide: 274 - High Liquefaction Areas: 132 - Tsunami Inundation Area: 0 - Wildfire Risk Areas: 9,934					
Describe the level of buildout in the jurisdiction, based on your jurisdiction's buildable lands inventory. If no such inventory exists, provide a qualitative description.	Currently, the City does not have an inventory of buildable lands. There is a theoretical residential capacity for the City of 81,124 dwelling units based on an evaluation of 1996 General Plan land use map governed by Measure E. This maximum capacity does not consider constraints that may result in less buildable area. Based on SCAG's 2020 Regional Transportation Plan/Sustainable Communities Strategy growth projections out to 2045, Thousand Oaks population will increase by 15,229, households will increase by 5,269 and employment will increase 9,897. The City is currently undergoing a General Plan Update and the Environmental Impact Report will evaluate new growth projections based on the revised land use map and economic analysis. The anticipated adoption date of the General Plan is in FY 2022-23.					

10.4 CAPABILITY ASSESSMENT

This section describes an assessment of existing capabilities for implementing hazard mitigation strategies. The introduction at the beginning of this volume of the hazard mitigation plan describes the components included in the capability assessment and their significance for hazard mitigation planning.

Findings of the capability assessment were reviewed to identify opportunities to expand, initiate or integrate capabilities to further hazard mitigation goals and objectives. Where such opportunities were

identified and determined to be feasible, they are included in the action plan. The “Analysis of Mitigation Actions” table in this annex identifies these as community capacity building mitigation actions. The findings of the assessment are presented as follows:

- An assessment of planning and regulatory capabilities is presented in Table 10-3.
- Development and permitting capabilities are presented in Table 10-4.
- An assessment of fiscal capabilities is presented in Table 10-5.
- An assessment of administrative and technical capabilities is presented in Table 10-6.
- An assessment of education and outreach capabilities is presented in Table 10-7.
- Information on National Flood Insurance Program (NFIP) compliance is presented in Table 10-8.
- Classifications under various community mitigation programs are presented in Table 10-9.
- The community’s adaptive capacity for the impacts of climate change is presented in Table 10-10.

Table 10-3. Planning and Regulatory Capability

	Local Authority	Other Jurisdiction Authority	State Mandated	Integration Opportunity?
Codes, Ordinances, & Requirements				
Building Code	Yes	Yes	Yes	Yes
<i>Comment:</i> TOMC Title 8 Ch.1 Building Code amended to reflect 2019 California Building Code				
Zoning Code	Yes	Yes	Yes	No
<i>Comment:</i> TOMC Title 9 Chapter 1 Flood Control requires building permit fees for Ventura County flood control facilities TOMC Title 9 Chapter 4 Zoning and Chapter 5 Environmental Impact Assessment				
Subdivisions	Yes	Yes	Yes	No
<i>Comment:</i> TOMC Title 9 Chapter 3 Subdivisions. Article 14 Environmental Impact and Grading and Erosion Control				
Stormwater Management	Yes	Yes	Yes	Yes
<i>Comment:</i> TOMC 4-7 (Public Safety, Flood Damage Prevention)				
Post-Disaster Recovery	Yes	Yes	Yes	Yes
<i>Comment:</i> The City Emergency Operations Plan was adopted on February 25, 2020, which includes a section on Disaster Recovery.				
Real Estate Disclosure	No	Yes	No	No
<i>Comment:</i> The Community Development Department Building Division prepares residential re-sale disclosure reports per TOMC Title 8 Chapter 12.				
Growth Management	Yes	Yes	Yes	Yes
<i>Comment:</i> Measure E requires voter approval for any amendment to the Land Use Element of the City’s General Plan that: increases residential land use density beyond the City’s General Plan of November 5, 1996 or increases the amount of commercial acreage beyond the City’s General Plan of November 5, 1996. City Council Ordinance No. 1280-NS				
Site Plan Review	Yes	Yes	Yes	Yes
<i>Comment:</i> The Community Development Department Planning Division and Public Works Engineering Division reviews land use entitlements and subdivisions. County Fire and Police Departments also review projects.				
Environmental Protection	Yes	Yes	Yes	Yes
<i>Comment:</i> The result of a completed Visioning 2064 process was the development of a Climate and Environmental Action Plan that is expected to be adopted in FY 2022-23. The Plan is for the City to be an environmental leader and promote climate change adaptation, zero waste, zero net energy usage, reduced water use, and greenhouse gas reduction, including allocation of the necessary resources. New development is subject to environmental review in accordance with CEQA.				

	Local Authority	Other Jurisdiction Authority	State Mandated	Integration Opportunity?
Flood Damage Prevention	Yes	Yes	Yes	Yes
<i>Comment:</i> The City's Water Emergency Operations Plan was adopted in June 2021, which includes a section on Flood Damage Prevention. The City and County of Ventura Public Works also developed a Flood Prevention & Preparedness manual that is posted on the City website. The Flood Damage Prevention Ordinance comprises the TOMC 4-7 (Public Safety, Flood Damage Prevention).				
Emergency Management	Yes	Yes	Yes	Yes
<i>Comment:</i> The City completed a Risk and Resiliency Assessment as part of America's Water Infrastructure Act (2018) that was submitted to the EPA in December 2020. The City's Water Emergency Operations Plan was certified through the EPA in June 2021. . Thousand Oaks Municipal Code Title 4 Section 404.01 describes the City emergency organization, functions and authorities.				
Climate Change	Yes	Yes	Yes	Yes
<i>Comment:</i> An anticipated City goal is to reduce greenhouse gas by a minimum of 40 percent by 2030 and 80 percent by 2050 to match or exceed the State goals. The City's Climate and Environmental Action Plan is expected to be adopted in FY 2022-23				
Planning Documents				
City General Plan	Yes	Yes	Yes	Yes
<i>Is the City's plan compliant with Assembly Bill 2140?</i> Yes				
<i>Comment:</i> The Thousand Oaks City General Plan is being updated and is expected to be adopted in FY 2022-23.				
Capital Improvement Plan	Yes	Yes	No	No
<i>How often is the plan updated?</i>				
<i>Comment:</i> The City's Capital Improvement Plan is part of the City Budget process and is updated every two years.				
Disaster Debris Management Plan	Yes	Yes	Yes	Yes
<i>Comment:</i> The City has a Disaster Debris Management procedure in its adopted EOP, which is complimentary to the County's Disaster Debris Management Plan.				
Floodplain Plan	Yes	Yes	Yes	Yes
<i>Comment:</i> In January 2010, the FEMA National Flood Insurance Program mapped the City's 100-year "Areas of Special Flood Hazard" (floodplains). The City's Capital Improvement Plan does not directly address a strategized approach to reducing or eliminating 100-year floodplains.				
Stormwater Plan	Yes	Yes	Yes	Yes
<i>Comment:</i> The City is participating in a Watershed Management Program and the Countywide Stormwater Quality Management Program that are being developed and implemented in compliance with the new State Regional Board Municipal Stormwater Permit.				
Urban Water Management Plan	Yes	Yes	Yes	Yes
<i>Comment:</i> In June 2021, the City adopted the 1) 2020 Urban Water Management Plan, 2) 2020 Water Shortage Contingency Plan, and 3) Addendum to the 2015 Urban Water Management Plan. Included in the 2020 UWMP are past, present, and projected water use data through 2045: a description of current and future water supply sources and allocations, information on the City's water conservation program, and background information on the City water system and service area.				
Habitat Conservation Plan	No	No	No	No
<i>Comment:</i> The City does not have a Habitat Conservation Plan but relies on policies within the Conservation Element of the General Plan. State and Federal agencies are involved as part CEQA review and permitting process. The Conejo Open Space Conservancy Agency (COSCA), a joint-powers authority between the City and the Conejo Recreation and Park District that implements conservation projects and manages habitat lands.				
Economic Development Plan	Yes	Yes	No	No
<i>Comment:</i> The City Council adopted its Economic Development Plan on November 7, 2017				
Shoreline Management Plan	No	No	No	No
<i>Comment:</i> Thousand Oaks is inland and does not have a shoreline.				
Community Wildfire Protection Plan	Yes	Yes	Yes	Yes
<i>Comment:</i> Wildfire protection is described in the City's EOP in addition to fire protection services provided by the Ventura County Fire Protection District. The City's Water Emergency Operations Plan and Risk and Resiliency Assessment addresses wildfire zones, specifically within the City's water infrastructure.				

	Local Authority	Other Jurisdiction Authority	State Mandated	Integration Opportunity?
Forest Management Plan	Yes	Yes	Yes	Yes
<i>Comment:</i> The City Forestry Master Plan was adopted in 2017 and applies to City-maintained plantings and provides historical background, design and management and community participation.				
Climate Action Plan	Yes	Yes	Yes	Yes
<i>Comment:</i> One of the City Council goals is to consider a plan to reduce greenhouse gas by a minimum of 40 percent by 2030 and 80 percent by 2050 to meet or exceed the state goals. The City's Climate and Environmental Action Plan is expected to be considered in FY 2022-23.				
Emergency Management Planning	Yes	Yes	Yes	Yes
<i>Comment:</i> The City's Water Emergency Operations Plan was adopted in June 2021. Thousand Oaks Municipal Code Title 4 Section 404.01 describes the City emergency organization, functions and authorities.				
Threat & Hazard Identification & Risk Assessment (THIRA)	Yes	No	No	No
<i>Comment:</i> In December 2017 the City contracted for the completion of a City facilities security for the two City Theaters. In September 2019, a similar assessment was completed for the Civic Arts Plaza/City Hall, both libraries, Municipal Service Center and the Hill Canyon Treatment Plant. The City completed a Risk and Resiliency Assessment in December 2020.				
Post-Disaster Recovery Plan	Yes	Yes	Yes	No
<i>Comment:</i> The City's Water Emergency Operations Plan was adopted in June 2021, which includes a section on Disaster Recovery				
Continuity of Operations Plan	Yes	Yes	Yes	No
<i>Comment:</i> The City's Water Emergency Operations Plan was adopted in June 2021 which includes a section on Continuity of Operations.				
Public Health Planning	No	Yes	Yes	No
<i>Comment:</i> The City's Water Emergency Operations Plan was adopted in June 2021, which includes a section on public health which as managed by the Ventura County Public Health Department.				

Table 10-4. Development and Permitting Capability

Criterion	Response
Does the City issue development permits?	Yes
<i>If no, who does? If yes, which department?</i>	Public Works Department, Community Development Department
Does the City have the ability to track permits by hazard area?	Yes
Does the City have a buildable lands inventory?	No

Table 10-5. Fiscal Capability

Financial Resource	Accessible or Eligible to Use?
Community Development Block Grants	Yes- City Council approval of application/acceptance and award by U.S. Department of Housing and Urban Development
Capital Improvements Project Funding	Yes-City Council approval.
Authority to Levy Taxes for Specific Purposes	Yes-City Council and voter approval.
User Fees for Water, Sewer, Gas or Electric Service	Yes City Council approval and Proposition 218 protest ballot.
Incur Debt through General Obligation Bonds	Yes City Council and voter approval.
Incur Debt through Special Tax Bonds	Yes City Council and voter approval.
Incur Debt through Private Activity Bonds	Yes City Council approval.
Withhold Public Expenditures in Hazard-Prone Areas	No
State-Sponsored Grant Programs	Yes City Council approval of application/acceptance and award by State
Development Impact Fees for Homebuyers or Developers	Yes City Council approval.

Financial Resource	Accessible or Eligible to Use?
Other	Yes
<i>If yes, specify:</i> Incur debt through Lease Revenue Bonds with City Council approval. Public-Private Partnerships with City Council approval.	

Table 10-6. Administrative and Technical Capability

Staff/Personnel Resource	Available?
Planners or engineers with knowledge of land development and land management practices	Yes
<i>If Yes, Department /Position:</i> Community Development Department & Public Works Department. Senior Planners, Senior Engineers and Division Managers.	
Engineers or professionals trained in building or infrastructure construction practices	Yes
<i>If Yes, Department /Position:</i> Community Development Department, Building and Safety Division plan checkers and inspectors	
Planners or engineers with an understanding of natural hazards	Yes
<i>If Yes, Department /Position:</i> Community Development Department and Public Works Department. Senior Planners, Senior Engineers and Division Managers.	
City staff with training in benefit-cost analysis	Yes
Surveyors	Yes
<i>If Yes, Department /Position:</i> Public Works Department, Engineering Services Division	
City personnel skilled or trained in GIS applications	Yes
<i>If Yes, Department /Position:</i> Public Works Department and Finance Department, IT Division	
Scientist familiar with natural hazards in local area	No
Emergency Services Manager	Yes
<i>If Yes, Department /Position:</i> Public Works Department, Emergency Services Manager.	
Grant writers	Yes
<i>If Yes, Department /Position:</i> Public Works, Community Development, Finance & Library Departments—The City has several staff in multiple departments that are skilled in writing and administering state and federal grant funded programs.	

Table 10-7. Education and Outreach Capability

Criterion	Response
Does City have a public information officer or communications office?	Yes
Does City have personnel skilled or trained in website development?	Yes
Does City have hazard mitigation information available on your website?	Yes
<i>If yes, briefly describe:</i> Hazard mitigation is part of the City's Emergency Management Program administered by the Public Works Department, which includes the posting of the City's current Hazard Mitigation Plan	
Does City use social media for hazard mitigation education and outreach?	Yes
<i>If yes, briefly describe:</i> The City utilizes several electronic community newsletters as well as Social Media for Facebook, Instagram, LinkedIn and Twitter.	
Does City have any citizen boards or commissions that address issues related to hazard mitigation?	No
Does City have any other programs in place that could be used to communicate hazard-related information?	Yes
<i>If yes, briefly describe:</i> Social media posts, newsletters and the City website	
Does City have any established warning systems for hazard events?	Yes
<i>If yes, briefly describe:</i> The Cities and County of Ventura all subscribe to VC Alert, a mass notification system for local and statewide emergency warnings, incidents and hazards.	

Table 10-8. National Flood Insurance Program Compliance

Criterion	Response
What City I department is responsible for floodplain management?	Public Works Department
Who is your City floodplain administrator? (department/position)	Jim Taylor, Senior Civil Engineer, Public Works
Are any certified floodplain managers on staff for your City?	Yes; Jim Taylor, Senior Civil Engineer
What is the date that your flood damage prevention ordinance was last amended?	February 11, 2010
Does the City floodplain management program meet or exceed minimum requirements? <i>If exceeds, in what ways?</i>	Exceeds Pursuant to Thousand Oaks Municipal Code Ordinance (TOMC) 1995-20, the City ensures newly-developed building pads are protected from a 100-year flooding event, regardless of whether the location is within a FEMA NFIP-designated floodplain
When was the most recent Community Assistance Visit or Community Assistance Contact? Salomon Miranda, California DWR	April 24, 2018
Does the City have any outstanding NFIP compliance violations that need to be addressed?	No
Are any Risk MAP projects currently underway in your jurisdiction?	No
Do your flood hazard maps adequately address the flood risk within your jurisdiction? <i>If no, state why.</i>	Yes
Does the City floodplain management staff need any assistance or training to support its floodplain management program?	No
Does the City participate in the Community Rating System (CRS)? <i>If no, is your jurisdiction interested in joining the CRS program?</i>	No No
How many flood insurance policies are in force in the City? ^a <i>What is the insurance in force?</i> \$109,948,800 <i>What is the premium in force?</i> \$253,564	336
How many total loss claims have been filed in the City? ^a <i>What were the total payments for losses?</i> \$341,390	62

a. According to FEMA statistics as of March 31, 2021

Table 10-9. Community Classifications

	Participating?	Classification	Date Classified
FIPS Code	Yes	95-2367314	N/A
DUNS No.	Yes	055751937	N/A
Community Rating System	No	N/A	N/A
Building Code Effectiveness Grading Schedule	No	N/A	N/A
Public Protection (VCFPD)	Yes	03/3X	12/21/18
Storm Ready	Yes	N/A	N/A
Firewise	No	N/A	N/A
Tsunami Ready	No	N/A	N/A

Table 10-10. Adaptive Capacity for Climate Change

Criterion	Jurisdiction Rating ^a
Technical Capacity	
City-level understanding of potential climate change impacts <i>Comment:</i> Staff and City Council are aware of potential climate change impacts and actions to address these issues will be included in the General Plan update and the City's Climate and Environmental Action Plan.	Medium
City -level monitoring of climate change impacts <i>Comment:</i> Staff and the City Council are aware of potential climate change impacts and actions to address these issues will be included in the General Plan update and Climate and Environmental Action Plan.	Medium
Technical resources to assess proposed strategies for feasibility and externalities <i>Comment:</i> The City has capacity internally and the ability to engage consultants for specialized tasks.	High
City -level capacity for development of greenhouse gas (GHG) emissions inventory <i>Comment:</i> The City has an internally developed GHG inventory.	High
Capital planning and land use decisions informed by potential climate impacts <i>Comment:</i> The City's General Plan will include Sustainability components throughout the document and is being developed in coordination with the City's Climate & Environmental Action Plan	Medium
Participation in regional groups addressing climate risks <i>Comment:</i> The City is a member of the Ventura County Regional Energy Alliance which addresses climate change issues within Thousand Oaks and Ventura County.	Medium
Implementation Capacity	
Clear authority/mandate to consider climate change impacts during public decision-making processes <i>Comment:</i> On January 12, 2021 the City Council meeting directed staff to develop a Climate and Environmental Action Plan that exceeds the state goals. Concurrently, the General Plan is being updated to include strategies and recommendations related to climate change mitigation.	Medium
Identified strategies for greenhouse gas mitigation efforts <i>Comment:</i> Staff has drafted green-house gas mitigation strategies after hosting four stakeholder meetings and additional community events to receive recommendations and input from the public.	Medium
Identified strategies for adaptation to impacts <i>Comment:</i> Staff has drafted the strategies now after hosting four stakeholder meetings and additional community events to receive recommendations and input from the public.	Medium
Champions for climate action in local government departments <i>Comment:</i> The City Public Works Department established an internal green team of employees from City departments to assist in the development and rollout of internal green policies.	Medium
Political support for implementing climate change adaptation strategies <i>Comment:</i> The City Council adopts goals annually and environmental leadership is always included as shown by the following goal. "Provide and enhance essential infrastructure to ensure the goals and policies of the City's General Plan are carried out and the City retains its role and reputation as a leader in protecting the environment and preserving limited natural resources." The City Council also approved participation in the Clean Power Alliance at the 100% renewable level which dramatically lowered GHG emissions.	Medium
Financial resources devoted to climate change adaptation <i>Comment:</i> The City is supportive of cost-effective environmental initiatives.	Medium
Local authority over sectors likely to be negative impacted <i>Comment:</i> The City has local authority over housing, water resources and land use issues.	Low

Criterion	Jurisdiction Rating ^a
Public Capacity	
Local resident's knowledge of and understanding of climate risk <i>Comment:</i> Thousand Oaks residents and business owners are knowledgeable and engaged.	Medium
Local resident's support of adaptation efforts <i>Comment:</i> Thousand Oaks residents are informed and active on climate and environmental issues.	Medium
Local resident's capacity to adapt to climate impacts <i>Comment:</i> The City's Climate & Environmental Action Plan documents residents' interests and priorities.	Medium
Local economy current capacity to adapt to climate impacts <i>Comment:</i> Many residents have the resources to make GHG reduction and resiliency reduction measures at home. However, Thousand Oaks also has an aging population with many seniors on a fixed income and unable to complete home improvements on their own.	Medium
Local ecosystems capacity to adapt to climate impacts <i>Comment:</i>	Unsure

- a. High = Capacity exists and is in use; Medium = Capacity may exist, but is not used or could use some improvement;
Low = Capacity does not exist or could use substantial improvement; Unsure = Not enough information is known to assign a rating.

10.5 INTEGRATION REVIEW

For hazard mitigation planning, “integration” means that hazard mitigation information is used in other relevant planning mechanisms, such as general planning and capital facilities planning, and that relevant information from those sources is used in hazard mitigation. This section identifies where such integration is already in place, and where there are opportunities for further integration in the future. Resources listed at the end of this annex were used to provide information on integration. The progress reporting process described in Volume 1 of the hazard mitigation plan will document the progress of hazard mitigation actions related to integration and identify new opportunities for integration.

10.5.1 Existing Integration

Integration has been established between local hazard mitigation planning and the following local plans and programs:

- **City Emergency Operations Plan**—Adopted in 2020, this Plan describes the City's preparedness, response, mitigation and recovery from local and national emergency incidents
- **City General Plan**—Scheduled for adoption in FY 2022-23, this Plan describes the long-term goals, policies and development of Thousand Oaks, including a Safety Element that addresses hazard mitigation.
- **City Climate & Environmental Action Plan**—Scheduled for adoption in FY 2022-23, this Plan describes the City's on-term strategies for reducing greenhouse gas emissions, reduce air pollution and improve public health.
- **Building Code**—The City routinely updates the Thousand Oaks Municipal Code (TOMC) and as part of a review of the hazard mitigation in the Building Section of the TOMC.
- **Stormwater Management**—The City is part of a Countywide Stormwater Pollution Management Plan and when possible the Cities and County of Ventura collaborate upon local stormwater management with hazard mitigation policies.

- **Post-Disaster Recovery**—The City addresses disaster recovery in its Emergency Operations Plan (EOP), which includes hazard mitigation as part of the Plan.
- **Growth Management**—The General Plan addresses future growth in Thousand Oaks and during the update, hazard mitigation is incorporated into the final Plan.
- **Site Plan Review**—The Community Development Department and the Public Works Department jointly consider hazard mitigation issues as part of each project review.
- **Environmental Protection**—Hazard mitigation is part of the City's review of programs, policies and projects as they relate to land, air, water and waste.
- **Flood Damage Protection**—All existing and proposed development projects are reviewed to address existing and future hazards.
- **Disaster Debris Plan**—The County has a Disaster Debris Plan and the City addressees' disaster debris in its Emergency Operations Plan in addition to hazard mitigation.
- **Floodplain Management**— The City EOP addresses flooding as well as the TOMC which is updated routinely
- **Urban Watershed Plan**—As part of a 2021 update, urban watershed policies and the City's program was updated, and hazard mitigation issues are part of that review.
- **Wildfire Protection Plan**— The City's EOP includes a wildfire protection element that includes hazard mitigation.
- **Forest Management Plan**—The 2017 adopted plan addresses City-maintained plantings, background, design and management. Hazard mitigation will continue to be part of the Plan.

10.5.2 Opportunities for Future Integration

The capability assessment in this annex indicates opportunities to integrate this mitigation plan with other jurisdictional planning/regulatory capabilities. Capabilities were identified as integration opportunities if they can support or enhance the actions identified in this plan or be supported or enhanced by components of this plan. The capability assessment identified the following plans and programs that do not currently integrate hazard mitigation information but provide opportunities to do so in the future:

- **Countywide Stormwater Pollution Control Plan**—This Plan describes how the Cities and County of Ventura will reduce pollution of local waterways. The integration of this Plan with hazard mitigation includes a review of policies and programs of both plans to ensure consistency and compliance.
- **Urban Water Management Plan** -This Plan describes the City's long-term water resource and planning principles for reducing water use. The integration of this Plan with hazard mitigation includes a review of policies and programs of both plans to ensure consistency and compliance.
- **Economic Development Strategic Plan**—This Plan was developed as a policy guide for guiding the City's short, medium and long-term economic development planning. The integration of this Plan with hazard mitigation includes a review of policies and programs of both plans to ensure consistency and compliance.

Acting to integrate each of these programs with the hazard mitigation plan was considered as a mitigation action to include in the action plan in this annex.

10.6 RISK ASSESSMENT

10.6.1 Jurisdiction-Specific Natural Hazard Event History

Table 10-11 lists past occurrences of natural hazards for which specific damage was recorded in this jurisdiction. Other hazard events that broadly affected the entire planning area, including this jurisdiction, are listed in the risk assessments in Volume 1 of this hazard mitigation plan.

Table 10-11. Past Natural Hazard Events

Type of Event	FEMA Disaster #	Date	Damage Assessment
Wind/PSPS Event	N/A	1/20	\$2 million
Hill Fire	DR 4407	11/8/18 - 11/9/18	\$1 million
Woolsey Fire	DR 4407	11/8/18-11/9/18	\$8 million
Borderline Active Shooter	N/A	11/18/18	\$5 million
Winter Storm Event	DR 4353	12/4/17- 1/31/18	\$2 million
Springs Fire	DR 5024	5/2/13 – 5/11/13	\$10 million
Wildwood I Fire	N/A	1995	\$ 500,000
Northridge Earthquake	DR 1008	1/17/94	\$6 million
Green Meadow Fire	N/A	10/26/93 – 11/3/93	\$12 million
Sherwood Fire	N/A	1985	\$ 1 million
Dayton Canyon Fire	N/A	10/25/82	\$4 million
Winter Storm Event	N/A	2/21/80	\$2 million
Winter Storm Event	N/A	2/15/78	\$1.5 million
Winter Storm Event	N/A	1/26/69	\$200,000
Winter Storm Event	N/A	12/7/65	\$100,000
Wind/PSPS Event	N/A	1/20	\$2 million

10.6.2 Hazard Risk Ranking

Table 10-12 presents a local ranking of all hazards of concern for which this hazard mitigation plan provides complete risk assessments. As described in detail in Volume 1, the ranking process involves an assessment of the likelihood of occurrence for each hazard, along with its potential impacts on people, property, and the economy. Mitigation actions primarily target hazards with high and medium rankings.

Table 10-12. Hazard Risk Ranking

Rank	Hazard	Risk Ranking Score	Risk Category
1	Landslide	51	High
2	Wildfire	36	High
3	Earthquake	32	Medium
4	Severe Storm	24	Medium
5	Severe Weather	24	Medium
6	Flooding	18	Medium
7	Dam Failure	12	Low
8	Drought	9	Low

10.6.3 Jurisdiction-Specific Vulnerabilities

Volume 1 of this hazard mitigation plan provides complete risk assessments for each identified hazard of concern. This section provides information on a few key vulnerabilities for Thousand Oaks. Available Thousand Oaks-specific risk maps of the hazards are provided at the end of this annex.

Repetitive Loss Properties

Repetitive loss records are as follows:

- Number of FEMA-identified Repetitive-Loss Properties: 5
- Number of FEMA-identified Severe-Repetitive-Loss Properties: N/A
- Number of Repetitive-Loss Properties or Severe-Repetitive-Loss Properties mitigated: N/A

Other Noted Vulnerabilities

The following jurisdiction-specific issues have been identified based on a review of the results of the risk assessment, public involvement strategy, and other available resources:

- **Urban Area Flooding**—Urban area flooding of specific neighborhoods in Thousand Oaks is an ongoing hazard that continues to be addressed through the City's Capital Improvement Program. The Public Works Department has identified hazard priorities and through City, State and Federal funding resources, many of the known hazards are being mitigated. Each project includes a public outreach component before, during and after the completion of each project.
- **Power Outages**—Scheduled and un-scheduled SCE power outages continue to be a hazard in Thousand Oaks, especially during excessive heat and wind. The Public Works Department has implemented a Red Flag-PSPS Policy that includes the use of permanent and portable back-up generators at critical City facilities. The City also encourages residents and business owners to secure back-up power.

Mitigation actions addressing these issues were prioritized for consideration in the action plan in this annex.

10.7 STATUS OF PREVIOUS PLAN ACTIONS

Table 10-13 summarizes the actions that were recommended in the previous version of the hazard mitigation plan and their implementation status at the time this update was prepared.

10.8 HAZARD MITIGATION ACTION PLAN

Table 10-14 lists the identified actions, which make up the hazard mitigation action plan for this jurisdiction. Table 10-15 identifies the priority for each action. Table 10-16 summarizes the mitigation actions by hazard of concern and mitigation type.

Table 10-13. Status of Previous Plan Actions

Action Item	Completed	Removed; No Longer Feasible	Carried Over to Plan Update	
			Check if Yes	Action # in Update
TO 1—Develop a water conservation public outreach program to increase awareness about the drought, fines and penalties for overuse and methods for conserving water.	✓			
Comment: The Public Works Department developed a public outreach program over the last decade that includes a monthly e-newsletter to over 10,500 recipients and use of Facebook, Instagram and Twitter. The Sustainability Division in the Public Works Department maintains the City's Water webpage which provides updates related to drought conditions, fines and penalties for overuse and strategies for conserving water. The City finished its Automatic Meter Reader Upgrade in June 2021 which provides customer access to water consumption data and monitoring of customer water leaks. The City's annual Arbor/Earth Day event includes water conservation booths from all three local water purveyors. During periods of significant water shortage, the City hosts monthly meetings with the three local water purveyors to coordinate programs and messaging. The City is also a member of the California Data Collaborative and has access to a dashboard that identifies high water users in Thousand Oaks that have accepted water rebates. Currently the City is preparing a Climate and Environmental Action Plan, which includes a water conservation component. The plan is being developed in conjunction with an update to the City's General Plan and it will be CEQA qualified. Several stakeholder meetings were held in 2021 and the Plan is expected to be considered by the City Council in 2023.				
TO 2—Adopt emergency water conservation measures and/or water conservation ordinance to reduce irrigation.	✓			
Comment: The City's Urban Water Management Plan (UWMP) was adopted by City Council in June 2021. Municipal code update conservation measures (3 tier to 6 tier) November 2021. Update of water conservation levels from 3 to 6 tiers with Water Shortage Contingency Plan and municipal code updates.				
TO 3—Evaluate City bridges for structural, seismic, functional, and safety adequacy.	✓			
Comment: Caltrans performs biennial evaluation of all City and State's bridges for structural, seismic, functional and safety adequacy. Caltrans provides inspection reports and repair and maintenance recommendations for each bridge that was inspected. In November 2020 Caltrans inspected City of Thousand Oaks bridges and rated them to indicate deficiencies, structural adequacy, safe load carrying capacity and general condition.				
TO 4—Update Supervisory Control and Data Acquisition (SCADA) Master Plan with seismic improvements, including design, integration of new Programmable Logic Controllers and communication systems at City pump stations, reservoirs, and turnouts.	✓			
Comment: CI 5284 SCADA Upgrades—New SCADA program, update of seismic equipment programmable logic controllers and programing. New communications system. Project completion target date: June 2022.				
TO 5—Remove and/or repair the interior of reservoir tanks and perform analysis, identify causes, and mitigate hazards to ensure tanks achieve seismic standards.	✓			
Comment: Water reservoirs are inspected and cleaned every 5 years and rehabilitated every 20-25 years. Rehabilitation project priorities include 2019 Lang Ranch Reservoir, 2020 Tara Reservoir Seismic upgrades, ventilation and structural safety were addressed at these sites and all reservoir rehabilitation projects. As part of CIP 5284, SCADA Upgrades				

Table 10-14. Hazard Mitigation Action Plan Matrix

Benefits New or Existing Assets	Objectives Met	Lead Agency	Support Agency	Estimated Cost	Sources of Funding	Timeline ^a
Action CTO-1 —Where appropriate, support retrofitting, purchase or relocation of structures located in hazard areas, prioritizing those that have experienced repetitive losses and/or located in high- or medium-risk hazard areas.						
<u>Hazards Mitigated:</u> Landslides, Wildfire, Earthquake, Severe Storms, Severe Weather, Flooding, Dam Failure						
New & Existing	4, 6, 8, 9, 10, 11, 19	City Public Works Department	City Community Development Department	High	Grant Funding- FEMA HMA (BRIC, FMA, HMGP)	Ongoing
Action CTO-2 —Integrate the hazard mitigation plan into other plans, ordinances and programs that dictate land use decisions in the community, including Urban Water Management Plan, General Plan Update, Climate & Environmental Action Plan						
<u>Hazards Mitigated:</u> Flooding, Earthquakes, Climate Change						
New & Existing	4, 8, 9, 11, 19	City Public Works Department	City Community Development Department	Low	Staff Time, General Fund	Ongoing
Action CTO-3 —Actively participate in the plan maintenance protocols outlined in Volume 1 of this hazard mitigation plan.						
<u>Hazards Mitigated:</u> Landslides, Wildfire, Earthquake, Severe Storms, Severe Weather, Flooding, Dam Failure, Drought						
New & Existing	9, 10, 11	City Public Works Department	City Community Development Department	Low	Staff Time, General Fund	Short-term
Action CTO-4 —Continue to maintain good standing and compliance under the NFIP through implementation of floodplain management programs that, at a minimum, meet the NFIP requirements that include enforcing the City flood damage prevention ordinance, participate in floodplain identification and mapping updates, and provide public assistance/information on floodplain requirements and impacts.						
<u>Hazards Mitigated:</u> Flooding						
New & Existing	8, 9, 10, 13, 14, 15, 19	Public Works	Ventura County Water Protection District	Low	Staff Time, General Fund	Ongoing
Action CTO-5 —Identify and pursue strategies to increase adaptive capacity to climate change including but not limited to the following projects:						
- CI 5395, Groundwater Utilization Project—Alternative source of water. - CI 5450, Emergency Water Interconnects—2 new interconnects with California American Water Service (Adrian Drive & Avenida de los Arboles).						
<u>Hazards Mitigated:</u> Drought, Earthquake						
New & Existing	1, 13, 14, 19	City Public Works Department		Low	Staff Time, General Fund	Short-term
Action CTO-6 —Purchase generators for critical facilities and infrastructure that lack adequate backup power, including the following projects:						
- CI 5292, La Granada Reservoir Improvements—Redundant supply pumps, emergency fire pump (Pump #3) and emergency backup generator installed at La Granada Reservoir. - CI 5454, Pressure Reducing Stations—1 new PRS & existing upgrade. Water supply redundancy, reduced pumping. - CI 5452, Lone Oak Emergency Generator—Install new generator at Lone Oak Pump Station with an automatic transfer switch and connection to SCADA System. - CI 5520, Site Improvements at Reservoir and Pump Stations—Erbes Road Emergency backup generator.						
<u>Hazards Mitigated:</u> Dam Failure, Earthquakes, Flooding, Landslide, Severe Weather, Wildfires						
New and Existing	2, 8, 10, 19	City Public Works Department	Community Development Department		Grant Funding- FEMA HMA (BRIC, FMA, HMGP)	Short-term

Benefits New or Existing Assets	Objectives Met	Lead Agency	Support Agency	Estimated Cost	Sources of Funding	Timeline ^a
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Action CTO-7—Maintain wildfire hazard fuel reduction program for areas that have been identified with overgrown or dead brush, trees and weeds to reduce the potential for tree-to-tree ignition. Ensure that a “maintenance now” component to provide continued fire resistance is part of the program. (Coordinates with Ventura County Fire Protection District Action VFP-6 and Conejo Recreation and Parks District Action CRP-1)

<u>Hazards Mitigated:</u> Wildfire						
New & Existing	2, 4, 5, 6, 8, 10, 11, 13, 14, 15, 18, 19	VCFPD	City of Thousand Oaks, COSCA (Conejo Open Space Conservancy Agency), Conejo Recreation and Parks District (CRPD), CAL FIRE & USDA	Medium	Grant Funding- FEMA HMA (BRIC, FMAP and HMGP), Staff Time & General Funds	Ongoing

Action CTO-8—The City is developing plans to install two City Hall emergency power battery backup systems. Two other emergency backup power systems include the Erbes Road Pump Station Battery Back-Up Project and the Pederson Battery Back Up Project. Both projects are funded by state HMGP funding.

<u>Hazards Mitigated:</u> Landslides, Wildfire, Earthquake, Severe Storms, Severe Weather, Flooding, Dam Failure						
New and Existing	1, 6, 11, 19	City Public Works Department	VCPWA-WP	Low	Grant Funding- FEMA HMA (BRIC, FMA, HMGP) and General Fund	Short-term

Action CTO-9— The Lake Eleanor (Banning) Dam was built in 1889 is operated by COSCA and is 37 feet high and has a storage capacity of 128-acre-feet. Dam failure would be a flood risk for the Westlake community and has a sentiment load that cannot be released downstream. The reduction of water storage volume would help mitigate the hazard potential of the Dam.

<u>Hazards Mitigated:</u> Dam Failure, Earthquakes, Flooding, Severe Weather						
New and existing	4, 5, 8, 9, 11, 14, 15, 16, 17, 19	City Public Works Department	COSCA, CRPD	Low	Grant Funding- FEMA HMA (BRIC, FMA, HMGP)	Long Term

Action CTO-10—Community outreach program for wildfire safety. Home losses associated with wildfires. COSCA contracts with the Ventura Regional Fire Safe Council to provide educational outreach and services promoting wildfire safety. These include webinars on fire safety, defensible space, and home hardening. Also offered are Home Ignition Zone assessments for homeowners in COSCA’s service area. Currently, these are funded through COSCA Board appropriations for funding from COSCA’s Woolsey Fire Recovery Fund.

<u>Hazards Mitigated:</u> Wildfire						
New and Existing	1, 5, 8, 11, 14, 17	City Community Development	COSCA, CRPD	Low	Grant Funding- FEMA HMA (BRIC, FMAP and HMGP), Cal-OES & Utility Settlement	Ongoing

Action CTO-11—Westlake Boulevard Flood Damage Mitigation. Install retaining walls and upgrade the drainage inlet along the west side of Westlake Boulevard at Cloverleaf Street to mitigate debris and mud flows from adjacent hillsides from entering the roadway.

<u>Hazards Mitigated:</u> Dam Failure, Earthquakes, Flooding, Severe Weather.						
New and Existing	4, 14, 11, 15, 16, 19	City Public Works Department	N/A	Medium	General Fund, Grant Funding- FEMA HMA (BRIC, FMAP and HMGP)	Ongoing

Benefits New or Existing Assets	Objectives Met	Lead Agency	Support Agency	Estimated Cost	Sources of Funding	Timeline ^a
Action CTO-12- Continue implementation of City Drainage Protection Program. Positive drainage away from structures is achieved in accordance with the City's adopted building codes development discharges to be safely conveyed to stable channels and/or dispersed into natural channels via energy dissipators/rip-rap to avoid scour of unstable areas in accordance with TOMC 1995-20 Section 4 (Commercial/Industrial) and Section 5 (Residential).						
Hazards Mitigated: Dam Failure, Earthquake, Flooding, Severe Weather						
New and Existing	1, 11, 15, 16, 19	City Public Works Department	City Community Development Department	Low	General Fund	Ongoing
Action CTO-13— Continue to participate in Countywide FEMA Coordination by meeting quarterly to discuss program enhancements, studies, and other floodplain matters.						
Hazards Mitigated: Flooding						
New and Existing	1, 8, 10, 13	City Public Works Department	N/A	Low	General Fund	Ongoing

a. Short-term = Completion within 5 years; Long-term = Completion within 10 years; Ongoing= Continuing new or existing program with no completion date

Acronyms used here are defined at the beginning of this volume.

Table 10-15. Mitigation Action Priority

Action #	# of Objectives Met	Benefits	Costs	Do Benefits Equal or Exceed Cost?	Is Project Grant-Eligible?	Can Project Be Funded Under Existing Programs/ Budgets?	Implementation Priority ^a	Grant Pursuit Priority ^a
1	7	High	High	Yes	Yes	No	High	High
2	5	High	Low	Yes	No	Yes	High	Low
3	3	Medium	Medium	Yes	No	Yes	Medium	Low
4	7	High	Low	Yes	No	Yes	Low	Low
5	4	High	Medium	Yes	No	Yes	Medium	Low
6	4	High	Medium	Yes	Yes	Yes	Medium	High
7	12	High	Low	Yes	Yes	Yes	High	High
8	4	Medium	High	Yes	Yes	No	Medium	Medium
9	10	High	Low	Yes	Yes	Yes	High	High
10	6	Low	Low	Yes	Yes	Yes	Low	Medium
11	5	Medium	Low	Yes	Yes	Yes	Low	Medium
12	5	Low	Low	Yes	No	Yes	Low	Low
13	4	Low	Low	Yes	No	Yes	Low	Low

a. See the introduction to this volume for explanation of priorities.

Table 10-16. Analysis of Mitigation Actions

Hazard Type	Action Addressing Hazard, by Mitigation Type ^a							
	Prevention	Property Protection	Public Education & Awareness	Natural Resource Protection	Emergency Services	Structural Projects	Climate Resilience	Community Capacity Building ^b
High-Risk Hazards								
Landslide	CTO-6, 11	CTO-1, 2, 6		CTO-1, 3, 5	CTO-6, 8	CTO-5, 6, 8	CTO-1, 5	CTO-3, 8
Wildfire	CTO-6, 7, 8, 10	CTO-1, 3, 6, 7, 10	CTO-7, 10	CTO-1, 7	CTO-6, 8, 10	CTO-3, 6, 7	CTO-10	CTO-3, 7, 10
Medium-Risk Hazards								
Earthquake	CTO-2, 3, 6, 8, 9	CTO-1, 2, 6, 8, 9	CTO-5, 10	CTO-1, 2, 5, 9, 11, 12	CTO-1, 2, 6, 8, 9	CTO-1, 2, 3, 8, 9, 12	CTO-5, 7, 9, 11	CTO-1, 2, 3, 8, 12
Severe Storms	CTO-3, 6, 8, 11	CTO-1, 3, 6, 8		CTO-1	CTO-8	CTO-1, 6, 8		CTO-1, 3, 6
Severe Weather	CTO-3, 6, 9, 11, 12	CTO-1, 6, 9, 11, 12	CTO-10, 13	CTO-1, 9, 12	CTO-1, 6, 8, 11	CTO-1, 6, 8, 11, 12	CTO-9	CTO-1, 3, 9, 12
Flooding	CTO-2, 3, 4	CTO-1, 2, 4, 8, 9	CTO-7, 11	CTO-1, 2, 9, 11, 12	CTO-6, 8, 11, 12	CTO-1, 2, 6, 8, 9, 11, 12	CTO-2, 9, 11, 12, 13	CTO-1, 2, 3, 4, 9, 12, 13
Low-Risk Hazards								
Dam Failure	CTO-11, 12	CTO-1, 3, 6, 8, 9, 11, 12	CTO-9	CTO-1, 8, 9	CTO-1, 6, 8	CTO-1, 6, 11, 12	CTO-8, 9	CTO-1, 3, 6, 8
Drought					CTO-5	CTO-5		CTO-3

a. See the introduction to this volume for explanation of mitigation types.

b. Note that the jurisdiction did not identify a need for expansion of financial capabilities, based on existing capabilities. The intent of this hazard mitigation plan is to expand the financial capability of the jurisdiction.

10.9 PUBLIC OUTREACH

Table 10-17 lists public outreach activities for Thousand Oaks which includes citywide communications and civic engagement activities for City departments, the press, and community members. Public outreach includes:

- City Websites
- Social Media
- Emergency Communications
- Media Relations
- Citywide Branding
- Press Releases
- Community Relations
- City Newsletters
- TOTV—Government Access Television
- Community Attitude Survey

Table 10-17. Local Public Outreach

Local Outreach Activity	Date	Number of People Involved
City Emergency Management E-Newsletter	6/29/21	1,100 subscribers
City Sustainability E-Newsletter & Blog	6/29/21	10,400 subscribers
City Scene E-Newsletter	7/1/21	1,500 subscribers
Hazard Mitigation Description/Survey Link on City Website	7/1/21	N/A
Chamber of Commerce E-Newsletter	8/21/21	2,500 subscribers
American Public Works Association, Ventura County Chapter	8/22/21	900 subscribers

10.10 INFORMATION SOURCES USED FOR THIS ANNEX

The following technical reports, plans, and regulatory mechanisms were reviewed to provide information for this annex.

- **Thousand Oaks Municipal Code**—The municipal code was reviewed for the full capability assessment and for identifying opportunities for action plan integration.
- **Emergency Operations Plan**—The EOP was reviewed for the full capability assessment and for identifying opportunities for action plan integration.
- **Thousand Oaks General Plan**—This plan is being updated and is scheduled to be adopted by the City in FY 2022-23. Several sections of the Plan, including the Safety Element and its relation to the Climate and Environmental Action Plan were referenced in this Hazard Mitigation Plan.
- **Climate Action & Environmental Plan**—This plan was reviewed for the full capability assessment and for identifying opportunities for action plan integration.

The following outside resources and references were reviewed:

- **Hazard Mitigation Plan Annex Development Toolkit**—The toolkit was used to support the identification of past hazard events and noted vulnerabilities, the risk ranking, and the development of the mitigation action plan.

10.11 ADDITIONAL COMMENTS

The City transitioned to a new solid waste hauler (Athens) on January 1, 2022. The new residential and commercial hauler provides improved collection services and has added organics collection and composting. In addition, Athens offers pickup of household hazardous waste (HHW) from residences citywide. A new service that will reduce illegal HHW disposal and improve the City's recovery of unwanted chemicals out of the waste stream and homes.

The addition of residential HHW curbside supplements the existing City HHW facility at 2010 Conejo Center Drive, which offers free drop-off of HHW to Thousand Oaks residents and unincorporated county residents every Friday 9 am – 1 pm. Small businesses also use the facility 1-3 pm and pay for the cost of disposal further reducing the illegal disposal of toxic chemicals into the waste stream.

In November 2021 the City adopted a Water Shortage Contingency Ordinance and Resolution for a 15 percent voluntary water conservation level.

Thousand Oaks

Critical Facilities (1 of 2)

- Food, Water, Shelter
- Health and Medical
- Safety and Security

- Major Roads
- ▭ Selected City
- ▭ Incorporated Cities
- ▭ County Boundary

Data Sources: Ventura Co., VCFD, Casitas MWD, Calleguas MWD, City of Camarillo, CA Energy Commission, Cal Trans, EPA, HIFLD, Esri



0 0.75 1.5 3 Miles

Thousand Oaks

Critical Facilities (1 of 2)

- Communications
- Energy
- Hazardous Material
- Transportation

- Major Roads
- Selected City
- Incorporated Cities
- County Boundary

Data Sources: Ventura Co., VCFD, Casitas MWD, Calleguas MWD, City of Camarillo, CA Energy Commission, Cal Trans, EPA, HIFLD, Esri



0 0.75 1.5 3 Miles

Thousand Oaks

Dam Failure Inundation Areas

-  Combined Inundation Areas
-  Major Roads
-  Selected City
-  Incorporated Cities
-  County Boundary

Data Sources: Ventura Co.,
CA DWR, Esri



0 0.75 1.5 3 Miles

Thousand Oaks

NEHRP Soil Class

-  C (Dense soil/soft rock)
-  D (Stiff soil)
-  Major Roads
-  Selected City
-  Incorporated Cities
-  County Boundary

Data Sources: Ventura Co.,
CGS, Esri



0 0.75 1.5 3 Miles

Thousand Oaks

Liquefaction Susceptibility

-  Liquefaction zone
-  Major Roads
-  Selected City
-  Incorporated Cities
-  County Boundary

Data Sources: Ventura Co.,
Esri



0 0.75 1.5 3
Miles

Thousand Oaks

100-Year Probabilistic Earthquake Scenario

Mercalli Intensity Scale

 VII (Very Strong/Moderate)

 Major Roads

 Selected City

 Incorporated Cities

 County Boundary

Intensity scale described as:
(perceived shaking / potential damage)

Data Sources: Ventura Co.,
USGS, Esri



0 0.75 1.5 3
 Miles

Thousand Oaks

Oak Ridge M7.16 Earthquake Scenario

Mercalli Intensity Scale

- VI (Strong/Light)
- VII (Very Strong/Moderate)
- VIII (Severe/Moderate-Heavy)

- Major Roads
- Selected City
- Incorporated Cities
- County Boundary

Intensity scale described as:
(perceived shaking / potential damage)

Data Sources: Ventura Co.,
USGS, Esri



0 0.75 1.5 3 Miles

Thousand Oaks

Pitas Point M7.12 Earthquake Scenario

Mercalli Intensity Scale

- V (Moderate/Very Light)
- VI (Strong/Light)
- VII (Very Strong/Moderate)
- VIII (Severe/Moderate-Heavy)

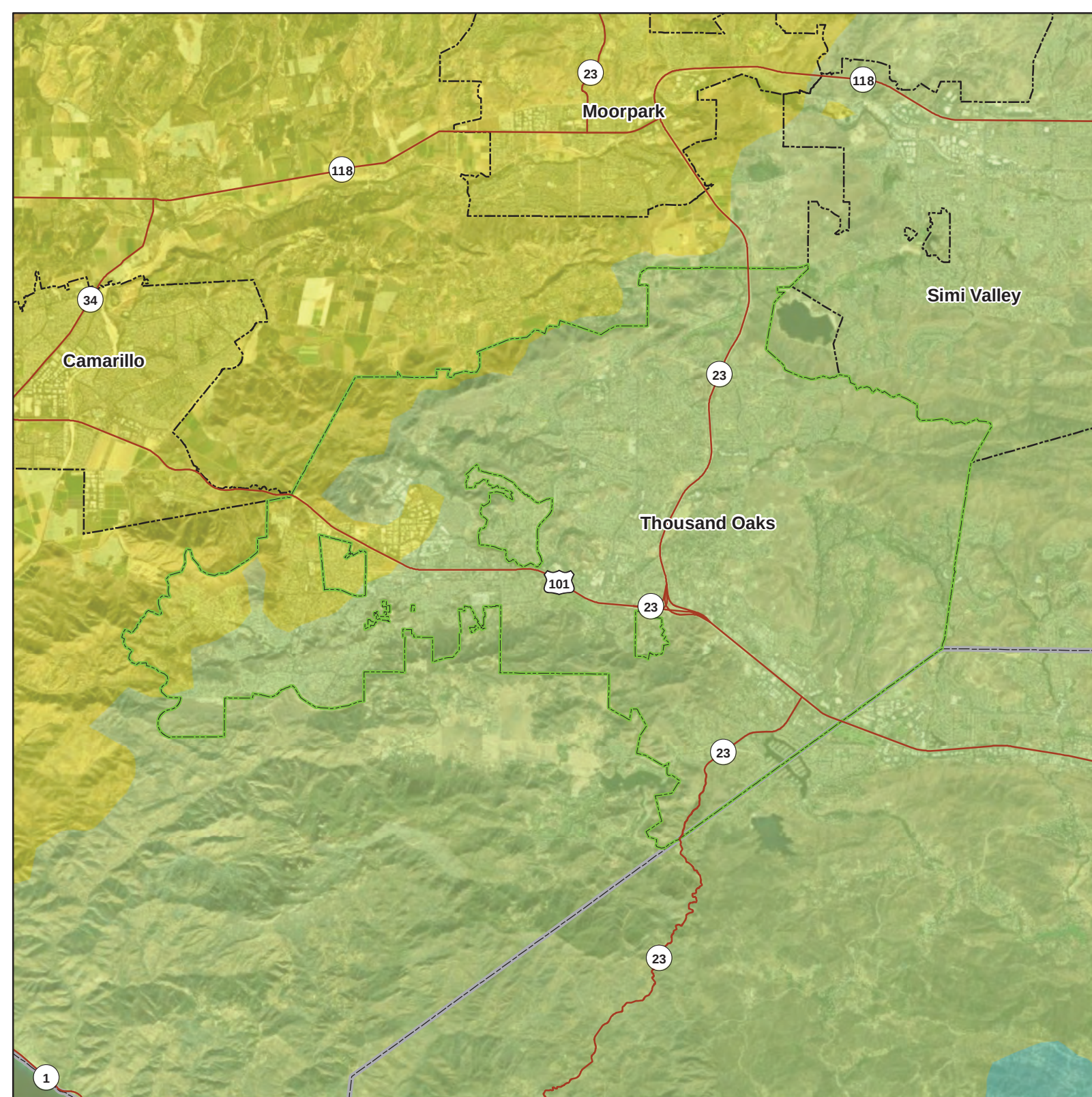
- Major Roads
- Selected City
- Incorporated Cities
- County Boundary

Intensity scale described as:
(perceived shaking / potential damage)

Data Sources: Ventura Co.,
USGS, Esri



0 0.75 1.5 3 Miles



Thousand Oaks

San Cayetano M7.16 Earthquake Scenario

Mercalli Intensity Scale

- VI (Strong/Light)
- VII (Very Strong/Moderate)

- Major Roads
- Selected City
- Incorporated Cities
- County Boundary

Intensity scale described as:
(perceived shaking / potential damage)

Data Sources: Ventura Co.,
USGS, Esri



0 0.75 1.5 3 Miles

Thousand Oaks

S. San Andreas M8.03 Earthquake Scenario

Mercalli Intensity Scale

 V (Moderate/Very Light)

 VI (Strong/Light)

 Major Roads

 Selected City

 Incorporated Cities

 County Boundary

Intensity scale described as:
(perceived shaking / potential damage)

Data Sources: Ventura Co.,
USGS, Esri



0 0.75 1.5 3
 Miles

Thousand Oaks

FEMA Flood Hazard Areas

-  1% Annual Chance Flood (100-Year)
-  0.2% Annual Chance Flood (500-Year)
-  Major Roads
-  Selected City
-  Incorporated Cities
-  County Boundary

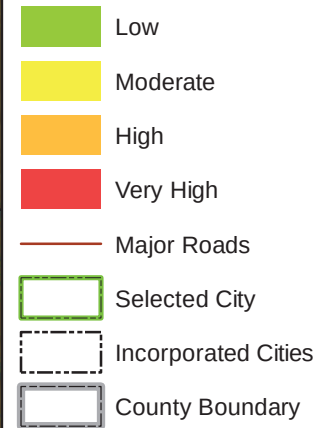
Data Sources: Ventura Co.,
FEMA, Esri



0 0.75 1.5 3 Miles

Thousand Oaks

Susceptibility to Deep-Seated Landslides



Data Sources: Ventura Co.,
CGS, Esri



0 0.75 1.5 3 Miles

Thousand Oaks

Wildfire Hazard Severity Zones

- Moderate
- High
- Very High
- Major Roads
- Selected City
- Incorporated Cities
- County Boundary

Data Sources: Ventura Co.,
CAL FIRE, Esri



0 0.75 1.5 3 Miles

11. CITY OF VENTURA

11.1 LOCAL HAZARD MITIGATION PLANNING TEAM

Primary Point of Contact

Daniel Wall, Emergency Services Manager
501 Poli St.
Ventura, CA 93001
Telephone: 805-223-1030
email: dwall@cityofventura.ca.gov

Alternate Point of Contact

Barry Fisher, Deputy City Manager
501 Poli St.
Ventura, CA 93001
Telephone: 805-223-6873
Email: bfisher@cityofventura.ca.gov

This annex was developed by the local hazard mitigation planning team, whose members are listed in Table 11-1.

Table 11-1. Local Mitigation Planning Team Members	
Name	Title
Peter Gilli	Director, Community Development
Neda Zayer	Deputy Director, Community Development
Jonathan Wood	Permit Services Manager, Planning Development
Phil Nelson	Director, Public Works
Mary Joyce Ivers	Deputy Director, Public Works
Jeff Hereford	Principal Civil Engineer
Cody Stults	Environmental
Susan Rungren	General Manager Ventura Water
Linda Sumansky	Director, Ventura Water Pure
Brett Reed	Fire Marshal, Ventura Fire Department

11.2 JURISDICTION PROFILE

11.2.1 Location and Features

The city of San Buenaventura is in Ventura County, California. The boundaries generally extend from Santa Barbara to Los Angeles along state route 101, the city, encompassing an area of 32.09 square miles. A California coastal community with its phenomenal climate, friendly people and spectacular coastline make Ventura a locale for those who appreciate and enjoy the outdoors.

11.2.2 History

Ventura is a coastal City, set against undeveloped hills and flanked by two free-flowing rivers, has been inhabited for thousands of years. Originally European explorers encountered the Chumash, while traveling along the Pacific coast. They witnessed the ocean navigation skill of the native people and their use of the abundant local resources from sea and land. In 1782, the eponymous Mission San Buenaventura was founded nearby, where it benefitted from the water of the Ventura River. The town grew around the mission compound and incorporated in 1866. The development of nearby oil fields began in the 1920s during which many designated landmark buildings were constructed. The mission and these buildings are at the center of a downtown that have become a cultural, retail, and residential district and visitor destination.

11.2.3 Governing Body Format

There are 7 members of the Ventura City Council, each serving a four-year term. Starting with the 2018 Election, four (4) Councilmembers were elected by Districts with the remaining three (3) Councilmembers elected by Districts in 2020. While elected by Districts, each member represents the interests of the City as a whole. The Ventura City Council assumes responsibility for the adoption of this plan; City Administration will oversee its implementation.

11.3 CURRENT TRENDS

11.3.1 Population

According to the California Department of Finance, the population of Ventura as of January 2020 was 106,276. Since 2010, the population has decreased at an average annual rate of 0.09 percent.

11.3.2 Development

Development trends in the City of Ventura are focused on infill development, versus new land/hillside development. The City is looking towards main corridors for increased density and mixed-use development to accommodate the balance of residential and commercial needs. Adaptive reuse of industrial properties is also being considered for last mile distribution centers. Increase housing demands with available property will likely result in more multi-family projects. More flexible zoning will increase commercial and industrial development.

Table 11-2 summarizes development trends in the period since the preparation of the previous hazard mitigation plan, as well as expected future development trends.

11.4 CAPABILITY ASSESSMENT

This section describes an assessment of existing capabilities for implementing hazard mitigation strategies. The introduction at the beginning of this volume of the hazard mitigation plan describes the components included in the capability assessment and their significance for hazard mitigation planning.

Table 11-2. Recent and Expected Future Development Trends

Criterion	Response					
Has your jurisdiction annexed any land since the preparation of the previous hazard mitigation plan?	No					
Is your jurisdiction expected to annex any areas during the performance period of this plan?	Yes					
If yes, describe land areas and dominant uses.	A 25.37-acre property located at the western terminus of Thille Street, just east of the Highway 101/ Highway 126 interchange and 75-acre property adjacent to Valentine road.					
If yes, who currently has permitting authority over these areas?	County of Ventura					
Are any areas targeted for development or major redevelopment in the next five years?	Yes					
If yes, briefly describe, including whether any of the areas are in known hazard risk areas	Most of the redevelopment is occurring within the downtown area and the major corridors such as Main Street and Thompson Blvd. The projects are occurring on infill sites that are building multi-story mixed use or residential projects. Some of the development in the downtown area is close to fault lines. Most of the redevelopment areas are generally outside of the high fire areas.					
How many permits for new construction were issued in your jurisdiction since the preparation of the previous hazard mitigation plan?		2016	2017	2018	2019	2020
	Single Family	56	255	60	7	4
	Multi-Family	31	59	11	14	36
	Other (commercial, mixed use, etc.)	1	1	5	0	4
	Total	88	315	76	21	44
Provide the number of new-construction permits for each hazard area or provide a qualitative description of where development has occurred.	• Special Flood Hazard Areas: 36 • Landslide: 12 • High Liquefaction Areas: 62 • Tsunami Inundation Area: 21 • Wildfire Risk Areas: 398					
Describe the level of buildout in the jurisdiction, based on your jurisdiction's buildable lands inventory. If no such inventory exists, provide a qualitative description.	Development trends in the City of Ventura are focused on infill development, (versus new land/hillside development). Looking towards main corridors for increased density and mixed-use development to accommodate to balance residential and commercial needs. Adaptive reuse of industrial properties for last mile distribution. Increase housing demands with available property will likely result in more multi-family projects. More flexible zoning will increase commercial and industrial development.					

Findings of the capability assessment were reviewed to identify opportunities to expand, initiate or integrate capabilities to further hazard mitigation goals and objectives. Where such opportunities were identified and determined to be feasible, they are included in the action plan. The "Analysis of Mitigation Actions" table in this annex identifies these as community capacity building mitigation actions.

The findings of the assessment are presented as follows:

- An assessment of planning and regulatory capabilities is presented in Table 11-3.
- Development and permitting capabilities are presented in Table 11-4.
- An assessment of fiscal capabilities is presented in Table 11-5.

- An assessment of administrative and technical capabilities is presented in Table 11-6.
- An assessment of education and outreach capabilities is presented in Table 11-7.
- Information on National Flood Insurance Program (NFIP) compliance is presented in Table 11-8.
- Classifications under various community mitigation programs are presented in Table 11-9.
- The community's adaptive capacity for the impacts of climate change is presented in Table 11-10.

Table 11-3. Planning and Regulatory Capability

	Local Authority	Other Jurisdiction Authority	State Mandated	Integration Opportunity?
Codes, Ordinances, & Requirements				
Building Code	Yes	Yes	Yes	Yes
<i>Comment: Sec. 12.115.010, Adoption of California Building Code, 2019 Edition. (Ord. No. 2019-011, § 2, 10-7-19)</i>				
Zoning Code	Yes	Yes	Yes	Yes
<i>Comment: Division 24 of the Municipal Code (Code 1971, updated numerous times, last updated Ord. No. 2020-021, § 1, 8-3-2020)</i>				
Subdivisions	Yes	Yes	Yes	Yes
<i>Comment: Division 26 of the Municipal Code (Code 1971, § 8211 through 8231.18, updated numerous times, last updated Ord. No. 2015-006, 6-8-15)</i>				
Stormwater Management	Yes	Yes	Yes	Yes
<i>Comment: Chapter 8.600, Stormwater Quality Management Ordinance 99-1 adopted 1-11-99</i>				
Post-Disaster Recovery	Yes	Yes	Yes	Yes
<i>Comment: Emergency Management Sec. 2.370.080., Emergency response May 2021</i>				
Real Estate Disclosure	Yes	No	Yes	Yes
<i>Comment: Division 24 of the Municipal Code (Code 1971, updated numerous times, last updated Ord. No. 2020-021, § 1, 8-3-2020)</i>				
Growth Management	Yes	No	No	Yes
<i>Comment: Save Open Space and Agricultural Resources initiative adopted 1995. Sec. 24.550.010 (Code 1971, § 15.850.010)</i>				
Site Plan Review	Yes	No	No	Yes
<i>Comment: Division 24 of the Municipal Code (Code 1971, updated numerous times, last updated Ord. No. 2020-021, § 1, 8-3-2020)</i>				
Environmental Protection	Yes	Yes	Yes	Yes
<i>Comment: Sec. 2R.450.750 (Res. No. 2002-57, § 4, 9-9-02)</i>				
Flood Damage Prevention	Yes	Yes	Yes	Yes
<i>Comment: Floodplain Regulations, Municipal Code Part 4 Chapter 12.430 (Ord. No. 2021-001, § 1, 1-11-21)</i>				
Emergency Management	Yes	Yes	Yes	Yes
<i>Comment: Emergency Management Sec. 2.370.080, Emergency response May 2021</i>				
Climate Change	No	No	No	Yes
<i>Comment: None</i>				
Planning Documents				
General Plan	Yes	No	Yes	Yes
<i>Is the plan compliant with Assembly Bill 2140? No</i>				
<i>Comment: Undergoing comprehensive General Plan that will bring the Plan into compliance with AB 2140</i>				
Capital Improvement Plan	Yes	No	Yes	Yes
<i>How often is the plan updated? Annually</i>				
<i>Comment: Current plan covers 6-year period from 2020-2026</i>				

	Local Authority	Other Jurisdiction Authority	State Mandated	Integration Opportunity?
Disaster Debris Management Plan <i>Comment: Ventura County Disaster Recovery Plan, Adopted by BOS in April 2019</i>	No	Yes	Yes	Yes
Floodplain or Watershed Plan <i>Comment: The Ventura County Watershed Protection creates and maintains countywide plans</i>	No	Yes	Yes	Yes
Stormwater Plan <i>Comment: The City of Ventura has joined other jurisdictions to form the Ventura Countywide Stormwater Quality Management Program and is named as a co-permittee under a revised countywide municipal National Pollutant Discharge Elimination System permit for stormwater discharges issued by the Regional Water Quality Control Board in 2010 (Order R4-2010-0108)</i>	Yes	Yes	Yes	Yes
Urban Water Management Plan <i>Comment: 2020 Urban Water Management Plan approved June 14, 2021</i>	Yes	No	Yes	Yes
Habitat Conservation Plan <i>Comment: The city does not have an existing habitat plan</i>	Yes	Yes	No	Yes
Economic Development Plan <i>Comment: Existing Gap plan developed 2018, funded Econ Dev plan request for proposals anticipated 2022 Spring</i>	Yes	No	No	Yes
Shoreline Management Plan <i>Comment: General Plan. Surfers Point Managed Retreat Project Chapter 24.310, Coastal Protection (CP) Overlay Zone</i>	Yes	Yes	Yes	Yes
Community Wildfire Protection Plan <i>Comment: Current effort to develop a plan due Jan 2022</i>	Yes	No	Yes	Yes
Urban Forest Management Plan <i>Comment: City of San Buenaventura Master Tree Plan, November 9, 2020</i>	Yes	No	No	Yes
Climate Action Plan <i>Comment: Preparation and adoption of a Climate Action Plan is part of the comprehensive General Plan update that is scheduled to be adopted in 2023.</i>	Yes	No	No	No
Comprehensive Emergency Management Plan <i>Comment: Emergency Operations Plan was published and approved May 10, 2021</i>	Yes	No	Yes	Yes
Threat & Hazard Identification & Risk Assessment (THIRA) <i>Comment: The city does not have a complete THIRA.</i>	Yes	No	No	Yes
Post-Disaster Recovery Plan <i>Comment: Incorporated into the EOP May 2021</i>	Yes	No	Yes	Yes
Continuity of Operations Plan <i>Comment: Incorporated into the EOP June 2021</i>	Yes	No	Yes	Yes
Public Health Plan <i>Comment: County of Ventura Health Care Agency Public Health Emergency Response Plan (ERP), 2019</i>	No	Yes	Yes	Yes
Other—Tsunami Plan <i>Comment: The County of Ventura has an existing plan that describes each City role and has been adopted locally. A revision of this document is required within the coming year 2022.</i>	No	Yes	Yes	Yes

Table 11-4. Development and Permitting Capability

Criterion	Response
Does your jurisdiction issue development permits? <i>If no, who does? If yes, which department?</i> Community Development	Yes
Does your jurisdiction have the ability to track permits by hazard area?	Yes
Does your jurisdiction have a buildable lands inventory?	No

Table 11-5. Fiscal Capability

Financial Resource	Accessible or Eligible to Use?
Community Development Block Grants	Yes
Capital Improvements Project Funding	Yes
Authority to Levy Taxes for Specific Purposes	Yes
User Fees for Water, Sewer, Gas or Electric Service	Yes
<i>If yes, specify:</i> Water, Sewer, Electrical Services fees for new construction	
Incur Debt through General Obligation Bonds	Yes
Incur Debt through Special Tax Bonds	Yes
Incur Debt through Private Activity Bonds	Yes
Withhold Public Expenditures in Hazard-Prone Areas	No
State-Sponsored Grant Programs	Yes
Development Impact Fees for Homebuyers or Developers	Yes

Table 11-6. Administrative and Technical Capability

Staff/Personnel Resource	Available?
Planners or engineers with knowledge of land development and land management practices	Yes
<i>If Yes, Department /Position:</i> Community Development / Chief Building Official and Public Works / Principal Civil Engineer	
Engineers or professionals trained in building or infrastructure construction practices	Yes
<i>If Yes, Department /Position:</i> Public Works/ Principal Civil Engineer, Community Development/Planner/inspector	
Planners or engineers with an understanding of natural hazards	Yes
<i>If Yes, Department /Position:</i> Public Works/ Principal Civil Engineer, Community Development/Planner/inspector	
Staff with training in benefit-cost analysis	Yes
<i>If Yes, Department /Position:</i> Finance / Finance Director	
Surveyors	Yes
<i>If Yes, Department /Position:</i> Public Works/ Surveyor	
Personnel skilled or trained in GIS applications	Yes
<i>If Yes, Department /Position:</i> Finance and Technology Department GIS/ Senior GIS Analyst	
Scientist familiar with natural hazards in local area	No
Emergency manager	Yes
<i>If Yes, Department /Position:</i> City Manager's Office, Emergency Services Manager	
Grant writers	Yes
<i>If Yes, Department /Position:</i> City Manager's Office and Multiple other departments	

Table 11-7. Education and Outreach Capability

Criterion	Response
Do you have a public information officer or communications office?	Yes
Do you have personnel skilled or trained in website development?	Yes
Do you have hazard mitigation information available on your website? <i>If yes, briefly describe:</i> On our website, there are references to the County OES website wherein centralized training and outreach can be found related to hazard mitigation education.	Yes
Do you use social media for hazard mitigation education and outreach? <i>If yes, briefly describe:</i> On our website, there are references to the County OES website wherein centralized training and outreach can be found related to hazard mitigation education.	Yes
Do you have any citizen boards or commissions that address issues related to hazard mitigation? <i>If yes, briefly describe:</i> The city of Ventura is currently developing a CERT team	Yes
Do you have any other programs in place that could be used to communicate hazard-related information? <i>If yes, briefly describe:</i> VCALERT, EVERBRIDGE, Email, Mail and Door Knocking	Yes
Do you have any established warning systems for hazard events? <i>If yes, briefly describe:</i> VCALERT, Emergency Notification System, VCSOES, WEA system	Yes

Table 11-8. National Flood Insurance Program Compliance

Criterion	Response
What local department is responsible for floodplain management?	Public Works
Who is your floodplain administrator? (department/position)	Public Works/Senior Engineer
Are any certified floodplain managers on staff in your jurisdiction?	Yes
What is the date that your flood damage prevention ordinance was last amended?	January 11, 2021
Does your floodplain management program meet or exceed minimum requirements?	Meets
When was the most recent Community Assistance Visit or Community Assistance Contact?	12-4-17 Thomas Fire
Does your jurisdiction have any outstanding NFIP compliance violations that need to be addressed?	No
Are any Risk MAP projects currently underway in your jurisdiction? <i>If so, state what they are.</i> FEMA has notified us that they will be studying the Ventura and Santa Clara River flooding	No
Do your flood hazard maps adequately address the flood risk within your jurisdiction?	Yes
Does your floodplain management staff need any assistance or training to support its floodplain management program?	No
Does your jurisdiction participate in the Community Rating System (CRS)? <i>If no, is your jurisdiction interested in joining the CRS program?</i> No	No
How many flood insurance policies are in force in your jurisdiction? ^a <i>What is the insurance in force?</i> \$161,828,500 <i>What is the premium in force?</i> \$374,421	471
How many total loss claims have been filed in your jurisdiction? <i>What were the total payments for losses?</i> \$660,191	62

a. According to FEMA statistics as of March 31, 2021

Table 11-9. Community Classifications

	Participating?	Classification	Date Classified
FIPS Code	Yes	00611165042	N/A
DUNS #	Yes	039974761	N/A
Community Rating System	No	N/A	N/A
Building Code Effectiveness Grading Schedule	No	N/A	N/A
Public Protection	Yes	ISO3	2019
Storm Ready	No	N/A	N/A
Firewise	No	N/A	N/A
Tsunami Ready	Yes	N/A	2012

Table 11-10. Adaptive Capacity for Climate Change

Criterion	Jurisdiction Ratings
Technical Capacity	
Jurisdiction-level understanding of potential climate change impacts <i>Comment:</i>	Low
Jurisdiction-level monitoring of climate change impacts <i>Comment:</i>	Low
Technical resources to assess proposed strategies for feasibility and externalities <i>Comment:</i>	Low
Jurisdiction-level capacity for development of greenhouse gas emissions inventory <i>Comment: City of Ventura has a current Greenhouse Gas inventory.</i>	Medium
Capital planning and land use decisions informed by potential climate impacts <i>Comment: Community Development/Public Works</i>	Medium
Participation in regional groups addressing climate risks <i>Comment: Public Works / Environmental Sustainability—The City has partnerships with a number of regional organizations that support greenhouse gas reduction efforts, including the Ventura County Regional Energy Alliance, Clean Power Alliance, and Tri-County Regional Energy Network (3CRen). The City has also partnered with the Beach Erosion Authority for Clean Oceans and Nourishment (BEACON), Surfrider and other organizations to complete the Surfers Point Managed Retreat Project.</i>	Medium
Implementation Capacity	
Clear authority/mandate to consider climate change impacts during public decision-making processes <i>Comment:</i>	Low
Identified strategies for greenhouse gas mitigation efforts <i>Comment: Draft Energy Action Plan completed in July 2021</i>	Low
Identified strategies for adaptation to impacts <i>Comment: The current update to the General plan has addressed strategies for adaptation to impacts.</i>	Medium
Champions for climate action in local government departments <i>Comment: Environmental Sustainability leads the effort on behalf of the city.</i>	Low
Political support for implementing climate change adaptation strategies <i>Comment: City of Ventura city council is supportive as well as local community-based organizations and environmental organizations.</i>	Low
Financial resources devoted to climate change adaptation <i>Comment:</i>	Low
Local authority over sectors likely to be negative impacted <i>Comment:</i>	Unsure

Criterion	Jurisdiction Ratings
Public Capacity	
Local residents' knowledge of and understanding of climate risk <i>Comment:</i>	Low
Local residents' support of adaptation efforts <i>Comment: Residents are supportive of adaptation efforts, but when implementation become restrictive, they are reticent to advance the course of action.</i>	Medium
Local residents' capacity to adapt to climate impacts <i>Comment: The vulnerable populations within the city may not be able to relocate out of a flood-prone area (homeless encampments), but residents with more resources may be more able to rebuild, retrofit, or otherwise protect their home.</i>	Medium
Local economy current capacity to adapt to climate impacts <i>Comment: The City has water shortage surcharge rates in addition to the base water rates. These surcharges help to fund the water budget during drought stages.</i>	Medium
Local ecosystems capacity to adapt to climate impacts <i>Comment:</i>	Low
a. High = Capacity exists and is in use; Medium = Capacity may exist but is not used or could use some improvement; Low = Capacity does not exist or could use substantial improvement; Unsure= Not enough information is known to assign a rating.	

11.5 INTEGRATION REVIEW

For hazard mitigation planning, “integration” means that hazard mitigation information is used in other relevant planning mechanisms, such as general planning and capital facilities planning, and that relevant information from those sources is used in hazard mitigation. This section identifies where such integration is already in place, and where there are opportunities for further integration in the future. Resources listed at the end of this annex were used to provide information on integration. The progress reporting process described in Volume 1 of the hazard mitigation plan will document the progress of hazard mitigation actions related to integration and identify new opportunities for integration.

11.5.1 Existing Integration

Some level of integration has already been established between local hazard mitigation planning and the following other local plans and programs:

- City of Ventura: General Plan
- City of Ventura: Emergency Operations Plan (EOP)
- Ventura County: Operational Area Emergency Operations Plan

11.5.2 Opportunities for Future Integration

The capability assessment in this annex indicates opportunities to integrate this mitigation plan with other jurisdictional planning/regulatory capabilities. Capabilities were identified as integration opportunities if they can support or enhance the actions identified in this plan or be supported or enhanced by components of this plan. The capability assessment identified the following plans and programs that do not currently integrate hazard mitigation information but provide opportunities to do so in the future:

- **City of Ventura: General Plan**—This comprehensive effort is underway and will be integrated into this effort to be compliant with AB2140.
- **City of Ventura: Evacuation plan**—This comprehensive effort is predicated on grant funds and will be initiated in FY20/21 and will encompass a multi-hazard perspective and routes with appropriate stakeholder/community input.
- **Visit Ventura: Tourist and Visitor disaster plan**—This effort will be a collaboration between the following: Visit Ventura, Chamber of Commerce, Hoteliers and City Emergency Management.
- **City of Ventura: Citizen Emergency Response Team (CERT)**—This effort will be a collaboration between the following: CERT volunteers, City staff, community-based organizations, with the existing DRAFT CERT team manual.

Taking action to integrate each of these programs with the hazard mitigation plan was considered as a mitigation action to include in the action plan in this annex.

11.6 RISK ASSESSMENT

11.6.1 Jurisdiction-Specific Natural Hazard Event History

Table 11-11 lists past occurrences of natural hazards for which specific damage was recorded in this jurisdiction. Other hazard events that broadly affected the entire planning area, including this jurisdiction, are listed in the risk assessments in Volume 1 of this hazard mitigation plan.

Table 11-11. Past Natural Hazard Events

Type of Event	FEMA Disaster #	Date	Damage Assessment
Wind Event	N/A	January 19, 2021	Strong surface high pressure in the Great Basin helped to generate a moderate Santa Ana wind event across Southern California.
Wildfire	N/A	2020	Strong surface high pressure building in the Great Basin generated strong and gusty Santa Ana winds across sections of Ventura and Los Angeles counties.
COVID-19	DR-4482	January 20, 2020. Continuing	Ongoing
High Wind	N/A	2020	Strong surface high pressure in the Great Basin along with strong north to northeast flow aloft generated strong Santa Ana winds across Ventura and Los Angeles counties. North to northeast wind gusts up to 83 mph were reported in the mountains while gusts to 59 mph were reported across the coastal plain.
Wildfire	N/A	2019	Strong surface high pressure building in the Great Basin generated strong and gusty Santa Ana winds across sections of Ventura and Los Angeles counties.
Wind Event	N/A	2018	Strong surface high pressure building in the Great Basin generated strong and gusty Santa Ana winds across sections of Ventura and Los Angeles counties.

Type of Event	FEMA Disaster #	Date	Damage Assessment
Winter Storm	N/A	2018	Strong surface high pressure in the Great Basin helped to generate a moderate Santa Ana wind event across Southern California. Strong northeast winds were reported across the mountains and valleys of Ventura and Los Angeles Counties.
Tornado	N/A	2018	A powerful winter storm brought significant rain, snow and wind to the area. Rainfall totals ranged from 1 to 2 inches across coastal and valleys areas with 2 to 4 inches in the foothills and mountains. With snow levels dropping to between 2500 and 3500 feet, significant snowfall was reported in the mountains (up to 1 to 2 feet) and even the Antelope Valley (4 to 8 inches). Numerous road closures due to winter storm conditions were reported, including Interstate 5 through the Grapevine as well as Highways 14 and 138. Additionally, thunderstorms generated a waterspout over the coastal waters as well as a very weak tornado over Ventura Harbor.
Flash Flood	N/A	2018	High pressure over the four-corners region resulted in an extended monsoonal flow pattern across Southern California. For several days, strong thunderstorms produced heavy rain, flash flooding and large hail across parts of Southern California.
Debris Flow	N/A	2018	A powerful early-season winter storm moves across Southwestern California on Halloween night. The storm produced some significant rainfall with amounts in the coastal areas ranging from 0.25 to 1.50 while the mountains received up to 2.00. In the Camarillo area, near the Springs burn scar, a mud/debris flow occurred. Otherwise just some minor nuisance flooding was reported.
Wildfires, Flooding, Mudflows, and Debris Flows	DR-4353	December 4, 2017- January 31, 2018	Strong surface high pressure building in the Great Basin generated strong and gusty Santa Ana winds across sections of Ventura and Los Angeles counties. North to northeast wind gusts up to 73 mph were reported. During this event, the Thomas Fire ignited across Ventura County, eventually spreading into Santa Barbara County. The Thomas Fire burned 500+ homes in the City of Ventura and destroyed infrastructure including roads, utilities, and utility distribution networks including telecom.
Thunderstorm	N/A	2017	A powerful winter storm brought heavy rain and snow, flash flooding and gusty winds to the area. Rainfall totals from this storm generally ranged between 2 and 6 inches with locally higher amounts in some foothill areas. With such rainfall amounts, there was significant snowfall totals in the local mountains with up to 28 inches of snow reported at the resort level. Additionally, the heavy rain did generate several flash flooding events including several mud and debris flows.
Severe Storm	DR-1267	January 7 – 11, 2005	Flooding and debris flows
Northridge Earthquake	DR-1008	January 17 – November 30, 1994	Power and communications disruptions, damage to structures

11.6.2 Hazard Risk Ranking

Table 11-12 presents a local ranking of all hazards of concern for which this hazard mitigation plan provides complete risk assessments. As described in detail in Volume 1, the ranking process involves an assessment of the likelihood of occurrence for each hazard, along with its potential impacts on people, property, and the economy. Mitigation actions primarily target hazards with high and medium rankings.

Table 11-12. Hazard Risk Ranking

Rank	Hazard	Risk Ranking Score	Risk Category
1	Landslide	33	High
2	Earthquake	32	Medium
3	Severe Storm	24	Medium
4	Severe Weather	24	Medium
5	Flooding	18	Medium
6	Wildfire	18	Medium
7	Dam Failure	12	Low
8	Sea Level Rise	12	Low
9	Tsunami	10	Low
10	Drought	9	Low

11.6.3 Jurisdiction-Specific Vulnerabilities

Volume 1 of this hazard mitigation plan provides complete risk assessments for each identified hazard of concern. This section provides information on a few key vulnerabilities for this jurisdiction. Available jurisdiction-specific risk maps of the hazards are provided at the end of this annex.

Repetitive Loss Properties

Repetitive loss records are as follows:

- Number of FEMA-identified Repetitive-Loss Properties: 4
- Number of FEMA-identified Severe-Repetitive-Loss Properties: N/A
- Number of Repetitive-Loss or Severe-Repetitive-Loss Properties that have been mitigated: N/A

Other Noted Vulnerabilities

The following jurisdiction-specific issues have been identified based on a review of the results of the risk assessment, public involvement strategy, and other available resources:

- **Unreinforced Masonry and Soft Story Structures**—Ventura has several unreinforced masonry buildings and Soft Story buildings within the city limits. These buildings are subject to severe damage or structural collapse during a moderate to severe earthquake.
- **Street and Urban Flooding**—There are numerous areas of the city that flood to varying degrees during periods of high rain. The effects of this flooding range from street closures to damage to property, vehicles and buildings.
- **Power Outages/Emergency Power**—Local power outages including public safety power shutoffs (PSPS) have resulted from high winds and storm conditions as well as from the effects of wildland fire in the region. Many key city buildings including the Main City Hall and Council Chambers buildings have no back-up power or emergency generators.
- **Debris Flows**—Following heavy rains and winter storms, substantial debris flows have occurred in the Santa Clara River, Ventura River, as well as other local streams and culverts. Debris flows following wildland fires are particularly bad and can require removal of material from streams, streets, culverts and beaches.

- **Liquefaction Potential**—Nearly the entire City of Ventura is in a “Liquefaction Zone”. The effects and damage caused by seismic activities can be amplified resulting in increased damage to buildings and infrastructure.
- **Homeless Population**—A significant number of persons commonly defined as “Homeless” live in the Santa Clara River and other undeveloped areas. During wildland fires, storms, and flooding these individuals are at great risk.
- **Tsunami Awareness and Notification**—Ventura has a large visitor and tourist population who may not be aware of the tsunami risk.

Mitigation actions addressing these issues were prioritized for consideration in the action plan in this annex.

11.7 STATUS OF PREVIOUS PLAN ACTIONS

Table 11-13 summarizes the actions that were recommended in the previous version of the hazard mitigation plan and their implementation status at the time this update was prepared.

Table 11-13. Status of Previous Plan Actions

Action Item	Completed	Removed; No Longer Feasible	Carried Over to Plan Update	
			Check if Yes	Action # in Update
OA 4—Relocate or reinforce bike trails, parking lots and other beach access amenities away from the shoreline to restore the beach/shoreline in sea-level rise/coastal erosion areas.			✓	VEN-1
Comment: The Surfers Point Managed Retreat Project Phase 1 has been completed. The Phase 2 design and permitting is nearly complete. The City is pursuing grants for construction. Seaside Wastewater Transfer Station relocation in exploratory phase.				
OA 9—Identify potentially vulnerable public and private utility systems including electric, gas, oil, water, sewer and communication. Upgrade vulnerable systems to ensure the operation and timely restoration of essential systems to reasonable levels of service.			✓	VEN-11
Comment: City of Ventura has multiple projects that meet criteria Southern California Edison has identified and is in the process of hardening their utility infrastructure. SoCalGas is also upgrading their facilities in the city. Water and Wastewater utilities are assessed through current Master Plan evaluations and projects developed for City CIP to address vulnerabilities.				
OA 11—Develop and implement plans to increase the building owner’s general knowledge of and appreciation for the value of seismic upgrading of the building’s structural and nonstructural elements.			✓	VEN-22
Comment: Due to staffing changes this action was not performed				
OA 19—Maintain vegetation management program that provides vegetation management services to elderly, disabled, or low-income property owners who lack the resources to remove flammable vegetation from around their homes.			✓	VEN-17
Comment: Due to limited funding this initiative was not completed.				

11.8 HAZARD MITIGATION ACTION PLAN

Table 11-14 lists the identified actions, which make up the hazard mitigation action plan for this jurisdiction. Table 11-15 identifies the priority for each action. Table 11-16 summarizes the mitigation actions by hazard of concern and mitigation type.

Table 11-14. Hazard Mitigation Action Plan Matrix

Benefits New or Existing Assets	Objectives Met	Lead Agency	Support Agency	Estimated Cost	Sources of Funding	Timeline
Action VEN-1 —Where appropriate, support retrofitting, purchase or relocation of structures located in hazard areas, prioritizing those that have experienced repetitive losses and/or are located in high- or medium-risk hazard areas.						
<u>Hazards Mitigated:</u>	Landslide, Earthquake, Severe Storm, Severe Weather, Flooding, Wildfire, Dam Failure, Sea Level Rise, Tsunami					
New & Existing	1, 4, 6, 9, 10, 11, 16	Public Works		High	Grant Funding-FEMA HMA (BRIC, FMA, HMGP)	Long Term
Action VEN-2 —Incorporate consideration of the FEMA 100-year tide and sea level rise, and climate change-driven extreme storms, into land use planning, shoreline development and dredging. This includes new policies by local jurisdictions, and County and City actions regarding their General Plans, visit Ventura tourist plan, Climate-related Plans, and the development applications.						
<u>Hazards Mitigated:</u>	Severe Storm, Flooding, Sea Level Rise					
New & Existing	1, 2, 3, 4, 6, 10, 15, 17, 19	Community Development	Public Works	Medium	Staff Time, General Funds	Ongoing
Action VEN-3 —Integrate the hazard mitigation plan into other plans, ordinances and programs that dictate land use decisions in the community, including Emergency Operations Plan, Community Climate Action plan, downtown specific plan, Citywide Evacuation Plan, General Plan, and ongoing plan maintenance						
<u>Hazards Mitigated:</u>	Landslide, Earthquake, Severe Storm, Severe Weather, Flooding, Wildfire, Dam Failure, Sea Level Rise, Tsunami, Drought					
New & Existing	1, 2, 10, 11, 12, 15, 16, 19	Community Development	City Manager	Low	Staff Time, General Funds	Ongoing
Action VEN-4 —Continue to maintain good standing and compliance under the NFIP through implementation of floodplain management programs that, at a minimum, meet the NFIP requirements: Enforce the flood damage prevention ordinance, participate in floodplain identification and mapping updates, and provide public assistance/information on floodplain requirements and impacts.						
<u>Hazards Mitigated:</u>	Severe Storm, Severe Weather, Flooding, Dam Failure, Sea Level Rise, Tsunami					
New & Existing	1, 2, 4, 6, 9, 10, 11, 13, 14, 15, 17, 18, 19	Public works		Low	Staff Time, General Funds	Ongoing
Action VEN-5 —Identify and pursue strategies to increase adaptive capacity to climate change including but not limited to the following:						
- Adopt a Climate Action Plan to reflect new State legislation, changing priorities, and environmental sustainability and greenhouse gas (GHG) reduction policies and goals. - Adopt modifications to existing plans and procedures to meet climate change issues and impacts.						
<u>Hazards Mitigated:</u>	Severe Storm, Severe Weather, Flooding, Wildfire, Sea Level Rise, Drought					
New & Existing	1, 3, 4, 9, 10, 13, 14, 15, 16, 17, 19	Community Development (for the Climate Action Plan) Public Works	Ventura Water	Medium	Water and Sanitation Funds	Short Term
Action VEN-6 —Advance long-term resilience to the population (including homeless individuals) to sea level rise and extreme storms for the communities and critical assets adjacent to San Buenaventura Beach, Santa Clara River, Ventura River, and nearby areas of the shoreline, as well as provide environmental, recreation, community/connectivity enhancements where possible.						
<u>Hazards Mitigated:</u>	Landslide, Severe Storm, Severe Weather, Flooding, Sea Level Rise, Tsunami					
Existing	1, 3, 4, 9, 10, 13, 14, 15, 16, 17, 19	City Manager office		Medium	General Funds, Grant Funding-FEMA HMA (BRIC, FMA, HMGP)	Long Term
Action VEN-7 —City Energy, Power, and Communication Systems Reliability. Ensure adequate emergency power and fuel at critical City facilities, including communications equipment, for continuity of government and services. Reliability will include but is not limited to purchasing stationary generators for critical facilities.						
<u>Hazards Mitigated:</u>	Landslide, Earthquake, Severe Storm, Severe Weather, Flooding, Wildfire, Dam Failure, Tsunami					
New & Existing	1, 2, 7, 10, 19	City Manager		Medium	EMPG, DHS, Grant Funding-FEMA HMA (BRIC, HMGP), CDBG Mitigation, General Funds	Short Term

Benefits New or Existing Assets	Objectives Met	Lead Agency	Support Agency	Estimated Cost	Sources of Funding	Timeline
Action VEN-8 —Identify appropriate facility/location for of the City's Emergency Operations Center to ensure state of readiness and designate a back-up Emergency Operations Center and associated systems. This should include the rebuilding or replacement of the current facility to maintain the Emergency Operations Capacity.						
<u>Hazards Mitigated:</u>	Landslide, Earthquake, Severe Storm, Severe Weather, Flooding, Wildfire, Dam Failure, Tsunami					
New & Existing	1, 8, 12, 17, 19	City Manager	N/A	Low	EMPG, DHS, BRIC, CDBG Mitigation, General Funds	Short Term
Action VEN-9 —Consider participation in incentive-based programs such as Tree City, TsunamiReady, and StormReady.						
<u>Hazards Mitigated:</u>	Severe Storm, Severe Weather, Flooding, Wildfire, Tsunami					
New	1, 2, 19	City Manager	N/A	Low	Staff Time, General Funds	Short Term
Action VEN-10 —Develop and implement a program to capture perishable data after significant events (e.g., high water marks, preliminary damage estimates, damage photos, snapshot in time status) to support future mitigation efforts including the implementation and maintenance of the hazard mitigation plan						
<u>Hazards Mitigated:</u>	Landslide, Earthquake, Severe Storm, Severe Weather, Flooding, Wildfire, Dam Failure, Tsunami					
New	1, 2, 4, 6, 8, 10, 11, 14, 15, 16, 17, 18, 19	City Manager	NA	Medium	EM Budget, Staff Time	Short Term
Action VEN-11 —Identify and upgrade potentially vulnerable public and private utility systems, including electric, gas, oil, sewer, and communication, to ensure the operation and timely restoration of essential systems to reasonable levels of service. Including equipment, and critical facilities, (e.g. pump stations, generators, tide gates, stream gages, open channel, and culvert/pipeline infrastructure), to Improve community resilience and response to emergencies.						
<u>Hazards Mitigated:</u>	Landslide, Earthquake, Severe Storm, Severe Weather, Flooding, Wildfire, Dam Failure, Tsunami					
New & Existing	9, 10, 11, 13	Public Works	NA	Medium	Grant Funding-FEMA HMA (BRIC, HMGP), City Capital Project Funding	Long-term
Action VEN-12 —Support green infrastructure projects that enhance resiliency to natural disasters and incorporate green design elements into hazard mitigation projects where feasible.						
<u>Hazards Mitigated:</u>	Severe Storm, Severe Weather, Flooding, Wildfire, Sea Level Rise, Drought					
New & Existing	1, 5, 13, 14, 15, 17	Public Works	N/A	Medium	DHS, EMPG, General Funds, Clean California, Grant Funding-FEMA HMA (BRIC, FMA, HMGP)	Short Term
Action VEN-13 —CIP Complete construction and oversee ongoing operation, maintenance, and mitigation efforts for the Ventura Water Pure Program, which will result in the Identification of strategies to enhance potable reuse infrastructure planning/implementation.						
<u>Hazards Mitigated:</u>	Drought					
New & Existing	1, 2, 3, 4, 9, 13, 15	Ventura Water	Community Development	Medium	General Funds, Water Grants, Grant Funding-FEMA HMA (BRIC, HMGP)	Long term
Action VEN-14 —CIP Complete permitting and construction of the Hall Canyon Channel, Drainage Basin Improvement Project, which will address storm-related flooding.						
<u>Hazards Mitigated:</u>	Severe Storm, Severe Weather, Flooding					
New & Existing	6, 9, 10, 11, 13, 14, 15	Public Works	N/A	Medium	General Funds, Grant Funding-FEMA HMA (BRIC, FMA, HMGP)	Long Term
Action VEN-15 —CIP Emergency Egress. Main Street Bridge replacement project, Olivas Park drive extension and associated infrastructure. Existing bridge is not up to current seismic standards.						
<u>Hazards Mitigated:</u>	Earthquake					
New & Existing	6, 9, 10, 11, 13, 14, 15	Public Works	N/A	High	General Funds, Staff Time, Grant Funding-FEMA HMA (BRIC, HMGP)	Long Term

Benefits New or Existing Assets	Objectives Met	Lead Agency	Support Agency	Estimated Cost	Sources of Funding	Timeline
Action VEN-16 —CIP Continue to Identify and plan upgrades to existing and potential water wells and resources.						
<u>Hazards Mitigated:</u>	Landslide, Earthquake, Severe Storm, Severe Weather, Flooding, Wildfire, Dam Failure, Sea Level Rise, Tsunami, Drought					
New & Existing	3, 9, 10, 13	Ventura Water	N/A	High	Water Grants, State Grants, General Funds, Grant Funding-FEMA HMA (BRIC, FMA, HMGP)	Long Term
Action VEN-17 —Develop a targeted wildfire awareness public information program for property owners, including managing potential fuel sources on their privately owned property. (e.g. Developing a program that assists elderly, disabled, or low-income property owners who lack the resources to remove flammable vegetation from around their homes)						
<u>Hazards Mitigated:</u>	Wildfire					
New & Existing	2, 4, 5, 8, 10, 12	Fire	Parks	Medium	General Funds, Clean California Grant	Short Term
Action VEN-18 —Impose mitigation measures on developers. Increase efforts to reduce landslides and erosion in existing and future development through continuing education of design professionals on mitigation strategies.						
- Educating design professionals and developers on mitigation strategies for existing development in identified hazard areas. - Adopting codes and standards to limit new development in areas identified as high-risk for landslides or erosion.						
<u>Hazards Mitigated:</u>	Landslide, Severe Storm, Flooding, Sea Level Rise, Tsunami					
New & Existing	16, 17, 19	Community Development	Public Works	Low	Staff Time, General Funds, Grant Funding-FEMA HMA (BRIC, FMA, HMGP)	Short Term
Action VEN-19 —Mutual Aid, Participate in general mutual-aid agreements with adjoining jurisdictions for cooperative response to fires, floods, earthquakes, and other disasters						
<u>Hazards Mitigated:</u>	Landslide, Earthquake, Severe Storm, Flooding, Wildfire, Dam Failure, Tsunami					
New & Existing	1, 2, 3, 8, 12, 19	Fire	N/A	Low	Staff Time	Short Term
Action VEN-20 —Through the City's Joint Powers Authority Fire/Rescue provider, the City of Ventura Fire Department, adopt the most current California codes and local regulations, conduct annual inspections of mandated occupancies including multi-family dwellings (i.e. apartments, condos), hotels/motels, and schools to ensure compliance with fire/life safety and hazardous materials requirements, and including inspections of residential care facilities done as requested by of the Department of Social Services. Additionally, perform hazardous materials annual or three-year inspections of sites containing hazardous materials over specified thresholds as a Participating Agency in the California Unified Program Agency in compliance with applicable state laws.						
<u>Hazards Mitigated:</u>	Wildfire					
New & Existing	1, 2, 12, 16, 17, 19	Fire	N/A	High	General Funds, Grant Funding-FEMA HMA (BRIC, HMGP), DHS, Fire funds	Long Term
Action VEN-21 —Retrofit Fire Facilities in accordance with identified gaps found in the Fire Department facilities Structural Analysis, which shows each City fire facility and its associated compliance-related deficits related to local regulations and industry standards.						
<u>Hazards Mitigated:</u>	Landslide, Earthquake, Severe Storm, Severe Weather, Flooding, Wildfire, Dam Failure, Sea Level Rise, Tsunami					
New & Existing	1, 2, 12, 16, 17, 19	Fire	N/A	High	Fire Budget, General Fund, Grant Funding-FEMA HMA (BRIC, HMGP), DHS grants	Short Term
Action VEN-22 —Study the City's existing infrastructure, identify sources of potential funding to upgrade its older facilities, Unreinforced masonry, and soft story building, and install new infrastructure to the latest seismic standards under its Seismic Improvement Plan including but not limited to unreinforced masonry buildings.						
<u>Hazards Mitigated:</u>	Earthquake					
New & Existing	1, 4, 6, 9, 10, 11, 19	Community Development	Public Works	High	General Funds, Grant Funding-FEMA HMA (BRIC, HMGP), DHS, Fire funds	Short Term

Benefits New or Existing Assets	Objectives Met	Lead Agency	Support Agency	Estimated Cost	Sources of Funding	Timeline
Action VEN-23—Improve Tsunami Awareness and Notification capacity within population and visitors to the City of Ventura.						
<u>Hazards Mitigated:</u> Earthquake, Tsunami						
New & Existing	1, 4, 6, 9, 10, 11, 19	City Manager		High	General Funds, Grant Funding-FEMA HMA (BRIC, HMGP), DHS, Fire funds	Short Term

a. Short-term = Completion within 5 years; Long-term = Completion within 10 years; Ongoing= Continuing new or existing program with no completion date

Acronyms used here are defined at the beginning of this volume.

Table 11-15. Mitigation Action Priority

Action #	# of Objectives Met	Benefits	Costs	Do Benefits Equal or Exceed Cost?	Is Project Grant-Eligible?	Can Project Be Funded Under Existing Programs/ Budgets?	Implementation Priority ^a	Grant Pursuit Priority ^a
VEN-1	7	High	High	Yes	Yes	No	Low	Medium
VEN-2	9	Medium	Medium	Yes	No	No	Medium	Low
VEN-3	8	Medium	Low	Yes	No	Yes	High	Low
VEN-4	13	Medium	Low	Yes	No	Yes	High	Low
VEN-5	11	Medium	Medium	Yes	No	No	Medium	Low
VEN-6	11	Medium	Medium	Yes	Yes	No	Low	Medium
VEN-7	5	High	Medium	Yes	Yes	No	Medium	High
VEN-8	5	High	Medium	Yes	Yes	Yes	Medium	High
VEN-9	3	Medium	Low	Yes	No	Yes	High	Low
VEN-10	13	Medium	Medium	Yes	No	No	Medium	Low
VEN-11	4	High	Medium	Yes	Yes	No	Low	Medium
VEN-12	6	Medium	Medium	Yes	Yes	No	Medium	Medium
VEN-13	7	High	Medium	Yes	Yes	No	Low	Medium
VEN-14	7	High	Medium	Yes	Yes	No	Low	Medium
VEN-15	7	High	High	Yes	Yes	No	Low	Medium
VEN-16	4	High	High	Yes	Yes	No	Low	Medium
VEN-17	6	Low	Medium	No	Yes	No	Low	Medium
VEN-18	3	Medium	Low	Yes	Yes	Yes	High	Medium
VEN-19	6	Medium	Low	Yes	No	Yes	High	Low
VEN-20	6	Medium	High	No	Yes	No	Low	Medium
VEN-21	6	High	High	Yes	Yes	No	Medium	High
VEN-22	6	High	High	Yes	Yes	No	Low	High
VEN-23	3	High	High	Yes	Yes	No	Low	High

a. See the introduction to this volume for explanation of priorities.

Table 11-16. Analysis of Mitigation Actions

Hazard Type	Action Addressing Hazard, by Mitigation Type ^a							
	Prevention	Property Protection	Public Education & Awareness	Natural Resource Protection	Emergency Services	Structural Projects	Climate Resilience	Community Capacity Building ^b
High-Risk Hazards								
Landslide	VEN-18	VEN-1, 6, 11, 21	VEN-6, 18		VEN-7, 8, 19		VEN-16	VEN-3, 10
Medium-Risk Hazards								
Earthquake		VEN-1, 11, 15, 21, 22	VEN-23		VEN-7, 8, 19		VEN-16	VEN-3, 10, 22, 23
Severe Storms	VEN-4, 18	VEN-1, 6, 11, 21	VEN-6, 18	VEN-12	VEN-7, 8, 19	VEN-14	VEN-12, 16	VEN-2, 3, 5, 9, 10
Severe Weather	VEN-4, 18	VEN-1, 6, 11, 21	VEN-6, 18	VEN-12	VEN-7, 8, 19	VEN-14	VEN-12, 16	VEN-3, 5, 9, 10
Flooding	VEN-4	VEN-1, 6, 11, 21	VEN-6, 18	VEN-12	VEN-7, 8, 19	VEN-14	VEN-12, 16	VEN-2, 3, 5, 9, 10
Wildfire	VEN-20	VEN-1, 11, 21	VEN-17	VEN-12	VEN-7, 8, 19		VEN-12, 16	VEN-3, 5, 9, 10
Low-Risk Hazards								
Dam Failure	VEN-4	VEN-1, 11, 21			VEN-7, 8, 19		VEN-16	VEN-3, 10
Sea Level Rise	VEN-4, 18	VEN-1, 6, 21	VEN-6, 18	VEN-12			VEN-12, 16	VEN-2, 3, 5
Tsunami	VEN-4, 18	VEN-1, 6, 11, 21	VEN-6, 18, 23		VEN-7, 8, 19	VEN-13		VEN-3, 9, 10, 23
Drought				VEN-12			VEN-12, 16	VEN-3, 5

a. See the introduction to this volume for explanation of mitigation types.

b. Note that the jurisdiction did not identify a need for expansion of financial capabilities, based on existing capabilities. The intent of this hazard mitigation plan is to expand the financial capability of the jurisdiction.

11.9 PUBLIC OUTREACH

Table 11-17 lists public outreach activities in connection with this hazard mitigation plan update for this jurisdiction.

Table 11-17. Local Public Outreach

Local Outreach Activity	Date	Number of People Involved
Social media link and website outreach for the public survey	9-28	118

11.10 INFORMATION SOURCES USED FOR THIS ANNEX

The following technical reports, plans, and regulatory mechanisms were reviewed to provide information for this annex.

- **City of San Buenaventura General Plan**—The General plan is under revision and has been aligned to be compliant with AB2140.
- **City of San Buenaventura Municipal Code**—The municipal code was reviewed for the full capability assessment and for identifying opportunities for action plan integration.
- **Flood Damage Prevention Ordinance**—The flood damage prevention ordinance was reviewed for compliance with the National Flood Insurance Program.

- **Health and Safety Code Section 13146**—Specifies the inspections the Fire Department is mandated by state law to perform annually.
- **California Code of Regulations Title 27**—Specifies hazardous materials regulations enforced by the Ventura Fire Department as a Participating Agency in the statewide Certified Unified Program.
- **California Government Code 51179-82**—Specifies fire defensible requirements around structures.
- **California, Amending Division 12, Part 4, of the San Buenaventura Municipal Code, entitled “Floodplain Regulations”** to comply with FEMA revisions to those regulations to meet the FEMA Model Ordinance in conjunction with the new California Coastal Analysis and Mapping Project that provides new maps for the coastal communities in Southern California that will be adopted by FEMA on January 29, 2021
- **Hazard Mitigation Plan Annex Development Toolkit**—The toolkit was used to support the identification of past hazard events and noted vulnerabilities, the risk ranking, and the development of the mitigation action plan.

11.11 FUTURE NEEDS TO BETTER UNDERSTAND RISK/VULNERABILITY

The City of Ventura will perform a Threat and Hazard Identification and Risk Assessment (THIRA) process to help the community understand the normal set of risks it faces. By identifying and prioritizing those threats, a community can then prioritize revisions and realignment of actions in this plan over time.

11.12 ADDITIONAL COMMENTS

The City of Ventura intends to continuously review and adjust this document annually.

San Buenaventura

Critical Facilities (1 of 2)

- Food, Water, Shelter
- Health and Medical
- Safety and Security

- Major Roads
- ▭ Selected City
- ▭ Incorporated Cities
- ▭ County Boundary

Data Sources: Ventura Co., VCFD, Casitas MWD, Calleguas MWD, City of Camarillo, CA Energy Commission, Cal Trans, EPA, HIFLD, Esri



0 0.5 1 2 Miles

San Buenaventura

Critical Facilities (1 of 2)

- Communications
- Energy
- Hazardous Material
- Transportation
- Major Roads
- Selected City
- Incorporated Cities
- County Boundary

Data Sources: Ventura Co., VCFD, Casitas MWD, Calleguas MWD, City of Camarillo, CA Energy Commission, Cal Trans, EPA, HIFLD, Esri



0 0.5 1 2 Miles

San Buenaventura

Dam Failure Inundation Areas

-  Combined Inundation Areas
-  Major Roads
-  Selected City
-  Incorporated Cities
-  County Boundary

Data Sources: Ventura Co.,
CA DWR, Esri



0 0.5 1 2 Miles

San Buenaventura

NEHRP Soil Class

- C (Dense soil/soft rock)
- D (Stiff soil)
- E (Soft clay)
- Major Roads
- Selected City
- Incorporated Cities
- County Boundary

Data Sources: Ventura Co.,
CGS, Esri



0 0.5 1 2 Miles

San Buenaventura

Liquefaction Susceptibility

-  Liquefaction zone
-  Major Roads
-  Selected City
-  Incorporated Cities
-  County Boundary

Data Sources: Ventura Co.,
Esri



0 0.5 1 2 Miles

San Buenaventura

100-Year Probabilistic Earthquake Scenario

Mercalli Intensity Scale

 VII (Very Strong/Moderate)

 Major Roads

 Selected City

 Incorporated Cities

 County Boundary

Intensity scale described as:
(perceived shaking / potential damage)

Data Sources: Ventura Co.,
USGS, Esri



0 0.5 1 2 Miles

San Buenaventura

Oak Ridge M7.16 Earthquake Scenario

Mercalli Intensity Scale

- VII (Very Strong/Moderate)
- VIII (Severe/Moderate-Heavy)

Major Roads

Selected City

Incorporated Cities

County Boundary

Intensity scale described as:
(perceived shaking / potential damage)

Data Sources: Ventura Co.,
USGS, Esri



0 0.5 1 2 Miles

San Buenaventura

Pitas Point M7.12 Earthquake Scenario

Mercalli Intensity Scale

- VII (Very Strong/Moderate)
- VIII (Severe/Moderate-Heavy)

- Major Roads
- Selected City
- Incorporated Cities
- County Boundary

Intensity scale described as:
(perceived shaking / potential damage)

Data Sources: Ventura Co.,
USGS, Esri



0 0.5 1 2 Miles

San Buenaventura

San Cayetano M7.16 Earthquake Scenario

Mercalli Intensity Scale

- VI (Strong/Light)
- VII (Very Strong/Moderate)
- VIII (Severe/Moderate-Heavy)

Major Roads

Selected City

Incorporated Cities

County Boundary

Intensity scale described as:
(perceived shaking / potential damage)

Data Sources: Ventura Co.,
USGS, Esri



0 0.5 1 2 Miles

San Buenaventura

S. San Andreas M8.03 Earthquake Scenario

Mercalli Intensity Scale

 V (Moderate/Very Light)

 VI (Strong/Light)

 Major Roads

 Selected City

 Incorporated Cities

 County Boundary

Intensity scale described as:
(perceived shaking / potential damage)

Data Sources: Ventura Co.,
USGS, Esri



0 0.5 1 2
 Miles

San Buenaventura

FEMA Flood Hazard Areas

- 1% Annual Chance Flood (100-Year)
- 0.2% Annual Chance Flood (500-Year)
- Major Roads
- Selected City
- Incorporated Cities
- County Boundary

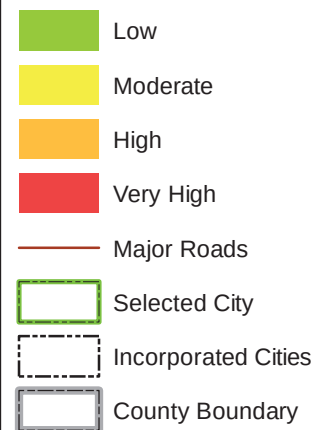
Data Sources: Ventura Co.,
FEMA, Esri



0 0.5 1 2 Miles

San Buenaventura

Susceptibility to Deep-Seated Landslides



Data Sources: Ventura Co.,
CGS, Esri



0 0.5 1 2 Miles

San Buenaventura

Sea Level Rise
of 25 cm (9.8 in.)

-  Sea Level Rise Inundation Area
-  Major Roads
-  Selected City
-  Incorporated Cities
-  County Boundary

Data Sources: Ventura Co.,
OCOF, Esri



0 0.5 1 2 Miles

San Buenaventura

Sea Level Rise
of 100 cm (39.4 in.)

-  Sea Level Rise Inundation Area
-  Major Roads
-  Selected City
-  Incorporated Cities
-  County Boundary

Data Sources: Ventura Co.,
OCOF, Esri



0 0.5 1 2 Miles

San Buenaventura

Tsunami Inundation Zones

-  Inundation Zones
-  Major Roads
-  Selected City
-  Incorporated Cities
-  County Boundary

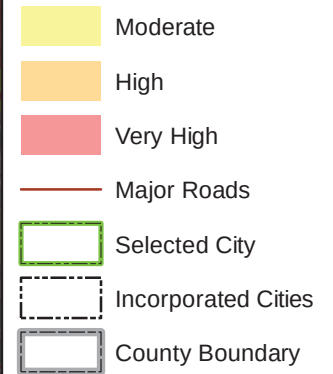
Data Sources: Ventura Co.,
CGS, Esri



0 0.5 1 2 Miles

San Buenaventura

Wildfire Hazard Severity Zones



Data Sources: Ventura Co.,
CAL FIRE, Esri



0 0.5 1 2 Miles

12. CALIFORNIA STATE UNIVERSITY, CHANNEL ISLANDS

12.1 LOCAL HAZARD MITIGATION PLANNING TEAM

Primary Point of Contact

Maggie Tougas, CSUCI Emergency Manager
One University Drive
Camarillo, CA 93012
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Alternate Point of Contact

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This annex was developed by the local hazard mitigation planning team, whose members are listed in Table 12-1.

Table 12-1. Local Hazard Mitigation Planning Team Members

Name	Title
Maggie Tougas	Emergency Manager
Tom Hunt	Assistant Vice President Facilities Services
Joyce Spencer	Director, Environmental Health and Safety
Wesley Cooper	Senior Director, Facilities Services
Roxanne Coryell-Biegel	Sustainability and Energy Manager
Terry Tarr	Assoc. Architect
Carlos Miranda	Assoc. Director Information Security
Dave Carlson	Planning Design & Construction

12.2 JURISDICTION PROFILE

12.2.1 Overview

The California State University Channel Islands (CSUCI) is a public university in Ventura County, California. CSUCI opened in 2002 as the 23rd campus in the California State University system. CSUCI is located midway between Santa Barbara and Los Angeles near Camarillo, at the intersection of the Oxnard Plain and northernmost edge of the Santa Monica Mountains range. The Channel Islands are nearby where the university operates a scientific research station on Santa Rosa Island.

The campus is located about two miles south of the city of Camarillo, at the base of Long Grade Canyon. The school is set on rich agricultural land at the edge of the Oxnard Plain bordered by farms and nestled into the base of the Santa Monica Mountains. The flat site is marked by a lone peak called

Round Mountain (the Chumash name is Sathwiwa). The campus is situated on land historically inhabited by the Chumash.

The site was originally a state hospital and operated from 1936 to 1997. The state hospital was built in a remote area so roads were improved to provide for the campus traffic. The university developed a bus transit network to serve the campus with VISTA buses providing access to Gold Coast Transit in Oxnard and the Camarillo train station. After gaining official possession of the land in 1998, improvements began in 1999 on the 634-acre existing campus-style facility, primarily one to two-story buildings organized around three primary quads. In 2007, the campus acquired an additional 153 acres. Many of the buildings are in the Mission Revival and Spanish Colonial Revival architectural styles, although there are a few “modern” buildings. The campus is split into two primary sections: North Quad and South Quad. In 2012, Del Norte and Madera halls were opened in the North Quad; some of the buildings in the North Quad are still uninhabited and unsafe due to age, which became CSU Channel Islands University Park located adjacent to the campus. The university is a Hispanic-serving institution. Channel Islands offers 54 types of Bachelor’s degrees, 6 different graduate (Master’s) degrees, 19 teaching credentials, and an Ed.D degree. In the fall of 2018, the university enrolled the largest number of students in its history with 7,095 undergraduate and postgraduate students. Since its establishment, the university has awarded over 11,000 students with degrees.

CSUCI is the only four-year public university in Ventura County and in 2010 it received Hispanic Serving Institution status (HSI). The university achieved this status by moving past the threshold of having at least a 25 percent Hispanic student population. The Hispanic/Latino student population was 50% as of the fall of 2017.

Planning for the University began in 1965, when State Senator Robert J. Lagomarsino co-authored Senate Bill 288 calling for establishment of a four-year public college in Ventura County, and Governor Pat Brown signed a bill authorizing a study for a state college for the county. In 1974, Dr. Joyce Kennedy established the UC/CSU Ventura Learning Center in Ventura as a partnership between UC Santa Barbara and California State University, Northridge. The Ventura Learning Center became the CSU Northridge Ventura Campus in 1988.

In 1996, J Handel began as the campus planning president to begin development of a public four-year university for the region. In 1997 the CSU Board of Trustees voted to accept the former Camarillo State hospital site for the purpose of transforming it into the CSU’s 23rd campus. At this time the hospital closed. In August 1999, the Ventura Learning Center moved to the Camarillo site as a CSU Northridge satellite facility.

In 2001, the CSU Board of Trustees appointed Richard R. Rush, Ph.D., as Founding President of California State University Channel Islands. While establishing the University structures, Dr. Rush has overseen and participated in the hiring of faculty and the university’s senior staff. On August 16, 2002, CSUCI opened to upper division transfer students and in the fall of 2003, accepted its first freshman class.

The CSUCI Campus President assumes responsibility for the adoption of this plan; Public Safety Staff will oversee its implementation.

12.2.2 Service Area

The District service area covers 1.85 square miles serving a population of approximately 7,000 combined students, faculty, and staff.

12.2.3 Assets

Table 12-2 summarizes the assets of the District and their value.

Table 12-2. Special-Purpose District Assets

Asset	Value
Property	
1,187 acres of land	Unknown
Equipment	
2014 Chevrolet Impala, 1417560	\$40,150
2012 Ford Crown Victoria, 139072	\$6,000
2014 Chevrolet Tahoe, 1322719	\$14,250
2015 Chevrolet Tahoe, 1463257	\$65,000
2017 Chevrolet Tahoe, 1506693	\$65,000
2017 Chevrolet Tahoe, 1526913	\$65,000
2018 Chevrolet Tahoe, 1561135	\$65,000
2011 Ford Crown Victoria, 1362925	\$6,000
2018 Chevrolet Impala, 1551846	\$48,550
2005 4 Seat GEM Cart 1172160	\$4,000
2014 Chevrolet 2500, 1417575 Admin EOC Parking	\$62,000
2016 Chevrolet Colorado, 14698 PSO	\$37,050
Critical Facilities (all default to 1 University Drive, Camarillo)	
Aliso Hall (Science/Lab), West of Central Mall	\$8,636,406
Anacapa Village (Student Housing A, B, C, Pool House), East of Petrero Road	\$28,350,319
Arroyo Hall (Gym)	\$6,121,457
Bell Tower Central (Education), West of South Quad	\$27,368,019
Bell Tower East (Office of Dean Pena), East of South Quad	\$7,276,728
Bell Tower West (Office of the Provost), West of South Quad	\$6,531,890
Broome Library (Library/Classrooms), East of Central Mall	\$60,337,738
Carden School, Camarillo Street	Unknown
Central Plant (HVAC/Facilities), Rear of Ironwood Hall	\$2,778,517
Chaparral Hall (General)	\$813,354
CI Power (Cogen), South of Central Plant	\$15,905,657
Del Norte Hall (Fiscal Resources), South End of North Quad	\$27,651,627
El Dorado Hall (Recreation Center)	\$1,818,956
Ironwood Hall (Facilities Services), East of Central Plant	\$6,300,580
Islands Cafe (Food Service), North of Topanga Hall	\$3,172,669
Lindero Hall (Administration)	\$2,490,846
Malibu Hall (General)	\$4,769,335
Manzanita Hall (General)	\$1,636,032
Martin V. Smith Decision Center (Lecture Hall, Conference Rooms)	\$1,596,020
Modoc Hall (Science Labs, Classrooms)	\$880,258

Asset	Value
Napa Hall (Administrative Office)	\$5,055,083
Ojai Hall (Data/Tech/EOC), North of Bell Tower	Unknown
OPC Shops (Corp Yard)	\$2,084,347
Placer Hall (General)	\$3,421,414
PD and Dispatch, Placer Hall	Unknown
Sage Hall (General)	\$8,014,973
Santa Cruz Village (Student Housing D, E, F) West of South Quad	\$32,250,010
Santa Rosa Village (Student Housing), East of South Quad	\$60,122,800
Sierra Hall (Science/Lab), East of Central Mall	\$33,254,128
Solano Hall (HR/Employment), West of North Quad	\$5,427,456
Student Union (Food/Recreation), North of Bell Tower West	\$11,312,460
Topanga Hall (Art Studio)	\$2,548,247
Town Center (Housing/Food Service), East of Broome Library	Unknown
University Hall (Office of the President), North of Central Mall	\$6,027,735
Water Storage Tank, Channel Islands Drive/Camarillo Street	Unknown
Yuba Hall (Student Health Services), South of Rincon Drive	Unknown
Total:	\$383,955,061

12.3 CURRENT TRENDS

The campus is under continuing construction to accommodate the projected growth of the university. While there are about 7,000 registered students, projected enrollment for the year 2025 is 15,000 full-time students.

12.4 CAPABILITY ASSESSMENT

This section describes an assessment of existing capabilities for implementing hazard mitigation strategies. The introduction at the beginning of this volume of the hazard mitigation plan describes the components included in the capability assessment and their significance for hazard mitigation planning.

Findings of the capability assessment were reviewed to identify opportunities to expand, initiate or integrate capabilities to further hazard mitigation goals and objectives. Where such opportunities were identified and determined to be feasible, they are included in the action plan. The “Analysis of Mitigation Actions” table in this annex identifies these as community capacity building mitigation actions. The findings of the assessment are presented as follows:

An assessment of planning and regulatory capabilities is presented in Table 12-3.

An assessment of fiscal capabilities is presented in Table 12-4.

An assessment of administrative and technical capabilities is presented in Table 12-5.

An assessment of education and outreach capabilities is presented in Table 12-6.

Classifications under various community mitigation programs are presented in Table 12-7.

The community’s adaptive capacity for the impacts of climate change is presented in Table 12-8.

Table 12-3. Planning and Regulatory Capability

Plan, Study or Program	Most Recent Update	Comment
Executive Order 987	2019	Building Operations and Maintenance
California Building Code	2019	Building design standards
Policy Number: FA.32.003 Strategic Risk Management	2019	Identifies and Assesses risks to the campus
Communicable Disease Response Plan	2020	Addresses communicable disease management.
CSU Channel Islands Exterior Building Management Plan	2014	Exterior buildings management; stormwater management.
Executive Order 1039	2017	Policy on Occupational Safety
Emergency Operations Plan	2018	Preparation, Response and Recovery.
Executive Order 1014	2017	Business Continuity Plan

Table 12-4. Fiscal Capability

Financial Resource	Accessible or Eligible to Use?
Community Development Block Grants	No
Capital Improvements Project Funding	Yes
Authority to Levy Taxes for Specific Purposes	No
User Fees for Water, Sewer, Gas or Electric Service	No
Incur Debt through General Obligation Bonds	No
Incur Debt through Special Tax Bonds	No
Incur Debt through Private Activity Bonds	No
Withhold Public Expenditures in Hazard-Prone Areas	No
State-Sponsored Grant Programs	Yes
Development Impact Fees for Homebuyers or Developers	Yes

Table 12-5. Administrative and Technical Capability

Staff/Personnel Resource	Available?
Planners or engineers with knowledge of land development and land management practices <i>If Yes, Department /Position:</i> Facilities services, use consultants from Chancellor's Office	Yes
Engineers or professionals trained in building or infrastructure construction practices <i>If Yes, Department /Position:</i> Engineering consultants, Facilities Services Director. Enter Response	Yes
Planners or engineers with an understanding of natural hazards <i>If Yes, Department /Position:</i> Facilities Services, consultants.	Yes
Staff with training in benefit-cost analysis <i>If Yes, Department /Position:</i> Dept. of Business and Finance, Assistant Vice President Budget and Planning	Yes
Surveyors	No
Personnel skilled or trained in GIS applications <i>If Yes, Department /Position:</i> Facilities Services, Environmental Health and Safety	Yes
Scientist familiar with natural hazards in local area <i>If Yes, Department /Position:</i> Facilities Services, Environmental Health and Safety, CSUCI Faculty ESRM	Yes
Emergency Manager <i>If Yes, Department /Position:</i> Public Safety	Yes
Grant writers <i>If Yes, Department /Position:</i> Academic Affairs	Yes
Other <i>If Yes, Department /Position:</i> Facilities Services Environmental Impacts 2004	Yes

Table 12-6. Education and Outreach Capability

Criterion	Response
Do you have a public information officer or communications office?	Yes
Do you have personnel skilled or trained in website development?	Yes
Do you have hazard mitigation information available on your website? <i>If yes, briefly describe:</i> COVID prevention and mitigation, Evacuation Plan	Yes
Do you use social media for hazard mitigation education and outreach? <i>If yes, briefly describe:</i> Facebook, Twitter, and Instagram for emergency preparedness activities	Yes
Do you have any citizen boards or commissions that address issues related to hazard mitigation?	No
Do you have any other programs in place that could be used to communicate hazard-related information? <i>If yes, briefly describe:</i> Public Safety Fair, Flood and Fire Prevention	Yes
Do you have any established warning systems for hazard events? <i>If yes, briefly describe:</i> Informacast, CI Alert Notification Systems	No

Table 12-7. Community Classifications

	Participating?	Classification	Date Classified
FIPS Code	No	N/A	N/A
DUNS#	Yes	796879943	N/A
Community Rating System	No	N/A	N/A
Building Code Effectiveness Grading Schedule	No	N/A	N/A
Public Protection	No	N/A	N/A
Storm Ready	Yes	N/A	September 19, 2019
Firewise	No	N/A	N/A
Tsunami Ready	No	N/A	N/A

Table 12-8. Adaptive Capacity for Climate Change

Criterion	Jurisdiction Rating ^a
Technical Capacity	
Jurisdiction-level understanding of potential climate change impacts <i>Comment: Climate change is taught in ESRM and biology classes, faculty have been doing research in climate change for a number of years, utilization of solar lighting, electric carts and buses, a climate change action plan is in process.</i>	Medium
Jurisdiction-level monitoring of climate change impacts <i>Comment: Faculty and staff are conducting research and continue to monitor and address impacts</i>	Medium
Technical resources to assess proposed strategies for feasibility and externalities <i>Comment:</i>	Low
Jurisdiction-level capacity for development of greenhouse gas emissions inventory <i>Comment: CI consistently conducts inventory for GH emissions. The CSU requires the campus to exceed California Green Building Code standards.</i>	High
Capital planning and land use decisions informed by potential climate impacts <i>Comment: Continued implementation of solar lighting, generators and batteries</i>	Medium
Participation in regional groups addressing climate risks <i>Comment: CI holds meetings discussing climate issues once a month, conducts research with the National Park Service and State parks, Dept. of Fish and Game</i>	Medium

Criterion	Jurisdiction Rating ^a
Implementation Capacity	
Clear authority/mandate to consider climate change impacts during public decision-making processes <i>Comment: There is a system-wide goal to reduce greenhouse gas emissions. Currently working on a plan. More classes will be offered on this subject in ESRM and biology.</i>	Medium
Identified strategies for greenhouse gas mitigation efforts <i>Comment: There is a system-wide goal to reduce greenhouse gas emissions. Currently working on a plan. More classes will be offered on this subject in ESRM and biology.</i>	Medium
Identified strategies for adaptation to impacts <i>Comment:</i>	Low
Champions for climate action in local government departments <i>Comment:</i>	Low
Political support for implementing climate change adaptation strategies <i>Comment:</i>	Low
Financial resources devoted to climate change adaptation <i>Comment: We have no budget for this at CI.</i>	Low
Local authority over sectors likely to be negative impacted <i>Comment:</i>	Low
Public Capacity	
Local residents' knowledge of and understanding of climate risk <i>Comment: Conducted presentations on climate impact to faculty, staff and students</i>	Medium
Local residents' support of adaptation efforts <i>Comment: N/A</i>	Low
Local residents' capacity to adapt to climate impacts <i>Comment: Unknown</i>	Low
Local economy current capacity to adapt to climate impacts <i>Comment: Unknown</i>	Low
Local ecosystems capacity to adapt to climate impacts <i>Comment: Unknown</i>	Low

- a. High = Capacity exists and is in use; Medium = Capacity may exist, but is not used or could use some improvement;
Low = Capacity does not exist or could use substantial improvement; Unsure= Not enough information is known to assign a rating.

12.5 INTEGRATION REVIEW

For hazard mitigation planning, “integration” means that hazard mitigation information is used in other relevant planning mechanisms, such as capital facilities planning, and that relevant information from those sources is used in hazard mitigation. This section identifies where such integration is already in place, and where there are opportunities for further integration in the future. Resources listed at the end of this annex were used to provide information on integration. The progress reporting process described in Volume 1 of the hazard mitigation plan will document the progress of hazard mitigation actions related to integration and identify new opportunities for integration.

12.5.1 Existing Integration

Some level of integration has already been established between local hazard mitigation planning and the following other local plans and programs:

- **CSU Channel Islands Capital Improvement Plan, Facilities Plan**—Incorporate new and updated hazards information relevant to the CSUCI Campus and University Glen Neighborhood. The hazard mitigation plan may identify new possible funding sources for capital improvement projects and may result in modifications to proposed projects based on results of the risk assessment.
- **CSUCI Emergency Operations Plan (EOP), 2018 (pending approval)**—Hazard Summary for the campus needs updating. Hazards referenced in the Ventura County Multi-Hazard Mitigation Plan for more specific information.
- **Wildfire Reduction and Preparedness Plan**—Year round recommendations for defensible space remediation and smoke intrusion into campus buildings.
- **Capital Improvement Plan**—The capital improvement plan includes projects that can help mitigate potential hazards.
- **Exterior Building Management Plan**—CSU Channel Islands property maintains a comprehensive exterior and hardscape management plan, using as a guideline, the standards developed by the US Green Building's Council's LEED program. The plan incorporates best management practices which significantly reduce the use of harmful chemicals, energy waste, water waste, air pollution, solid waste and/or chemical runoff as compared to traditional practices

12.5.2 Opportunities for Future Integration

The capability assessment in this annex indicates opportunities to integrate this mitigation plan with other jurisdictional planning/regulatory capabilities. Capabilities were identified as integration opportunities if they can support or enhance the actions identified in this plan or be supported or enhanced by components of this plan. The capability assessment identified the following plans and programs that do not currently integrate hazard mitigation information but provide opportunities to do so in the future:

- **Climate Action Plan**—Adopting a formal plan indicates the institution's commitment to reducing its global warming impact. Since multiple facets of an institution's operations can help reduce emissions, developing a climate action strategy can help an institution realize its sustainability goals as well as climate targets. Currently, the Campus is in the process of writing a Climate Action Plan.
- **Capital Improvement Projects**—Capital improvement project proposals may take into consideration hazard risks and provide mitigation recommendations as a means of evaluating project prioritization.
- **Post-Disaster Recovery Plan**—The campus addresses recovery and is part of the Ventura County Long Term Recovery Group and Ventura County VOAD (Voluntary Organizations Active in Disaster). The campus utilizes the specific goals, objectives and processes from the Long-Term Recovery Group and VC VOAD. The campus will also utilize particular aspects that are included in the Ventura County EOP.

Taking action to integrate each of these programs with the hazard mitigation plan was considered as a mitigation action to include in the action plan in this annex.

12.6 RISK ASSESSMENT

12.6.1 Jurisdiction-Specific Natural Hazard Event History

Table 12-9 lists past occurrences of natural hazards for which specific damage was recorded in this jurisdiction. Other hazard events that broadly affected the entire planning area, including this jurisdiction, are listed in the risk assessments in Volume 1 of this hazard mitigation plan.

Table 12-9. Past Natural Hazard Events

Type of Event	FEMA Disaster #	Date	Damage Assessment
COVID-19 Pandemic	DR-4482	January 20, 2020 and continuing	The campus did not experience any property damages from COVID19 just emergency protective measures response related costs, telecommuting costs, testing, workplace safety inserts (plexiglass, HVAC upgrades) total approximately \$5,000,000.00
Maria Fire	FM-5302	November 1, 2019	Campus was not directly impacted by this fire, however, The Arc of Ventura County opened a community shelter at the Camarillo Community Center.
Hill/Woolsey Fire		November 2018	Campus directly affected, Fire approached campus, campus impacted by smoke. Campus was closed for numerous days.
Wildfires, Flooding, Mudflows, and Debris Flows (Thomas Fire)	DR-4353	December 4, 2017- January 31, 2018	Although this fire burned 281,893 acres in both Ventura County and Santa Barbara County, the campus was only indirectly impacted by smoke, however, faculty, staff and students were unable to go to work or class due to the compromised 101 corridor in Montecito.
Flooding		February 18, 2017	Localized flooding of the campus due to a severe storm closed the campus for several days.
Springs Fire	FM-5024	May 2 – 11, 2013	24,251 acres burned; The campus was surrounded by fire, lots of smoke damage, melted cell towers and irrigation lines, one outbuilding destroyed and several buildings damaged. Campus was closed for numerous days.
Wildfires, Flooding, Mudflows, and Debris Flows; Springs Fire		December 14, 2014	Camarillo Springs near campus had a significant mudslide. Campus had moderate flooding on the roads in and out of campus.
Wildfires, Flooding, Mudflows, and Debris Flows	DR-1731	October 21 – March 31, 2008	Although Ventura County was impacted by the Ranch Fire, the campus was not directly impacted except for heavy smoke.
Shekell Fire	FM-2681	December 3 – 6, 2006	This fire burned in Fillmore and Moorpark. The campus had no direct impacts from the fire only indirectly from smoke.
Day Fire	FM-2677	September 25 – 30, 2006	The campus was not directly impacted except for heavy smoke.
Topanga Fire	FM-2583	September 28 – October 10, 2005	The campus was not directly impacted except for smoke.
Severe Storms, Flooding, Landslides, and Mud and Debris Flows	DR-1585	February 16 – 23, 2005	City experienced localized flooding. No significant losses were documented. The campus was affected due to road closures.

Type of Event	FEMA Disaster #	Date	Damage Assessment
Severe Storms, Flooding, Debris Flows, and Mudslides	DR-1577	December 27, 2004 – January 11, 2005	Water and mudslides damaged structures in the city.
Wildfires, Flooding, Mudflow and Debris Flow	DR-1498	October 21, 2003 – March 31, 2004	The campus was not directly impacted from the fires in Piru and Fillmore except for heavy smoke
CSUCI opened in 2002. Therefore, damage prior to 2002 affected the area now known as CSUCI.			
Severe Winter Storms and Flooding	DR-1203	February 2 – April 30, 1998	Backed up storm drains caused flooding.
Severe Winter Storms, Flooding, Landslides, Mud Flows	DR-1046	February 13 – April 19, 1995	Localized flooding and clogged storm drains.
Severe Winter Storms, Flooding, Landslides, Mud Flows	DR-1044	January 3 – February, 1995	Localized flooding and clogged storm drains.
Northridge Earthquake	DR-1008	January 17 – November 30, 1994	Structure and infrastructure damages.
Fires, Mud & Landslides, Soil Erosion, Flooding	DR-1005	October 26 – April 22, 1994	Multiple fires around Ventura County and subsequent flooding. Smoke and flooding impacts
Severe Storm, Winter Storm, Mud & Landslides, Flooding	DR-979	January 5 – March 20, 1993	Localized street flooding.
Snow Storm, Heavy Rain, High Winds, Flooding, Mudslide	DR-935	February 10 – 19, 1992	City experienced localized street flooding.
Severe Freeze	DR-894	December 19, 1990 – January 3, 1991	Countywide damages.
Grass, Wildlands, Forest Fires	DR-739	June 26 – July 19, 1985	Area was not directly impacted except for heavy smoke.
Coastal Storms, Floods, Slides, Tornadoes	DR-677	January 21 – March 30, 1983	Flooding
Severe Storms, Mudslides, Flooding	DR-615	January 8, 1980	Flooding countywide.

12.6.2 Hazard Risk Ranking

Table 12-10 presents a local ranking of all hazards of concern for which this hazard mitigation plan provides complete risk assessments. As described in detail in Volume 1, the ranking process involves an assessment of the likelihood of occurrence for each hazard, along with its potential impacts on people, property, and district operations. Mitigation actions primarily target hazards with high and medium rankings.

Table 12-10. Hazard Risk Ranking

Rank	Hazard	Risk Ranking Score	Risk Category
1	Earthquake	32	Medium
2	Severe Storms	24	Medium
2	Severe Weather	24	Medium
4	Dam Failure	22	Medium
5	Flooding	18	Medium
5	Landslide	18	Medium
7	Wildfire	12	Medium
8	Drought	9	Low

12.6.3 Other Noted Vulnerabilities

Volume 1 of this hazard mitigation plan provides complete risk assessments for each identified hazard of concern. The following jurisdiction-specific issues have been identified based on a review of the results of the risk assessment, public involvement strategy, and other available resources:

- Wildfire frequently affects the campus. Campus structures and communication towers have been burned or been damaged. Smoke damage is the most frequent event.
- Flooding regularly occurs during periods of heavy rainfall. One campus dormitory regularly floods.
- Climate Change amplified in the future.

Mitigation actions addressing these issues were prioritized for consideration in the action plan in this annex.

12.7 HAZARD MITIGATION ACTION PLAN

Table 12-11 lists the actions that make up the hazard mitigation action plan for this jurisdiction. Table 12-12 identifies the priority for each action. Table 12-13 summarizes the mitigation actions by hazard of concern and mitigation type.

Table 12-11. Hazard Mitigation Action Plan Matrix

Benefits New or Existing Assets	Objectives Met	Lead Agency	Support Agency	Estimated Cost	Sources of Funding	Timeline ^a
Action CSU-1—Where appropriate, support retrofitting, purchase or relocation of structures located in hazard areas, prioritizing those that have experienced repetitive losses and/or are located in high- or medium-risk hazard areas.						
<u>Hazards Mitigated:</u> Earthquake, Flooding, Severe Storms, Landslide						
Existing	9, 10, 11	Facilities Services		High	Staff Time, General Funds, Grant Funding- FEMA HMA (BRIC, FMA, HMGP)	Short-term
Action CSU-2—Actively participate in the plan maintenance protocols outlined in Volume 1 of this hazard mitigation plan.						
<u>Hazards Mitigated:</u> All hazards						
New & Existing	8, 19	Public Safety		Low	Staff Time, General Funds	Short-term
Action CSU-3—Purchase solar back up batteries and solar panels to sustain adequate power in campus buildings.						
<u>Hazards Mitigated:</u> All hazards						
New & Existing	2, 6	Facilities Services	Chancellor's Office	Medium	Staff Time, General Funds, Grant Funding- FEMA HMA (BRIC, FMA, HMGP)	Short-term

Benefits New or Existing Assets	Objectives Met	Lead Agency	Support Agency	Estimated Cost	Sources of Funding	Timeline ^a
Action CSU-4 —Harden earthen dam by way of debris basin infrastructure and spillway located above University Glen community and student housing in Town Center.						
<u>Hazards Mitigated:</u>	Flooding, Severe Storms					
Existing	2, 9, 10, 11, 14, 15	Facilities Services		High	Staff Time, General Funds, Grant Funding- FEMA HMA (BRIC, FMA, HMGP)	Short-term
Action CSU-5 —Replace undersized reclaimed water lines to increase capacity, create sustainability and mitigate flooding.						
<u>Hazards Mitigated:</u>	Flooding, Severe Weather, Drought					
Existing	6, 9, 10, 11, 14	Facilities Services		High	Staff Time, General Funds, Grant Funding- FEMA HMA (BRIC, FMA, HMGP)	Short Term
Action CSU-6 —Harden infrastructure of two bridges on campus. Bridges are compromised during storm events and rip rap is eroding at the base of the bridges.						
<u>Hazards Mitigated:</u>	Flooding, Severe Weather					
Existing	6, 9, 10, 11, 15	Facilities Services		Medium	Staff Time, General Funds, Grant Funding- FEMA HMA (BRIC, FMA, HMGP)	Short Term
Action CSU-7 —Create and maintain defensible space around structures and other infrastructure to coordinate with existing Emergency Operations Plan actions.						
<u>Hazards Mitigated:</u>	Wildfire					
New & Existing	5, 6, 9	Facilities Services	Cal Fire, Chancellor's Office	Low	Staff Time, General Funds, Grant Funding- FEMA HMA (BRIC, FMAP and HMGP)	Short Term
Action CSU-8 —Retrofit Modoc Hall by replacing windows with energy-efficient tempered glass that will not shatter during seismic activity or severe windstorms, and will reduce energy loss from heating and air conditioning.						
<u>Hazards Mitigated:</u>	Earthquake, Severe Storms					
Existing	6, 9, 11	Facilities Services		High	Staff Time, General Funds, Grant Funding- FEMA HMA (BRIC, HMGP)	Short Term

a. Short-term = Completion within 5 years; Long-term = Completion within 10 years; Ongoing= Continuing new or existing program with no completion date

Acronyms used here are defined at the beginning of this volume.

Table 12-12. Mitigation Action Priority

Action #	# of Objectives Met	Benefits	Costs	Do Benefits Equal or Exceed Cost?	Is Project Grant-Eligible?	Can Project Be Funded Under Existing Programs/ Budgets?	Implementation Priority ^a	Grant Pursuit Priority ^a
1	3	High	High	Yes	Yes	No	Medium	High
2	2	Medium	Low	Yes	No	Yes	High	Low
3	2	High	Medium	Yes	Yes	No	Medium	High
4	6	High	High	Yes	Yes	No	Medium	High
5	5	High	High	Yes	Yes	No	Medium	High
6	5	High	Medium	Yes	Yes	No	Medium	High
7	3	High	Low	Yes	Yes	No	Medium	High
8	3	High	High	Yes	Yes	No	Medium	High

a. See the introduction to this volume for explanation of priorities.

Table 12-13. Analysis of Mitigation Actions

Hazard Type	Action Addressing Hazard, by Mitigation Type ^a							
	Prevention	Property Protection	Public Education & Awareness	Natural Resource Protection	Emergency Services	Structural Projects	Climate Resilient	Community Capacity Building ^b
Medium-Risk Hazards								
Earthquake		CSU-1, 8	CSU-2	CSU-3	CSU-3			CSU-2
Severe Storms		CSU-1, 8	CSU-2	CSU-3	CSU-3	CSU-4		CSU-2
Severe Weather		CSU-6	CSU-2	CSU-3, 5	CSU-3	CSU-5	CSU-5	CSU-2
Dam Failure			CSU-2	CSU-3	CSU-3			CSU-2
Flooding		CSU-1, 6	CSU-2	CSU-3, 5	CSU-3	CSU-4, 5	CSU-5	CSU-2
Landslide		CSU-1	CSU-2	CSU-3	CSU-3			CSU-2
Wildfire			CSU-2	CSU-3, 7	CSU-3			CSU-2, 7
Low-Risk Hazards								
Drought			CSU-2	CSU-3, 5	CSU-3	CSU-5	CSU-5	CSU-2

a. See the introduction to this volume for explanation of mitigation types.

b. Note that the jurisdiction did not identify a need for expansion of technical and administrative or financial capabilities, based on existing capabilities. The intent of this hazard mitigation plan is to expand the financial capability of the jurisdiction.

12.8 PUBLIC OUTREACH

Table 12-14 lists public outreach activities for this jurisdiction.

Table 12-14. Local Public Outreach

Local Outreach Activity	Date	Number of People Involved
VC VOAD General Membership Meeting	June 17, 2021	40
VC VOAD Executive Board Meeting	June 9, 2021	7
VC VOAD General Membership Meeting	September 16, 2021	50
Postings on Facebook, Twitter	July 2021-September 2021	400+

12.9 INFORMATION SOURCES USED FOR THIS ANNEX

The following technical reports, plans, and regulatory mechanisms were reviewed to provide information for this annex.

- **Executive Order 987, Building Operations and Maintenance**—Reviewed for the capabilities assessment and action plan development.
- **Policy Number: FA.32.003 Strategic Risk Management**—Reviewed for the capabilities assessment.
- **Communicable Disease Response Plan**—Reviewed for the capabilities assessment.
- **CSU Channel Islands Exterior Building Management Plan**—Reviewed for the capabilities assessment and action plan development.
- **Executive Order, Policy on Occupational Safety**—Reviewed for the capabilities assessment.

- **Emergency Operations Plan**—Reviewed for the capabilities assessment and action plan development.
- **Executive Order, Business Continuity Plan**—Reviewed for the capabilities assessment.

The following outside resources and references were reviewed:

- **Hazard Mitigation Plan Annex Development Toolkit**—The toolkit was used to support the identification of past hazard events and noted vulnerabilities, the risk ranking, and the development of the mitigation action plan.
- **Ventura County Hazard Mitigation Plan 2015**—The previous hazard mitigation plan was reviewed when developing mitigation actions.
- **Cal OES Hazard Mitigation Plan 2018**—The state hazard mitigation plan was reviewed when developing mitigation actions.

12.10 FUTURE NEEDS TO BETTER UNDERSTAND RISK/VULNERABILITY

- Workshops, training and education for the campus community.
- Develop and strengthen a campus Hazard Mitigation Planning Team.
- Hire a Risk Manager for the campus.

13. CALLEGUAS MUNICIPAL WATER DISTRICT

13.1 LOCAL HAZARD MITIGATION PLANNING TEAM

Primary Point of Contact

Daniel Cohen, Emergency Response
Coordinator
2100 E. Olsen Road
Thousand Oaks, CA 91360
Telephone: 805-579-7134
e-mail Address: dcohen@calleguas.com

Alternate Point of Contact

Rob Peters, Manager of Operations and
Maintenance
2100 E. Olsen Road
Thousand Oaks, CA 91360
Telephone: 805-579-7136
e-mail Address: rpeters@calleguas.com

This annex was developed by the local hazard mitigation planning team, whose members are listed in Table 13-1.

Table 13-1. Local Hazard Mitigation Planning Team Members

Name	Title
Daniel Cohen	Emergency Response Coordinator
Rob Peters	Manager of Operations and Maintenance
Kristine McCaffrey	Manager of Engineering
Dan Drugan	Manager of Resources
Sue Taylor	Accounting Supervisor
Julio Reyes	Operations Supervisor

13.2 JURISDICTION PROFILE

13.2.1 Overview

The Calleguas Municipal Water District (Calleguas, District) was formed in 1953 as voters in southern Ventura County were faced with limited local water supplies, recurring droughts, and an expanding population and economy. In 1960, Calleguas joined the Metropolitan Water District of Southern California (Metropolitan) as a way of securing water from the state water system. The District's mission is to provide its service area with a reliable supplemental supply of regional and locally developed water in an environmentally and economically responsible manner.

Calleguas is an independent special district with 70 employees who work in Administrative Services, Engineering, Operations and Maintenance, and Resources divisions. The District operates on funding that comes primarily through operating revenues and water rates, and is supplemented by non-operating revenues and investment earnings.

Calleguas is governed by an elected five-member Board of Directors, which assumes responsibility for the adoption of this plan. The General Manager will oversee the plan's implementation.

13.2.2 Service Area

Calleguas is a wholesale water provider that imports and distributes water from Metropolitan through the State Water Project. A majority of the District's water supply is treated at Metropolitan's Jensen Treatment Facility in Granada Hills and conveyed into Calleguas' distribution system. Calleguas does not deliver water directly to consumers, but serves high quality drinking water to 19 retail purveyors within its service area that then deliver water to residents and municipal and agricultural customers.

The District serves an area of approximately 366 square miles in southeast Ventura County and an estimated 635,000 residents, or roughly three quarters of Ventura County's population. Communities served by Calleguas include the cities of Camarillo, Moorpark, Oxnard, Port Hueneme, Simi Valley, and Thousand Oaks; and the unincorporated areas of Bell Canyon, Camarillo Estates, Camarillo Heights, Lake Sherwood, Naval Base Ventura County, Oak Park, Santa Rosa Valley, and Somis.

Calleguas' distribution system is made up of 140 miles of large diameter transmission pipelines, 12 potable water reservoirs, 6 potable water pump stations, 5 hydroelectric generators, 20 pressure regulating stations, and 91 service connections (turnouts). The District also owns and operates Lake Bard, an earthen open-surface reservoir, and associated water filtration plant, as well as an aquifer storage and recovery (ASR) project with 18 ASR wells and an associated disinfection facility.

13.2.3 Assets

Table 13-2 summarizes the assets of the District and their value.

Table 13-2. Special-Purpose District Assets

Asset	Value
<i>Property</i>	
887 acres	Unknown
<i>Equipment</i>	
Calleguas Conduit Surge Relief Facility	\$267,749
Conejo Generating Station	\$1,627,029
Conejo Mobile Standby Generators	Unknown
Conejo Standby Generators	\$3,337,558
Crestview Interconnection	\$1,560,585
Distribution System Pipelines: 140 miles, various diameters (14"-78")	Unknown
East Portal Standby Generator	\$71,822
Emergency Pipe Yard	\$1,759,356
Fairview Standby Generator	Unknown
Grandsen Generating Station	\$1,166,850
Grandsen Standby Generators	\$2,908,577
Grandsen Surge Tank	\$612,825
Mesa Pressure Relief Station	\$2,187,000
Pressure Regulating Station 1	\$35,034

Asset	Value
Pressure Regulating Station 1A	\$35,034
Pressure Regulating Station 2	\$219,790
Pressure Regulating Station 3	\$42,621
Pressure Regulating Station 4	\$69,781
Pressure Regulating Station 5	\$42,621
Pressure Regulating Station 6	\$133,355
Pressure Regulating Station 6A	\$42,621
Pressure Regulating Station 7	\$42,621
Pressure Regulating Station 8	\$42,621
Pressure Regulating Station 9	\$52,286
Reg Station 6 Standby Generator	\$9,965
Reg Station 9 Standby Generator	Unknown
Santa Rosa Generating Station	\$952,557
Santa Susana Tunnel	Unknown
Salinity Management Pipeline (SMP) Phase 1A	\$13,579,369
SMP Phase 1B	\$13,617,662
SMP Phase 1C	\$8,978,601
SMP Phase 1D	\$4,858,495
SMP Phase 1E	\$32,756,801
SMP Phase 2A	\$8,636,675
SMP Phase 2B	\$13,260,190
SMP Phase 2C	\$5,743,806
SMP Phase 2D	\$4,939,862
SMP Hueneme Outfall	\$21,352,277
Springville Flow Control Facility	\$1,440,415
Springville Generating Station	\$3,053,878
Springville Standby Generators	Unknown
Vehicle Fleet	Unknown
Well 1	\$777,480
Well 2	\$777,480
Well 3	\$777,480
Well 4	\$777,480
Well 5	\$773,964
Well 6	\$1,143,577
Well 7	\$1,141,924
Well 8	\$836,705
Well 9	\$1,154,833
Well 10	\$881,306
Well 11	\$768,269
Well 12	\$773,964
Well 13	\$774,560
Well 14	\$836,705
Well 15	\$1,066,882

Asset	Value
Well 16	\$1,066,883
Well 17	\$806,428
Well 18	\$814,091
Wellfield Standby Generators	Unknown
Total:	\$165,388,300
Critical Facilities	
Calleguas Administration Building	\$4,909,768
Conejo Pump Station	\$4,225,361
Conejo Reservoir	Unknown
East Portal	\$3,513,041
Fairview Pump Station	\$1,584,922
Grandsen Pump Station 1	\$5,344,699
Grandsen Pump Station 2	\$2,486,828
Grimes Canyon Disinfection Facility	\$3,235,725
Lake Bard	\$2,795,730
Lake Bard Water Filtration Plant	\$14,377,027
Lake Sherwood Pump Station	Unknown
Lake Sherwood Reservoir	\$1,503,910
Lindero Pump Station	\$2,526,679
Lindero Reservoir	\$3,198,563
Newbury Park Reservoir	\$1,900,000
SMP Control Tank	\$3,708,277
Springville Reservoir A	\$1,109,000
Springville Reservoir B	\$4,139,655
Thousand Oaks Reservoir	\$12,980,000
TOD Pump Station	\$2,064,923
West Portal Overflow Structure	\$1,463,000
Westlake Reservoir	\$12,745,905
Wood Ranch Dam	Unknown
Total:	\$89,813,013

13.3 CURRENT TRENDS

When Calleguas joined Metropolitan in 1960, its service area was approximately 270 square miles. The Calleguas service area reached 366 square miles in 2010. Since 2000, the frequency and size of annexations into Calleguas' service boundary have slowed considerably. Future annexations are anticipated to continue at a relatively small size and rate, and Calleguas has no plans to significantly expand its service area.

13.4 CAPABILITY ASSESSMENT

This section describes an assessment of existing capabilities for implementing hazard mitigation strategies. The introduction at the beginning of this volume of the hazard mitigation plan describes the components included in the capability assessment and their significance for hazard mitigation planning.

Findings of the capability assessment were reviewed to identify opportunities to expand, initiate or integrate capabilities to further hazard mitigation goals and objectives. Where such opportunities were identified and determined to be feasible, they are included in the action plan. The “Analysis of Mitigation Actions” table in this annex identifies these as community capacity building mitigation actions. The findings of the assessment are presented as follows:

- An assessment of planning and regulatory capabilities is presented in Table 13-3.
- An assessment of fiscal capabilities is presented in Table 13-4.
- An assessment of administrative and technical capabilities is presented in Table 13-5.
- An assessment of education and outreach capabilities is presented in Table 13-6.
- Classifications under various community mitigation programs are presented in Table 13-7.
- The community’s adaptive capacity for the impacts of climate change is presented in Table 13-8.

Table 13-3. Planning and Regulatory Capability

Plan, Study or Program	Date of Most Recent Update	Comment
Capital Improvement Program	2021	Updated at least annually, covers a 5-year timeframe.
Emergency Action Plan & Inundation Maps for Wood Ranch Dam	2020-21	Updated at least every 10 years in accordance with California Water Code 6160-6161.
Emergency Response Plan	2020	Updated regularly and self-certified with EPA at least every 5 years in accordance with America’s Water Infrastructure Act of 2018.
Master Plan	2017	Updated as needed.
Risk and Resilience Assessment	2020	Updated and self-certified with EPA every 5 years in accordance with America’s Water Infrastructure Act of 2018.
Urban Water Management Plan	2021	Updated every 5 years in accordance with the Urban Water Management Planning Act.
Water Supply Alternatives Study	Ongoing	Evaluation of potential approaches to meet water supply needs during a 6-month outage of imported water.

Table 13-4. Fiscal Capability

Financial Resource	Accessible or Eligible to Use?
Community Development Block Grants	No
Capital Improvements Project Funding	Yes
Authority to Levy Taxes for Specific Purposes	No
User Fees for Water, Sewer, Gas or Electric Service	No
<i>If yes, specify:</i> Calleguas does not directly provide water to homes or businesses, therefore customer user fees are not directly collected. User fees are collected by the District’s purveyors, which ultimately contribute to funding sources used by those purveyors to purchase water from Calleguas.	
Incur Debt through General Obligation Bonds	Yes
Incur Debt through Special Tax Bonds	No
Incur Debt through Private Activity Bonds	No
Withhold Public Expenditures in Hazard-Prone Areas	No
State-Sponsored Grant Programs	Yes
Development Impact Fees for Homebuyers or Developers	No

Table 13-5. Administrative and Technical Capability

Staff/Personnel Resource	Available?
Planners or engineers with knowledge of land development and land management practices <i>If Yes, Department /Position:</i> This resource is available through contract support.	Yes
Engineers or professionals trained in building or infrastructure construction practices <i>If Yes, Department /Position:</i> Engineering Department / Manager of Engineering, Project Managers, and Inspectors.	Yes
Planners or engineers with an understanding of natural hazards <i>If Yes, Department /Position:</i> Engineering Department / Manager of Engineering, Project Managers, and Inspectors.	Yes
Staff with training in benefit-cost analysis <i>If Yes, Department /Position:</i> This resource is available through contract support.	Yes
Surveyors <i>If Yes, Department /Position:</i> This resource is available through contract support.	Yes
Personnel skilled or trained in GIS applications <i>If Yes, Department /Position:</i> Administrative Services Department / Information Technology Specialist.	Yes
Scientist familiar with natural hazards in local area <i>If Yes, Department /Position:</i> This resource is available through contract support.	Yes
Emergency manager <i>If Yes, Department /Position:</i> Operations & Maintenance Department / Emergency Response Coordinator.	Yes
Grant writers <i>If Yes, Department /Position:</i> Engineering Department / Manager of Engineering.	Yes
Procurement Services and Management <i>If Yes, Department /Position:</i> Administrative Services Department, Operations & Maintenance Department / General Services Division.	Yes

Table 13-6. Education and Outreach Capability

Criterion	Response
Do you have a public information officer or communications office?	Yes
Do you have personnel skilled or trained in website development?	Yes
Do you have hazard mitigation information available on your website? <i>If yes, briefly describe:</i> Information is available regarding specific plans and capital projects that relate to specific hazard mitigation activities.	Yes
Do you use social media for hazard mitigation education and outreach? <i>If yes, briefly describe:</i> Public education through social media is focused on drought mitigation and water conservation.	Yes
Do you have any citizen boards or commissions that address issues related to hazard mitigation?	No
Do you have any other programs in place that could be used to communicate hazard-related information? <i>If yes, briefly describe:</i> Calleguas organizes a banner distribution program and displays signage related to drought mitigation in coordination with water purveyors throughout Ventura County.	Yes
Do you have any established warning systems for hazard events? <i>If yes, briefly describe:</i> Public warning notification procedures are established for potential safety incidents involving a dam breach or failure, as well as hazards not included in this HMP.	Yes

Table 13-7. Community Classifications

	Participating?	Classification	Date Classified
FIPS Code	No	N/A	N/A
DUNS#	Yes	010726883	N/A
Community Rating System	No	N/A	N/A
Building Code Effectiveness Grading Schedule	No	N/A	N/A
Public Protection	No	N/A	N/A
Storm Ready	No	N/A	N/A
Firewise	No	N/A	N/A
Tsunami Ready	No	N/A	N/A

Table 13-8. Adaptive Capacity for Climate Change

Criterion	Jurisdiction Rating ^a
Technical Capacity	
Jurisdiction-level understanding of potential climate change impacts <i>Comment: Calleguas' elected officials and managerial staff understand that climate change is real and requires planned actions to mitigate its impacts.</i>	High
Jurisdiction-level monitoring of climate change impacts <i>Comment: Calleguas regularly monitors climate change impacts on snowpack, water supply conditions, drought, and wildfires.</i>	High
Technical resources to assess proposed strategies for feasibility and externalities <i>Comment: Calleguas has organized and participated in plans and programs that assess mitigation strategies, in addition to utilizing contract support.</i>	High
Jurisdiction-level capacity for development of greenhouse gas emissions inventory <i>Comment: The Calleguas distribution system is primarily a gravity-fed system that generates more power than it uses on an annual basis.</i>	High
Capital planning and land use decisions informed by potential climate impacts <i>Comment: Calleguas complies with the California Environmental Quality Act (CEQA) for projects, which includes an evaluation of climate impacts.</i>	High
Participation in regional groups addressing climate risks <i>Comment: Calleguas Directors and staff actively participate in multiple groups focused on addressing climate risks and impacts, including the Watersheds Coalition of Ventura County and the Ventura County Regional Energy Alliance.</i>	High
Implementation Capacity	
Clear authority/mandate to consider climate change impacts during public decision-making processes <i>Comment: Processes in CEQA require climate change impacts to be considered.</i>	High
Identified strategies for greenhouse gas mitigation efforts <i>Comment: Strategies to mitigate greenhouse gas emissions have been identified and continue to be explored, including additional hydroelectric power generation, water use efficiency programs, and eventual transition of the District's fleet to electric vehicles.</i>	High
Identified strategies for adaptation to impacts <i>Comment: Calleguas actively participates in integrated water resource planning and local water resource development to increase local resilience and reduce reliability on imported water.</i>	High
Champions for climate action in local government departments <i>Comment: Water resources personnel at Calleguas actively organize and coordinate water conservation efforts with local cities, utilities, special districts, and the public across Ventura County.</i>	High

Criterion	Jurisdiction Rating ^a
Political support for implementing climate change adaptation strategies <i>Comment: The District's elected officials actively support strategies that direct preparedness and support measures that encourage adaptability to climate change impacts. Additionally, state and federal representatives serving regions in the District's service area traditionally support legislation intended to mitigate impacts created by climate change.</i>	High
Financial resources devoted to climate change adaptation <i>Comment: Water use efficiency programs financially incentivize efforts to conserve water. Financial resources are also dedicated to capital improvement planning projects, such as development of local water resources and resiliency of water system components, that may be impacted by climate change.</i>	High
Local authority over sectors likely to be negative impacted <i>Comment: Calleguas has jurisdiction over its water supply.</i>	High
Public Capacity	
Local residents' knowledge of and understanding of climate risk <i>Comment: Public capacity is measured in accordance with municipalities and unincorporated areas of Ventura County located in the District's service area.</i>	Medium
Local residents' support of adaptation efforts <i>Comment: Public capacity is measured in accordance with municipalities and unincorporated areas of Ventura County located in the District's service area.</i>	Medium
Local residents' capacity to adapt to climate impacts <i>Comment: Public capacity is measured in accordance with municipalities and unincorporated areas of Ventura County located in the District's service area.</i>	Medium
Local economy current capacity to adapt to climate impacts <i>Comment: Public capacity is measured in accordance with municipalities and unincorporated areas of Ventura County located in the District's service area.</i>	Medium
Local ecosystems capacity to adapt to climate impacts <i>Comment: Public capacity is measured in accordance with municipalities and unincorporated areas of Ventura County located in the District's service area.</i>	Medium
a. High = Capacity exists and is in use; Medium = Capacity may exist, but is not used or could use some improvement; Low = Capacity does not exist or could use substantial improvement; Unsure= Not enough information is known to assign a rating.	

13.5 INTEGRATION REVIEW

For hazard mitigation planning, “integration” means that hazard mitigation information is used in other relevant planning mechanisms, such as capital facilities planning, and that relevant information from those sources is used in hazard mitigation. This section identifies where such integration is already in place, and where there are opportunities for further integration in the future. Resources listed at the end of this annex were used to provide information on integration. The progress reporting process described in Volume 1 of the hazard mitigation plan will document the progress of hazard mitigation actions related to integration and identify new opportunities for integration.

13.5.1 Existing Integration

Some level of integration has already been established between local hazard mitigation planning and the following other local plans and programs:

- **Capital Improvement Program**—The Capital Improvement Program includes projects that can help mitigate potential hazards, as well as address the potential impacts of those hazards on operations and water supply. The District will act to ensure consistency between the HMP and

the current and future capital improvement program. The HMP may identify new possible funding sources for capital improvement projects and may result in modifications to proposed projects based on results of the risk assessment.

- **Emergency Response Plan**—The Emergency Response Plan describes procedures and operations to be executed by Calleguas staff in the event of various types of disasters or emergency situations. Response procedures and action plans, specifically for natural hazards, incorporate mitigation planning efforts recognized in the HMP in order to minimize the impacts to District facilities, infrastructure, equipment, staff, and the public.
- **Master Plan**—The Master Plan includes projects that can help address the potential impacts of hazards on operations and water supply. The District will act to ensure consistency between the HMP and the Master Plan.
- **Risk and Resilience Assessment**—The Risk and Resilience Assessment identifies and evaluates hazards that present the highest risk to the District's infrastructure and measures the resiliency of the District's system against those hazards, including natural hazards. Countermeasures that mitigate impacts and vulnerabilities associated with high-risk hazards are evaluated, including potential mitigation actions that are also recognized and described in the HMP.
- **Urban Water Management Plan**—The Urban Water Management Plan outlines and assesses long-term water resource planning as local and state supplies continually experience highly variable hydrology and impacts of climate change. Water service reliability, water use efficiency efforts, and contingency planning aspects of the Urban Water Management Plan integrate the HMP by incorporating potential mitigation actions.
- **Water Supply Alternatives Study**—The Water Supply Alternatives Study includes projects that can help address the potential impacts of hazards on operations and water supply. The District will act to ensure consistency between the HMP and Water Supply Alternatives Study.

13.5.2 Opportunities for Future Integration

The capability assessment in this annex indicates opportunities to integrate this mitigation plan with other jurisdictional planning/regulatory capabilities. Capabilities were identified as integration opportunities if they can support or enhance the actions identified in this plan or be supported or enhanced by components of this plan. The capability assessment identified the following plans and programs that do not currently integrate hazard mitigation information but provide opportunities to do so in the future:

- **Business Continuity Plan**—The District may assess its existing Business Continuity Plan to expand the plan and update it in accordance with the HMP.
- **Post-Disaster Recovery Plan**—The District may consider preparing a Post-Disaster Recovery Plan that would emphasize the planning goals and strategies identified in the HMP during long-term recovery efforts.
- **Power Outage Response Plan**—The District plans to develop an action plan specifically for responding to various types of power outages, including Public Safety Power Shutoffs (PSPS) and extended blackouts. This plan will incorporate mitigation objectives and other measures identified in the HMP.

Taking action to integrate each of these programs with the hazard mitigation plan was considered as a mitigation action to include in the action plan in this annex.

13.6 RISK ASSESSMENT

13.6.1 Jurisdiction-Specific Natural Hazard Event History

Table 13-9 lists past occurrences of natural hazards for which specific damage was recorded in this jurisdiction. Other hazard events that broadly affected the entire planning area, including this jurisdiction, are listed in the risk assessments in Volume 1 of this hazard mitigation plan.

Table 13-9. Past Natural Hazard Events

Type of Event	FEMA Disaster #	Date	Damage Assessment
COVID-19 Pandemic	DR-4482	01/20/2020	Ongoing.
Easy Fire	FM-5298	10/30/2019	The Easy Fire occurred just north of the District's main facility, interrupting normal operations and requiring most staff to evacuate the property. Although no District facilities were directly impacted, the District's water supply was used for firefighting efforts via distribution pipelines and aerial surface water dips in Lake Bard.
2018 Fires	DR-4407	11/08/2018	The Hill and Woolsey Fires both occurred inside separate areas of the District's service territory. Although no District facilities were directly impacted, the District's water supply was used for firefighting efforts via distribution pipelines and aerial surface water dips in Lake Bard. Power outages caused by the fire also created operational challenges and complications.
Thomas Fire	FM-5224	12/04/2017	District staff provided mutual aid and support to water agencies impacted by this fire, including staffing the water infrastructure liaison position in the County EOC.
Springs Fire	FM-5024	05/02/2013	The District's water supply was used for firefighting efforts.
Guiberson Fire	FM-2839	09/22/2009	The District's water supply was used for firefighting efforts.
Shekell Fire	FM-2681	12/03/2006	The Shekell Fire burned through the District's Wellfield facility but caused minimal damage to equipment and infrastructure. The District's water supply was used for firefighting efforts.
Topanga Fire	FM-2583	09/28/2005	The District's water supply was used for firefighting efforts.
Severe Storms	DR-1577	12/27/2004	\$121,296.45
Simi Fire	DR-1498	10/21/2003	The District's water supply was used for firefighting efforts.
Northridge Earthquake	DR-1008	01/17/1994	The District incurred multiple significant pipeline failures and suffered damages on other components related to the distribution system, reaching costs totaling several hundreds of thousands of dollars to repair or replace assets.

13.6.2 Hazard Risk Ranking

Table 13-10 presents a local ranking of all hazards of concern for which this hazard mitigation plan provides complete risk assessments. As described in detail in Volume 1, the ranking process involves an assessment of the likelihood of occurrence for each hazard, along with its potential impacts on

people, property, and district operations. Mitigation actions primarily target hazards with high and medium rankings.

Table 13-10. Hazard Risk Ranking

Rank	Hazard	Risk Ranking Score	Risk Category
1	Earthquake	32	High
1	Wildfire	32	High
3	Drought	31	High
4	Severe Weather	24	Medium
4	Severe Storms	24	Medium
6	Dam Failure	21	Medium
7	Landslide	18	Medium
8	Flooding	15	Low
9	Sea Level Rise	2	Low
9	Tsunami	2	Low

13.6.3 Other Noted Vulnerabilities

Volume 1 of this hazard mitigation plan provides complete risk assessments for each identified hazard of concern. The following jurisdiction-specific issues have been identified based on a review of the results of the risk assessment, public involvement strategy, and other available resources:

- Strong to severe ground shaking and liquefaction produced by an earthquake on one of many nearby faults could result in significant simultaneous damages to several assets and critical facilities across the District's service area.
- Numerous District assets and critical facilities are located in a very high wildfire severity zone, including multiple pump stations, reservoirs, and water treatment facilities containing hazardous materials.
- Long-term statewide and regional drought could impact the District's imported water supply and strain local water resources and emergency reserves.
- The Santa Susana Tunnel conveys imported water from Metropolitan Water District into the Calleguas distribution system. An impact to the tunnel caused by an earthquake or other natural hazard could completely cut off imported water until the tunnel is repaired or temporary infrastructure is installed.

Mitigation actions addressing these issues were prioritized for consideration in the action plan in this annex.

13.7 STATUS OF PREVIOUS PLAN ACTIONS

Table 13-11 summarizes the actions that were recommended in the previous version of the hazard mitigation plan and their implementation status at the time this update was prepared.

Table 13-11. Status of Previous Plan Actions

Action Item from Previous Plan	Completed	Removed; No Longer Feasible	Carried Over to Plan Update	
			Check if Yes	Action # in Update
OA 9—Identify potentially vulnerable public and private utility systems including electric, gas, oil, water, sewer and communication. Upgrade vulnerable systems to ensure the operation and timely restoration of essential systems to reasonable levels of service. <i>Comment: Although Calleguas has completed several projects to mitigate earthquake hazards, this action item is evergreen and will always remain relevant to Calleguas.</i>			✓	CAL-6
OA 16—Implement landslide stabilization and/or protection measures. Stabilization measures include grading the unstable portion of the slope to a lower gradient, construction of rock buttresses and retaining walls, and drainage improvements. Protection measures include containment and/or diversion of the moving debris, such as walls, berms, ditches and catchment basins. <i>Comment: Calleguas has completed several efforts to mitigate hazards related to erosion and drainage. However, this action item will always remain relevant to Calleguas.</i>			✓	CAL-7
OA 21—Maintain hazards fuel treatment program for areas that have been identified with overgrown/dead brush/trees to reduce the potential for tree-to-tree ignition. Ensure that a “maintenance now” component to provide continued fire resistance is part of the program. <i>Comment: Calleguas maintains a brush clearing and defensible space program to mitigate wildfire risks. These mitigation efforts are completed regularly and will always remain relevant to Calleguas.</i>			✓	CAL-8

13.8 HAZARD MITIGATION ACTION PLAN

Table 13-12 lists the actions that make up the hazard mitigation action plan for this jurisdiction.

Table 13-13 identifies the priority for each action. Table 13-14 summarizes the mitigation actions by hazard of concern and mitigation type.

Table 13-12. Hazard Mitigation Action Plan Matrix

Benefits New or Existing Assets	Objectives Met	Lead Agency	Support Agency	Estimated Cost	Sources of Funding	Timeline ^a
Action CAL-1—Where appropriate, support retrofitting, purchase or relocation of structures located in hazard areas, prioritizing those that have experienced repetitive losses and/or are located in high- or medium-risk hazard areas. <i>Hazards Mitigated:</i> Earthquake, Wildfire, Dam Failure, Landslide, Flooding						
Existing	2, 6, 9, 18	Calleguas MWD	Various	TBD	CIP Funds, HMGP/BRIC Grant Funding	Long-term
Action CAL-2—Improve imported water supply reliability by seismically upgrading Calleguas' Santa Susana Tunnel, which was constructed in the early 1960s. <i>Hazards Mitigated:</i> Earthquake						
Existing	2, 6, 9, 18	Calleguas MWD	N/A	\$4M	CIP Funds, HMGP/BRIC Grant Funding	Long-term
CAL-3—Improve water supply reliability and reduce risk of critical pipeline failure during an earthquake by rehabilitating and/or strengthening segments of Prestressed Concrete Cylinder Pipe (PCCP) in the District's distribution system that are vulnerable to “broken back” failures. <i>Hazards Mitigated:</i> Earthquake						
Existing	2, 6, 9, 18	Calleguas MWD	N/A	\$10M	CIP Funds, HMGP/BRIC Grant Funding	Short and long-term (phased project)

Benefits New or Existing Assets	Objectives Met	Lead Agency	Support Agency	Estimated Cost	Sources of Funding	Timeline ^a
Action CAL-4 —Actively participate in the plan maintenance protocols outlined in Volume 1 of this hazard mitigation plan.						
<u>Hazards Mitigated:</u> All Hazards						
New/Existing	1, 4, 6, 8, 19	Calleguas MWD	N/A	Low	Staff Time, General Funds	Short-term
Action CAL-5 —Purchase generators for critical facilities and infrastructure that lack adequate backup power as listed below.						
<u>Hazards Mitigated:</u> Earthquake, Wildfire, Severe Weather, Severe Storms, Dam Failure, Landslide, Flooding						
Existing, Lindero Pump Station	2, 6, 18	Calleguas MWD	N/A	\$1.3M	CIP Funds, BRIC Grant Funding (pending)	Short-term
Existing, Lake Sherwood Pump Station	2, 6, 18	Calleguas MWD	N/A	\$340,000	CIP Funds, HMGP/BRIC Grant Funding	Short-term
Action CAL-6 —Identify potentially vulnerable public water utility systems. Upgrade vulnerable systems under the District's authority to ensure the operation and timely restoration of essential systems to reasonable levels of service.						
<u>Hazards Mitigated:</u> All Hazards						
New/Existing	2, 6, 9	Calleguas MWD	N/A	Medium	General Funds, HMGP/BRIC Grant Funding	Ongoing
Action CAL-7 —Implement landslide stabilization and/or protection measures. Stabilization measures include grading the unstable portion of the slope to a lower gradient, construction of rock buttresses and retaining walls, and drainage improvements. Protection measures include containment and/or diversion of the moving debris, such as walls, berms, ditches and catchment basins.						
<u>Hazards Mitigated:</u> Landslide						
New/Existing	2, 6, 9	Calleguas MWD	N/A	Medium	CIP Funds, HMGP/BRIC Grant Funding	Ongoing
Action CAL-8 —Maintain wildfire hazard fuel reduction program for areas that have been identified with overgrown or dead brush, trees and weeds to reduce the potential for tree-to-tree ignition. Ensure that a "maintenance now" component to provide continued fire resistance is part of the program. (Coordinates with Ventura County Fire Protection District Action VFP-6)						
<u>Hazards Mitigated:</u> Wildfire						
Existing	5, 13, 14	Calleguas MWD	N/A	Low	General Funds, HMGP/BRIC Grant Funding	Ongoing
Action CAL-9 —Implement projects to help address water supply needs during a 6-month imported water outage.						
<u>Hazards Mitigated:</u> Earthquake, Drought						
New	2, 6, 18	Calleguas MWD	Various	TBD	CIP Funds, IRWM/HMGP/ BRIC Grant Funding	Long-term
Action CAL-10 —The Las Virgenes-Calleguas Interconnection is a cost-effective, mutually beneficial pipeline that can deliver water between agencies if one were to experience a complete or partial water supply interruption that did not significantly affect the other agency.						
<u>Hazards Mitigated:</u> Earthquake						
New	2, 3, 6, 8, 18	Calleguas MWD	Las Virgenes Municipal Water District	\$30M	CIP Funds, Proposition 1 IRWM Grant Funding	Short-term
Action CAL-11 —The Calleguas-Ventura Interconnection is a cost-effective, mutually beneficial pipeline that will be utilized to improve water system reliability for both agencies during water supply shortages that may not significantly affect both jurisdictions at the same time.						
<u>Hazards Mitigated:</u> Earthquake, Drought						
New	2, 3, 6, 8, 18	Calleguas MWD	City of Ventura	\$21M	CIP Funds, IRWM/HMGP/ BRIC Grant Funding	Short-term

Benefits New or Existing Assets	Objectives Met	Lead Agency	Support Agency	Estimated Cost	Sources of Funding	Timeline ^a
Action CAL-12 —The Crestview Well No.8 project involves construction and installation of a new groundwater well, associated components and system connections necessary to deliver water from Crestview Mutual Water Company to Calleguas during an imported water outage.						
<i>Hazards Mitigated:</i> Earthquake						
New	2, 6, 8, 18	Crestview Mutual Water Company	Calleguas MWD	\$2.4M	CIP Funds	Short-term
Action CAL-13 —Lake Bard Pump Station will enable the treatment of approximately 30% of water in Lake Bard that cannot currently be treated by the Lake Bard Water Filtration Plant due to insufficient hydraulic head by pumping that water through the treatment process. This water would likely only need to be treated during a major imported water outage, which could be caused by an earthquake.						
<i>Hazards Mitigated:</i> Earthquake						
New	2, 6, 18	Calleguas MWD	N/A	\$6M	CIP Funds	Short-term
Action CAL-14 —Fairview Well Rehabilitation will help the District meet demands during imported water outages by rehabilitating and performing upgrades on system components to enable operation of Fairview Well, an aquifer storage and recovery well that has not operated since 1998.						
<i>Hazards Mitigated:</i> Earthquake						
New	2, 6, 18	Calleguas MWD	N/A	\$2M	CIP Funds, HMGP/BRIC Grant Funding	Short-term

a. Short-term = Completion within 5 years; Long-term = Completion within 10 years; Ongoing= Continuing new or existing program with no completion date; Acronyms used here are defined at the beginning of this volume.

Table 13-13. Mitigation Action Priority

Action #	# of Objectives Met	Benefits	Costs	Do Benefits Equal or Exceed Cost?	Is Project Grant-Eligible?	Can Project Be Funded Under Existing Programs/ Budgets?	Implementation Priority ^a	Grant Pursuit Priority ^a
CAL-1	4	High	Medium	Yes	Yes	No	Medium	High
CAL-2	4	High	Medium	Yes	Yes	Yes	High	High
CAL-3	4	High	Medium	Yes	Yes	Yes	High	High
CAL-4	5	Medium	Low	Yes	No	Yes	High	Low
CAL-5	3	High	Low	Yes	Yes	Yes	High	High
CAL-6	3	High	Medium	Yes	Yes	No	Medium	High
CAL-7	3	High	Medium	Yes	Yes	No	Medium	High
CAL-8	3	High	Low	Yes	Yes	Yes	High	High
CAL-9	3	High	Medium	Yes	Yes	No	Medium	High
CAL-10	5	High	Medium	Yes	Yes	Yes	High	High
CAL-11	5	High	Medium	Yes	Yes	Yes	High	High
CAL-12	4	High	Medium	Yes	Yes	Yes	High	High
CAL-13	3	High	Medium	Yes	Yes	Yes	High	High
CAL-14	3	High	Medium	Yes	Yes	Yes	High	High

a. See the introduction to this volume for explanation of priorities.

Table 13-14. Analysis of Mitigation Actions

Hazard Type	Action Addressing Hazard, by Mitigation Type ^a							
	Prevention	Property Protection	Public Education & Awareness	Natural Resource Protection	Emergency Services	Structural Projects	Climate Resilient	Community Capacity Building ^b
High-Risk Hazards								
Earthquake	CAL-9	CAL-1, 2, 3, 9	CAL-4		CAL-5, 6	CAL-1, 9, 10, 11, 12, 13		CAL-4, 6, 9, 10, 11, 12, 13, 14
Wildfire	CAL-8	CAL-1, 8	CAL-4	CAL-8	CAL-5, 6, 8	CAL-1		CAL-4, 6, 8
Drought	CAL-9		CAL-4			CAL-9, 11	CAL-9, 11	CAL-4, 6, 9, 11
Medium-Risk Hazards								
Severe Weather			CAL-4		CAL-5, 6			CAL-4, 6
Severe Storms			CAL-4		CAL-5, 6			CAL-4, 6
Dam Failure		CAL-1	CAL-4		CAL-5, 6	CAL-1		CAL-4, 6
Landslide		CAL-1, 7	CAL-4	CAL-7	CAL-5, 6	CAL-1, 7		CAL-4, 6, 7
Low-Risk Hazards								
Flooding		CAL-1			CAL-5, 6	CAL-1		CAL-4, 6
Sea Level Rise								CAL-4, 6
Tsunami								CAL-4, 6

a. See the introduction to this volume for explanation of mitigation types.

b. Note that the jurisdiction did not identify a need for expansion of financial capabilities, based on existing capabilities. The intent of this hazard mitigation plan is to expand the financial capability of the jurisdiction.

13.9 PUBLIC OUTREACH

Table 13-15 lists public outreach activities for this jurisdiction.

Table 13-15. Local Public Outreach

Local Outreach Activity	Date	Number of People Involved
Calleguas board resolution calling for water conservation to reduce demand by 15%	11/17/2021	15
Los Angeles Department of Water and Power (to shift-off state water project supplies), Metropolitan, Las Virgenes, and Calleguas drought press release	10/05/2021	15
Calleguas social media blast promoting public participation in the multi-hazard mitigation plan update	08/02/2021	N/A
Calleguas board adoption of stage 2 drought condition	08/18/2021	15
Calleguas board adoption of stage 4 drought condition—implementation of mandatory conservation	04/15/2015	15
Calleguas board resolution calling for increased water use efficiency	02/05/2014	25

13.10 INFORMATION SOURCES USED FOR THIS ANNEX

The following technical reports, plans, and regulatory mechanisms were reviewed to provide information for this annex.

- **Capital Improvement Program**—The Capital Improvement Program prioritizes projects that have been identified to improve District facilities, infrastructure, and equipment, including

potential mitigation projects. The Capital Improvement Program was used as a source of information while preparing this annex.

- **Emergency Response Plan**—The District's Emergency Response Plan provides response procedures to various emergency incidents, including natural disasters. Several emergency response procedures and operations are intended to mitigate impacts of the incident. This information was reviewed and supported the development of this annex.
- **Master Plan**—The District's Master Plan includes projects that could mitigate the impacts of natural hazards on the water supply and distribution system. This information was referenced during the development of this annex.
- **Risk and Resilience Assessment**—The Risk and Resilience Assessment identifies the natural hazards that pose the largest risk to the District's water supply and infrastructure. Additionally, potential countermeasures to prevent or mitigate risks are included in the assessment. These aspects of the Risk and Resilience Assessment supported the development of this annex.
- **Urban Water Management Plan**—The Urban Water Management Plan provides information on water supplies, demands, and strategies to conserve water and mitigate impacts from natural hazards that could impact the distribution system. Information from the Urban Water Management Plan was utilized to support this annex.
- **Water Supply Alternatives Study**—The Water Supply Alternatives Study focuses on potential projects that could improve the District's water supply portfolio and ultimately increase local resiliency. Ideas in the Water Supply Alternatives Study were used to assist in the creation of this annex.

The following outside resources and references were reviewed:

- **California State Hazard Mitigation Plan (SHMP)**—The 2018 SHMP was referenced in order to understand the state's focus, objectives, and strategies related to hazard mitigation. The SHMP also includes an overview of disaster history, statewide risks, successful mitigation actions, and best practices.
- **Hazard Mitigation Plan Annex Development Toolkit**—The toolkit was used to support the identification of past hazard events and noted vulnerabilities, risk ranking, and the development of the mitigation action plan.
- **Integrated Water Resources Plan (IRP) developed by Metropolitan Water District of Southern California**—The 2020 IRP was prepared in concert with Metropolitan's Urban Water Management Plan and addresses the complexity of developing, maintaining, and delivering water to meet changing demands in face of uncertainties that the Southern California region faces. Climate change experts were consulted throughout the creation of the 2020 IRP, which creates multiple scenarios that could foreseeably occur due to climate change and other factors affecting water resources and demands. The IRP was referenced during development of this annex.
- **Projected Changes in Ventura County Climate**—The 2019 climate change report directed by the Watersheds Coalition of Ventura County projects local climate change impacts from 2021-2040. Climate factors that were assessed include projected changes in temperature, projected changes in precipitation, projected changes in evaporative demand, and considerations regarding atmospheric rivers, projected snowpack, drought, and wildfire. Calleguas participated in the development of the 2019 report as a wholesale water agency, and referenced the report during the development of this annex in the HMP.

- **Ventura County Emergency Operations Plan (EOP)**—The Ventura County EOP identifies countywide procedures for response to a largescale disaster or emergency incident. The County EOP was used as a resource throughout preparation of this annex.
- **Water Surplus and Drought Management Plan (WSDM Plan)**—Metropolitan Water District's WSDM Plan provides principles, goals, and potential actions to manage various water supply conditions. The WSDM Plan was used as a supporting document during development of this annex.

14. CASITAS MUNICIPAL WATER DISTRICT

14.1 LOCAL HAZARD MITIGATION PLANNING TEAM

Primary Point of Contact

Julia Aranda, PE, Engineering Manager
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Alternate Point of Contact

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This annex was developed by the local hazard mitigation planning team, whose members are listed in Table 14-1.

Table 14-1. Local Hazard Mitigation Planning Team Members

Name	Title
Julia Aranda	Engineering Manager
Greg Romey	Safety Officer
Kelley Dyer	Assistant General Manager

14.2 JURISDICTION PROFILE

14.2.1 Overview

The Casitas Municipal Water District was formed in 1952 (as the Ventura River Municipal Water District). In 1956, the Ventura River Project was authorized by Congress, which included the Robles Diversion facility on the Ventura River, the Robles Canal, and the Casitas Dam. The District is governed by a five-member Board of Directors. Funding is primarily from water rates and revenue bonds.

The Casitas Board of Directors assumes responsibility for the adoption of this plan; Casitas Municipal Water District will oversee its implementation.

14.2.2 Service Area

Casitas provides wholesale and retail water service to western Ventura County and is governed by a five-member elected Board of Directors. Communities served include the City of Ojai, Upper Ojai, the Ventura River Valley area, the City of Ventura (west of Mills Road) and the beach communities of Solimar, La Conchita, and Rincon. Originally named the Ventura River Municipal Water District in 1952,

Casitas was formed to provide supplemental water to the agricultural communities in its service area. The service area also includes residential, commercial, and industrial uses. Wholesale customers include the City of Ventura and several special districts and mutual water companies. Casitas has 60 full-time employees, not including those employed at the Lake Casitas Recreation Area.

Casitas' service area covers 136 square miles of land (177 square miles including ocean area). As of December 31, 2020, Casitas had 6,130 service connections. In 2017, Casitas acquired the Ojai Water System from Golden State Water Company (GSWC); this did not increase the service area as GSWC was a wholesale customer of Casitas.

14.2.3 Assets

Table 14-2 summarizes the assets of the District and their value. Many of the District's facilities are on land owned by the United States of America as they were acquired by the US Bureau of Reclamation; these parcels are not included in the table. Casitas operates and maintains the facilities (tanks, pump plants, etc.) on this land.

Table 14-2. Special-Purpose District Assets

Asset	Value
Property	
98.28 acres of land (\$750,000/acre)	\$73,710,000
Equipment	
163.52 miles of pipeline (\$1.25M/mile)	\$204,400,000
28.19 million gallons of storage tanks (\$3/gal)	\$84,570,000
16 pump plants (PP) (75,075 gpm total capacity x \$1,000 per gpm)	\$75,075,000
Generators	\$972,000
Vehicles/Heavy Equipment	\$3,000,000
Total:	\$441,727,000
Critical Facilities	
Avenue No. 1 PP	\$17,950,000
Gardens PP	\$80,000
Avenue No. 2 PP	\$18,800,000
Fairview PP	\$4,670,000
4M PP	\$5,300,000
Grand Avenue PP	\$1,120,000
Upper Ojai PP	\$4,850,000
3M PP	\$1,425,000
Ojai Valley PP	\$10,800,000
Rincon PP	\$5,150,000
Fortress PP	\$400,000
San Antonio PP	\$3,000,000
Signal PP	\$200,000
Arbolada PP	\$390,000
Valley View PP	\$700,000
Heidelberger PP	\$240,000
Oak View Tank	\$21,000,000

Asset	Value
Gardens Tank	\$33,000
Villanova Tank	\$19,500,000
Fairview Tank	\$6,000,000
4M Tank	\$6,000,000
Upper Ojai Tank	\$5,400,000
3M Tank	\$3,000,000
Ojai East Tank	\$9,000,000
Rincon Control Tank	\$750,000
Rincon Balancing Tank	\$7,500,000
Fortress	\$405,000
San Antonio Forebay	\$1,500,000
Signal Tank	\$900,000
Arbolada Tank	\$3,000,000
Running Ridge Tank	\$282,000
Heidelberger Tank	\$300,000
Marion Walker Water Treatment Facility	\$15,000,000
San Antonio Wellfield Treatment Facility	\$5,000,000
District Office	\$5,000,000
Robles Diversion and Fish Passage Facility	\$20,000,000
San Antonio Plant Generator (500 kW)	\$500,000
Marion Walker Water Treatment Plan Generator (350 kW)	\$350,000
Robles Diversion Facility Generator (60 kW)	\$60,000
Heidelberger PP Booster Generator (37 kW)	\$37,000
Signal PP Booster Generator (25 kW)	\$25,000
Vehicles and Heavy Equipment	\$3,000,000
Total:	\$208,617,000

14.3 CURRENT TRENDS

Population is not expected to significantly increase over the next ten years and the District has no plans to expand its service area.

14.4 CAPABILITY ASSESSMENT

This section describes an assessment of existing capabilities for implementing hazard mitigation strategies. The introduction at the beginning of this volume of the hazard mitigation plan describes the components included in the capability assessment and their significance for hazard mitigation planning.

Findings of the capability assessment were reviewed to identify opportunities to expand, initiate or integrate capabilities to further hazard mitigation goals and objectives. Where such opportunities were identified and determined to be feasible, they are included in the action plan. The “Analysis of Mitigation Actions” table in this annex identifies these as community capacity building mitigation actions.

The findings of the assessment are presented as follows:

- An assessment of planning and regulatory capabilities is presented in Table 14-3.
- An assessment of fiscal capabilities is presented in Table 14-4.
- An assessment of administrative and technical capabilities is presented in Table 14-5.
- An assessment of education and outreach capabilities is presented in Table 14-6.
- Classifications under various community mitigation programs are presented in Table 14-7.
- The community's adaptive capacity for the impacts of climate change is presented in Table 14-8.

Table 14-3. Planning and Regulatory Capability

Plan, Study or Program	Date of Most Recent Update	Comment
Emergency Action Plan	2021	Prepared by USBR for Casitas Dam
Standard Specifications and Details	2021	Prepared by District
Emergency Response Plan	2021	Prepared by District
Standard Operating Procedures	2007	Prepared by USBR for Casitas Dam
10 Year Capital Improvement Program	2021	Updated annually by District

Table 14-4. Fiscal Capability

Financial Resource	Accessible or Eligible to Use?
Community Development Block Grants	No
Capital Improvements Project Funding	Yes
Authority to Levy Taxes for Specific Purposes	Yes
User Fees for Water, Sewer, Gas or Electric Service	Yes
<i>If yes, specify:</i> Water	
Incur Debt through General Obligation Bonds	Yes
Incur Debt through Special Tax Bonds	Yes
Incur Debt through Private Activity Bonds	No
Withhold Public Expenditures in Hazard-Prone Areas	No
State-Sponsored Grant Programs	Yes
Development Impact Fees for Homebuyers or Developers	No

Table 14-5. Administrative and Technical Capability

Staff/Personnel Resource	Available?
Planners or engineers with knowledge of land development and land management practices	Yes
<i>If Yes, Department /Position:</i> Engineering/Manager	
Engineers or professionals trained in building or infrastructure construction practices	Yes
<i>If Yes, Department /Position:</i> Engineering/Manager	
Planners or engineers with an understanding of natural hazards	Yes
<i>If Yes, Department /Position:</i> Engineering/Manager	
Staff with training in benefit/cost analysis	Yes

Staff/Personnel Resource	Available?
<i>If Yes, Department /Position:</i> Administration/Chief Financial Officer	
Surveyors	Yes
<i>If Yes, Department /Position:</i> Through Contract	
Personnel skilled or trained in GIS applications	Yes
<i>If Yes, Department /Position:</i> Engineering/GIS Technician	
Scientist familiar with natural hazards in local area	Yes
<i>If Yes, Department /Position:</i> Engineering/Manager	
Emergency manager	Yes
<i>If Yes, Department /Position:</i> Management/General Manager	
Grant writers	Yes
<i>If Yes, Department /Position:</i> Through Contract	
Other	Yes (Operations and Maintenance/Manager)

Table 14-6. Education and Outreach Capability

Criterion	Response
Do you have a public information officer or communications office?	Yes
Do you have personnel skilled or trained in website development?	Yes
Do you have hazard mitigation information available on your website?	No
Do you use social media for hazard mitigation education and outreach?	No
Do you have any citizen boards or commissions that address issues related to hazard mitigation?	No
Do you have any other programs in place that could be used to communicate hazard-related information?	Yes
<i>If yes, briefly describe: Casitas uses our website to post emergency information related to interruptions in service caused by disasters.</i>	
Do you have any established warning systems for hazard events?	No

Table 14-7. Community Classifications

	Participating?	Classification	Date Classified
FIPS Code	No	N/A	N/A
DUNS#	Yes	072927973	N/A
Community Rating System	No	N/A	N/A
Building Code Effectiveness Grading Schedule	No	N/A	N/A
Public Protection	No	N/A	N/A
Storm Ready	No	N/A	N/A
Firewise	No	N/A	N/A
Tsunami Ready	No	N/A	N/A

Table 14-8. Adaptive Capacity for Climate Change

Criterion	Jurisdiction Rating ^a
Technical Capacity	
Jurisdiction-level understanding of potential climate change impacts <i>Comment: Casitas understands climate change impacts on local, regional, and Statewide water supplies</i>	High
Jurisdiction-level monitoring of climate change impacts <i>Comment: Casitas monitors local surface water flows, evaporation rates, and water demands regularly</i>	High
Technical resources to assess proposed strategies for feasibility and externalities <i>Comment: Casitas engages consultants for assistance with water supply alternatives as needed</i>	Medium
Jurisdiction-level capacity for development of greenhouse gas emissions inventory <i>Comment: Casitas staff has this capacity</i>	High
Capital planning and land use decisions informed by potential climate impacts <i>Comment: Casitas manages its own capital planning; Casitas does not have jurisdiction over land use</i>	Medium
Participation in regional groups addressing climate risks <i>Comment: Casitas participates in Upper Ventura River Groundwater Agency, Ojai GMA, and Watersheds Coalition of Ventura County</i>	Medium
Implementation Capacity	
Clear authority/mandate to consider climate change impacts during public decision-making processes <i>Comment: The Board of Directors considers climate change impacts during environmental review of projects under their jurisdiction.</i>	High
Identified strategies for greenhouse gas mitigation efforts <i>Comment: GGs have not been a priority for Casitas</i>	Low
Identified strategies for adaptation to impacts <i>Comment: Casitas uses its Water Efficiency Allocation Program to implement water conservation requirements based on lake level</i>	Medium
Champions for climate action in local government departments <i>Comment: The Board participates in regional organizations advocating groundwater management, drought mitigation, and water resources.</i>	Medium
Political support for implementing climate change adaptation strategies <i>Comment: Casitas' Board considers climate change in planning efforts.</i>	Medium
Financial resources devoted to climate change adaptation <i>Comment: Casitas' funds for capital projects are limited</i>	Low
Local authority over sectors likely to be negative impacted <i>Comment: Casitas is a wholesale and retail agency. The Water Efficiency Allocation Program allows Casitas to impose conservation and penalties.</i>	High
Public Capacity	
Local residents' knowledge of and understanding of climate risk <i>Comment: Residents seem to be informed of climate change and impacts to water supply</i>	Medium
Local residents' support of adaptation efforts <i>Comment: Residents are very vocal about the need for additional water supplies</i>	High
Local residents' capacity to adapt to climate impacts <i>Comment: The majority of customers have surpassed conservation goals</i>	High
Local economy current capacity to adapt to climate impacts <i>Comment: Agricultural customers may have difficulty adapting to climate change impacts to water supply</i>	Medium
Local ecosystems capacity to adapt to climate impacts <i>Comment:</i>	Unsure

- a. High = Capacity exists and is in use; Medium = Capacity may exist, but is not used or could use some improvement;
Low = Capacity does not exist or could use substantial improvement; Unsure = Not enough information is known to assign a rating.

14.5 INTEGRATION REVIEW

For hazard mitigation planning, “integration” means that hazard mitigation information is used in other relevant planning mechanisms, such as capital facilities planning, and that relevant information from those sources is used in hazard mitigation. This section identifies where such integration is already in place, and where there are opportunities for further integration in the future. Resources listed at the end of this annex were used to provide information on integration. The progress reporting process described in Volume 1 of the hazard mitigation plan will document the progress of hazard mitigation actions related to integration and identify new opportunities for integration.

14.5.1 Existing Integration

Some level of integration has already been established between local hazard mitigation planning and the following other local plans and programs:

- **10-year Capital Improvement Plan (CIP)**—Mitigation projects are identified and included in the 10-year CIP. Funding may not be available each year to implement mitigation.
- **Emergency Response Plan (ERP)**—Casitas’ ERP identifies all vulnerable facilities and includes response actions to hazards such as earthquake, wildfire, etc.
- **Emergency Action Plan (EAP)**—The EAP prepared by the US Bureau of Reclamation is updated annually and exercises are held on a regular basis with local emergency response agencies.
- **Urban Water Management Plan (UWMP)**—The UWMP describes the District’s water supplies and demands, and identifies water supply projects to mitigate drought
- **Water Efficiency Allocation Program**—The Water Efficiency Allocation Program includes implementation of water conservation goals depending on the level of Lake Casitas to assist with drought mitigation.

14.5.2 Opportunities for Future Integration

The capability assessment in this annex indicates opportunities to integrate this mitigation plan with other jurisdictional planning/regulatory capabilities. Capabilities were identified as integration opportunities if they can support or enhance the actions identified in this plan or be supported or enhanced by components of this plan. The capability assessment identified the following plans and programs that do not currently integrate hazard mitigation information but provide opportunities to do so in the future:

- **Capital Improvement Projects**—Capital improvement project proposals may take into consideration hazard mitigation potential as a means of evaluating project prioritization.
- **Post-Disaster Recovery Plan**—The District does not have a recovery plan and intends to develop one as a mitigation planning action during the next five years. The plan will build on the mitigation goals and objectives identified in the mitigation plan.

Taking action to integrate each of these programs with the hazard mitigation plan was considered as a mitigation action to include in the action plan in this annex.

14.6 RISK ASSESSMENT

14.6.1 Jurisdiction-Specific Natural Hazard Event History

Table 14-9 lists past occurrences of natural hazards for which specific damage was recorded in this jurisdiction. Other hazard events that broadly affected the entire planning area, including this jurisdiction, are listed in the risk assessments in Volume 1 of this hazard mitigation plan.

Table 14-9. Past Natural Hazard Events

Type of Event	FEMA Disaster #	Date	Damage Assessment
California COVID-19	4482	2020	Ongoing
Thomas Fire	FM-5224	2017	\$692,821
Severe Storms, Flooding, Debris Flows, and Mudslides	DR-1577	2005	\$454,822
Severe Winter Storms and Flooding	DR-1203	1998	\$200,493
Severe Winter Storms, Flooding, Landslides, Mud Flows	DR-1044	1995	\$298,414
Grass, Wildlands, Forest Fires	DR-739	1985	\$43,230
Coastal Storms, Floods, Slides, Tornadoes	DR-677	1983	\$211,950
Severe Storms, Mudslides, Flooding	DR-615	1980	\$186,619
Coastal Storms, Mudslides, Flooding	DR-547	1978	\$1,078,867
Severe Storms, High Tides, Flooding	DR-364	1973	\$97,341
Severe Storms, Flooding	DR-253	1969	\$245,005

14.6.2 Hazard Risk Ranking

Table 14-10 presents a local ranking of all hazards of concern for which this hazard mitigation plan provides complete risk assessments. As described in detail in Volume 1, the ranking process involves an assessment of the likelihood of occurrence for each hazard, along with its potential impacts on people, property, and district operations. Mitigation actions primarily target hazards with high and medium rankings.

Table 14-10. Hazard Risk Ranking

Rank	Hazard	Risk Ranking Score	Risk Category
1	Landslide	39	High
2	Severe Storms	35	High
3	Earthquake	32	High
4	Drought	30	High
4	Severe Weather	30	High
6	Wildfire	24	Medium
7	Flooding	18	Medium
8	Dam Failure	12	Low
9	Sea Level Rise	8	Low
10	Tsunami	7	Low

To develop the Risk Ranking Score for Casitas, first the scores for each category for City of Ojai, City of Ventura, and Unincorporated Ventura County were averaged. Next, for categories for which Casitas has specific experience and damages, the scores were adjusted to be more representative for Casitas'

service area and facilities. This specifically applies to the scores for Dam Failure, Drought, Severe Storms, and Severe Weather for the following reasons:

- **Dam Failure**—The average score was 16 and was adjusted to 12. Casitas Dam is owned by the US Bureau of Reclamation. The original dam was constructed in 1959 and a seismic stability berm was constructed in 1998. The dam is monitored regularly and has an extremely low chance of failure.
- **Drought**—The average score was 9 and was adjusted to 30. Casitas is particularly vulnerable to drought as all water sources are local and dependent on weather. As of October 25, 2021, Lake Casitas is at 33% capacity. If no inflows are received, this represents approximately five years of supply for customer demands. Casitas is currently in Stage 3 of its Water Efficiency Allocation Program and will reevaluate this stage after the 2021/22 winter season. In the event lake capacity is reduced to 30% or less, Casitas would implement Stage 4 of the Water Efficiency Allocation Program.
- **Severe Storms**—The average score was 24 and was adjusted to 35. Due to the topography and geographic location of District facilities, specifically pipelines in canyons and the Robles Diversion Facility adjacent to the Ventura River, damage from severe storms has been significant.
- **Severe Weather**—The average score was 24 and was adjusted to 30. Severe rain causes erosion and landslides where District pipelines are located. Severe hot weather increases evaporation at Lake Casitas as well as customer water demands.

14.6.3 Other Noted Vulnerabilities

Volume 1 of this hazard mitigation plan provides complete risk assessments for each identified hazard of concern. The following jurisdiction-specific issues have been identified based on a review of the results of the risk assessment, public involvement strategy, and other available resources:

- Over the past 60 years, the Rincon 2(M) Main, an 18-inch pipeline through mountainous terrain serving the coastal communities, has been washed out by severe storms/landslides, requiring multiple replacement and relocation projects.
- The District's Marion Walker Pressure Filtration Plant, Administration Building/Operations Center and 19 water storage tanks are in need of seismic assessment and potential retrofits.
- Lake Casitas relies on local water sources and is at 33% capacity as of October 2021. The ongoing drought has strained both surface water diversions and groundwater supplies.
- The Robles Diversion Facility has required several rehabilitation projects due to severe flooding along the Ventura River in 1969, 1973, 1978, 1980, 1995, and 1998 and was damaged in the Thomas Fire.
- The Thomas Fire impacted multiple District facilities resulting in a nearly \$700,000 FEMA claim. Rented mobile generators were used to power pump plants when electrical lines burned.
- The Marion Walker Pressure Filtration Plant, located at the base of Casitas Dam, is at risk of flooding from Coyote Creek, which would impact potable water treatment to all 65,000 District customers.

Mitigation actions addressing these issues were prioritized for consideration in the action plan in this annex.

14.7 STATUS OF PREVIOUS PLAN ACTIONS

Table 14-11 summarizes the actions that were recommended in the previous version of the hazard mitigation plan and their implementation status at the time this update was prepared.

Table 14-11. Status of Previous Plan Actions

Action Item from Previous Plan	Completed	Removed; No Longer Feasible	Carried Over to Plan Update	
			Check if Yes	Action # in Update
CMWD-3—Replace and relocate pipes in vulnerable areas. <i>Comment: Rincon Main at Ayers Creek relocated in 2020. Additional vulnerable pipelines remain.</i>			✓	CAS-1
CMWD-4—Seismic retrofit of Ojai East and Rincon Control Reservoirs. <i>Comment: Incomplete pending completion of Casitas Master Plan.</i>			✓	CAS-4

14.8 HAZARD MITIGATION ACTION PLAN

Table 14-12 lists the actions that make up the hazard mitigation action plan for this jurisdiction.

Table 14-13 identifies the priority for each action. Table 14-14 summarizes the mitigation actions by hazard of concern and mitigation type.

Table 14-12. Hazard Mitigation Action Plan Matrix

Benefits New or Existing Assets	Objectives Met	Lead Agency	Support Agency	Estimated Cost	Sources of Funding	Timeline ^a
Action CAS-1—Replace and relocate pipes in vulnerable areas. (previously CMWD-3)						
<u>Hazards Mitigated:</u> Existing	Landslide, Severe Storms, Severe Weather 9, 10, 11	Casitas Municipal Water District	NA	High	Grant Funding- FEMA HMA (BRIC, FMA, HMGP), General Funds	Short-term
Action CAS-2—Actively participate in the plan maintenance protocols outlined in Volume 1 of this hazard mitigation plan.						
<u>Hazards Mitigated:</u> New & Existing	Landslide, Severe Storms, Earthquake, Drought, Severe Weather, Wildfire, Flooding, Dam Failure, Sea Level Rise, Tsunami 2, 7, 8, 11, 18, 19	County of Ventura	Casitas Municipal Water District	Low	Staff Time, General Funds	Short-term
Action CAS-3—Purchase generators for critical facilities and infrastructure that lack adequate backup power, including Administration Building/Operations Center and pump plants						
<u>Hazards Mitigated:</u> Existing	Earthquake, Severe Weather, Wildfire 2, 6	Casitas Municipal Water District	NA	Medium	Grant Funding- FEMA HMA (BRIC, FMA, HMGP), General Funds	Short-term
Action CAS-4—Seismic evaluation and potential retrofit of Marion Walker Pressure Filtration Plant, Administration Building/Operations Center, District reservoirs (previously CMWD-4 Seismic Retrofit of Ojai East and Rincon Control Reservoirs)						
<u>Hazards Mitigated:</u> Existing	Earthquake 2, 6, 9, 18	Casitas Municipal Water District	NA	High	Grant Funding- FEMA HMA (BRIC, FMA, HMGP), General Funds	Short-term

Benefits New or Existing Assets	Objectives Met	Lead Agency	Support Agency	Estimated Cost	Sources of Funding	Timeline ^a
Action CAS-5—Ventura-Santa Barbara Counties Intertie which will allow Casitas access to 2,000 acre-feet per year of its State Water Project allocation (through facilities owned and operated by Carpinteria Valley Water District) and provides a means to supply water across County lines in the event of an emergency in the event of a supply interruption that did not significantly affect the other agency.						
<u>Hazards Mitigated:</u> Drought, Wildfire, Landslide						
New	2, 6, 8, 18	Casitas Municipal Water District	NA	High	Grant Funding (USBR, DWR), General Funds	Short-term
Action CAS-6—Marion Walker Pressure Filtration Plant Flood Protection						
<u>Hazards Mitigated:</u> Flood, Severe Storms						
Existing	2, 6, 9, 18	Casitas Municipal Water District	NA	High	Grant Funding- FEMA HMA (BRIC, FMA, HMGP), General Funds	Short-term
Action CAS-7—Lake Casitas Recreation Area Vegetation Management						
<u>Hazards Mitigated:</u> Wildfire						
Existing	5, 13, 14, 18	Casitas Municipal Water District	US Bureau of Reclamation	Medium	Grant Funding- FEMA HMA (BRIC, FMAP and HMGP), General Funds	Short-term
Action CAS-8—Add a mitigation page to the Casitas website that references the Ventura County Local Hazard Mitigation Plan and provide applicable updates on action status						
<u>Hazards Mitigated:</u> Landslide, Severe Storms, Earthquake, Drought, Severe Weather, Wildfire, Flooding, Dam Failure, Sea Level Rise, Tsunami						
Existing	17, 19	Casitas Municipal Water District	NA	Low	General Funds	Short-term

a. Short-term = Completion within 5 years; Long-term = Completion within 10 years; Ongoing= Continuing new or existing program with no completion date

Acronyms used here are defined at the beginning of this volume.

Table 14-13. Mitigation Action Priority

Action #	# of Objectives Met	Benefits	Costs	Do Benefits Equal or Exceed Cost?	Is Project Grant-Eligible?	Can Project Be Funded Under Existing Programs/ Budgets?	Implementation Priority ^a	Grant Pursuit Priority ^a
CAS-1	3	Medium	High	No	Yes	No	Low	Medium
CAS-2	6	Medium	Low	Yes	No	Yes	High	Low
CAS-3	2	Medium	Medium	Yes	Yes	No	Medium	Medium
CAS-4	4	Medium	High	No	Yes	No	Low	Medium
CAS-5	4	Medium	High	No	Yes	Yes	Low	Medium
CAS-6	4	Medium	High	No	Yes	No	Low	Medium
CAS-7	4	Medium	Medium	Yes	Yes	No	Medium	Medium
CAS-8	2	Medium	Low	Yes	No	Yes	Low	Low

a. See the introduction to this volume for explanation of priorities.

Table 14-14. Analysis of Mitigation Actions

Hazard Type	Action Addressing Hazard, by Mitigation Type ^a							
	Prevention	Property Protection	Public Education & Awareness	Natural Resource Protection	Emergency Services	Structural Projects	Climate Resilient	Community Capacity Building ^b
High-Risk Hazards								
Landslide	CAS-1	CAS-1	CAS-8				CAS-1, 5	CAS-2, 5, 8
Severe Storms	CAS-1	CAS-1	CAS-8			CAS-6	CAS-1, 6	CAS-2, 6, 8
Earthquake		CAS-3, CAS-4	CAS-8		CAS-3	CAS-3, CAS-4		CAS-2, 4, 8
Drought			CAS-8				CAS-5	CAS-2, 5, 8
Severe Weather	CAS-1	CAS-1	CAS-8		CAS-3		CAS-1	CAS-2, 8
Medium-Risk Hazards								
Wildfire	CAS-7	CAS-7	CAS-8	CAS-7	CAS-3		CAS-5, 7	CAS-2, 5, 8
Flooding		CAS-6	CAS-8			CAS-6	CAS-6	CAS-2, 8
Low-Risk Hazards								
Dam Failure			CAS-8					CAS-2, 8
Sea Level Rise			CAS-8					CAS-2, 8
Tsunami			CAS-8					CAS-2, 8

a. See the introduction to this volume for explanation of mitigation types.

b. Note that the jurisdiction did not identify a need for expansion of financial capabilities, based on existing capabilities. The intent of this hazard mitigation plan is to expand the financial capability of the jurisdiction.

14.9 INFORMATION SOURCES USED FOR THIS ANNEX

The following technical reports, plans, and regulatory mechanisms were reviewed to provide information for this annex.

- **2020 Urban Water Management Plan**—This plan was used to inform the capability assessment.
- **CMWD Emergency Response Plan**—This plan was used to inform the capability assessment.
- **USBR Emergency Action Plan**—This plan was used to inform the capability assessment.
- **CMWD 10-Year Capital Improvement Plan**—This plan was used to inform the capability assessment and develop the action plan.
- **CMWD Standard Specifications and Details**—This plan was used to inform the capability assessment.
- **Casitas Dam Standard Operating Procedures**—This plan was used to inform the capability assessment.
- **Water Efficiency and Allocation Program**—This plan was used to inform the capability assessment.

The following outside resources and references were reviewed:

- **Hazard Mitigation Plan Annex Development Toolkit**—The toolkit was used to support the identification of past hazard events and noted vulnerabilities, the risk ranking, and the development of the mitigation action plan.

14.10 FUTURE NEEDS TO BETTER UNDERSTAND RISK/VULNERABILITY

- Seismic Analysis of Administration Building/Operations Center, Marion Walker Pressure Filtration Plant, and District reservoirs
- Technical and permitting assistance to scope flood protection improvements at Marion Walker Pressure Filtration Plant

15. CHANNEL ISLANDS BEACH COMMUNITY SERVICES DISTRICT

15.1 LOCAL HAZARD MITIGATION PLANNING TEAM

Primary Point of Contact

Peter Martinez, General Manager
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Alternate Point of Contact

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This annex was developed by the local hazard mitigation planning team, whose members are listed in Table 15-1.

Table 15-1. Local Hazard Mitigation Planning Team Members

Name	Title
Peter Martinez	General Manager
Jesus Navarro	Operations Manager
CJ Dillon	Office Manager
Erika Davis	Clerk of the Board

15.2 JURISDICTION PROFILE

15.2.1 Overview

Channel Islands Beach Community Services District (CIBCSO) was created on December 13, 1982, as a result of the demand of the citizens of the beach community for an independent governmental entity to provide solutions to their need for various services, including but not limited to water, sewer, and trash services. A five member elected board governs the District. The District currently employs a staff of 8. Funding comes primarily through water, sewer, and trash rates.

The Channel Islands Beach Community Services District Board of Directors assumes responsibility for the adoption of this plan; the General Manager for CIBCSO will oversee its implementation.

15.2.2 Service Area

The Channel Islands Beach Community Services District serves the unincorporated areas of Ventura County southwest of Port Hueneme and the beach communities south of Oxnard, including the Silverstrand, Hollywood Beach, Hollywood by the Sea, and Channel Islands Harbor. The total current service area is approximately 1 square mile and serves about 10,000 customers via approximately 2,240 service connections.

15.2.3 Assets

Table 15-2 summarizes the assets of the District and their value.

Table 15-2. Special-Purpose District Assets	
Asset	Value
Property	
43 acres of land, District owns 9 lots at estimated \$400,000 each	\$3,600,000 (estimated)
Equipment	
Backhoe	\$40,000
Wach's Valve Turning Trailer	\$50,000
Ford 350 Crane Truck	\$25,000
4 light work trucks 2008-2015 in age	\$32,000
Large Generator	\$18,000
<i>Total:</i>	<i>\$165,000</i>
Critical Facilities	
Well House & Pumping Station 4200 W. Baracuda Way	\$165,000
Sewer Lift Station 529 Ocean Drive & Corner Panama/Highland	\$116,000
Sewer Lift Station 1729 Ocean Drive & 3384 Ocean Drive	\$116,000
Pump Station A-Corner Highland/Roosevelt	\$121,489.00
Pump Station B- 3765 Ocean Drive	\$121,489.00
Pump Station H- Channel Islands Blvd. and Peninsula Rd	\$79,857.00
<i>Total:</i>	<i>\$719,835.00</i>

15.3 CURRENT TRENDS

The population within the Channel Islands Beach Community Services District boundaries is not expected to significantly increase over the next five years and the District has no plans to expand its service area.

The District is legally authorized, but not obligated to provide street maintenance and improvement, street lighting, undergrounding of overhead utilities, fire protection, and police protection. The District does not provide these additional services at this time as the District does not have sufficient revenues for any of these services. The ability of the District to provide these services in the future will depend on upon available revenues and decisions by the Board of Directors and the District electors. These additional services are currently provided by the County of Ventura in the unincorporated areas of the District and by the City of Oxnard within its boundaries.

15.4 CAPABILITY ASSESSMENT

This section describes an assessment of existing capabilities for implementing hazard mitigation strategies. The introduction at the beginning of this volume of the hazard mitigation plan describes the components included in the capability assessment and their significance for hazard mitigation planning.

Findings of the capability assessment were reviewed to identify opportunities to expand, initiate or integrate capabilities to further hazard mitigation goals and objectives. Where such opportunities were identified and determined to be feasible, they are included in the action plan. The “Analysis of Mitigation Actions” table in this annex identifies these as community capacity building mitigation actions. The findings of the assessment are presented as follows:

An assessment of planning and regulatory capabilities is presented in Table 15-3.

An assessment of fiscal capabilities is presented in Table 15-4.

An assessment of administrative and technical capabilities is presented in Table 15-5.

An assessment of education and outreach capabilities is presented in Table 15-6.

Classifications under various community mitigation programs are presented in Table 15-7.

The community’s adaptive capacity for the impacts of climate change is presented in Table 15-8.

Table 15-3. Planning and Regulatory Capability

Plan, Study or Program	Date of Most Recent Update	Comment
Capital Improvement Plan	FY 2021-2022	Through FYE 2026
Emergency Response Plan	December 2021	
Urban Water Management Plan	Adopted June 2021	In coordination with Port Hueneme Water Agency
Sewer System Management Plan	2019	

Table 15-4. Fiscal Capability

Financial Resource	Accessible or Eligible to Use?
Community Development Block Grants	No
Capital Improvements Project Funding	Yes
Authority to Levy Taxes for Specific Purposes	No
User Fees for Water, Sewer, Gas or Electric Service <i>If yes, specify: Water, Sewer, Refuse Collection</i>	Yes
Incur Debt through Wastewater Bonds	Yes
Incur Debt through Special Tax Bonds	No
Incur Debt through Private Activity Bonds	No
Withhold Public Expenditures in Hazard-Prone Areas	No
State-Sponsored Grant Programs	Yes
Development Impact Fees for Homebuyers or Developers	Cap fees for water and sewer

Table 15-5. Administrative and Technical Capability

Staff/Personnel Resource	Available?
Planners or engineers with knowledge of land development and land management practices <i>If Yes, Department /Position:</i> Contracted	Yes
Engineers or professionals trained in building or infrastructure construction practices <i>If Yes, Department /Position:</i> Contracted	Yes
Planners or engineers with an understanding of natural hazards <i>If Yes, Department /Position:</i> Contracted	Yes
Staff with training in benefit/cost analysis <i>If Yes, Department /Position:</i> Contracted	Yes
Surveyors <i>If Yes, Department /Position:</i> Contracted	Yes
Personnel skilled or trained in GIS applications <i>If Yes, Department /Position:</i> Contracted	Yes
Scientist familiar with natural hazards in local area	No
Emergency manager <i>If Yes, Department /Position:</i> General Manager	Yes
Grant writers <i>If Yes, Department /Position:</i> Contracted	Yes

Table 15-6. Education and Outreach Capability

Criterion	Response
Do you have a public information officer or communications office?	Yes
Do you have personnel skilled or trained in website development?	Yes
Do you have hazard mitigation information available on your website? <i>If yes, briefly describe:</i> Drought information, Tsunami information, VC Resilient Coastal Adaptation Project	Yes
Do you use social media for hazard mitigation education and outreach? <i>If yes, briefly describe:</i> NextDoor	Yes
Do you have any citizen boards or commissions that address issues related to hazard mitigation? <i>If yes, briefly describe:</i> The Channel Islands Beach Emergency Response Team operates under the Channel Islands Beach Community Services District (CIBCS). The team is made up of concerned residents who have completed the basic CERT training.	Yes
Do you have any other programs in place that could be used to communicate hazard-related information? <i>If yes, briefly describe:</i> Mobile electronic message board, bulletin boards	Yes
Do you have any established warning systems for hazard events? <i>If yes, briefly describe:</i> NextDoor, Website, Reverse 911	Yes

Table 15-7. Community Classifications

	Participating?	Classification	Date Classified
FIPS Code	N/A	N/A	N/A
DUNS#	Yes	085392637	N/A
Community Rating System	N/A	N/A	N/A
Building Code Effectiveness Grading Schedule	N/A	N/A	N/A
Public Protection	N/A	N/A	N/A
Storm Ready	N/A	N/A	N/A
Firewise	N/A	N/A	N/A
Tsunami Ready	N/A	N/A	N/A

Table 15-8. Adaptive Capacity for Climate Change

Criterion	Jurisdiction Rating ^a
Technical Capacity	
Jurisdiction-level understanding of potential climate change impacts <i>Comment:</i>	Low
Jurisdiction-level monitoring of climate change impacts <i>Comment:</i>	Low
Technical resources to assess proposed strategies for feasibility and externalities <i>Comment:</i>	Low
Jurisdiction-level capacity for development of greenhouse gas emissions inventory <i>Comment:</i>	Low
Capital planning and land use decisions informed by potential climate impacts <i>Comment:</i>	Low
Participation in regional groups addressing climate risks <i>Comment:</i>	Low
Implementation Capacity	
Clear authority/mandate to consider climate change impacts during public decision-making processes <i>Comment:</i>	Low
Identified strategies for greenhouse gas mitigation efforts <i>Comment:</i>	Low
Identified strategies for adaptation to impacts <i>Comment: CIP addresses strategies</i>	Medium
Champions for climate action in local government departments <i>Comment: Regularly discussed in board meetings</i>	Medium
Political support for implementing climate change adaptation strategies <i>Comment:</i>	Unsure
Financial resources devoted to climate change adaptation <i>Comment: Designated rate fees for construction projects</i>	Medium
Local authority over sectors likely to be negative impacted <i>Comment:</i>	Low
Public Capacity	
Local residents' knowledge of and understanding of climate risk <i>Comment: Often shared in board meetings</i>	High
Local residents' support of adaptation efforts <i>Comment: Support voluntary water use reduction</i>	High
Local residents' capacity to adapt to climate impacts <i>Comment:</i>	Low
Local economy current capacity to adapt to climate impacts <i>Comment:</i>	Low
Local ecosystems capacity to adapt to climate impacts <i>Comment:</i>	Low

- a. High = Capacity exists and is in use; Medium = Capacity may exist, but is not used or could use some improvement;
Low = Capacity does not exist or could use substantial improvement; Unsure= Not enough information is known to assign a rating.

15.5 INTEGRATION REVIEW

For hazard mitigation planning, “integration” means that hazard mitigation information is used in other relevant planning mechanisms, such as capital facilities planning, and that relevant information from those sources is used in hazard mitigation. This section identifies where such integration is already in place, and where there are opportunities for further integration in the future. Resources listed at the end of this annex were used to provide information on integration. The progress reporting process described in Volume 1 of the hazard mitigation plan will document the progress of hazard mitigation actions related to integration and identify new opportunities for integration.

15.5.1 Existing Integration

Some level of integration has already been established between local hazard mitigation planning and the following other local plans and programs:

Capital Improvement Plan—The capital improvement plan includes projects that can help mitigate potential hazards. The District will act to ensure consistency between the hazard mitigation plan and the current and future capital improvement plans. The hazard mitigation plan may identify new possible funding sources for capital improvement projects and may result in modifications to proposed projects based on results of the risk assessment.

Urban Water Management Plan—The Urban Water Management Plan addresses risks also addressed in this hazard mitigation plan including water reliability in drought years and following regional power outages and earthquakes.

15.5.2 Opportunities for Future Integration

The capability assessment in this annex indicates opportunities to integrate this mitigation plan with other jurisdictional planning/regulatory capabilities. Capabilities were identified as integration opportunities if they can support or enhance the actions identified in this plan or be supported or enhanced by components of this plan. The capability assessment identified the following plans and programs that do not currently integrate hazard mitigation information but provide opportunities to do so in the future:

- **Capital Improvement Projects**—Capital improvement project proposals may take into consideration hazard mitigation potential as a means of evaluating project prioritization.
- **Emergency Response Plan**—The results of the risk assessment may be used in the next update of the emergency response plan.
- **Sewer System Management Plan**—The results of the risk assessment may be used in the next update of the sewer system management plan as it relates to infrastructure upgrades to protect against seismic activity and coastal hazards.

Taking action to integrate each of these programs with the hazard mitigation plan was considered as a mitigation action to include in the action plan in this annex.

15.6 RISK ASSESSMENT

15.6.1 Jurisdiction-Specific Natural Hazard Event History

Table 15-9 lists past occurrences of natural hazards for which specific damage was recorded in this jurisdiction. Other hazard events that broadly affected the entire planning area, including this jurisdiction, are listed in the risk assessments in Volume 1 of this hazard mitigation plan.

Table 15-9. Past Natural Hazard Events

Type of Event	FEMA Disaster #	Date	Damage Assessment
Rain and High Wind Event		January 19, 2021	Trees down, road closures, power outages, damage to structures
COVID-19	DR-4482	January 20, 2020 Continuing	Ongoing
Atmospheric River Storm System	CA Disaster 109	January/February 2019	Local stream and street flooding, trees down, power outages
Wildfires, Flooding, Mudflows, and Debris Flows	DR-4353	December 4, 2017- January 31, 2018	Post Thomas Fire debris flows in local rivers, large deposits of debris on local beaches, road closures
Thomas Fire	DR-4224	December 4, 2017	Public Health issues due to smoke, power outages, sewage spill due to power outage
February Winter Storm	CA Disaster 77.1	February 2017	Local stream and street flooding, trees down, power outages, debris deposits in local stream and on beaches
January Winter Storm	CA Disaster 77	January 2017	Local stream and street flooding, trees down, power outages, debris deposits in local stream and on beaches
Extreme Wind Storm		February 2016	Trees down, power outages, street closures, damage to structures, debris
Erratic Weather (frost, heat, drought)		Winter 2013	Economic loss
Tsunami (7.1 earthquake in Japan)		March 11, 2011	Damage to local harbors, marinas and docks
Tsunami (8.8 earthquake in Chile)		February 27, 2010	Damage to local harbors, marinas and docks
Storm and Flood		January 18 – 22, 2010.	Local stream and street flooding, trees down, power outages
Wildfires, Flooding, Mudflows, and Debris Flows	DR-1731	October 21 – March 31, 2008	Post burn, flooding, debris and mud flows.
Severe Storm	DR-1267	January 7 – 11, 2005	Flooding and debris flows
“El Nino” Storm and Flood		February 1998	Street and stream flooding, debris flows
Storms and Floods		January and March, 1995	Unknown
Northridge Earthquake	DR-1008	January 17 – November 30, 1994	Power and communications disruptions, damage to structures
Storm and Flood		February 10-15, 1992	Street and stream flooding, debris flows
Earthquake (Whittier Narrows Earthquake)		October 1, 1987	Unknown
Storm and Flood		February 25-March 3, 1983	Street and stream flooding, debris flows
Storm and Flood		February 13-22, 1980	Street and stream flooding, debris flows
Tsunami (9.5 earthquake in Chile)		May 24, 1960	Damage to docks and ships in Port Hueneme
St Francis Dam Disaster		March 12, 1928	\$7 Million (1928)—Inundation of nearly the entire area, flooding, debris flows, destruction of infrastructure, high loss of life

15.6.2 Hazard Risk Ranking

Table 15-10 presents a local ranking of all hazards of concern for which this hazard mitigation plan provides complete risk assessments. As described in detail in Volume 1, the ranking process involves an assessment of the likelihood of occurrence for each hazard, along with its potential impacts on people, property, and district operations. Mitigation actions primarily target hazards with high and medium rankings.

Table 15-10. Hazard Risk Ranking

Rank	Hazard	Risk Ranking Score	Risk Category
1	Dam Failure	36	High
2	Earthquake	32	High
3	Drought	9	High
4	Severe Storm	24	Medium
5	Severe Weather	24	Medium
6	Flooding	18	Medium
7	Landslide	18	Medium
8	Sea Level Rise	18	Medium
9	Tsunami	12	Low
10	Wildfire	0	Low

15.6.3 Other Noted Vulnerabilities

Volume 1 of this hazard mitigation plan provides complete risk assessments for each identified hazard of concern. The following jurisdiction-specific issues have been identified based on a review of the results of the risk assessment, public involvement strategy, and other available resources:

- Tsunami—The highest elevation in the service area is about 30 feet above sea level and the district operations facility is only about 20 feet above sea level.
- Erosion—Coastal erosion impacts the district service area especially during severe storm events. Impacts are expected to increase as the sea level rises and climate change produces stronger or more frequent coastal storms.
- Earthquake and Liquefaction Zone—Asbestos cement pipe infrastructure is known to have moderate to high vulnerability, especially in liquefaction areas. In order for the infrastructure to be more resilient to seismic activity in the liquefaction zone, it needs to be replaced with PVC C900 pipes, which have a lower vulnerability rating.
- Drought—80 percent of the water distributed by the district is pumped from wells. Only 20 percent is imported.

Mitigation actions addressing these issues were prioritized for consideration in the action plan in this annex.

15.7 STATUS OF PREVIOUS PLAN ACTIONS

Table 15-11 summarizes the actions that were recommended in the previous version of the hazard mitigation plan and their implementation status at the time this update was prepared.

Table 15-11. Status of Previous Plan Actions

Action Item from Previous Plan	Completed	Removed; No Longer Feasible	Carried Over to Plan Update	
			Check if Yes	Action # in Update
OA 9—Identify potentially vulnerable public and private utility systems including electric, gas, oil, water, sewer and communication. Upgrade vulnerable systems to ensure the operation and timely restoration of essential systems to reasonable levels of service. <i>Comment: Closed circuit TV assessments done in 2018, but need to continue every 5 years. The district does not have current authority over electric, gas, oil or communication utilities.</i>			✓	CIB-2 CIB-3
OA 18—Continue to participate in the NWS TsunamiReady Program through continued implementation of Guideline 4: Community Preparedness measures, including public outreach material and curriculum. <i>Comment: Public outreach component is part of the CERT outreach and is an ongoing action that needs to be carried forward.</i>			✓	CIB-8
CIBCS D 1—Replace and relocate pipes in vulnerable areas. <i>Comment: Sewer line replacement is an ongoing action and needs to be carried forward.</i>			✓	CIB-2 CIB-3

15.8 HAZARD MITIGATION ACTION PLAN

Table 15-12 lists the actions that make up the hazard mitigation action plan for this jurisdiction. Table 15-13 identifies the priority for each action. Table 15-14 summarizes the mitigation actions by hazard of concern and mitigation type.

Table 15-12. Hazard Mitigation Action Plan Matrix

Benefits New or Existing Assets	Objectives Met	Lead Agency	Support Agency	Estimated Cost	Sources of Funding	Timeline ^a
Action CIB-1—Where appropriate, support retrofitting, purchase or relocation of structures located in hazard areas, prioritizing those that have experienced repetitive losses and/or are located in high- or medium-risk hazard areas. <i>Hazards Mitigated:</i> Dam Failure, Earthquake, Severe Storm, Severe Weather, Flooding, Landslide, Sea Level Rise, Tsunami						
Existing	2, 6, 9, 11, 19	CIBCS D		High	General Funds, Grant Funding- FEMA HMA (BRIC, FMA, HMGP)	Short-term
Action CIB-2—Assess and address the vulnerability of critical sewer infrastructure through the capital improvement plan process, including, but not limited to:						
• Inflow and Infiltration Reduction • Sewer Lift Station and Pump Station Rehabilitation • Sewer Improvement Projects • Pump Station B Replacement • Oxnard Wastewater Plant Improvements						
<i>Hazards Mitigated:</i> Dam Failure, Earthquake, Severe Storm, Severe Weather, Flooding, Landslide, Sea Level Rise, Tsunami						
Existing	2, 6, 9, 11, 19	CIBCS D		High	Staff Time, General Funds, Grant Funding- FEMA HMA (BRIC, FMA, HMGP)	Short-term and Ongoing

Benefits New or Existing Assets	Objectives Met	Lead Agency	Support Agency	Estimated Cost	Sources of Funding	Timeline ^a
Action CIB-3—Assess and address the vulnerability of critical water infrastructure through the capital improvement plan process, including, but not limited to: - Easement Risk Mitigation Projects - Port Hueneme Water Agency Improvements - Water Distribution Improvements - Valve Replacement - Water Supply Upgrades - Fire Flow Improvements						
<u>Hazards Mitigated:</u> Dam Failure, Earthquake, Drought, Severe Storm, Severe Weather, Flooding, Landslide, Sea Level Rise, Tsunami						
Existing	2, 6, 9, 11, 19	CIBCSD		High	Staff Time, General Funds, Grant Funding- FEMA HMA (BRIC, FMA, HMGP)	Short-term and Ongoing
Action CIB-4—Replace or renovate the Administration & Operations Facility to meet current seismic and Americans with Disabilities Act standards						
<u>Hazards Mitigated:</u> Dam Failure, Earthquake, Severe Storm, Severe Weather, Flooding, Landslide, Sea Level Rise, Tsunami						
Existing	2, 6, 9, 11, 19	CIBCSD		High	General Funds, Grant Funding- FEMA HMA (BRIC, FMA, HMGP)	Short-term
Action CIB-5—Actively participate in the plan maintenance protocols outlined in Volume 1 of this hazard mitigation plan.						
<u>Hazards Mitigated:</u> Dam Failure, Earthquake, Drought, Severe Storm, Severe Weather, Flooding, Landslide, Sea Level Rise, Tsunami, Wildfire						
New & Existing	2, 8, 17, 19	CIBCSD		Low	Staff Time, General Funds	Short-term
Action CIB-6—Purchase generators for critical facilities and infrastructure that lack adequate backup power.						
<u>Hazards Mitigated:</u> Dam Failure, Earthquake, Severe Storm, Severe Weather, Flooding, Landslide, Tsunami, Wildfire						
Existing	2, 6	CIBCSD		High	Staff Time, General Funds, Grant Funding- FEMA HMA (BRIC, HMGP)	Short-term
Action CIB-7—Study the feasibility of using green energy, such as solar power, for emergency backup power at pump stations and other critical locations. Determine if space requirements can be met with current or new green energy technology.						
<u>Hazards Mitigated:</u> Dam Failure, Earthquake, Severe Storm, Severe Weather, Flooding, Landslide, Tsunami						
Existing	1, 15, 19	CIBCSD		Low	Staff Time, General Funds, Grant Funding- FEMA HMA (BRIC, FMA, HMGP)	Short-term
Action CIB-8—Continue to participate in the NWS TsunamiReady Program through continued implementation of Guideline 4: Community Preparedness measures, including public outreach material and curriculum.						
<u>Hazards Mitigated:</u> Tsunami						
New & Existing	2, 7, 8, 17	CIBCSD		Low	Staff Time, General Funds	Ongoing

a. Short-term = Completion within 5 years; Long-term = Completion within 10 years; Ongoing= Continuing new or existing program with no completion date

Acronyms used here are defined at the beginning of this volume.

Table 15-13. Mitigation Action Priority

Action #	# of Objectives Met	Benefits	Costs	Do Benefits Equal or Exceed Cost?	Is Project Grant-Eligible?	Can Project Be Funded Under Existing Programs/ Budgets?	Implementation Priority ^a	Grant Pursuit Priority ^a
1	5	High	High	Yes	Yes	No	Medium	High
2	5	Medium	High	No	Yes	Yes	Low	Medium
3	5	Medium	High	No	Yes	Yes	Low	Medium
4	5	High	High	Yes	Yes	Yes	High	High
5	4	Medium	Low	Yes	No	Yes	High	Low
6	2	High	High	Yes	Yes	No	Medium	High
7	3	Low	Low	Yes	Yes	Yes	High	Medium
8	4	Medium	Low	Yes	No	Yes	High	Low

a. See the introduction to this volume for explanation of priorities.

Table 15-14. Analysis of Mitigation Actions

Hazard Type	Action Addressing Hazard, by Mitigation Type ^a							
	Prevention	Property Protection	Public Education & Awareness	Natural Resource Protection	Emergency Services	Structural Projects	Climate Resilient	Community Capacity Building ^b
High-Risk Hazards								
Dam Failure	CIB-2, 3	CIB-1, 2, 3, 4	CIB-5	CIB-7	CIB-6	CIB-2	CIB-7	CIB-5, 7
Earthquake	CIB-2, 3	CIB-1, 2, 3, 4	CIB-5	CIB-7	CIB-6	CIB-2	CIB-7	CIB-5, 7
Drought	CIB-3	CIB-3	CIB-5					CIB-5
Medium-Risk Hazards								
Severe Storm	CIB-2, 3	CIB-1, 2, 3, 4	CIB-5	CIB-7	CIB-6	CIB-2	CIB-7	CIB-5, 7
Severe Weather	CIB-2, 3	CIB-1, 2, 3, 4	CIB-5	CIB-7	CIB-6	CIB-2	CIB-7	CIB-5, 7
Flooding	CIB-2, 3	CIB-1, 2, 3, 4	CIB-5	CIB-7	CIB-6	CIB-2	CIB-7	CIB-5, 7
Landslide	CIB-2, 3	CIB-1, 2, 3, 4	CIB-5	CIB-7	CIB-6	CIB-2	CIB-7	CIB-5, 7
Sea Level Rise	CIB-2, 3	CIB-1, 2, 3, 4	CIB-5	CIB-7				CIB-5
Low-Risk Hazards								
Tsunami	CIB-2, 3	CIB-1, 2, 3, 4	CIB-5	CIB-7	CIB-6	CIB-2	CIB-7	CIB-5, 7, 8
Wildfire					CIB-6			CIB-5

a. See the introduction to this volume for explanation of mitigation types.

b. Note that the jurisdiction did not identify a need for expansion of financial capabilities, based on existing capabilities. The intent of this hazard mitigation plan is to expand the financial capability of the jurisdiction.

15.9 PUBLIC OUTREACH

Table 15-15 lists public outreach activities for this jurisdiction.

Table 15-15. Local Public Outreach

Local Outreach Activity	Date	Number of People Involved
Channel Islands Beach Emergency Response Team Meetings	Monthly, every third Tuesday	Average attendance 8
Website—tsunami evacuation and emergency preparedness outreach	Updated as needed	About 10,000 customers

15.10 INFORMATION SOURCES USED FOR THIS ANNEX

The following technical reports, plans, and regulatory mechanisms were reviewed to provide information for this annex.

- **Capital Improvement Plan**—The CIP was reviewed for the capabilities assessment, plan integration analysis, and in the development of mitigation actions.
- **Port Hueneme Water Agency 2020 Urban Water Management Plan**—The urban water management plan was used for the capabilities assessment, plan integration analysis, and in the development of mitigation actions.
- **Emergency Response Plan**—The Emergency Response Plan was reviewed for the capabilities assessment.
- **Sewer System Management Plan**—The Sewer System Management Plan was reviewed for the capabilities assessment.

The following outside resources and references were reviewed:

- **Hazard Mitigation Plan Annex Development Toolkit**—The toolkit was used to support the identification of past hazard events and noted vulnerabilities, the risk ranking, and the development of the mitigation action plan.
- **Environmental Protection Agency (EPA) Earthquake Resilience Guide for Water and Wastewater Utilities, March 2018**—Reviewed for the development of the mitigation action plan.

15.11 FUTURE NEEDS TO BETTER UNDERSTAND RISK/VULNERABILITY

Groundwater Sustainability Plan will require groundwater pumping cutbacks by 50% over the next 20 years.

16. CONEJO RECREATION & PARK DISTRICT

16.1 LOCAL HAZARD MITIGATION PLANNING TEAM

Primary Point of Contact

Bill Palermo, Park Operations Analyst
403 West Hillcrest Drive
Thousand Oaks, CA 91360
Telephone: 805-381-1201
e-mail Address: bpalermo@crpd.org

Alternate Point of Contact

Andrew Mooney, Senior Planner
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Thousand Oaks, CA 91360
Telephone: 805-495-6471
e-mail Address: amoonney@crpd.org

This annex was developed by the local hazard mitigation planning team, whose members are listed in Table 16-1.

Table 16-1. Local Hazard Mitigation Planning Team Members

Name	Title
James Friedl	General Manager
Bill Palermo	Park Operations Analyst
Andrew Mooney	Senior Park Planner

16.2 JURISDICTION PROFILE

16.2.1 Overview

The Conejo Recreation and Park District (CRPD) is a special district created in 1963 to provide park and recreational services and facilities for the residents of the Conejo Valley. A five-member elected Board of Directors governs the District. The Board will assume responsibility for the adoption of this plan; the General Manager will oversee its implementation. The District currently employs a full-time staff of 94. Funding is obtained through property taxes, State revenue bonds, developer fees, and assessment districts.

The City of Thousand Oaks and CRPD formed the Conejo Open Space Conservation Agency (COSCA) by a Joint Powers Agreement in 1977. This agreement enables the combined agency to conserve natural open space lands and assures the coordination of local land use and resource management decisions that support the goals of the City of Thousand Oaks General Plan and the CRPD Master Plan. Additional agreements between the City of Thousand Oaks, COSCA, and CRPD provide for an extensive equestrian/hiking trail system and a citywide bicycle trail system. In cooperation with the National Park Service, the Mountains Recreation and Conservation Authority,

COSCA, CRPD, and CTO, over 15,000 acres of open space are available for public enjoyment. COSCA, CRPD, and the City of Thousand Oaks maintain approximately 13,215 acres of this amount and a 140-mile multi-use trail system.

16.2.2 Service Area and Trends

The District covers 62 square miles, and serves more than 136,000 residents of Thousand Oaks, Newbury Park, and the Ventura County portion of Westlake Village. Assets

Table 16-2 summarizes the assets of the District and their value.

Table 16-2. Special-Purpose District Assets	
Asset	Value
Property	
3,254.1 acres of land	\$ unknown
Equipment	
Vehicles, Blanket	\$1,563,000
Equipment Blanket	\$2,500,000
Total:	\$4,063,000
Critical Facilities	
Borchard Community Center—190 Reino Road, Thousand Oaks, CA 91320	\$2,619,000
Conejo Community Center—1175 Hendrix Avenue, Thousand Oaks, CA 91360	\$3,571,486
Dos Vientos Community Center—4801 Borchard Road, Thousand Oaks, CA 91320	\$4,935,548
Thousand Oaks Community Center—2525 N. Moorpark Rd, Thousand Oaks, CA 91360	\$6,483,858
Old Meadows Center—1600 Marview Drive, Thousand Oaks, CA 91362	\$1,349,914
Hillcrest Center—403 West Hillcrest Drive, Thousand Oaks, CA 91360	\$1,088,921 (contents only)
Conejo Creek South Park	\$1,402,928
Total: (value of all facilities on Property Schedule: \$60,684,717)	\$21,451,655

16.3 CURRENT TRENDS

Recent updates to the City's General Plan project a build-out population of over 145,000 by 2045. CRPD faces two distinct funding challenges. The first is the high cost of funding new facilities, and the second, the funding of ongoing maintenance and operation of new and existing facilities. Coordination with the City and updates to the District's Master Plan will enable the District to meet the projected service needs of the community.

16.4 CAPABILITY ASSESSMENT

This section describes an assessment of existing capabilities for implementing hazard mitigation strategies. The introduction at the beginning of this volume of the hazard mitigation plan describes the components included in the capability assessment and their significance for hazard mitigation planning.

Findings of the capability assessment were reviewed to identify opportunities to expand, initiate or integrate capabilities to further hazard mitigation goals and objectives. Where such opportunities were identified and determined to be feasible, they are included in the action plan. The "Analysis of Mitigation

Actions” table in this annex identifies these as community capacity building mitigation actions. The findings of the assessment are presented as follows:

An assessment of planning and regulatory capabilities is presented in Table 16-3.

An assessment of fiscal capabilities is presented in Table 16-4.

An assessment of administrative and technical capabilities is presented in Table 16-5.

An assessment of education and outreach capabilities is presented in Table 16-6.

Classifications under various community mitigation programs are presented in Table 16-7.

The community’s adaptive capacity for the impacts of climate change is presented in Table 16-8.

Table 16-3. Planning and Regulatory Capability

Plan, Study or Program	Date of Most Recent Update	Comment
CRPD Administration Public Policies and Documents	Continually updated	Public Policies and Documents: Finance & Audit; Forms and Documents
Memorandum of Understanding for Emergency Care and Shelter Services	5/12/20	
American Red Cross Agreement	5/12/20	
County of Ventura Mass Care Shelter Annex	3/12/19	
CRPD Disaster Management Plan	5/07/20	Internal document not formally approved

Table 16-4. Fiscal Capability

Financial Resource	Accessible or Eligible to Use?
Community Development Block Grants	Yes
Capital Improvements Project Funding	Yes
Authority to Levy Taxes for Specific Purposes	Yes
User Fees for Water, Sewer, Gas or Electric Service	No
Incur Debt through General Obligation Bonds	No
Incur Debt through Special Tax Bonds	No
Incur Debt through Private Activity Bonds	No
Withhold Public Expenditures in Hazard-Prone Areas	No
State-Sponsored Grant Programs	Yes
Development Impact Fees for Homebuyers or Developers	Yes

Table 16-5. Administrative and Technical Capability

Staff/Personnel Resource	Available?
Planners or engineers with knowledge of land development and land management practices <i>If Yes, Department /Position:</i> Andrew Mooney, Senior Planner; Bill Palermo, Park Operations Analyst	Yes
Engineers or professionals trained in building or infrastructure construction practices <i>If Yes, Department /Position:</i> Andrew Mooney, Senior Planner; Joe Tornero, Facility Maintenance Supervisor	Yes
Planners or engineers with an understanding of natural hazards <i>If Yes, Department /Position:</i> Andrew Mooney, Senior Planner; Matt Kouba, Park Superintendent;	Yes
Staff with training in benefit/cost analysis <i>If Yes, Department /Position:</i> Andrew Mooney, Senior Planner; Bill Palermo, Park Operation Analyst	Yes
Surveyors	No
Personnel skilled or trained in GIS applications <i>If Yes, Department /Position:</i> Bill Palermo, Park Operations Analyst	Yes
Scientist familiar with natural hazards in local area	No
Emergency manager <i>If Yes, Department /Position:</i> Matt Kouba, Park Superintendent	Yes
Grant writers <i>If Yes, Department /Position:</i> Bill Palermo, Park Operations Analyst	Yes

Table 16-6. Education and Outreach Capability

Criterion	Response
Do you have a public information officer or communications office?	No
Do you have personnel skilled or trained in website development? (consultant developed; staff maintained)	Yes
Do you have hazard mitigation information available on your website? <i>If yes, briefly describe:</i> Information posted as needed during an event (i.e., emergency shelters; cooling centers)	Yes
Do you use social media for hazard mitigation education and outreach? <i>If yes, briefly describe:</i> Information posted as needed during an event (i.e., emergency shelters; cooling centers)	Yes
Do you have any citizen boards or commissions that address issues related to hazard mitigation?	No
Do you have any other programs in place that could be used to communicate hazard-related information?	No
Do you have any established warning systems for hazard events?	No

Table 16-7. Community Classifications

	Participating?	Classification	Date Classified
FIPS Code:	No	N/A	N/A
DUNS#:	Yes	798289708	N/A
Community Rating System	No	N/A	N/A
Building Code Effectiveness Grading Schedule	No	N/A	N/A
Public Protection	No	N/A	N/A
Storm Ready	No	N/A	N/A
Firewise	No	N/A	N/A
Tsunami Ready	No	N/A	N/A

Table 16-8. Adaptive Capacity for Climate Change

Criterion	Jurisdiction Rating ^a
Technical Capacity	
Jurisdiction-level understanding of potential climate change impacts <i>Comment:</i>	Low
Jurisdiction-level monitoring of climate change impacts <i>Comment:</i>	Low
Technical resources to assess proposed strategies for feasibility and externalities <i>Comment:</i>	Low
Jurisdiction-level capacity for development of greenhouse gas emissions inventory <i>Comment:</i>	Low
Capital planning and land use decisions informed by potential climate impacts <i>Comment:</i>	Low
Participation in regional groups addressing climate risks <i>Comment:</i>	Low
Implementation Capacity	
Clear authority/mandate to consider climate change impacts during public decision-making processes <i>Comment: Processes in CEQA require climate change impacts to be considered.</i>	Medium
Identified strategies for greenhouse gas mitigation efforts <i>Comment:</i>	Low
Identified strategies for adaptation to impacts <i>Comment: Strategies include, but not limited to, capturing electrical power through solar carport, emergency backup generators, removal of non-essential turf, LED construction practices, fuel modification, fire resiliency projects, stormwater management, bioswales and planting of vegetation on slopes. An existing agreement with American Red Cross and pending shelter agreement with the County of Ventura aid in providing public assistance during a climate event.</i>	Medium
Champions for climate action in local government departments <i>Comment: Planning of development and capital improvement projects include aforementioned strategies in addressing the negative impacts of climate change. Capital improvement project proposals take into consideration hazard mitigation potential as a means of evaluating project prioritization.</i>	Medium
Political support for implementing climate change adaptation strategies <i>Comment: CRPD Board of Directors and other elected City officials support strategies for implementation of climate change adaptation.</i>	Medium
Financial resources devoted to climate change adaptation <i>Comment: Funding for climate change adaptation is available through the District's General Fund and Capital Improvement Projects budget.</i>	Medium
Local authority over sectors likely to be negative impacted <i>Comment: CRPD works closely with the Ventura County Fire Protection District to eliminate potential risks of wildfire. Fuel modification is managed through an annual weed abatement contract and brush clearance easements.</i>	Medium
Public Capacity	
Local residents' knowledge of and understanding of climate risk <i>Comment:</i>	Low
Local residents' support of adaptation efforts <i>Comment:</i>	Low
Local residents' capacity to adapt to climate impacts <i>Comment:</i>	Low
Local economy current capacity to adapt to climate impacts <i>Comment:</i>	Low
Local ecosystems capacity to adapt to climate impacts <i>Comment:</i>	Low

- a. High = Capacity exists and is in use; Medium = Capacity may exist, but is not used or could use some improvement;
Low = Capacity does not exist or could use substantial improvement; Unsure= Not enough information is known to assign a rating.

16.5 INTEGRATION REVIEW

For hazard mitigation planning, “integration” means that hazard mitigation information is used in other relevant planning mechanisms, such as capital facilities planning, and that relevant information from those sources is used in hazard mitigation. This section identifies where such integration is already in place, and where there are opportunities for further integration in the future. Resources listed at the end of this annex were used to provide information on integration. The progress reporting process described in Volume 1 of the hazard mitigation plan will document the progress of hazard mitigation actions related to integration and identify new opportunities for integration.

16.5.1 Existing Integration

Conejo Recreation and Park District continually integrates hazard mitigation information and strategies during planning sessions related to capital improvement projects. This includes projects of new development and those related to the major repair of existing facilities (see FY 2021-2023 Adopted Budget via ‘CRPD Administration Public Policies and Documents’ link, Finance and Audit Section, in Table 16-3 above).

The development of internal documents, such as the ‘CRPD Disaster Management Plan’, which outlines a disaster response protocol, including training, and procedures for deployment of resources during an event, is another example of this integration. The District has included, in its two-year budget, portable emergency backup generators and electrical plug-in retrofits for these units. Other examples of integration include sustainable building practices, reduction of non-essential turf in response to the ongoing drought and the adoption of facility use agreements with coordinating agencies, such as the City of Thousand Oaks and American Red Cross.

16.5.2 Opportunities for Future Integration

The capability assessment has not identified any plans or programs for future integration with hazard mitigation information.

16.6 RISK ASSESSMENT

16.6.1 Jurisdiction-Specific Natural Hazard Event History

Table 16-9 lists past occurrences of natural hazards for which specific damage was recorded in this jurisdiction. Other hazard events that broadly affected the entire planning area, including this jurisdiction, are listed in the risk assessments in Volume 1 of this hazard mitigation plan.

Table 16-9. Past Natural Hazard Events

Type of Event	FEMA Disaster #	Date	Damage Assessment
COVID-19	DR-4482-CA	3/2020	\$150,000; ongoing
Woolsey / Hill Fires	DR-4407-CA	11/2018	\$712,000; mutual aid provided in fire response
Active Shooter, Borderline Shooting	N/A	11/2018	support role; no cost damages
Sesnon Fire	CA-LAC-08246455	10/2008	\$ 45,970, mutual aid provided in fire response
California Wildfires	DR-1731-CA	10/2007	\$ 21,982; mutual aid provided in fire response
California Severe Storms	DR-1577-CA	1/2005	\$131,602; flooding, power outages, debris from winds

Type of Event	FEMA Disaster #	Date	Damage Assessment
Fire Mitigation	DR-1498-CA	10/2003	\$115,950; mutual aid provided in fire response
Wildfire	N/A	12/2000	Gusty winds fueled wildfire, 600-acres burned; mutual aid
Severe Winter Storms, El Niño	DR-1203-CA	2/1998	\$398,984; flooding, power outages; debris from winds
Winter Storms (Aggregate)	N/A	1996, 1997	Flooding, power outages; debris from heavy winds
Northridge-Simi Earthquake	DR-1008-CA	1/1994	no cost damages
California Fires	DR-1005-CA	10/1993	\$27,288; mutual aid provided in fire response

16.6.2 Hazard Risk Ranking

Table 16-10 presents a local ranking of all hazards of concern for which this hazard mitigation plan provides complete risk assessments. As described in detail in Volume 1, the ranking process involves an assessment of the likelihood of occurrence for each hazard, along with its potential impacts on people, property, and district operations. Mitigation actions primarily target hazards with high and medium rankings.

Table 16-10. Hazard Risk Ranking

Rank	Hazard	Risk Ranking Score	Risk Category
1	Landslide	51	High
2	Wildfire	36	High
3	Earthquake	32	High
4	Severe Storms	24	Medium
4	Severe Weather	24	Medium
5	Flooding	18	Medium
6	Dam Failure	12	Low
7	Drought	9	Low
8	Sea Level Rise; Coastal Erosion	0	Low
8	Tsunami	0	Low

16.6.3 Other Noted Vulnerabilities

Volume 1 of this hazard mitigation plan provides complete risk assessments for each identified hazard of concern.

Irrespective of the risk ranking above, the principal hazards affecting Conejo Recreation and Park District are wildfire, severe storms and weather, and drought. The following hazard mitigation action plan will address vulnerabilities through flood and erosion control, soil stabilization, defensible space, ignition-resistant construction and infrastructure retrofits. Through independent solutions, public facilities and neighboring properties will have increased protection and full capacity of use.

Mitigation actions addressing these issues were prioritized for consideration in the action plan in this annex.

16.7 HAZARD MITIGATION ACTION PLAN

Table 16-11 lists the actions that make up the hazard mitigation action plan for this jurisdiction.

Table 16-12 identifies the priority for each action. Table 16-13 summarizes the actions by hazard of concern and type.

Table 16-11. Hazard Mitigation Action Plan Matrix

Benefits New or Existing Assets	Objectives Met	Lead Agency	Support Agency	Estimated Cost	Sources of Funding	Timeline ^a
Action CRP-1—Maintain wildfire hazard fuel reduction program for areas that have been identified with overgrown or dead brush, trees and weeds to reduce the potential for tree-to-tree ignition. Ensure that a “maintenance now” component to provide continued fire resistance is part of the program. (Coordinates with Ventura County Fire Protection District Action VFP-6 and City of Thousand Oaks Action CTO-7)						
<u>Hazards Mitigated:</u>	Wildfire					
New & Existing	2, 4, 5, 6, 8, 10, 11, 13, 14, 15, 18, 19	Ventura County Fire Protection District	CAL FIRE, USDA, Conejo Recreation & Park District, City of Thousand Oaks	Low	General Fund, Grant Funding- FEMA HMA (BRIC, HMGP and FMAP)	Ongoing
Action CRP-2—Actively participate in the plan maintenance protocols outlined in Volume 1 of this hazard mitigation plan.						
<u>Hazards Mitigated:</u>	Landslide, Wildfire, Earthquake, Severe Storms, Severe Weather, Flooding, Dam Failure, Drought					
New & Existing	4, 5, 6, 8, 19	County of Ventura	CRPD	Low	Staff Time, General Funds	Short-term
Action CRP-3—Purchase generators for critical facilities and infrastructure that lack adequate backup power. Install transfer switches to allow temporary power connections during emergencies. (Several CRPD community centers serve as evacuation shelters or cooling centers during a disaster or hazard event.)						
<u>Hazards Mitigated:</u>	Dam Failure, Earthquake, Flooding, Landslide, Severe Weather, Wildfire					
Existing	2, 6, 7, 8	Conejo Recreation & Park District	N/A	Medium	Capital Improvement Project Budget, Staff Time, Grant Funding- FEMA HMA (BRIC, HMGP)	Short-term
Action CRP-4—Major removal of vegetation and sediment debris, flood control capacity improvement to existing drainage infrastructure in conjunction with soil stabilization and erosion control measures Districtwide, at key locations within 26 parks.						
<u>Hazards Mitigated:</u>	Flooding, Wildfire, Severe Weather					
Existing	2, 5, 7, 8	Conejo Recreation & Park District	N/A	Medium	General Fund, Grant Funding- FEMA HMA (BRIC, FMA, HMGP)	Short-term
Action CRP-5—Retrofit irrigation system components with bubblers, low-angle directional spray heads, and smart controllers to reduce water consumption and runoff.						
<u>Hazards Mitigated:</u>	Drought					
New & Existing	5, 8, 19	Conejo Recreation & Park District	N/A	Medium	General Fund	Ongoing
Action CRP-6—Remove non-essential turf and install drought-tolerant plants with mulch ground cover. Irrigation modifications as necessary. All new development will incorporate this action into the design of each park.						
<u>Hazards Mitigated:</u>	Drought					
New & Existing	5, 8, 19	Conejo Recreation & Park District	N/A	Medium	General Fund	Ongoing
Action CRP-7—Track future hazard events and impacts to inform decisions on future development and provide public outreach opportunities for hazard awareness.						
<u>Hazards Mitigated:</u>	Dam Failure, Earthquake, Flooding, Landslide, Severe Weather, Severe Storms, Tsunami, Wildfire					
New & Existing	1, 2, 5, 6, 8, 17	Conejo Recreation & Park District	N/A	Low	General Fund	Ongoing

a. Short-term = Completion within 5 years; Long-term = Completion within 10 years; Ongoing= Continuing new or existing program with no completion date

Table 16-12. Mitigation Action Priority

Action #	# of Objectives Met	Benefits	Costs	Do Benefits Equal or Exceed Cost?	Is Project Grant-Eligible?	Can Project Be Funded Under Existing Programs/ Budgets?	Implementation Priority ^a	Grant Pursuit Priority ^a
1	12	High	Low	Yes	Yes	Yes	High	High
2	5	Medium	Low	Yes	No	No	Low	Low
3	4	High	Medium	Yes	Yes	No	Medium	Medium
4	4	Medium	Medium	Yes	Yes	No	Medium	Medium
5	3	Medium	Medium	Yes	No	Yes	High	Low
6	3	Medium	Medium	Yes	No	No	Low	Low
7	6	Low	Low	Yes	No	No	Low	Low

a. See the introduction to this volume for explanation of priorities

Table 16-13. Analysis of Mitigation Actions

Hazard Type	Action Addressing Hazard, by Mitigation Type ^a							
	Prevention	Property Protection	Public Education & Awareness	Natural Resource Protection	Emergency Services	Structural Projects	Climate Resilient	Community Capacity Building ^b
High-Risk Hazards								
Landslide	CRP-7	CRP-4	CRP-2, 7		CRP-3			CRP-2, 3, 7
Wildfire	CRP-1, 7	CRP-1, 4	CRP-1, 2, 7	CRP-1, 4, 6	CRP-3		CRP-4	CRP-2, 3, 7
Earthquake	CRP-7	CRP-4	CRP-2, 7	CRP-6	CRP-3			CRP-2, 3, 7
Medium-Risk Hazards								
Severe Storms	CRP-7	CRP-4	CRP-2, 7		CRP-3			CRP-2, 3, 7
Severe Weather	CRP-7	CRP-4	CRP-2, 7	CRP-4	CRP-3		CRP-4	CRP-2, 3, 7
Flood	CRP-7		CRP-7		CRP-3		CRP-4	CRP-2, 3, 7
Low-Risk Hazards								
Dam Failure	CRP-7				CRP-3			CRP-2, 3, 7
Drought			CRP-2, 7	CRP-1, 5, 6	CRP-3		CRP-5, 6	CRP-2, 3, 7

a. See the introduction to this volume for explanation of mitigation types.

b. Note that the jurisdiction did not identify a need for expansion of financial capabilities, based on existing capabilities. The intent of this hazard mitigation plan is to expand the financial capability of the jurisdiction.

16.8 PUBLIC OUTREACH

Table 16-14 lists public outreach activities for this jurisdiction.

Table 16-14. Local Public Outreach

Local Outreach Activity	Date	Number of People Involved
Information posted on District website and social media	Ongoing	130,000

16.9 INFORMATION SOURCES USED FOR THIS ANNEX

The following technical reports, plans, and regulatory mechanisms were reviewed to provide information for this annex.

- **American Red Cross Shelter Agreement**—Reviewed for capabilities and integration.
- **Center Emergency Action Plan**—Reviewed for capabilities
- **Memorandum of Understanding for Emergency Care and Shelter Services**—Reviewed for capabilities and integration
- **County of Ventura Mass Care Shelter Annex**—Reviewed for capabilities and integration
- **CRPD Capri Property Schedule**—Used to list district assets

The following outside resources and references were reviewed:

- **Hazard Mitigation Plan Annex Development Toolkit**—The toolkit was used to support the identification of past hazard events and noted vulnerabilities, the risk ranking, and the development of the mitigation action plan.

16.10 FUTURE NEEDS TO BETTER UNDERSTAND RISK/VULNERABILITY

The District will study and consider options to increasingly develop projects to reduce risk/vulnerability through climate resilient mitigation activities including, floodplain and stream restoration, green infrastructure methods, and flood diversion and storage.

17. OJAI VALLEY SANITARY DISTRICT

17.1 LOCAL HAZARD MITIGATION PLANNING TEAM

Primary Point of Contact

Jeff Palmer, General Manager
1072 Tico Road
Ojai, California 93023
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e-mail Address: jeff.palmer@ojaisan.org

Alternate Point of Contact

Alison Young, Administrative Officer
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Ojai, California 93023
Telephone: 805-646-5548
e-mail Address: alison.young@ojaisan.org

This annex was developed by the local hazard mitigation planning team, whose members are listed in Table 17-1.

Table 17-1. Local Hazard Mitigation Planning Team Members

Name	Title
Jeff Palmer	General Manager
Alison Young	Administrative Officer

17.2 JURISDICTION PROFILE

17.2.1 Overview

The Ojai Valley Sanitary District was established in 1985 as the result of a consolidation of the Ventura Avenue, Oak View, and Meiners Oaks sanitary districts and the Sanitation Department of the City of Ojai. It collects and transports wastewater for treatment at the Ojai Valley Treatment Plant and disposes of effluent and sludge.

The district is a public agency organized under the Sanitary District Act of 1923 and is governed by an elected seven-member board.

The Board of Directors assumes responsibility for the adoption of this plan; Staff will oversee its implementation.

17.2.2 Service Area

The District provides sanitary sewer service for about 20,000 residents of the City of Ojai and the unincorporated Ojai Valley. The District's collection system consists of approximately 120 miles of trunk and main sewer lines.

17.2.3 Assets

Table 17-2 summarizes the assets of the District and their value.

Table 17-2. Special-Purpose District Assets	
Asset	Value
Property	
0 acres of land	N/A
Equipment	
Vehicles	\$1.5 million
Total:	\$1.5 million
Critical Facilities	
Tico Administration Office—1072 Tico Road, Ojai CA 93023	\$2.5 million
Santa Ana Lift Station—Santa Ana Rd, Oak View CA 93022	\$5 million
Little Santa Ana Lift Station—Santa Ana Rd, Oak View CA 93022	\$1.5 million
Orchard Lift Station—Ojai Ca 93023	\$5 million
Wastewater Treatment Plant—6363 N Ventura Ave, Ventura CA 93001	\$27 Million
Collection System—various areas, Ojai Valley, Ventura CA	\$22.8 million
Total:	\$63.8 Million

17.3 CURRENT TRENDS

Flows have been steady for years with little new growth.

17.4 CAPABILITY ASSESSMENT

This section describes an assessment of existing capabilities for implementing hazard mitigation strategies. The introduction at the beginning of this volume of the hazard mitigation plan describes the components included in the capability assessment and their significance for hazard mitigation planning.

Findings of the capability assessment were reviewed to identify opportunities to expand, initiate or integrate capabilities to further hazard mitigation goals and objectives. Where such opportunities were identified and determined to be feasible, they are included in the action plan. The “Analysis of Mitigation Actions” table in this annex identifies these as community capacity building mitigation actions. The findings of the assessment are presented as follows:

- An assessment of planning and regulatory capabilities is presented in Table 17-3.
- An assessment of fiscal capabilities is presented in Table 17-4.
- An assessment of administrative and technical capabilities is presented in Table 17-5.
- An assessment of education and outreach capabilities is presented in Table 17-6.
- Classifications under various community mitigation programs are presented in Table 17-7.
- The community’s adaptive capacity for the impacts of climate change is presented in Table 17-8.

Table 17-3. Planning and Regulatory Capability

Plan, Study or Program	Date of Most Recent Update	Comment
Budget	7/2021	Annual Budget Adoption
CIP	7/2021	Reviewed Monthly
Disaster Operations Plan		
District Code of Regulations	6/2021	Updated through Ordinance No. OVSD-83
Infiltration & Inflow Master Plan	2014	
Sewer System Management Plan	9/2019	

Table 17-4. Fiscal Capability

Financial Resource	Accessible or Eligible to Use?
Community Development Block Grants	No
Capital Improvements Project Funding	Yes
Authority to Levy Taxes for Specific Purposes	No
User Fees for Water, Sewer, Gas or Electric Service <i>If yes, specify: Sewer Service Fees</i>	Yes
Incur Debt through General Obligation Bonds	Yes
Incur Debt through Special Tax Bonds	Yes
Incur Debt through Private Activity Bonds	Yes
Withhold Public Expenditures in Hazard-Prone Areas	No
State-Sponsored Grant Programs	Yes
Development Impact Fees for Homebuyers or Developers	No

Table 17-5. Administrative and Technical Capability

Staff/Personnel Resource	Available?
Planners or engineers with knowledge of land development and land management practices <i>If Yes, Department /Position: Operations Manager and General Manager</i>	Yes
Engineers or professionals trained in building or infrastructure construction practices <i>If Yes, Department /Position: Operations Manager and General Manager</i>	Yes
Planners or engineers with an understanding of natural hazards <i>If Yes, Department /Position: Operations Manager and General Manager</i>	Yes
Staff with training in benefit/cost analysis <i>If Yes, Department /Position: Operations Manager and General Manager</i>	Yes
Surveyors	No
Personnel skilled or trained in GIS applications	No
Scientist familiar with natural hazards in local area	No
Emergency manager <i>If Yes, Department /Position: Operations Manager and General Manager</i>	Yes
Grant writers <i>If Yes, Department /Position: Operations Manager and General Manager</i>	Yes

Table 17-6. Education and Outreach Capability

Criterion	Response
Do you have a public information officer or communications office?	Yes
Do you have personnel skilled or trained in website development?	Yes
Do you have hazard mitigation information available on your website?	Yes
Do you use social media for hazard mitigation education and outreach?	No
Do you have any citizen boards or commissions that address issues related to hazard mitigation?	No
Do you have any other programs in place that could be used to communicate hazard-related information?	No
Do you have any established warning systems for hazard events?	No

Table 17-7. Community Classifications

	Participating?	Classification	Date Classified
FIPS Code	No	N/A	N/A
DUNS#	Yes	081077164	N/A
Community Rating System	No	N/A	N/A
Building Code Effectiveness Grading Schedule	No	N/A	N/A
Public Protection	No	N/A	N/A
Storm Ready	No	N/A	N/A
Firewise	No	N/A	N/A
Tsunami Ready	No	N/A	N/A

Table 17-8. Adaptive Capacity for Climate Change

Criterion	Jurisdiction Rating ^a
Technical Capacity	
Jurisdiction-level understanding of potential climate change impacts <i>Comment:</i> OVSD has engineering staff to track and record flow & loading as it changes over time. Real time data is available to make operational decisions	High
Jurisdiction-level monitoring of climate change impacts <i>Comment:</i> OVSD has engineering staff to track and record flow & loading as it changes over time. Real time data is available to make operational decisions	High
Technical resources to assess proposed strategies for feasibility and externalities <i>Comment:</i>	Low
Jurisdiction-level capacity for development of greenhouse gas emissions inventory <i>Comment:</i> OVSD has engineering staff to track and record flow & loading as it changes over time. Real time data is available to make operational decisions	High
Capital planning and land use decisions informed by potential climate impacts <i>Comment:</i>	Low
Participation in regional groups addressing climate risks <i>Comment:</i>	Low

Criterion	Jurisdiction Rating ^a
Implementation Capacity	
Clear authority/mandate to consider climate change impacts during public decision-making processes <i>Comment: OVSD has capability to make operational decisions to address flow conditions</i>	Medium
Identified strategies for greenhouse gas mitigation efforts <i>Comment:</i>	Low
Identified strategies for adaptation to impacts <i>Comment: OVSD has capability to make operational decisions to address flow conditions</i>	Medium
Champions for climate action in local government departments <i>Comment:</i>	Low
Political support for implementing climate change adaptation strategies <i>Comment:</i>	Low
Financial resources devoted to climate change adaptation <i>Comment:</i>	Low
Local authority over sectors likely to be negative impacted <i>Comment:</i>	Low
Public Capacity	
Local residents' knowledge of and understanding of climate risk <i>Comment: Climate risks studied by County of Ventura & City of Ojai</i>	High
Local residents' support of adaptation efforts <i>Comment: Climate risks studied by County of Ventura & City of Ojai</i>	High
Local residents' capacity to adapt to climate impacts <i>Comment:</i>	Low
Local economy current capacity to adapt to climate impacts <i>Comment:</i>	Low
Local ecosystems capacity to adapt to climate impacts <i>Comment:</i>	Low

- a. High = Capacity exists and is in use; Medium = Capacity may exist, but is not used or could use some improvement;
Low = Capacity does not exist or could use substantial improvement; Unsure= Not enough information is known to assign a rating.

17.5 INTEGRATION REVIEW

For hazard mitigation planning, “integration” means that hazard mitigation information is used in other relevant planning mechanisms, such as capital facilities planning, and that relevant information from those sources is used in hazard mitigation. This section identifies where such integration is already in place, and where there are opportunities for further integration in the future. Resources listed at the end of this annex were used to provide information on integration. The progress reporting process described in Volume 1 of the hazard mitigation plan will document the progress of hazard mitigation actions related to integration and identify new opportunities for integration.

17.5.1 Existing Integration

No level of integration has already been established between local hazard mitigation planning and other local plans and programs.

17.5.2 Opportunities for Future Integration

The capability assessment in this annex indicates opportunities to integrate this mitigation plan with other jurisdictional planning/regulatory capabilities. Capabilities were identified as integration opportunities if they can support or enhance the actions identified in this plan or be supported or enhanced by components of this plan. The capability assessment did not identify any plans or programs that do not currently integrate hazard mitigation information but provide opportunities to do so in the future.

17.6 RISK ASSESSMENT

17.6.1 Jurisdiction-Specific Natural Hazard Event History

Table 17-9 lists past occurrences of natural hazards for which specific damage was recorded in this jurisdiction. Other hazard events that broadly affected the entire planning area, including this jurisdiction, are listed in the risk assessments in Volume 1 of this hazard mitigation plan.

Table 17-9. Past Natural Hazard Events

Type of Event	FEMA Disaster #	Date	Damage Assessment
COVID-19 Pandemic	DR-4482	January 20, 2020 and continuing	District administrative operations were impacted due to stay-at-home orders
Thomas Fire	FM-5224-CA	12/4/2017	\$90,000
Wolf Fire	N/A	6/1/2002	This event impacted the Ojai area, but damages specific to the district are unknown.
Flash Flood	N/A	2/20/2000	Heavy rain, totaling 2 to 6 inches produced flash flooding in Ventura County, but damages specific to the district are unknown.

17.6.2 Hazard Risk Ranking

Table 17-10 presents a local ranking of all hazards of concern for which this hazard mitigation plan provides complete risk assessments. As described in detail in Volume 1, the ranking process involves an assessment of the likelihood of occurrence for each hazard, along with its potential impacts on people, property, and district operations. Mitigation actions primarily target hazards with high and medium rankings.

Table 17-10. Hazard Risk Ranking

Rank	Hazard	Risk Ranking Score	Risk Category
1	Landslide	33	High
2	Earthquake	32	Medium
3	Severe Storms	24	Medium
4	Severe Weather	24	Medium
5	Wildfire	18	Medium
6	Flooding	18	Medium
7	Dam Failure	12	Low
8	Drought	9	Low

17.6.3 Other Noted Vulnerabilities

Volume 1 of this hazard mitigation plan provides complete risk assessments for each identified hazard of concern. The following jurisdiction-specific issues have been identified based on a review of the results of the risk assessment, public involvement strategy, and other available resources:

- OVSD has had a direct wildfire impact in the form of damages done by the Thomas Fire. Increased drought conditions make us susceptible to a similar occurrence.

Mitigation actions addressing these issues were prioritized for consideration in the action plan in this annex.

17.7 STATUS OF PREVIOUS PLAN ACTIONS

The District began to participate in the previous plan, but did not complete participation and therefore does not have a previous action plan.

17.8 HAZARD MITIGATION ACTION PLAN

Table 17-11 lists the actions that make up the hazard mitigation action plan for this jurisdiction.

Table 17-12 identifies the priority for each action. Table 17-13 summarizes the mitigation actions by hazard of concern and mitigation type.

Table 17-11. Hazard Mitigation Action Plan Matrix

Benefits New or Existing Assets	Objectives Met	Lead Agency	Support Agency	Estimated Cost	Sources of Funding	Timeline ^a
Action OVS-1—Where appropriate, support retrofitting, purchase or relocation of structures located in hazard areas, prioritizing those that have experienced repetitive losses and/or are located in high- or medium-risk hazard areas.						
<u>Hazards Mitigated:</u>	Landslide, Earthquake, Severe Storms, Severe Weather, Wildfire, Flooding, Dam Failure					
Existing	2, 6, 9, 11	OVSD	None	High	FEMA HMA (BRIC, FMA, HMGP)	Short-term
Action OVS-2—Actively participate in the plan maintenance protocols outlined in Volume 1 of this hazard mitigation plan.						
<u>Hazards Mitigated:</u>	Landslide, Earthquake, Severe Storms, Severe Weather, Wildfire, Flooding, Dam Failure, Drought					
New & Existing	2, 8, 11, 19	OVSD	None	Low	Staff Time, General Funds	Short-term
Action OVS-3—Purchase generators for all critical facilities and infrastructure that lack adequate backup power.						
<u>Hazards Mitigated:</u>	Landslide, Earthquake, Severe Storms, Severe Weather, Wildfire, Flooding, Dam Failure					
Existing	2, 7, 8	OVSD	None	High	Grant Funding- FEMA HMA (BRIC, HMGP)	Short-term

a. Short-term = Completion within 5 years; Long-term = Completion within 10 years; Ongoing= Continuing new or existing program with no completion date

Acronyms used here are defined at the beginning of this volume.

Table 17-12. Mitigation Action Priority

Action #	# of Objectives Met	Benefits	Costs	Do Benefits Equal or Exceed Cost?	Is Project Grant-Eligible?	Can Project Be Funded Under Existing Programs/ Budgets?	Implementation Priority ^a	Grant Pursuit Priority ^a
1	4	High	High	Yes	Yes	No	Medium	High
2	4	Medium	Low	Yes	No	Yes	High	Low
3	3	High	High	Yes	Yes	No	Medium	High

a. See the introduction to this volume for explanation of priorities.

Table 17-13. Analysis of Mitigation Actions

Hazard Type	Action Addressing Hazard, by Mitigation Type ^a							
	Prevention	Property Protection	Public Education & Awareness	Natural Resource Protection	Emergency Services	Structural Projects	Climate Resilient	Community Capacity Building ^b
High-Risk Hazards								
Landslide		OVS-1, 3	OVS-2		OVS-3			OVS-2
Medium-Risk Hazards								
Earthquake		OVS-1, 3	OVS-2		OVS-3			OVS-2
Severe Storms		OVS-1, 3	OVS-2		OVS-3			OVS-2
Severe Weather		OVS-1, 3	OVS-2		OVS-3			OVS-2
Wildfire		OVS-1, 3	OVS-2		OVS-3			OVS-2
Flooding		OVS-1, 3	OVS-2		OVS-3			OVS-2
Low-Risk Hazards								
Dam Failure		OVS-1, 3	OVS-2		OVS-3			OVS-2
Drought			OVS-2					OVS-2

a. See the introduction to this volume for explanation of mitigation types.

b. Note that the jurisdiction did not identify a need for expansion of administrative and technical or financial capabilities, based on existing capabilities. The intent of this hazard mitigation plan is to expand the financial capability of the jurisdiction.

17.9 INFORMATION SOURCES USED FOR THIS ANNEX

The following technical reports, plans, and regulatory mechanisms were reviewed to provide information for this annex.

- **Budget**—as a financial reference point and pre-planning operationally and major expenditures through reserves
- **CIP**—Summary and tracking of Construction Projects in progress
- **Disaster Operations Plan**—Guide to disaster preparedness and navigation

The following outside resources and references were reviewed:

- **Hazard Mitigation Plan Annex Development Toolkit**—The toolkit was used to support the identification of past hazard events and noted vulnerabilities, the risk ranking, and the development of the mitigation action plan.

18. PLEASANT VALLEY RECREATION & PARK DISTRICT

18.1 LOCAL HAZARD MITIGATION PLANNING TEAM

Primary Point of Contact

Mary Otten, General Manager
1605 E. Burnley Street
Camarillo, CA 93010
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e-mail Address: motten@pvrpd.org

Alternate Point of Contact

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e-mail Address: lyoung@pvrpd.org

This annex was developed by the local hazard mitigation planning team, whose members are listed in Table 18-1.

Table 18-1. Local Hazard Mitigation Planning Team Members

Name	Title
Mary Otten	General Manager
Leonore Young	Administrative Services Manager
Bob Cerasuolo	Park Services Manager
Dylan Gunning	Administrative Analyst
Jessica Puckett	Administrative Analyst
Nick Marienthal	Park Supervisor

18.2 JURISDICTION PROFILE

18.2.1 Overview

The Pleasant Valley Recreation and Park District is a Special District created in 1962 to provide recreation services and programs and to maintain park space which encompasses the city of Camarillo ("City") and surrounding areas. A five-member elected Board of Directors governs the District. The Board assumes responsibility for the adoption of this plan: the General Manager will oversee its implementation. The District currently employs a staff of 48. Funding comes primarily through property taxes and fees charged for District classes and programs.

18.2.2 Service Area

The Pleasant Valley Recreation and Park District serves the City of Camarillo and the unincorporated areas outside the City of Camarillo city limits to include California State University Channel Island. The

District service area covers 45 square miles with 256 acres of park land, serving a population over 78,936 (as of the latest census).

18.2.3 Assets

Table 18-2 summarizes the assets of the District and their value.

Table 18-2. Special-Purpose District Assets	
Asset	Value
Property	
256.5 Acres of Land	\$22,732,253
Adolfo Park 3601 N. Adolfo, Camarillo CA 93010 (3.0 Acres)	
Arneill Ranch Park 1301 Sweetwater, Camarillo CA 93010 (5.0 Acres)	
Birchview Park 5564 Laurel Ridge Lane, Camarillo CA 93012 (0.7 Acres)	
Calleguas Creek Park 675 Avenida Valencia, Camarillo CA 93012 (3.0 Acres)	
Camarillo Oak Grove Park 6968 Camarillo Springs Rd, Camarillo CA 93012 (24.55 Acres)	
Carmenita Park 1506 Sevilla Camarillo CA 93010 (1.0 Acre)	
Charter Oak Park 2500 Charter Oak Drive Camarillo CA 93010 (5.7 Acres)	
Community Center Park 1605 E. Burnley Street Camarillo CA 93010 (12.9 Acres)	
Dos Camino Park 2198 N. Ponderosa Lane Camarillo CA 93010 (4.4 Acres)	
Encanto Park 5300 Encanto Camarillo CA 93012 (3.0 Acres)	
Foothill Park 1501 Cranbrook Street Camarillo CA 93010 (2.3 Acres)	
Freedom Park 275 E. Pleasant Valley Road Camarillo CA 93010 (33.9 Acres)	
Heritage Park 1630 Heritage Trail Camarillo CA 93012 (9.0 Acres)	
Las Posas Equestrian Park 2084 Via Veneto Camarillo CA 93010 (2.0 Acres)	
Laurelwood Park 2127 Dexter Camarillo CA 93010 (1.5 Acres)	
Lokker Park 848 Vista Coto Verde Camarillo CA 93010 (7.0 Acres)	
Mel Vincent Park 668 Calistoga Road Camarillo CA 93010 (5.0 Acres)	
Mission Oaks Park 5501 Mission Oaks Blvd Camarillo CA 930102 (20.2 Acres)	
Nancy Bush Park 1150 Bradford Camarillo CA 93010 (3.4 Acres)	
Pitts Ranch Park 1400 Flynn Road Camarillo CA 93012 (10.0 Acres)	
Bob Kildee Community Park 1030 Temple Ave Camarillo CA 93010 (13.0 Acres)	
Quito Park 7073 Quito Court Camarillo CA 93012 (5.0 Acres)	
Springville Park 801 Via Zamora Camarillo CA 93010 (5.0 Acres)	
Trailside Park 5462 Cherry Ridge Drive Camarillo CA 93012 (0.5 Acres)	
Valle Lindo Park 889 Aileen Street Camarillo CA 93010 (10.0 Acres)	
Pleasant Valley Fields 3777 Village at the Park Drive Camarillo CA 93010 (55.0 Acres)	
Woodcreek Park 1200 Woodcreek Road Camarillo CA 93012 (5.0 Acres)	
Woodside Park 247 Japonica Avenue Camarillo CA 93012 (5.0 Acres)	
Equipment	
20 Parks Vehicles	\$805,000
4 Tractors	\$140,000
3 Generators	\$15,000
1-200 Gallon Portable Water Tank	\$500
2-250 Portable Water Tanks	\$1,500
11 Trailers	\$11,000
Total:	\$973,000

Asset	Value
Critical Facilities	
Community Center (Admin Office, Auditorium, Classrooms and Senior Center) 1605 E. Burnely St. Camarillo 93010	
Freedom Park 275 E. Pleasant Valley Road Camarillo CA 93010	
Pleasant Valley Aquatic Center 1030 Temple Ave Camarillo CA 93010	
Pleasant Valley Recreation and Parks Operation Building 480 Skyway Dr. Camarillo CA 93010	
Pleasant Valley Recreation and Parks Shop & Yard 380 Skyway Camarillo CA 93010	
<i>Total:</i>	<i>\$8,712,616</i>

18.3 CURRENT TRENDS

Pleasant Valley Recreation and Park District has a population of 78,936 (2020 Census) and is located in Ventura County, and encompasses the City of Camarillo and surrounding areas. The City of Camarillo is currently growing at a rate of 1.42% annually. (<https://worldpopulationreview.com>). Slated for future development, multiple new housing projects within the boundaries of the District will increase the population, impacting the capacity of existing parks and facilities the District operates. The future growth of facilities within the District includes new sports fields, new parks, pickleball courts, and a new Senior and Community Center.

Emergency services use district parks and facilities as staging locations for natural disasters, including wildfires within the region. Additionally, the District facilities are used as evacuation centers where that District staff monitor emergency operations.

18.4 CAPABILITY ASSESSMENT

This section describes an assessment of existing capabilities for implementing hazard mitigation strategies. The introduction at the beginning of this volume of the hazard mitigation plan describes the components included in the capability assessment and their significance for hazard mitigation planning.

Findings of the capability assessment were reviewed to identify opportunities to expand, initiate or integrate capabilities to further hazard mitigation goals and objectives. Where such opportunities were identified and determined to be feasible, they are included in the action plan. The “Analysis of Mitigation Actions” table in this annex identifies these as community capacity building mitigation actions. The findings of the assessment are presented as follows:

- An assessment of planning and regulatory capabilities is presented in Table 18-3.
- An assessment of fiscal capabilities is presented in Table 18-4.
- An assessment of administrative and technical capabilities is presented in Table 18-5.
- An assessment of education and outreach capabilities is presented in Table 18-6.
- Classifications under various community mitigation programs are presented in Table 18-7.
- The community’s adaptive capacity for the impacts of climate change is presented in Table 18-8.

Table 18-3. Planning and Regulatory Capability

Plan, Study or Program	Date of Most Recent Update	Comment
Capital Improvement Plan	6/5/2013	Plan is for 2013-2018
Strategic Plan	5/5/2021	Plan is for 2021-2026
Americans with Disabilities Act Compliance Plan		Plan being devised starting Sept 2021
Fiscal Year Budget	7/7/2021	Updated Annually
Reserve Policy	9/1/2021	Reviewed every three to five years

Table 18-4. Fiscal Capability

Financial Resource	Accessible or Eligible to Use?
Community Development Block Grants	Yes, through the City of Camarillo
Capital Improvements Project Funding	Yes
Authority to Levy Taxes for Specific Purposes	Yes
User Fees for Water, Sewer, Gas or Electric Service	No
Incur Debt through General Obligation Bonds	Yes
Incur Debt through Special Tax Bonds	No
Incur Debt through Private Activity Bonds	No
Withhold Public Expenditures in Hazard-Prone Areas	No
State-Sponsored Grant Programs	Yes
Development Impact Fees for Homebuyers or Developers	Yes
Other	Yes

If yes, specify: Quimby Fees

Table 18-5. Administrative and Technical Capability

Staff/Personnel Resource	Available?
Planners or engineers with knowledge of land development and land management practices	No
Engineers or professionals trained in building or infrastructure construction practices	No
Planners or engineers with an understanding of natural hazards	No
Staff with training in benefit-cost analysis	Yes
<i>If Yes, Department /Position:</i> Administration Dept./Admin Services Manager, Administrative Analyst	
Surveyors	No
Personnel skilled or trained in GIS applications	No
Scientist familiar with natural hazards in local area	No
Emergency manager	No
Grant writers	Yes

If Yes, Department /Position: Various staff dependent upon specific grant

Table 18-6. Education and Outreach Capability

Criterion	Response
Do you have a public information officer or communications office?	Yes
Do you have personnel skilled or trained in website development?	Yes
Do you have hazard mitigation information available on your website?	No
Do you use social media for hazard mitigation education and outreach?	No
Do you have any citizen boards or commissions that address issues related to hazard mitigation?	No
Do you have any other programs in place that could be used to communicate hazard-related information?	No
Do you have any established warning systems for hazard events?	No

Table 18-7. Community Classifications

	Participating?	Classification	Date Classified
FIPS Code	N/A		N/A
DUNS#	Yes	077230183	N/A
Community Rating System	N/A		N/A
Building Code Effectiveness Grading Schedule	N/A		N/A
Public Protection	N/A		N/A
Storm Ready	N/A		N/A
Firewise	N/A		N/A
Tsunami Ready	N/A		N/A

Table 18-8. Adaptive Capacity for Climate Change

Criterion	Jurisdiction Rating ^a
Technical Capacity	
Jurisdiction-level understanding of potential climate change impacts <i>Comment: Water, Electricity</i>	Medium
Jurisdiction-level monitoring of climate change impacts <i>Comment: Water, Electricity, Tankless Water heaters</i>	Medium
Technical resources to assess proposed strategies for feasibility and externalities <i>Comment:</i>	Low
Jurisdiction-level capacity for development of greenhouse gas emissions inventory <i>Comment:</i>	Low
Capital planning and land use decisions informed by potential climate impacts <i>Comment:</i>	Low
Participation in regional groups addressing climate risks <i>Comment:</i>	Low
Implementation Capacity	
Clear authority/mandate to consider climate change impacts during public decision-making processes <i>Comment: Water, Electricity, Vehicle</i>	Medium
Identified strategies for greenhouse gas mitigation efforts <i>Comment: Water, Vehicle, Urban Forest</i>	Medium

Criterion	Jurisdiction Rating ^a
Identified strategies for adaptation to impacts <i>Comment: Turf reduction</i>	Medium
Champions for climate action in local government departments <i>Comment:</i>	Low
Political support for implementing climate change adaptation strategies <i>Comment:</i>	Low
Financial resources devoted to climate change adaptation <i>Comment: Turf Mitigation, LED funding</i>	Medium
Local authority over sectors likely to be negative impacted <i>Comment:</i>	Low
Public Capacity	
Local residents' knowledge of and understanding of climate risk <i>Comment:</i>	Low
Local residents' support of adaptation efforts <i>Comment:</i>	Low
Local residents' capacity to adapt to climate impacts <i>Comment:</i>	Low
Local economy current capacity to adapt to climate impacts <i>Comment:</i>	Low
Local ecosystems capacity to adapt to climate impacts <i>Comment:</i>	Low

- a. High = Capacity exists and is in use; Medium = Capacity may exist, but is not used or could use some improvement;
Low = Capacity does not exist or could use substantial improvement; Unsure= Not enough information is known to assign a rating.

18.5 INTEGRATION REVIEW

For hazard mitigation planning, “integration” means that hazard mitigation information is used in other relevant planning mechanisms, such as capital facilities planning, and that relevant information from those sources is used in hazard mitigation. This section identifies where such integration is already in place, and where there are opportunities for further integration in the future. Resources listed at the end of this annex were used to provide information on integration. The progress reporting process described in Volume 1 of the hazard mitigation plan will document the progress of hazard mitigation actions related to integration and identify new opportunities for integration.

18.5.1 Existing Integration

Some level of integration has already been established between local hazard mitigation planning and the following other local plans and programs:

- The Strategic Plan contains goals that align with hazard mitigation including green initiatives and sustainability, increased use of technology for hazard awareness and public outreach, and retrofits to facilities to meet new design standards.

- Grid Pruning—Certified arborist hired by the District has put a grid pruning schedule together to ensure trees are maintained in the event of high winds, branches are secure, not weak, diseased or dead.
- Long term plan in place to mitigate Charter Oaks windrow Eucalyptus trees (approx. 220 trees).
- Annually clear brush at Las Posas Equestrian Park and trail as well as Camarillo Grove Park.
- Annually clear and prep storm drains prior to winter storms.
- Parks Mow/Water Schedule—The district has over 256 acres of parkland that is maintained with regular maintenance. Should a disaster occur, District parks have the capability to react quickly if they are needed for emergency usage.
- Aquatics Maintenance—Showers at the aquatics center are fully maintained. If an emergency event occurred, the showers in the aquatics center could be used either for emergency personnel or citizens who have been displaced during the event.
- Community Center Auditorium/Freedom Center—Community Center and Freedom Center is available to either house emergency personnel or citizens who have been displaced. Community Center and Freedom Center is maintained at all times.
- District electronic marquee sign has the capability to display emergency situations and weather conditions.

18.5.2 Opportunities for Future Integration

The capability assessment in this annex indicates opportunities to integrate this mitigation plan with other jurisdictional planning/regulatory capabilities. Capabilities were identified as integration opportunities if they can support or enhance the actions identified in this plan or be supported or enhanced by components of this plan. The capability assessment identified the following plans and programs that do not currently integrate hazard mitigation information but provide opportunities to do so in the future:

- The District does not have a generator for any of its sites. Placing a generator at the Community Center location would enable the district to provide shelter/housing for emergency personnel or citizens who have become displaced due to an emergency event
- The District does not currently have a recovery plan, but could partner with the City of Camarillo to offer resources and staffing in the event of an emergency. The District could build a Post-Disaster Recovery Plan partnering with the City of Camarillo to help lay out policies, operational strategies and roles and responsibilities that would help guide the decisions and actions of community leaders relative to long-term recovery and redevelopment following a major catastrophic disaster.
- Future Capital Improvement Projects could take hazard mitigation into consideration when evaluating project prioritization.
- Send selected staff to a Community Emergency Response Team (CERT) class.

Taking action to integrate each of these programs with the hazard mitigation plan was considered as a mitigation action to include in the action plan in this annex.

18.6 RISK ASSESSMENT

18.6.1 Jurisdiction-Specific Natural Hazard Event History

Table 18-9 lists past occurrences of natural hazards for which specific damage was recorded in this jurisdiction. Other hazard events that broadly affected the entire planning area, including this jurisdiction, are listed in the risk assessments in Volume 1 of this hazard mitigation plan.

Table 18-9. Past Natural Hazard Events

Type of Event	FEMA Disaster #	Date	Damage Assessment
California COVID-19	DR-4482	March 22, 2020	Ongoing
California COVID-19	EM-3428	March 13, 2020	Ongoing
Wildfire	795861	November 8, 2018	The Woolsey Fire burned 96,949 acres in Ventura and Los Angeles county. In total, the Woolsey Fire destroyed 1,643 structures, damaged an additional 364 structures. Three deaths.
Wildfire	795860	November 8, 2018	The Woolsey Fire burned 96,949 acres in Ventura and Los Angeles county. In total, the Woolsey Fire destroyed 1,643 structures, damaged an additional 364 structures. Three deaths.
Wildfire	729837	December 4, 2017	In all, the Thomas Fire burned 281,893 acres, making it the largest recorded fire in the state of California. One firefighter died.
Flash Flood	553273	December 12, 2014	Intense rainfall over the Springs Fire burn scar generated flash flooding as well as mud and debris flow in the community of Camarillo Springs. A wall of mud and debris severely damaged ten homes.
Debris Flow	544619	October 31, 2014	Two homes were damaged by mud. The debris flow occurred near the burn scar of the Springs Fire.
Wildfire	439713	May 2, 2013	The Springs Fire burned 24,251 acres. Six commercial properties were damaged and 10 firefighter injuries were reported.
Wildfire	439712	May 2, 2013	The Springs Fire burned 24,251 acres. Six commercial properties were damaged and 10 firefighter injuries were reported.
Flood	5688228	March 25, 1999	N/A
Tornado	5640770	May 13, 1998	Weak tornado. No damage reported.

18.6.2 Hazard Risk Ranking

Table 18-10 presents a local ranking of all hazards of concern for which this hazard mitigation plan provides complete risk assessments. As described in detail in Volume 1, the ranking process involves an assessment of the likelihood of occurrence for each hazard, along with its potential impacts on people, property, and district operations. Mitigation actions primarily target hazards with high and medium rankings.

Table 18-10. Hazard Risk Ranking

Rank	Hazard	Risk Ranking Score	Risk Category
1	Landslide	33	High
2	Earthquake	32	High
3	Severe Storms	24	Medium
4	Severe Weather	24	Medium
5	Dam Failure	22	Medium
6	Flooding	18	Medium
7	Wildfire	12	Low
8	Drought	9	Low

18.6.3 Other Noted Vulnerabilities

Volume 1 of this hazard mitigation plan provides complete risk assessments for each identified hazard of concern. The following jurisdiction-specific issues have been identified based on a review of the results of the risk assessment, public involvement strategy, and other available resources:

- The jurisdiction has experienced increasingly intense wildfires that threaten District land and property. The District provides emergency personnel staging areas and public evacuation locations.
- The jurisdiction has seen landslides in correlation to the burn areas loss of vegetation
- Severe storms and weather
- The jurisdiction has experience landslides due to wildfires destroying vegetation.
- One significant District asset is not equipped with a generator.
- The jurisdiction has experienced severe storms resulting in flash flooding threatening District property.

Mitigation actions addressing these issues were prioritized for consideration in the action plan in this annex.

18.7 HAZARD MITIGATION ACTION PLAN

Table 18-11 lists the actions that make up the hazard mitigation action plan for this jurisdiction.

Table 18-12 identifies the priority for each action. Table 18-13 summarizes the mitigation actions by hazard of concern and mitigation type.

Table 18-11. Hazard Mitigation Action Plan Matrix

Benefits New or Existing Assets	Objectives Met	Lead Agency	Support Agency	Estimated Cost	Sources of Funding	Timeline ^a
Action PLV-1—Where appropriate, provide earthquake retrofitting for hardening and to build resilience to critical infrastructure. Armor/retrofit critical infrastructure from the impact of landslides.						
<u>Hazards Mitigated:</u> Earthquake, Landslide						
Existing	1, 2, 5, 6, 8, 9, 11, 13, 14, 15	PVRPD	None	High	HMGP, BRIC, FMA, General Fund	Long-Term

Benefits New or Existing Assets	Objectives Met	Lead Agency	Support Agency	Estimated Cost	Sources of Funding	Timeline ^a
Action PLV-2—Actively participate in plan maintenance protocols outlined in Volume 1 of this hazard mitigation plan.						
<u>Hazards Mitigated:</u>	Landslide, Earthquake, Severe Storms, Severe Weather, Dam Failure, Flooding, Wildfire, Drought					
New & Existing	1, 4, 6, 8, 19	PVRPD	None	Low	General Funds	Short-term
Action PLV-3—Purchase generators for critical facilities and infrastructure that lack adequate backup power, included but not limited to the Camarillo Community Center.						
<u>Hazards Mitigated:</u>	Landslide, Earthquake, Severe Storms, Severe Weather, Dam Failure, Flooding, Wildfire, Drought					
Existing	2, 6, 18	PVRPD	None	High	HMGP, BRIC, General Funds	Short-term
Action PLV-4—Develop a recovery plan, partner with the City of Camarillo to offer resources and staffing in the event of an emergency.						
<u>Hazards Mitigated:</u>	Landslide, Earthquake, Severe Storms, Severe Weather, Dam Failure, Flooding, Wildfire, Drought					
New	2, 8, 19	PVRPD	City of Camarillo	Low	HMGP, General Funds	Short-term
Action PLV-5—Identify features and amenities with the existing facilities to be updated or improved (Fire Codes, Americans with Disabilities Act, etc.)						
<u>Hazards Mitigated:</u>	Landslide, Earthquake, Severe Storms, Severe Weather, Dam Failure, Flooding, Wildfire, Drought					
New & Existing	2, 4, 9	PVRPD	None	High	HMGP, BRIC, FMA, General Fund, Quimby	Long-Term
Action PLV-6—Enhance technology to engage the community by sharing information more effectively and efficiently across the organization and with the community.						
<u>Hazards Mitigated:</u>	Landslide, Earthquake, Severe Storms, Severe Weather, Dam Failure, Flooding, Wildfire, Drought					
New & Existing	1, 7, 8, 17	PVRPD	None	Low	FMA, General Fund	Short-Term
Action PLV-7—Develop a drought contingency plan incorporating utilizing drought-resistant landscapes on District-owned facilities.						
<u>Hazards Mitigated:</u>	Drought					
New & Existing	4, 5, 11, 13, 14, 15, 19	PVRPD	None	Low	HMGP, BRIC, FMA, General Fund	Short-Term
Action PLV-8—Train emergency responders and develop a strategy to take advantage of pre- and post-disaster opportunities. Educate employees and elected officials on the potential hazard exposures and emergency response protocol.						
<u>Hazards Mitigated:</u>	Landslide, Earthquake, Severe Storms, Severe Weather, Dam Failure, Flooding, Wildfire, Drought					
New & Existing	1, 4, 8	PVRPD	None	Medium	HMGP, BRIC, FMA, General Funds	Short-term
Action PLV-9—Create and maintain defensible space around District structures and infrastructure.						
<u>Hazards Mitigated:</u>	Wildfire, Landslide					
New & Existing	4, 5, 11, 13	PVRPD	None	Medium	HMGP, BRIC, General Funds	Short-term
Action PLV-10—Use performance metrics and data to evaluate and monitor impacts of climate change and natural hazard risk reduction strategies on public health and social equity						
<u>Hazards Mitigated:</u>	Landslide, Earthquake, Severe Storms, Severe Weather, Dam Failure, Flooding, Wildfire, Drought					
New	1, 2, 4, 15, 19	PVRPD	None	Low	HMGP, BRIC, FMA, General Fund	Short-Term

a. Short-term = Completion within 5 years; Long-term = Completion within 10 years; Ongoing= Continuing new or existing program with no completion date

Acronyms used here are defined at the beginning of this volume.

Table 18-12. Mitigation Action Priority

Action #	# of Objectives Met	Benefits	Costs	Do Benefits Equal or Exceed Cost?	Is Project Grant-Eligible?	Can Project Be Funded Under Existing Programs/ Budgets?	Implementation Priority ^a	Grant Pursuit Priority ^a
1	10	High	High	Yes	Yes	No	Medium	High
2	5	Medium	Low	Yes	No	Yes	High	Low
3	3	High	High	Yes	Yes	No	Medium	High
4	3	Medium	Low	Yes	Yes	Yes	High	Medium
5	3	Medium	High	No	Yes	No	Low	Medium
6	4	Low	Low	Yes	Yes	No	Medium	Medium
7	7	Medium	Low	Yes	Yes	Yes	High	Medium
8	3	Medium	Medium	Yes	Yes	Yes	High	Medium
9	4	High	Medium	Yes	Yes	Yes	High	High
10	5	Low	Low	Yes	Yes	Yes	High	Medium

a. See the introduction to this volume for explanation of priorities.

Table 18-13. Analysis of Mitigation Actions

Hazard Type	Action Addressing Hazard, by Mitigation Type ^a							
	Prevention	Property Protection	Public Education & Awareness	Natural Resource Protection	Emergency Services	Structural Projects	Climate Resilient	Community Capacity Building ^b
High-Risk Hazards								
Landslide	PLV-2, 4, 5, 10	PLV-1, 2, 4, 5, 10	PLV-6, 8, 9, 10	PLV-2, 5, 7, 9, 10	PLV-3, 4, 6, 8, 10	PLV-1, 2, 5, 9, 10	PLV-2, 7, 10	PLV-2, 4, 6, 8, 10
Earthquake	PLV-2, 4, 5, 10	PLV-1, 2, 4, 5, 10	PLV-6, 8, 10	PLV-2, 5, 10	PLV-3, 4, 6, 8, 10	PLV-1, 2, 5, 10	PLV-2, 7, 10	PLV-2, 4, 6, 8, 10
Medium-Risk Hazards								
Severe Storms	PLV-2, 4, 5, 10	PLV-2, 4, 5, 10	PLV-6, 8, 10	PLV-2, 5, 10	PLV-3, 4, 6, 8, 10	PLV-2, 5, 10	PLV-2, 7, 10	PLV-2, 4, 6, 8, 10
Severe Weather	PLV-2, 4, 5, 10	PLV-2, 4, 5, 10	PLV-6, 8, 10	PLV-2, 5, 10	PLV-3, 4, 6, 8, 10	PLV-2, 5, 10	PLV-2, 7, 10	PLV-2, 4, 6, 8, 10
Dam Failure	PLV-2, 4, 5, 10	PLV-2, 4, 5, 10	PLV-6, 8, 10	PLV-2, 5, 10	PLV-3, 4, 6, 8, 10	PLV-2, 5, 10	PLV-2, 7, 10	PLV-2, 4, 6, 8, 10
Flooding	PLV-2, 4, 5, 10	PLV-2, 4, 5, 10	PLV-6, 8, 10	PLV-2, 5, 10	PLV-3, 4, 6, 8, 10	PLV-2, 5, 10	PLV-2, 7, 10	PLV-2, 4, 6, 8, 10
Low-Risk Hazards								
Wildfire	PLV-2, 4, 5, 7, 10	PLV-2, 4, 5, 7, 10	PLV-6, 8, 9, 10	PLV-2, 5, 7, 9, 10	PLV-3, 4, 6, 8, 10	PLV-2, 5, 9, 10	PLV-2, 7, 10	PLV-2, 4, 6, 8, 10
Drought	PLV-2, 4, 5, 10	PLV-2, 4, 5, 10	PLV-6, 8, 9, 10	PLV-2, 5, 7, 10	PLV-3, 4, 6, 8, 10	PLV-2, 5, 9, 10	PLV-2, 7, 10	PLV-2, 4, 6, 7, 8, 10

a. See the introduction to this volume for explanation of mitigation types.

b. Note that the jurisdiction did not identify a need for expansion of financial capabilities, based on existing capabilities. The intent of this hazard mitigation plan is to expand the financial capability of the jurisdiction.

18.8 INFORMATION SOURCES USED FOR THIS ANNEX

The following technical reports, plans, and regulatory mechanisms were reviewed to provide information for this annex.

- **PVRPD Fee Schedule**—Fee schedule is used to determine the pricing for District indoor and outdoor facilities.
- **PVRPD Capital Improvement Plan**—Capital Improvement Plan is used to plan projects as the community grows and changes. The plan can also be adapted to include projects to mitigate hazards if needed. It was reviewed while developing the action plan for this annex.
- **PVRPD American with Disabilities Act Transition Plan**—Americans with Disabilities Act Plan is part of the FY21-22 budget. Plan will help District identify and correct barriers that limit access to programs, services, and activities by persons with disabilities. It was reviewed while developing the action plan for this annex.

The following outside resources and references were reviewed:

- **Hazard Mitigation Plan Annex Development Toolkit**—The toolkit was used to support the identification of past hazard events and noted vulnerabilities, the risk ranking, and the development of the mitigation action plan.

19. SATICOY SANITARY DISTRICT

19.1 LOCAL HAZARD MITIGATION PLANNING TEAM

Primary Point of Contact

Tim Doyle, Engineering Analyst
1001 Partridge Drive, Suite 150
Ventura, California 93003-0704
Telephone: 805-658-4606
e-mail Address: tim.doyle@theprdgroup.net

Alternate Point of Contact

Mark Norris, General Manager
1001 Partridge Drive, Suite 150
Ventura, California 93003-0704
Telephone: 805-658-4621
e-mail Address: marknorris@vrdsd.com

This annex was developed by the local hazard mitigation planning team, whose members are listed in Table 19-1.

Table 19-1. Local Hazard Mitigation Planning Team Members

Name	Title
Tim Doyle	Engineering Analyst
Mark Norris	General Manager
Richard Jones	Operations Manager
Alvertina Rivera	Director of Finance

19.2 JURISDICTION PROFILE

19.2.1 Overview

The Saticoy Sanitary District is a special district created in 1941 to provide wastewater (sewer) service. A five-member elected Board of Directors governs the District. The Board assumes responsibility for the adoption of this plan; the General Manager will oversee its implementation. The District currently has no employees and contracts via Ventura Regional Sanitation District for its administrative and operational work with direct contracts for the General Manager and Engineering Analyst services. Funding comes primarily through sewer service rates.

19.2.2 Service Area

The Saticoy Sanitary District serves an unincorporated area of the County of Ventura with the City of Ventura to the west. The current total service area is 0.35 square miles. As of May 30, 2021, the District serves approximately 3,600 wastewater customers through 292 parcels located within the District.

19.2.3 Assets

Table 19-2 summarizes the assets of the District and their value.

Table 19-2. Special-Purpose District Assets	
Asset	Value
Property	
4.88 acres of land	\$390,500
Equipment	
Total length of WW pipe—4.4 miles (\$2.11M/mile, includes varied sizes 6"-16" and manholes)	\$9,292,800
Emergency Diesel Generator	\$40,000
Three high-capacity wastewater pumps	\$30,000
Four 3-hp blower/pump motors	\$20,000
<i>Total:</i>	<i>\$9,382,800</i>
Critical Facilities	
WW Treatment Plant—1419 Lirio St.	\$5,223,400
<i>Total:</i>	<i>\$5,223,400</i>

19.3 CURRENT TRENDS

The District only serves the unincorporated community of Saticoy. Population within the service has remained stable over the past 5 years and there have been no new developments within the District. There are 45 vacant parcels that could have dwelling units built there but the District has no information on any future plans. There is no potential expansion of the District's boundaries.

19.4 CAPABILITY ASSESSMENT

This section describes an assessment of existing capabilities for implementing hazard mitigation strategies. The introduction at the beginning of this volume of the hazard mitigation plan describes the components included in the capability assessment and their significance for hazard mitigation planning.

Findings of the capability assessment were reviewed to identify opportunities to expand, initiate or integrate capabilities to further hazard mitigation goals and objectives. Where such opportunities were identified and determined to be feasible, they are included in the action plan. The "Analysis of Mitigation Actions" table in this annex identifies these as community capacity building mitigation actions. The findings of the assessment are presented as follows:

- An assessment of planning and regulatory capabilities is presented in Table 19-3.
- An assessment of fiscal capabilities is presented in Table 19-4.
- An assessment of administrative and technical capabilities is presented in Table 19-5.
- An assessment of education and outreach capabilities is presented in Table 19-6.
- Classifications under various community mitigation programs are presented in Table 19-7.
- The community's adaptive capacity for the impacts of climate change is presented in Table 19-8.

Table 19-3. Planning and Regulatory Capability

Plan, Study or Program	Date of Most Recent Update	Comment
CA Cease and Desist Order (R4-2013-0098)	2013	
Waste Discharge Requirement (R4-2013-0092)	2013	
Emergency Response Plan	2019	
Rules and Regulations for the Sewage Collection System	1989	
Sewer System Management Plan	2015	
Ordinance SSD-14 Sewer Policy	2021	

Table 19-4. Fiscal Capability

Financial Resource	Accessible or Eligible to Use?
Community Development Block Grants	Yes
Capital Improvements Project Funding	Yes
Authority to Levy Taxes for Specific Purposes	No
User Fees for Water, Sewer, Gas or Electric Service <i>If yes, specify:</i> VC Tax Rolls	Yes
Incur Debt through General Obligation Bonds	No
Incur Debt through Special Tax Bonds	Yes
Incur Debt through Private Activity Bonds	No
Withhold Public Expenditures in Hazard-Prone Areas	No
State-Sponsored Grant Programs	Yes
Development Impact Fees for Homebuyers or Developers	Yes

Table 19-5. Administrative and Technical Capability

Staff/Personnel Resource	Available?
Planners or engineers with knowledge of land development and land management practices <i>If Yes, Department /Position:</i> Contractor	Yes
Engineers or professionals trained in building or infrastructure construction practices <i>If Yes, Department /Position:</i> Contractor	Yes
Planners or engineers with an understanding of natural hazards <i>If Yes, Department /Position:</i> Contractor	Yes
Staff with training in benefit-cost analysis <i>If Yes, Department /Position:</i> Contractor	Yes
Surveyors <i>If Yes, Department /Position:</i> Contractor	Yes
Personnel skilled or trained in GIS applications <i>If Yes, Department /Position:</i> Contractor	Yes
Scientist familiar with natural hazards in local area <i>If Yes, Department /Position:</i> Contractor	Yes
Emergency manager <i>If Yes, Department /Position:</i> General Manager or Operations Manager	Yes
Grant writers <i>If Yes, Department /Position:</i> Contractor	Yes

Table 19-6. Education and Outreach Capability

Criterion	Response
Do you have a public information officer or communications office?	No
Do you have personnel skilled or trained in website development?	No
Do you have hazard mitigation information available on your website?	No
Do you use social media for hazard mitigation education and outreach?	No
Do you have any citizen boards or commissions that address issues related to hazard mitigation?	No
Do you have any other programs in place that could be used to communicate hazard-related information?	No
Do you have any established warning systems for hazard events?	No

Table 19-7. Community Classifications

	Participating?	Classification	Date Classified
FIPS Code	No	N/A	N/A
DUNS#	Yes	149532686	N/A
Community Rating System	No	N/A	N/A
Building Code Effectiveness Grading Schedule	No	N/A	N/A
Public Protection	No	N/A	N/A
Storm Ready	No	N/A	N/A
Firewise	No	N/A	N/A
Tsunami Ready	No	N/A	N/A

Table 19-8. Adaptive Capacity for Climate Change

Criterion	Jurisdiction Rating ^a
Technical Capacity	
Jurisdiction-level understanding of potential climate change impacts <i>Comment:</i>	Low
Jurisdiction-level monitoring of climate change impacts <i>Comment:</i>	Low
Technical resources to assess proposed strategies for feasibility and externalities <i>Comment:</i>	Low
Jurisdiction-level capacity for development of greenhouse gas emissions inventory <i>Comment:</i>	Low
Capital planning and land use decisions informed by potential climate impacts <i>Comment:</i>	Low
Participation in regional groups addressing climate risks <i>Comment:</i>	Low
Implementation Capacity	
Clear authority/mandate to consider climate change impacts during public decision-making processes <i>Comment:</i>	Low
Identified strategies for greenhouse gas mitigation efforts <i>Comment:</i>	Low

Criterion	Jurisdiction Rating ^a
Identified strategies for adaptation to impacts <i>Comment:</i>	Low
Champions for climate action in local government departments <i>Comment:</i>	Low
Political support for implementing climate change adaptation strategies <i>Comment:</i>	Low
Financial resources devoted to climate change adaptation <i>Comment: None</i>	Low
Local authority over sectors likely to be negative impacted <i>Comment:</i>	Low
Public Capacity	
Local residents' knowledge of and understanding of climate risk <i>Comment:</i>	Low
Local residents' support of adaptation efforts <i>Comment:</i>	Low
Local residents' capacity to adapt to climate impacts <i>Comment: Unknown given the demographics but likely minimal</i>	Low
Local economy current capacity to adapt to climate impacts <i>Comment: Minimal since Saticoy is a severely disadvantaged community</i>	Low
Local ecosystems capacity to adapt to climate impacts <i>Comment:</i>	Low

- a. High = Capacity exists and is in use; Medium = Capacity may exist, but is not used or could use some improvement;
Low = Capacity does not exist or could use substantial improvement; Unsure= Not enough information is known to assign a rating.

19.5 INTEGRATION REVIEW

For hazard mitigation planning, “integration” means that hazard mitigation information is used in other relevant planning mechanisms, such as capital facilities planning, and that relevant information from those sources is used in hazard mitigation. This section identifies where such integration is already in place, and where there are opportunities for further integration in the future. Resources listed at the end of this annex were used to provide information on integration. The progress reporting process described in Volume 1 of the hazard mitigation plan will document the progress of hazard mitigation actions related to integration and identify new opportunities for integration.

19.5.1 Existing Integration

Some level of integration has already been established between local hazard mitigation planning and the following other local plans and programs:

- **Capital Improvement Plan**—The capital improvement plan includes projects that can help mitigate potential hazards through rehabilitating key components. The District will act to ensure consistency between the hazard mitigation plan and the current and future capital improvement plans. The hazard mitigation plan may identify new possible funding sources for capital improvement projects and may result in modifications to proposed projects based on results of the risk assessment. Currently, the District utilizes the Department of Housing and Urban

Development CDBG program and is in the design phase for the State of California Prop1-TA Bond Program.

- **Emergency Response Plan**—The results of a risk assessment were used in the development of the emergency response plan and are so noted in the plan.

19.5.2 Opportunities for Future Integration

The capability assessment in this annex indicates opportunities to integrate this mitigation plan with other jurisdictional planning/regulatory capabilities. Capabilities were identified as integration opportunities if they can support or enhance the actions identified in this plan or be supported or enhanced by components of this plan. The capability assessment identified the following plans and programs that do not currently integrate hazard mitigation information but provide opportunities to do so in the future:

- **Capital Improvement Projects**—Capital improvement project proposals may take into consideration hazard mitigation potential as a means of evaluating project prioritization. But the critical criteria remains the risk assessment and needs prioritization coupled with funding availability.
- **Post-Disaster Recovery Plan**—The District does not have a recovery plan and intends to develop one as a mitigation planning action during the next five years. The plan will build on the mitigation goals and objectives identified in the mitigation plan.

Taking action to integrate each of these programs with the hazard mitigation plan was considered as a mitigation action to include in the action plan in this annex.

19.6 RISK ASSESSMENT

19.6.1 Jurisdiction-Specific Natural Hazard Event History

Table 19-9 lists past occurrences of natural hazards for which specific damage was recorded in this jurisdiction. Other hazard events that broadly affected the entire planning area, including this jurisdiction, are listed in the risk assessments in Volume 1 of this hazard mitigation plan.

Table 19-9. Past Natural Hazard Events

Type of Event	FEMA Disaster #	Date	Damage Assessment
COVID-19	DR-4482	January 20, 2020 Continuing	Ongoing
Atmospheric River Storm System	CA Disaster 109	January/February 2019	N/A
Wildfires, Flooding, Mudflows, and Debris Flows	DR-4353	December 4, 2017- January 31, 2018	N/A
Thomas Fire	4224-DR-CA	December 4, 2017	N/A
February Winter Storm	CA Disaster 77.1	February 2017	N/A
January Winter Storm	CA Disaster 77	January 2017	N/A
Tsunami (7.1 earthquake in Japan)		March 11, 2011	N/A
Tsunami (8.8 Quake in Chile)		February 27, 2010	N/A
Storm and Flood		January 18 – 22, 2010.	Unknown
Wildfires, Flooding, Mudflows, and Debris Flows	DR-1731	October 21 – March 31, 2008	Unknown

Type of Event	FEMA Disaster #	Date	Damage Assessment
Severe Storm	DR-1267	January 7 – 11, 2005	Unknown
Severe Storms/Flooding	DR-1577	January 2005	Unknown
“El Nino” Storm and Flood		February 1998	Unknown
Storms and Floods		January and March, 1995	Unknown
Northridge Earthquake	DR-1008	January 17 – November 30, 1994	Unknown
Storm and Flood		February 10-15, 1992	Unknown
Storm and Flood		February 25-March 3, 1983	Unknown
Storm and Flood		February 13-22, 1980	Unknown
Sespe Creek Flood		March 4, 1978	Unknown
Storms and Floods (Calleguas Creek Flood)		February 28-March 5, 1978	Unknown
Severe Storms/Flooding	DR-211	January 1969	Unknown

19.6.2 Hazard Risk Ranking

Table 19-10 presents a local ranking of all hazards of concern for which this hazard mitigation plan provides complete risk assessments. As described in detail in Volume 1, the ranking process involves an assessment of the likelihood of occurrence for each hazard, along with its potential impacts on people, property, and district operations. Mitigation actions primarily target hazards with high and medium rankings.

Table 19-10. Hazard Risk Ranking

Rank	Hazard	Risk Ranking Score	Risk Category
1	Earthquake	36	High
1	Flooding	36	High
2	Landslide	24	Medium
2	Dam Failure	24	Medium
2	Severe Weather	24	Medium
2	Severe Storms	24	Medium
3	Wildfire	15	Low
3	Sea Level Rise	15	Low
3	Tsunami	15	Low
4	Drought	9	Low

19.6.3 Other Noted Vulnerabilities

Volume 1 of this hazard mitigation plan provides complete risk assessments for each identified hazard of concern. The following jurisdiction-specific issues have been identified based on a review of the results of the risk assessment, public involvement strategy, and other available resources:

- With 80% of the District's facilities underground (wastewater pipelines, storage tanks), the Risk Ranking Score for earthquake was elevated from the County level of 24 to 36.
- Structural stability for the above ground facilities and piping to retard flooding damage.

Mitigation actions addressing these issues were prioritized for consideration in the action plan in this annex.

19.7 HAZARD MITIGATION ACTION PLAN

Table 19-11 lists the actions that make up the hazard mitigation action plan for this jurisdiction.

Table 19-12 identifies the priority for each action. Table 19-13 summarizes the mitigation actions by hazard of concern and mitigation type.

Table 19-11. Hazard Mitigation Action Plan Matrix

Benefits New or Existing Assets	Objectives Met	Lead Agency	Support Agency	Estimated Cost	Sources of Funding	Timeline ^a
Action SAT-1—Where appropriate, support retrofitting, rehabilitation, or relocation of structures located in potential hazard areas, prioritizing those that have experienced repetitive losses and/or are located in high- or medium-risk hazard areas.						
<u>Hazards Mitigated:</u> Dam Failure, Earthquake, Flooding, Landslide, Severe Weather, Sea Level, Tsunami						
Existing	2, 6, 9, 11	Saticoy SD	N/A	High	Grant Funding- FEMA HMA (BRIC, FMA, HMGP)	Short-term
Action SAT-2—Actively participate in the plan maintenance protocols outlined in Volume 1 of this hazard mitigation plan.						
<u>Hazards Mitigated:</u> Earthquake, Flooding, Landslide, Dam Failure, Severe Weather, Severe Storms, Wildfire, Drought						
New & Existing	2, 8, 11, 19	Saticoy SD	N/A	Low	General Funds	Short-term
Action SAT-3—Purchase generator for treatment plant that lacks adequate backup power.						
<u>Hazards Mitigated:</u> Dam Failure, Earthquake, Flooding, Landslide, Severe Weather, Tsunami						
New & Existing	2, 7, 8	Saticoy SD	N/A	Medium	CIP & Grant Funding- FEMA HMA (BRIC, HMGP)	Short-term
Action SAT-4—Develop a post disaster action plan that includes assistance with grant fund writing, debris removal components, and warehousing of critical infrastructure components.						
<u>Hazards Mitigated:</u> Dam Failure, Earthquake, Flooding, Landslide, Severe Weather, Sea Level, Tsunami						
Existing	2, 8, 19	Saticoy SD	N/A	Medium	General Funds & Grant Funding- FEMA HMA (BRIC, FMA, HMGP)	Ongoing

a. Short-term = Completion within 5 years; Long-term = Completion within 10 years; Ongoing= Continuing new or existing program with no completion date

Acronyms used here are defined at the beginning of this volume.

Table 19-12. Mitigation Action Priority

Action #	# of Objectives Met	Benefits	Costs	Do Benefits Equal or Exceed Cost?	Is Project Grant-Eligible?	Can Project Be Funded Under Existing Programs/ Budgets?	Implementation Priority ^a	Grant Pursuit Priority ^a
SAT-1	4	High	High	Yes	Yes	No	Medium	High
SAT-2	4	Medium	Low	Yes	No	Yes	High	Low
SAT-3	3	High	Medium	Yes	Yes	No	Medium	High
SAT-4	3	Medium	Medium	Yes	Yes	No	Medium	Medium

a. See the introduction to this volume for explanation of priorities.

Table 19-13. Analysis of Mitigation Actions

Hazard Type	Action Addressing Hazard, by Mitigation Type ^a							
	Prevention	Property Protection	Public Education & Awareness	Natural Resource Protection	Emergency Services	Structural Projects	Climate Resilient	Community Capacity Building ^b
High-Risk Hazards								
Earthquake		SAT-1	SAT-2		SAT-3, 4	SAT-1		SAT-2, 4
Flooding	SAT-1	SAT-1	SAT-2		SAT-3, 4	SAT-1		SAT-2, 4
Medium-Risk Hazards								
Landslide		SAT-1	SAT-2		SAT-3, 4	SAT-1		SAT-2, 4
Dam Failure		SAT-1	SAT-2		SAT-3, 4	SAT-1		SAT-2, 4
Severe weather/storms	SAT-1	SAT-1	SAT-2		SAT-3, 4	SAT-1		SAT-2, 4
Low-Risk Hazards								
Wildfire	SAT-1	SAT-1	SAT-2		SAT-3, 4	SAT-1		SAT-2, 4
Drought								SAT-2, 4

a. See the introduction to this volume for explanation of mitigation types.

b. Note that the jurisdiction did not identify a need for expansion of financial capabilities, based on existing capabilities. The intent of this hazard mitigation plan is to expand the financial capability of the jurisdiction.

19.8 INFORMATION SOURCES USED FOR THIS ANNEX

The following technical reports, plans, and regulatory mechanisms were reviewed to provide information for this annex.

- **5-year CIP** was reviewed to determine if the risk assessment and hazard mitigation factors could be comingled and used to develop a more structured needs base.
- **The Los Angeles Regional Water Quality Control Board (RWQCB) Cease and Desist Order** was instrumental to prioritize the hazards the District faces due to certain system deficiencies caused by an aging infrastructure and vulnerabilities if not corrected.
- The District reviewed its **Waste Discharge Permit** and **Emergency Response Plan** along with the **Threat Assessment Matrix** to ensure that the incorporation of a Hazard Mitigation Plan could be achieved and implemented accordingly.

The following outside resources and references were reviewed:

- **Hazard Mitigation Plan Annex Development Toolkit**—The toolkit was used to support the identification of past hazard events and noted vulnerabilities, the risk ranking, and the development of the mitigation action plan. This will be incorporated as the District moves along in this process.

20. TRIUNFO WATER & SANITATION DISTRICT

20.1 LOCAL HAZARD MITIGATION PLANNING TEAM

Primary Point of Contact

Timothy Doyle, Engineering Program Mgr.
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Alternate Point of Contact

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This annex was developed by the local hazard mitigation planning team, whose members are listed in Table 20-1.

Table 20-1. Local Hazard Mitigation Planning Team Members

Name	Title
Timothy Doyle	Engineering Program Manager
Mark Norris	General Manager
Richard Jones	Operations Manager
Vickie Dragan	Director of Finance
Chi Hermann	Administrative Program Manager

20.2 JURISDICTION PROFILE

20.2.1 Overview

The Triunfo Water & Sanitation District is a special district created in 1963 to provide wastewater (sewer) service. The District expanded its service to the community in 1993 with the purchase of the Metropolitan Water Company located within the District's boundaries in Oak Park. A five-member elected Board of Directors governs the District. The Board assumes responsibility for the adoption of this plan; the General Manager will oversee its implementation. The District currently has 9 employees and contracts via Ventura Regional Sanitation District for its operational services. Funding comes primarily through potable water and sewer service rates.

20.2.2 Service Area and Trends

Covering a service area of approximately 50 square miles, the District provides wastewater collection and treatment services to more than 30,000 people in Oak Park, Lake Sherwood, Bell Canyon, and the

Westlake Village and North Ranch portions of Thousand Oaks. Triunfo also supplies potable water to more than 14,000 people in Oak Park.

20.2.3 Assets

Table 20-2 summarizes the assets of the District and their value.

Table 20-2. Special-Purpose District Assets	
Asset	Value
Property	
7.17 acres of land	\$573,900
Equipment	
Total length of PW pipe—49 miles (\$2.1M/mile, includes varied sizes 6"-30" and valves/PRVs)	\$102,900,000
Total length of WW pipe—129 miles (\$2.3M/mile, includes varied sizes 6"-18" and manholes)	\$296,700,000
Emergency Diesel Generators (7 generators with varied KVA output)	\$385,000
SCADA System	\$200,000
Total:	\$400,758,900
Critical Facilities	
Oak Canyon Reservoir 2.4 MG, 1115 Kanan Rd, 91377	\$8,100,000
Deerhill Reservoir 2.2 MG, 990-1/2 Lambourne Ct, 91377	\$2,690,000
Savoy Reservoir 1.6 MG, 322-1/2 Savoy Ct, 91377	\$1,783,000
Kilburn Reservoir 0.86 MG, 4997 Kilburn Ct, 91377	\$877,000
Deerhill Pump Station, 5000 Bishopwood Ln, 91377	\$2,700,000
Lindero Pump Station, 753 Lindero Canyon Rd, 91377	\$495,800
Savoy Pump Station, 322-1/2 Savoy Ct, 91377	\$882,000
Lambourne Booster Station, 990-1/2 Lambourne Ct, 91377	\$75,000
Smoketree Booster Station, 6613 Smoketree Ave, 91377	\$75,000
Bell Canyon Lift Station, 62-1/2 Buckskin Rd, 91307	\$532,200
Carlisle Lift Station, 2845 Calbourne Ln, 91361	\$574,000
Lakeside Lift Station, 654 Lake Sherwood Dr, 91361	\$195,000
North Ranch Lift Station, Country Valley Rd & Meadow Grove, 91362	\$170,000
Polo Lift Station, E. Potrero Rd & Polo St, 91361	\$150,000
Westlake Lift Station, Triunfo Canyon & Westshore Ln, 91361	\$150,000
Total:	\$19,449,000

20.3 CURRENT TRENDS

Population within the District's service area has remained relatively stable over the past 5 years and there have been no new major developments within the District. Although Oak Park is basically built-out, there remain portions of Lake Sherwood, Bell Canyon, and the Westlake area that have parcels available for residential dwellings. These parcels are being slowly developed with approximately 5-7 new homes per year. In addition, there are ADU (Accessory Dwelling Unit) improvements to 2-3 parcels per year. There is no potential expansion of the District's boundaries.

20.4 CAPABILITY ASSESSMENT

This section describes an assessment of existing capabilities for implementing hazard mitigation strategies. The introduction at the beginning of this volume of the hazard mitigation plan describes the components included in the capability assessment and their significance for hazard mitigation planning.

Findings of the capability assessment were reviewed to identify opportunities to expand, initiate or integrate capabilities to further hazard mitigation goals and objectives. Where such opportunities were identified and determined to be feasible, they are included in the action plan. The “Analysis of Mitigation Actions” table in this annex identifies these as community capacity building mitigation actions. The findings of the assessment are presented as follows:

- An assessment of planning and regulatory capabilities is presented in Table 20-3.
- An assessment of fiscal capabilities is presented in Table 20-4.
- An assessment of administrative and technical capabilities is presented in Table 20-5.
- An assessment of education and outreach capabilities is presented in Table 20-6.
- Classifications under various community mitigation programs are presented in Table 20-7.
- The community’s adaptive capacity for the impacts of climate change is presented in Table 20-8.

Table 20-3. Planning and Regulatory Capability

Plan, Study or Program	Date of Most Recent Update	Comment
Urban Water Management Plan	2015	2020 version pending
Emergency Response Plan	2015	2020 version pending
Rules and Regulations for the Sewage Collection System	1989	
Ordinance TSD-202 Sewer Pretreatment Policy	2021	
Sewer System Management Plan	2015	

Table 20-4. Fiscal Capability

Financial Resource	Accessible or Eligible to Use?
Community Development Block Grants	Yes
Capital Improvements Project Funding	Yes
Authority to Levy Taxes for Specific Purposes	No
User Fees for Water, Sewer, Gas or Electric Service	Yes
<i>If yes, specify:</i> VC Tax Rolls	
Incur Debt through General Obligation Bonds	No
Incur Debt through Special Tax Bonds	Yes
Incur Debt through Private Activity Bonds	No
Withhold Public Expenditures in Hazard-Prone Areas	No
State-Sponsored Grant Programs	Yes
Development Impact Fees for Homebuyers or Developers	Yes

Table 20-5. Administrative and Technical Capability

Staff/Personnel Resource	Available?
Planners or engineers with knowledge of land development and land management practices <i>If Yes, Department /Position:</i> Contractor	Yes
Engineers or professionals trained in building or infrastructure construction practices <i>If Yes, Department /Position:</i> Administrative Dept./Contractor	Yes
Planners or engineers with an understanding of natural hazards <i>If Yes, Department /Position:</i> Administrative Dept./Contractor	Yes
Staff with training in benefit-cost analysis <i>If Yes, Department /Position:</i> Finance Dept.	Yes
Surveyors <i>If Yes, Department /Position:</i> Contractor	Yes
Personnel skilled or trained in GIS applications <i>If Yes, Department /Position:</i> Administrative Dept./Contractor	Yes
Scientist familiar with natural hazards in local area <i>If Yes, Department /Position:</i> Contractor	Yes
Emergency manager <i>If Yes, Department /Position:</i> General Manager or Operations Manager	Yes
Grant writers <i>If Yes, Department /Position:</i> Contractor	Yes
Other <i>If Yes, Department /Position:</i> As needed	Yes

Table 20-6. Education and Outreach Capability

Criterion	Response
Do you have a public information officer or communications office?	Yes
Do you have personnel skilled or trained in website development?	Yes
Do you have hazard mitigation information available on your website?	No
Do you use social media for hazard mitigation education and outreach? <i>If yes, briefly describe:</i> Have social media but not currently used for hazard mitigation outreach	Pending
Do you have any citizen boards or commissions that address issues related to hazard mitigation?	No
Do you have any other programs in place that could be used to communicate hazard-related information?	No
Do you have any established warning systems for hazard events? <i>If yes, briefly describe:</i> Reverse 911/email/social media	Yes

Table 20-7. Community Classifications

	Participating?	Classification	Date Classified
FIPS Code	No	N/A	N/A
DUNS#	Yes	156-168205	N/A
Community Rating System	No	N/A	N/A
Building Code Effectiveness Grading Schedule	No	N/A	N/A
Public Protection	No	N/A	N/A
Storm Ready	No	N/A	N/A
Firewise	No	N/A	N/A
Tsunami Ready	No	N/A	N/A

Table 20-8. Adaptive Capacity for Climate Change

Criterion	Jurisdiction Rating ^a
Technical Capacity	
Jurisdiction-level understanding of potential climate change impacts <i>Comment:</i>	Low
Jurisdiction-level monitoring of climate change impacts <i>Comment:</i>	Low
Technical resources to assess proposed strategies for feasibility and externalities <i>Comment:</i>	Low
Jurisdiction-level capacity for development of greenhouse gas emissions inventory <i>Comment:</i>	Low
Capital planning and land use decisions informed by potential climate impacts <i>Comment:</i>	Low
Participation in regional groups addressing climate risks <i>Comment:</i>	Low
Implementation Capacity	
Clear authority/mandate to consider climate change impacts during public decision-making processes <i>Comment:</i>	Low
Identified strategies for greenhouse gas mitigation efforts <i>Comment:</i>	Low
Identified strategies for adaptation to impacts <i>Comment:</i>	Low
Champions for climate action in local government departments <i>Comment:</i>	Low
Political support for implementing climate change adaptation strategies <i>Comment:</i>	Low
Financial resources devoted to climate change adaptation <i>Comment:</i>	Low
Local authority over sectors likely to be negative impacted <i>Comment:</i>	Low
Public Capacity	
Local residents' knowledge of and understanding of climate risk <i>Comment: Triunfo customers are highly educated and involved with climate risk issues</i>	Medium
Local residents' support of adaptation efforts <i>Comment: District residents are highly supportive of measures to minimize risk and address climate issues</i>	Medium
Local residents' capacity to adapt to climate impacts <i>Comment: Being supportive of necessary changes posed by the District, residents are willing to cooperate, within reason, as requested by the Agency or other government entities.</i>	Medium
Local economy current capacity to adapt to climate impacts <i>Comment: Median income level is well above the State average giving additional resources to support needed changes to address impacts</i>	Medium
Local ecosystems capacity to adapt to climate impacts <i>Comment:</i>	Low

- a. High = Capacity exists and is in use; Medium = Capacity may exist, but is not used or could use some improvement;
Low = Capacity does not exist or could use substantial improvement; Unsure= Not enough information is known to assign a rating.

20.5 INTEGRATION REVIEW

For hazard mitigation planning, “integration” means that hazard mitigation information is used in other relevant planning mechanisms, such as capital facilities planning, and that relevant information from those sources is used in hazard mitigation. This section identifies where such integration is already in place, and where there are opportunities for further integration in the future. Resources listed at the end of this annex were used to provide information on integration. The progress reporting process described in Volume 1 of the hazard mitigation plan will document the progress of hazard mitigation actions related to integration and identify new opportunities for integration.

20.5.1 Existing Integration

Some level of integration has already been established between local hazard mitigation planning and the following other local plans and programs:

- **Capital Improvement Plan**—The capital improvement plan includes projects that can help mitigate potential hazards through rehabilitating key components. The District will act to ensure consistency between the hazard mitigation plan and the current and future capital improvement plans. The hazard mitigation plan may identify new possible funding sources for capital improvement projects and may result in modifications to proposed projects based on results of the risk assessment.
- **Emergency Response Plan**—The results of a risk assessment were used in the development of the emergency response plan and are so noted in the plan.

20.5.2 Opportunities for Future Integration

The capability assessment in this annex indicates opportunities to integrate this mitigation plan with other jurisdictional planning/regulatory capabilities. Capabilities were identified as integration opportunities if they can support or enhance the actions identified in this plan or be supported or enhanced by components of this plan. The capability assessment identified the following plans and programs that do not currently integrate hazard mitigation information but provide opportunities to do so in the future:

- **Capital Improvement Projects**—Capital improvement project proposals may take into consideration hazard mitigation potential as a means of evaluating project prioritization. But the critical criteria remains the risk assessment and needs prioritization coupled with funding availability.
- **Post-Disaster Recovery Plan**—The District does not have a completed recovery plan and intends to fully develop one as a mitigation planning action during the next five years. The plan will build on the mitigation goals and objectives identified in the mitigation plan.

Taking action to integrate each of these programs with the hazard mitigation plan was considered as a mitigation action to include in the action plan in this annex.

20.6 RISK ASSESSMENT

20.6.1 Jurisdiction-Specific Natural Hazard Event History

Table 20-9 lists past occurrences of natural hazards for which specific damage was recorded in this jurisdiction. Other hazard events that broadly affected the entire planning area, including this jurisdiction, are listed in the risk assessments in Volume 1 of this hazard mitigation plan.

Table 20-9. Past Natural Hazard Events

Type of Event	FEMA Disaster #	Date	Damage Assessment
COVID-19	DR-4482	January 20, 2020 Continuing	Ongoing
Hill Fire	DR 4407	11/8/18 -11/9/18	N/A
Winter Storm Event	DR 4353	12/4/17- 1/31/18	N/A
Springs Fire	DR 5024	5/2/13 – 5/11/13	N/A
Wildwood I Fire	N/A	1995	N/A
Wildfires	DR-4407	November 12, 2018	\$404,424
Northridge Earthquake	DR-1008	January 17, 1994	N/A
Green Meadow Fire	N/A	10/26/93 – 11/3/93	N/A
Sherwood Fire	N/A	1985	N/A
Dayton Canyon Fire	N/A	October 25, 1982	N/A
Winter Storm Event	N/A	February 21, 1980	N/A
Winter Storm Event	N/A	February 15, 1978	N/A
Winter Storm Event	N/A	January 26, 1969	N/A

20.6.2 Hazard Risk Ranking

Table 20-10 presents a local ranking of all hazards of concern for which this hazard mitigation plan provides complete risk assessments. As described in detail in Volume 1, the ranking process involves an assessment of the likelihood of occurrence for each hazard, along with its potential impacts on people, property, and district operations. Mitigation actions primarily target hazards with high and medium rankings.

Table 20-10. Hazard Risk Ranking

Rank	Hazard	Risk Ranking Score	Risk Category
1	Earthquake	36	High
1	Wildfire	36	High
1	Landslide	36	High
2	Dam Failure	24	Medium
2	Severe weather/storms	24	Medium
3	Flooding	18	Medium
4	Drought	9	Low

20.6.3 Other Noted Vulnerabilities

Volume 1 of this hazard mitigation plan provides complete risk assessments for each identified hazard of concern. The following jurisdiction-specific issues have been identified based on a review of the results of the risk assessment, public involvement strategy, and other available resources:

- With 90% of the District's facilities underground (water and wastewater pipelines), the Risk Ranking Score for earthquake was elevated from the County level of 24 to 36.
- The Lake Sherwood Dam poses a direct threat to District facilities downstream of its location.

Mitigation actions addressing these issues were prioritized for consideration in the action plan in this annex.

20.7 HAZARD MITIGATION ACTION PLAN

Table 20-11 lists the actions that make up the hazard mitigation action plan for this jurisdiction.

Table 20-12 identifies the priority for each action. Table 20-13 summarizes the mitigation actions by hazard of concern and mitigation type.

Table 20-11. Hazard Mitigation Action Plan Matrix

Benefits New or Existing Assets	Objectives Met	Lead Agency	Support Agency	Estimated Cost	Sources of Funding	Timeline ^a
Action TRI-1—Where appropriate, support retrofitting, purchase or relocation of structures located in hazard areas, prioritizing those that have experienced repetitive losses and/or are located in high- or medium-risk hazard areas.						
<u>Hazards Mitigated:</u> Dam Failure, Earthquake, Flooding, Landslide, Severe Weather, Wildfire						
Existing	2, 6, 9, 11	Triunfo WSD	N/A	High	Grant Funding- FEMA HMA (BRIC, FMA, HMGP)	Short-term
Action TRI-2—Actively participate in the plan maintenance protocols outlined in Volume 1 of this hazard mitigation plan.						
<u>Hazards Mitigated:</u> Earthquake, Wildfire, Landslide, Dam Failure, Severe Weather, Storms, Flooding, Drought						
New & Existing	2, 8, 11, 19	Triunfo WSD	N/A	Low	General Funds, Staff Time	Short-term
Action TRI-3—Purchase generators for critical facilities that lack adequate backup power, including Savoy, Lambourne, and Smoketree Booster Stations.						
<u>Hazards Mitigated:</u> Dam Failure, Earthquake, Flooding, Landslide, Severe Weather, Wildfire						
New & Existing	2, 7, 8	Triunfo WSD	N/A	Medium	CIP & Grant Funding- FEMA HMA (BRIC, HMGP)	Ongoing
Action TRI-4—Develop a post disaster action plan that includes grant funding, debris removal components, and warehousing of critical infrastructure components						
<u>Hazards Mitigated:</u> Dam Failure, Earthquake, Wildfire, Flooding, Landslide, Severe Weather, Severe Storms						
Existing	2, 8, 19	Triunfo WSD	N/A	Medium	General Funds & Grant Funding- FEMA HMA (BRIC, FMA, HMGP)	Ongoing
Action TRI-5—Maintain wildfire hazard fuel reduction program for areas that have been identified with overgrown or dead brush, trees and weeds to reduce the potential for tree-to-tree ignition. Ensure that a "maintenance now" component to provide continued fire resistance is part of the program. (Coordinates with Ventura County Fire Protection District Action VFP-6)						
<u>Hazards Mitigated:</u> Wildfire						
New & Existing	2, 4, 5, 6, 8, 10, 11, 13, 14, 15, 18, 19	VCFPD	Triunfo WSD, CAL FIRE & USDA	Medium	FEMA HMA (BRIC, FMAP and HMGP), Staff Time & General Funds	Ongoing
Action TRI-6—Acquire properties in high risk areas						
<u>Hazards Mitigated:</u> Wildfire, Landslide, Severe Weather, Severe Storms						
New	5, 8, 11, 17	Triunfo WSD	N/A	Medium	Grant Funding- FEMA HMA (BRIC, FMA, HMGP)	Long-term

Benefits New or Existing Assets	Objectives Met	Lead Agency	Support Agency	Estimated Cost	Sources of Funding	Timeline ^a
Action TRI-7—Slope stabilization and drainage control features around water reservoirs						
<u>Hazards Mitigated:</u> Landslide, Flooding, Severe Weather						
Existing	5, 9, 11, 14	Triunfo WSD	N/A	Medium	General Funds & Grant Funding-FEMA HMA (BRIC, FMA, HMGP)	Ongoing

a. Short-term = Completion within 5 years; Long-term = Completion within 10 years; Ongoing= Continuing new or existing program with no completion date

Acronyms used here are defined at the beginning of this volume.

Table 20-12. Mitigation Action Priority

Action #	# of Objectives Met	Benefits	Costs	Do Benefits Equal or Exceed Cost?	Is Project Grant-Eligible?	Can Project Be Funded Under Existing Programs/ Budgets?	Implementation Priority ^a	Grant Pursuit Priority ^a
TRI-1	4	High	High	Yes	Yes	No	Medium	High
TRI-2	4	Medium	Low	Yes	No	Yes	High	Low
TRI-3	3	High	Medium	Yes	Yes	No	Medium	High
TRI-4	3	Medium	Medium	Yes	Yes	No	Medium	Medium
TRI-5	12	High	Low	Yes	Yes	Yes	High	High
TRI-6	4	High	Medium	Yes	Yes	No	Medium	High
TRI-7	4	High	Medium	Yes	Yes	No	Medium	High

a. See the introduction to this volume for explanation of priorities.

Table 20-13. Analysis of Mitigation Actions

Hazard Type	Action Addressing Hazard, by Mitigation Type ^a							
	Prevention	Property Protection	Public Education & Awareness	Natural Resource Protection	Emergency Services	Structural Projects	Climate Resilient	Community Capacity Building ^b
High-Risk Hazards								
Earthquake		TRI-1	TRI-2	TRI-5	TRI-3, 4			TRI-2, 4
Wildfire	TRI-5, 6	TRI-1	TRI-2, 5	TRI-5, 6	TRI-3, 4		TRI-5	TRI-2, 4, 5
Landslide	TRI-6	TRI-1	TRI-2	TRI-5, 6, 7	TRI-3, 4	TRI-7		TRI-2, 4
Medium-Risk Hazards								
Dam Failure		TRI-1	TRI-2	TRI-5	TRI-3, 4			TRI-2, 4
Severe Weather	TRI-5, 6	TRI-1	TRI-2	TRI-5, 7	TRI-3, 4			TRI-2, 4
Severe Storms	TRI-5	TRI-1	TRI-2	TRI-5	TRI-4	TRI-7		TRI-2, 4
Flooding	TRI-5, 6	TRI-1	TRI-2	TRI-5, 7	TRI-3, 4	TRI-7		TRI-2, 4
Low-Risk Hazards								
Drought			TRI-2					TRI-2

a. See the introduction to this volume for explanation of mitigation types.

b. Note that the jurisdiction did not identify a need for expansion of financial capabilities, based on existing capabilities. The intent of this hazard mitigation plan is to expand the financial capability of the jurisdiction.

20.8 INFORMATION SOURCES USED FOR THIS ANNEX

The following technical reports, plans, and regulatory mechanisms were reviewed to provide information for this annex.

- **Capital Improvement Plans**—The 5-year and 10-year CIPs were reviewed to determine if the risk assessment and hazard mitigation factors could be comingled and used to develop a more structured needs base.
- The District reviewed its **Urban Water Management Plan**, **Emergency Response Plan** along with the **Threat Assessment Matrix**, and **District Ordinances** to ensure that the incorporation of a Hazard Mitigation Plan could be achieved and implemented accordingly.

The following outside resources and references were reviewed:

- **Hazard Mitigation Plan Annex Development Toolkit**—The toolkit was used to support the identification of past hazard events and noted vulnerabilities, the risk ranking, and the development of the mitigation action plan. This will continue to be utilized as the District moves along in this process.

21. UNITED WATER CONSERVATION DISTRICT

21.1 LOCAL HAZARD MITIGATION PLANNING TEAM

Primary Point of Contact

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This annex was developed by the local hazard mitigation planning team, whose members are listed in Table 21-1.

Table 21-1. Local Hazard Mitigation Planning Team Members

Name	Title
Brian Collins	Chief Operations Officer
Maryam Bral	Chief Engineer
Craig Morgan	Engineering Manager
Josh Perez	Human Resources Manager
Tony Huynh	Safety and Security Program Coordinator
John Carman	O&M Program Supervisor
Michel Kadah	Engineer
Adrian Quiroz	Associate Engineer

21.2 JURISDICTION PROFILE

21.2.1 Overview

Local landowners formed the Santa Clara River Water Conservation District in 1927. As cities and agricultural areas grew, water usage increased rapidly. By 1950, the district was reorganized and renamed the United Water Conservation District (UWCD). The mission of UWCD is to manage, protect, conserve and enhance the water resources of the Santa Clara River, its tributaries and associated aquifers, in the most cost effective and environmentally balanced manner. UWCD constructed the Santa Felicia Dam, three spreading grounds, and distribution facilities, all of which were urgently needed to combat seawater intrusion.

UWCD is governed by seven members elected Board of Directors, one elected from each of the seven district divisions. UWCD administers a “basin management” program for the Santa Clara Valley and

Oxnard Plain, using the surface flow of the Santa Clara River and its tributaries for replenishment of groundwater and owns and operates a number of facilities within its service area. UWCD currently employs a staff of 64. Funding comes primarily through rates and revenue bonds.

The Board of Directors assumes responsibility for the adoption of this plan; Mr. Mauricio E. Guardado Jr. (UWCD General Manager) will oversee its implementation.

21.2.2 Service Area

UWCD operates within the Santa Clara River Valley and the Oxnard Plain and covers approximately 335 square miles in central Ventura County. UWCD owns and operates a number of facilities to recharge the groundwater basins and enhance the water supplies within UWCD boundaries including: Santa Felicia Dam and Lake Piru Reservoir; Santa Felicia Dam hydroelectric power plant; the Piru Groundwater Recharge Basins; Freeman Diversion Facility; Saticoy Groundwater Recharge Basins (Saticoy, Noble, Rose and Ferro Basins); El Rio Groundwater Recharge Facilities and Wellfield and Water Treatment Plant (El Rio); the Pleasant Valley (PV) and Pumping Trough Pipeline (PTP) (surface water deliveries in-lieu of pumping), PV and PTP reservoirs, and the Oxnard Hueneme (OH) Pipeline system which delivers domestic potable water to the City of Oxnard, Port Hueneme Water Agency, Naval Base Ventura County, several mutual water companies and the El Rio School District.

21.2.3 Assets

Table 21-2 summarizes the assets of UWCD and their value.

Table 21-2. Special-Purpose District Assets

Asset	Value
Property	
3421 acres of land (including Lake Piru)	Unknown
Equipment	
43 UWCD owned vehicles(trucks and SUV's)	\$1,720,000
1 ten yard dump truck	\$110,089
1 2000 gallon water truck (estimated low value)	\$85,000
1 CAT 300 SLR Excavator	\$280,190
1 CAT 416C Backhoe	\$75,021
1 CAT D6R Dozer	\$279,000
1 CAT 613 Scraper	\$193,000
1 CAT 120H Motor Grader	\$170,177
1 John Deere Skip Loader	\$110,000
1 CAT Skid Steer	\$39,000
12 Diesel Powered Emergency Generators (1 being Portable)	\$1,200,000
4 Natural Gas Backup Booster Pumps	\$1,510,000
17 water wells	\$15,000,000
8 Miles of OH Pipeline (1.2 million per mile x 8) (Estimated low value)	\$9,600,000
13 Miles of PTP Pipeline (1.2 million per mile x13) (Estimated low value)	\$15,600,000
5 Miles of PV Pipeline (1.2 million per mile x 5) (Estimated low value)	\$6,000,000
3 Miles of Lake Piru Campground Pipeline (1 million per mile estimated) (Estimated low value)	\$3,000,000
Lake Piru Water Treatment Plant	\$1,219,000

Asset	Value
<i>Total:</i>	\$56,190,477
Critical Facilities	
Headquarter Building—1701 N. Lombard Street, Suite 200, Oxnard, CA 93030	\$10,000,000
Santa Felicia Dam Hydroelectric Power Plant—3838 Piru Canyon Road, Piru, CA 93040	\$630,000
Santa Felicia Dam—3838 Piru Canyon Road, Piru, CA 93040 (estimated low value)	\$200,000,000
Freeman Diversion Facility—2641 W. Los Angeles Ave. Oxnard, CA 93036 (estimated low value)	\$30,000,000
Saticoy Groundwater Recharge Basins—2641 W. Los Angeles Ave. Oxnard, CA 93036	Unknown
El Rio Groundwater Recharge Basins— 3651 N. Rose Avenue, Oxnard, CA 93036	Unknown
Piru Groundwater Recharge Basin	Unknown
Lake Piru Reservoir	Unknown
Lake Piru Recreation Area—4780 Piru Canyon Road, Piru, CA 93040	Unknown
Pleasant Valley (PV) and Pumping Trough (PTP) irrigation pipelines –	\$21,600,000
Oxnard-Hueneme booster plant system (OH System)	\$4,527,000
<i>Total:</i>	\$266,757,000

21.3 CURRENT TRENDS

Originally formed as the Santa Clara Water Conservation District in 1927, voters approved the formation of United Water Conservation District in 1950. UWCD was formed to conserve and enhance water resources of the Santa Clara River. UWCD operates in the Santa Clara River Valley and the Oxnard Plain and covers 214,000 acres in central Ventura County that typically receives from 12 to 20 inches of rainfall each year.

Over the years, UWCD has constructed numerous facilities, pipelines, and recharge basins, including the Santa Felicia Dam, Lake Piru Reservoir and Freeman Diversion, to enhance the local water system and maintain sustainable water management. Today, UWCD diverts Santa Clara River surface water to recharge groundwater basins or for use in-lieu of groundwater pumping by agricultural operations on the Oxnard Plain and in Pleasant Valley basin. Groundwater recharged at United's Saticoy and El Rio facilities (in the Oxnard Forebay) over the last thirty years has averaged approximately 46, 400 acre-feet per year (AFY). During the same period, surface water deliveries have averaged approximately 13, 200 AF/yr. Lake Piru receives approximately 65,000 visitors per year, with peak season between the months of April 1st to September 15. In 2021, UWCD took over operations from the previous concessionaire, and Lake Piru welcomed to date 34,600 visitors, with daily average of 1,533 guests per day since the lake re-opened from the COVID-19 closure.

21.4 CAPABILITY ASSESSMENT

This section describes an assessment of existing capabilities for implementing hazard mitigation strategies. The introduction at the beginning of this volume of the hazard mitigation plan describes the components included in the capability assessment and their significance for hazard mitigation planning.

Findings of the capability assessment were reviewed to identify opportunities to expand, initiate or integrate capabilities to further hazard mitigation goals and objectives. Where such opportunities were identified and determined to be feasible, they are included in the action plan. The "Analysis of Mitigation Actions" table in this annex identifies these as community capacity building mitigation actions. The findings of the assessment are presented as follows:

- An assessment of planning and regulatory capabilities is presented in Table 21-3.
- An assessment of fiscal capabilities is presented in Table 21-4.
- An assessment of administrative and technical capabilities is presented in Table 21-5.
- An assessment of education and outreach capabilities is presented in Table 21-6.
- Classifications under various community mitigation programs are presented in Table 21-7.
- The community's adaptive capacity for the impacts of climate change is presented in Table 21-8.

Table 21-3. Planning and Regulatory Capability

Plan, Study or Program	Date of Most Recent Update	Comment
Santa Felicia Dam Emergency Action Plan (EAP)	July 16, 2021	Approved by Cal OES on September 2, 2021
Santa Felicia Dam Security Plan	June 30, 2021	
Oxnard Hueneme System Emergency Response Plan (per America's Water Infrastructure Act, EPA)	March 15, 2021	Submitted to the U.S. EPA and the State Water Resources Control Board, Division of Drinking Water
Aqueous Ammonia Storage, California Accidental Release Prevention Program (CalARP)	June 2019	
Chlorine & Aqueous Ammonia Treatment Systems CalARP Seismic Assessment	May 2019	
Chlorine & Aqueous Ammonia Injection System, Process Hazard Analysis Report	May 21, 2019	

Table 21-4. Fiscal Capability

Financial Resource	Accessible or Eligible to Use?
Community Development Block Grants	No
Capital Improvements Project Funding	Yes
Authority to Levy Taxes for Specific Purposes	Yes
User Fees for Water, Sewer, Gas or Electric Service <i>If yes, specify:</i> Only groundwater extraction fees	Yes
Incur Debt through General Obligation Bonds	No
Incur Debt through Special Tax Bonds	No
Incur Debt through Private Activity Bonds	Yes
Withhold Public Expenditures in Hazard-Prone Areas	No
State-Sponsored Grant Programs	Yes
Development Impact Fees for Homebuyers or Developers	No

Table 21-5. Administrative and Technical Capability

Staff/Personnel Resource	Available?
Planners or engineers with knowledge of land development and land management practices	No
Engineers or professionals trained in building or infrastructure construction practices	Yes
<i>If Yes, Department /Position:</i> Engineering and Water Resources Department/ Engineers	
Planners or engineers with an understanding of natural hazards	Yes
<i>If Yes, Department /Position:</i> Engineering and Water Resources Department/ Engineers and Hydrogeologists	
Staff with training in benefit/cost analysis	Yes
<i>If Yes, Department /Position:</i> Finance Department and Engineering Department/ Accountants and Engineers	
Surveyors	Yes
<i>If Yes, Department /Position:</i> Engineering Department /Provided through retention of external vendors	
Personnel skilled or trained in GIS applications	Yes
<i>If Yes, Department /Position:</i> Engineering and Water Resources Department/ GIS Analysts	
Scientist familiar with natural hazards in local area	Yes
<i>If Yes, Department /Position:</i> Engineering and Water Resources Department/ Hydrogeologists	
Emergency manager	Yes
<i>If Yes, Department /Position:</i> Engineering/Chief Engineer Operations and Maintenance (O&M)/Chief Operations Officer Lake Piru Park Rangers/Chief Park Ranger	
Grant writers	Yes
<i>If Yes, Department /Position:</i> Engineering and Water Resources Department /Provided through retention of external vendors	
Other: Environmental and Biologist	Yes
<i>If Yes, Department /Position:</i> Environmental Services Department/ Environmental Scientists	

Table 21-6. Education and Outreach Capability

Criterion	Response
Do you have a public information officer or communications office?	Yes
Do you have personnel skilled or trained in website development? Provided through retention of contractors	No
Do you have hazard mitigation information available on your website?	No
Do you use social media for hazard mitigation education and outreach?	No
Do you have any citizen boards or commissions that address issues related to hazard mitigation?	No
Do you have any other programs in place that could be used to communicate hazard-related information?	Yes
<i>If yes, briefly describe:</i> Through the annual EAP seminars; and participation in the Association of Water Agencies Ventura County.	
Do you have any established warning systems for hazard events?	Yes
<i>If yes, briefly describe:</i> A warning siren in the town of Piru. This is used to warn the residents of dam failure incidents. The siren is tested on the first Friday of each month. UWCD utilizes the County's VC Alert (Everbridge) system, including email, text, and voice options for immediate emergency notifications to a list of stakeholders included in the Santa Felicia Dam EAP notification flow charts and follow up manual phone calls. Four dam failure scenarios are included in the SFD inundation maps.	

Table 21-7. Community Classifications

	Participating?	Classification	Date Classified
FIPS Code	No	N/A	N/A
DUNS#	Yes	121878094	N/A
Community Rating System	No	N/A	N/A
Building Code Effectiveness Grading Schedule	No	N/A	N/A
Public Protection	No	N/A	N/A
Storm Ready	No	N/A	N/A
Firewise	No	N/A	N/A
Tsunami Ready	No	N/A	N/A

Table 21-8. Adaptive Capacity for Climate Change

Criterion	Jurisdiction Rating ^a
Technical Capacity	
Jurisdiction-level understanding of potential climate change impacts <i>Comment:</i> Wildfires, as a climate change indicator, may impact UWCD operations. Also, climate change could lead to a major storm, and the probability of having a Probable Maximum Flood (PMF) event. FEMA document titled "Selecting and Accommodating Inflow Design Floods for Dams" states that recent studies have been performed to estimate the impact of the climate change on the probable maximum precipitation and some climate models are consistent in showing increases of 10 percent every few decades that would correspond to 10 percent increases in probable maximum precipitation. The climate change (soil moisture, snowpack, temperature sequence, etc.) can influence on runoff and increase the likelihood of a large flood or Probable Maximum Flood (PMF) event. UWCD is in advancing the design of a number of modifications to the existing Santa Felicia Dam spillway to be able to safely pass the Inflow Design Flood (IDF), or the PMF determined for Santa Felicia Dam by the Department of Water Resources, Division of Safety of Dams (DSOD).	High
Jurisdiction-level monitoring of climate change impacts <i>Comment:</i> Rainfall and hydrology are monitored on regular basis, Groundwater basin management and monitoring through groundwater levels recording, evaporation monitoring, and sediment monitoring.	High
Technical resources to assess proposed strategies for feasibility and externalities <i>Comment:</i> Plan for drought resiliency projects and long term mitigation for climate change impacts.	High
Jurisdiction-level capacity for development of greenhouse gas emissions inventory <i>Comment:</i> Performed by contractor in a limited capacity.	Low
Capital planning and land use decisions informed by potential climate impacts <i>Comment:</i> Some of UWCD CIP projects are directly or indirectly addressing the climate change impacts.	Medium
Participation in regional groups addressing climate risks <i>Comment:</i> Member of the Watersheds Coalition of Ventura County.	Medium
Implementation Capacity	
Clear authority/mandate to consider climate change impacts during public decision-making processes <i>Comment:</i> No mandate.	Low
Identified strategies for greenhouse gas mitigation efforts <i>Comment:</i> Fossil fuel energy optimization efficiency is in place.	Low
Identified strategies for adaptation to impacts <i>Comment:</i> Regulatory mandated mitigation, water supply resiliency, and portfolio diversification.	Medium
Champions for climate action in local government departments <i>Comment:</i> N/A	Low

Criterion	Jurisdiction Rating ^a
Political support for implementing climate change adaptation strategies <i>Comment:</i> N/A	Low
Financial resources devoted to climate change adaptation <i>Comment:</i> Construction of the drought resilience Oxnard Hueneme Iron and Manganese Treatment Plant Project in 2021/2022.	Medium
Local authority over sectors likely to be negative impacted <i>Comment:</i> UWCD boundaries.	Medium
Public Capacity	
Local residents' knowledge of and understanding of climate risk <i>Comment:</i> N/A	Low
Local residents' support of adaptation efforts <i>Comment:</i> N/A	Low
Local residents' capacity to adapt to climate impacts <i>Comment:</i> N/A	Low
Local economy current capacity to adapt to climate impacts <i>Comment:</i> N/A	Low
Local ecosystems capacity to adapt to climate impacts <i>Comment:</i> N/A	Low

- a. High = Capacity exists and is in use; Medium = Capacity may exist, but is not used or could use some improvement;
Low = Capacity does not exist or could use substantial improvement; Unsure= Not enough information is known to assign a rating.

21.5 INTEGRATION REVIEW

For hazard mitigation planning, “integration” means that hazard mitigation information is used in other relevant planning mechanisms, such as capital facilities planning, and that relevant information from those sources is used in hazard mitigation. This section identifies where such integration is already in place, and where there are opportunities for further integration in the future. Resources listed at the end of this annex were used to provide information on integration. The progress reporting process described in Volume 1 of the hazard mitigation plan will document the progress of hazard mitigation actions related to integration and identify new opportunities for integration.

21.5.1 Existing Integration

Some level of integration has already been established between local hazard mitigation planning and the following other local plans and programs:

- **Santa Felicia Dam Emergency Action Plan (EAP):** The EAP defines the UWCD staff responsibilities and provides procedures designed to identify unusual and unlikely conditions that may endanger Santa Felicia Dam in time to take mitigation action and to notify the appropriate emergency management authorities and stakeholders of possible, impending, or actual failure of the dam. The EAP may also be used to provide notification when flood releases can create major flooding. The results of the Time-Sensitive Emergency Action Plan Assessment associated with the Santa Felicia Dam were used to develop the EAP.
- **Santa Felicia Dam Outlet Works Improvement:** The purpose of the Santa Felicia Dam Outlet Works Improvement project is to replace the existing outlet works because of concerns regarding seismic stability of the intake tower and conduit through the dam. UWCD conducted a

Seismic Deformation Analyses of Santa Felicia Dam on May 11, 2015 that indicated that the computed seismic deformations of the embankment are expected to be large enough to damage the outlet works conduit, and possibly compromise the safety of the dam. In addition, based on the 2015 and 2020 bathymetric surveys of Lake Piru Reservoir performed by UWCD, the sediment level near the existing intake was approximately only 4.1 feet below the intake sill. Based on the computed average annual rate of sediment level rise, the sediment may reach the intake sill in the near future and will become inoperable. The new outlet works system will mitigate ongoing accumulation of sediment in the reservoir and includes provisions for continued operation of the facility despite the future sediment buildup in the reservoir.

- **Santa Felicia Dam Probable Maximum Flood (PMF) Containment, Spillway Improvement Project:** The capacity of the existing spillway at Santa Felicia Dam is inadequate to pass the inflow design flood (IDF), which for the Santa Felicia Dam is the PMF. The Spillway Improvement Project includes modifications to the existing spillway to safely pass the IDF of 220,000 cfs, which is derived from hydrologic evaluations (HMR 58/59) performed by the DSOD and approved by the Federal Energy Regulatory Commission.

21.5.2 Opportunities for Future Integration

The capability assessment in this annex indicates opportunities to integrate this mitigation plan with other jurisdictional planning/regulatory capabilities. Capabilities were identified as integration opportunities if they can support or enhance the actions identified in this plan or be supported or enhanced by components of this plan. The capability assessment identified in the following plans and programs does not currently integrate hazard mitigation information but provides opportunities to do so in the future:

- **Coastal Brackish Groundwater Extraction and Treatment Project:** The project objectives are to combat further seawater intrusion in the Oxnard Plain and provide a local supply source that can help meet the groundwater sustainability goals of the Fox canyon Groundwater Management Agency.
- **Expansion of the Ferro Basin:** The project is to be used as a groundwater recharge basin to expand UWCD's recharge capacities.
- **Freeman Diversion Expansion:** The project allows UWCD to increase the instantaneous diversion rate to capture more water at the peak of the hydrograph. This is necessary in the respect that regulatory agencies are requiring more flow in the river on the receding limb of the hydrograph. Ultimately the expansion project will provide the opportunity to maintain historical surface water deliveries to the Oxnard Plain when available. The project is also to comply with an Endangered Species Act (ESA) settlement as well as a mitigation measure for the Multi-Species Habitat Conservation Plan.
- **Pumping Trough Pipeline (PTP) Recycled Water Connection:** A pipeline connection to UWCD's PTP system for the delivery of recycled water. The recycled water delivered to the PTP system can significantly reduce groundwater pumping in the PTP service area and Oxnard Plain.

Taking action to integrate each of these programs with the hazard mitigation plan was considered as a mitigation action to include in the action plan in this annex.

21.6 RISK ASSESSMENT

21.6.1 Jurisdiction-Specific Natural Hazard Event History

Table 21-9 lists past occurrences of natural hazards for which specific damage was recorded in this jurisdiction. Other hazard events that broadly affected the entire planning area, including this jurisdiction, are listed in the risk assessments in Volume 1 of this hazard mitigation plan.

Table 21-9. Past Natural Hazard Events

Type of Event	FEMA Disaster #	Date	Damage Assessment
Holser Fire	N/A	August 17, 2020	Lake Piru Recreation Area operational impact
Lime Fire	N/A	June 10, 2020	Recreation Area operational impact
Maria Fire	FM-5302	November 1, 2019	Headquarter closer and Saticoy Facility operational impact
Thomas Fire	FM-5224	December 4, 2017	Power outage at El Rio Facility and operational impact
Flood	DR-1585	February 18, 2005	Debris at the upstream of SFD and landslide at the downstream
Severe Storms, Tornadoes, High Winds and Flooding	DR-1267	December 20 – 28, 1998	Not Available
Severe Winter Storms and Flooding	DR-1203	February 2 – April 30, 1998	Not Available
Severe Winter Storms, Flooding, Landslides, Mud Flows	DR-1046	February 13 – April 19, 1995	Not Available
Severe Winter Storms, Flooding, Landslides, Mud Flows	DR-1044	January 3 – February, 1995	Not Available
Northridge Earthquake	DR-1008	January 17 – November 30, 1994	Not Available**
Fires, Mud & Landslides, Soil Erosion, Flooding	DR-1005	October 26 – April 22, 1994	Not Available
Severe Storm, Winter Storm, Mud & Landslides, Flooding	DR-979	January 5 – March 20, 1993	Not Available
Snow Storm, Heavy Rain, High Winds, Flooding, Mudslide	DR-935	February 10 – 19, 1992	Not Available
Severe Storms, High Tides, Flooding	DR-812	January 17 – 22, 1988	Not Available
Coastal Storms, Floods, Slides, Tornadoes	DR-677	January 21 – March 30, 1983	Not Available
Severe Storms, Mudslides, Flooding	DR-615	January 8, 1980	Not Available
Coastal Storms, Mudslides, Flooding	DR-547	February 15, 1978	Not Available
Severe Storms, High Tides, Flooding	DR-364	February 8, 1973	Not Available
Severe Storms, Flooding	DR-253	January 26, 1969	Not Available

** Santa Felicia Dam recorded a peak ground acceleration of 0.27g during the Northridge earthquake with no visible movements or distortion of the structure. Following the Northridge Earthquake, the Santa Felicia Dam was inspected and surveyed to determine if any changes had occurred as a result of the earthquake. The conclusion of these investigations that the dam has responded well to the motions induced by the earthquake and has not experienced any changes or exhibited any behavior that indicate a reduction in the safety of the structure.

21.6.2 Hazard Risk Ranking

Table 21-10 presents a local ranking of all hazards of concern for which this hazard mitigation plan provides complete risk assessments. As described in detail in Volume 1, the ranking process involves an assessment of the likelihood of occurrence for each hazard, along with its potential impacts on people, property, and district operations. Mitigation actions primarily target hazards with high and medium rankings.

Table 21-10. Hazard Risk Ranking

Rank	Hazard	Risk Ranking Score	Risk Category
1	Earthquake	32	High
2	Drought	31	High
3	Dam Failure	30	Medium
4	Severe Storms	24	Medium
5	Severe Weather	24	Medium
6	Wildfire	18	Medium
7	Flooding	18	Medium
8	Sea Level Rise	15	Low
9	Landslide	12	Low
10	Tsunami	11	Low

21.6.3 Other Noted Vulnerabilities

Volume 1 of this hazard mitigation plan provides complete risk assessments for each identified hazard of concern. The following jurisdiction-specific issues have been identified based on a review of the results of the risk assessment, public involvement strategy, and other available resources:

- Santa Felicia Dam is classified as an “Extremely High Hazard” dam by the DSOD. Two of the Dam's largest infrastructure components, Outlet Works and Spillway, will pose a significant risk to public safety if not modernized and upgraded. Failure of these components could result in the potential loss of life for approximately 377,000 people living downstream of the Santa Felicia Dam, as well as property loss and damage from the flooding of the towns of Piru, Fillmore, Santa Paula, and Oxnard, negatively impacting the area's \$2 billion dollar the agricultural industry as well as manufacturing, retail, hospitality, health care and military operations.

Mitigation actions addressing these issues were prioritized for consideration in the action plan in this annex.

21.7 STATUS OF PREVIOUS PLAN ACTIONS

Table 21-11 summarizes the actions that were recommended in the previous version of the hazard mitigation plan and their implementation status at the time this update was prepared.

Table 21-11. Status of Previous Plan Actions

Action Item from Previous Plan	Completed	Removed; No Longer Feasible	Carried Over to Plan Update	
			Check if Yes	Action # in Update
OA 10—SFD Outlet Works Rehab—Replace the nearly buried and seismic-deficient intake tower at Santa Felicia Dam with a robust facility with higher elevation point(s) of intake. Replace the seismically marginal penstock with appropriate new materials. <i>Comment: The planned design alternative is to build a new outlet works facility on the left (east) abutment of the dam. The SFD Outlet Works improvement and retrofit is currently in the design phase. The construction is anticipated to start in 2024. The success of this project is contingent upon securing grant funding support from both state and federal sources critical for the implementation of the dam safety improvements.</i>			✓	UWC-4
OA 10—SFD PMF Containment—The Probable Maximum Flood (PMF at all dams must be confined to the structure and spillway. Overtopping earthen dams will almost certainly lead to failure. UWCD will need to deepen the spillway and raise the height of the dam crest. <i>Comment: The SFD improvements of the spillway are currently in the design phase. The construction is anticipated to start in 2026. The success of this project is contingent upon securing both the state and federal grant funds.</i>			✓	UWC-5
UWCD 1—UWCD will install a generator at the Saticoy Recharge Facility. <i>Comment: A new generator was installed at the Saticoy Recharge Facility in 2018.</i>	✓			
UWCD 2—Part 12D Dam Safety Report—An independent consultant will be hired to perform the Federal Energy Regulatory Commission Part 12D safety inspection and review of Santa Felicia Dam. This process includes reviewing the Potential Failure Mode Analysis (completed in 2007) and the Supporting Technical Information Document; and updating the documents as necessary. <i>Comment: Part 12D Dam Safety Inspection and Report for the Santa Felicia Dam was completed in 2017. UWCD will conduct the next Part 12D Dam Safety Inspection in 2022 as the inspection is required to be conducted every 5 years.</i>	✓			
UWCD 3—Evaluate and develop a public outreach program that informs and educates the public located in the inundation zone directly downstream of Santa Felicia Dam. <i>Comment: The public outreach program includes the required annual Emergency Action Plan (EAP) seminars and annual law enforcement coordination meetings, as well as frequent participation in the Piru neighborhood council monthly meetings.</i>			✓	UWC-10

21.8 HAZARD MITIGATION ACTION PLAN

Table 21-12 lists the actions that make up the hazard mitigation action plan for this jurisdiction. Table 21-13 identifies the priority for each action. Table 21-14 summarizes the mitigation actions by hazard of concern and mitigation type.

Table 21-12. Hazard Mitigation Action Plan Matrix

Benefits New or Existing Assets	Objectives Met	Lead Agency	Support Agency	Estimated Cost	Sources of Funding	Timeline ^a
Action UWC-1—Where appropriate, support retrofitting, purchase or relocation of structures located in hazard areas, prioritizing those that have experienced repetitive losses and/or are located in high- or medium-risk hazard areas.						
<i>Hazards Mitigated:</i> Earthquake, Drought, Dam Failure, Severe Storms, Severe Weather, Wildfire, Flooding						
Existing	1, 2, 4, 5, 6, 7, 8, 9, 10, 11, 13, 14	United Water Conservation District	None	High	Local Fund, HMGP, BRIC, FMA	Short-term

Benefits New or Existing Assets	Objectives Met	Lead Agency	Support Agency	Estimated Cost	Sources of Funding	Timeline ^a
Action UWC-2—Actively participate in the plan maintenance protocols outlined in Volume 1 of this hazard mitigation plan.						
<u>Hazards Mitigated:</u> All hazards						
New & Existing	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 13, 14, 16, 19	United Water Conservation District	None	Low	Staff Time, General Funds	Short-term
Action UWC-3—Purchase generators for critical facilities and infrastructure that lack adequate backup power.						
<u>Hazards Mitigated:</u> Earthquake, Drought, Dam Failure, Severe Storms, Severe Weather, Wildfire, Flooding						
Existing	1, 2, 3, 4, 10	United Water Conservation District	None	High	Local Fund, HMGP, BRIC, FMA	Short-term
Action UWC-4—Santa Felicia Dam Outlet Works Improvement and Retrofit. Replace the existing Santa Felicia Dam Outlet Works due to seismic deficiencies of the intake tower and conduit through the dam and to mitigate ongoing accumulation of sediment in Lake Piru reservoir that will impact operation of the outlet works in the near future with a robust facility with higher elevation point(s) of intake.						
<u>Hazards Mitigated:</u> Earthquake, Drought, Dam Failure, Severe Storms, Flooding						
New & Existing	1, 2, 3, 4, 9, 10, 11, 13, 18	United Water Conservation District	None	High	Local Fund, HMGP, BRIC, FMA, HHPD	Long-term
Action UWC-5—Santa Felicia Dam PMF Containment, Spillway Improvement Project— The Probable Maximum Flood (PMF) at all dams must be confined to the structure and spillway. Overtopping earthen dams will almost certainly lead to failure. The existing SFD spillway is inadequate to pass the inflow design flood (IDF), which for this dam is the PMF. The existing spillway will be deepened and the dam crest will be raised to allow for safely passing the IDF.						
<u>Hazards Mitigated:</u> Dam Failure, Severe Storms, Flooding						
Existing	1, 2, 3, 4, 9, 10, 11, 13, 18	United Water Conservation District	None	High	Local Fund, HMGP, BRIC, FMA, HHPD	Long-term
Action UWC-6—Coastal Brackish Groundwater Extraction and Treatment Project. The project objectives is to combat further seawater intrusion in the Oxnard Plain and provide a local supply source that can help meet the groundwater sustainability goals of the Fox canyon Groundwater Management Agency.						
<u>Hazards Mitigated:</u> Drought						
New	1, 2, 3, 4, 13, 14, 18	United Water Conservation District	None	High	Local Fund, HMGP, BRIC, FMA	Long-term
Action UWC-7—Pumping Trough Pipeline (PTP) Recycled Water Connection. Potential pipeline connections to UWCD's PTP system for the delivery of recycled water. The recycled water delivered to the PTP system can significantly reduce groundwater pumping in the PTP service area and Oxnard Plain.						
<u>Hazards Mitigated:</u> Drought						
New	1, 2, 3, 4, 14, 18	United Water Conservation District	None	Medium	Local Fund, HMGP, BRIC, FMA	Long-term
Action UWC-8—Freeman Diversion Rehab—The Freeman Diversion Dam is used to divert and efficiently manage run-off water from the Santa Clara River. The project allows UWCD to increase the instantaneous diversion rate to capture more water at the height of the hydrograph. This is necessary in the respect that regulatory agencies are requiring more flow in the river on the receding limb of the hydrograph. Ultimately the project will provide the opportunity to deliver additional surface water when available.						
<u>Hazards Mitigated:</u> Drought						
Existing	1, 2, 3, 4, 13, 14, 18	United Water Conservation District	None	High	Local Fund, HMGP, BRIC, FMA	Long-term
Action UWC-9—Twelfth Part 12D Dam Safety Inspection—An independent consultant will be hired to perform the Federal Energy Regulatory Commission Part 12D safety inspection and review of Santa Felicia Dam. This process includes reviewing the Potential Failure Mode Analysis (completed in 2007) and the Supporting Technical Information Document; and updating the documents as necessary.						
<u>Hazards Mitigated:</u> Earthquake, Dam Failure, Severe Storms, Flooding						
Existing	1, 2, 4, 6, 9, 10, 17, 18	United Water Conservation District	None	Low	Local Fund	Ongoing

Benefits New or Existing Assets	Objectives Met	Lead Agency	Support Agency	Estimated Cost	Sources of Funding	Timeline ^a
Action UWC-10 —UWCD will re-evaluate current public outreach efforts and develop a program to educate and inform the public within the inundation zone directly downstream of Santa Felicia Dam.						
<u>Hazards Mitigated:</u> Dam Failure, Severe Storms, Flooding						
Existing	1, 2, 4, 7, 8, 12, 17, 18	United Water Conservation District	None	Low	Local Fund	Short-term
Action UWC-11 —Implement landslide stabilization and/or protection measures. Stabilization measures include grading the unstable portion of the slope to a lower gradient, construction of rock buttresses, and drainage improvements. Protection measures include containment and construction of walls, berms, ditches, and or diversion of moving debris.						
<u>Hazards Mitigated:</u> Landslide						
Existing	1, 2, 13, 14	United Water Conservation District	None	Low	Local Fund, HMGP, BRIC, FMA	Ongoing
Action UWC-12 —Vegetation Management. Maintain vegetation management program within UWCD facilities to reduce the risk of wildfire and avoid creation of wind acceleration corridors within vegetated areas.						
<u>Hazards Mitigated:</u> Severe Weather, Wildfire						
Existing	1, 2, 5, 13, 14	United Water Conservation District	None	Low	Local Fund, HMGP, BRIC, FMAP	Ongoing
Action UWC-13 —Update Santa Felicia Dam Emergency Action Plan (EAP)						
<u>Hazards Mitigated:</u> Dam Failure, Severe Storms, Flooding						
Existing	1, 2, 4, 6, 7, 8, 10, 19	United Water Conservation District	None	Low	Local Fund, HMGP, BRIC, FMA	Ongoing

a. Short-term = Completion within 5 years; Long-term = Completion within 10 years; Ongoing= Continuing new or existing program with no completion date

HHPD = Rehabilitation of High Hazard Potential Dams

FMA = Flood Mitigation Assistance Grant Program

HMGP = Hazard Mitigation Grant Program

BRIC = Building Resilient Infrastructure and Communities Grant Program

Table 21-13. Mitigation Action Priority

Action #	# of Objectives Met	Benefits	Costs	Do Benefits Equal or Exceed Cost?	Is Project Grant-Eligible?	Can Project Be Funded Under Existing Programs/ Budgets?	Implementation Priority ^a	Grant Pursuit Priority ^a
1	7	High	High	Yes	Yes	No	Medium	High
2	10	High	Low	Yes	Yes	Yes	Medium	High
3	7	High	High	Yes	Yes	No	Medium	High
4	5	High	High	Yes	Yes	No	Medium	High
5	3	High	High	Yes	Yes	No	Medium	High
6	2	High	High	Yes	Yes	No	Medium	High
7	1	High	Medium	Yes	Yes	No	Medium	High
8	1	High	High	Yes	Yes	No	Medium	High
9	4	Low	Low	Yes	No	Yes	High	Medium
10	3	Low	Low	Yes	No	Yes	High	Medium
11	1	High	Low	Yes	Yes	Yes	High	High
12	2	High	Low	Yes	Yes	Yes	High	High
13	3	Medium	Low	Yes	Yes	Yes	High	Medium

a. See the introduction to this volume for explanation of priorities.

Table 21-14. Analysis of Mitigation Actions

Hazard Type	Action Addressing Hazard, by Mitigation Type ^a							
	Prevention	Property Protection	Public Education & Awareness	Natural Resource Protection	Emergency Services	Structural Projects	Climate Resilient	Community Capacity Building ^b
High-Risk Hazards								
Earthquake	UWC-4	UWC-4				UWC-4		UWC-9
Drought	UWC-4	UWC-4, 8		UWC-6, 7, 8		UWC-4, 6, 7, 8	UWC-6	
Medium-Risk Hazards								
Dam Failure	UWC-4, 5	UWC-4, 5	UWC-10		UWC-13	UWC-4, 5	UWC-5	UWC-9, 10, 13
Severe Storms	UWC-4, 5	UWC-4, 5	UWC-10		UWC-13	UWC-4, 5	UWC-5	UWC-9, 13
Severe Weather	UWC-1, 5	UWC-3, 5	UWC-10		UWC-13	UWC-1, 3, 5	UWC-2	
Wildfire	UWC-12			UWC-12				
Flooding	UWC-4, 5	UWC-4, 5	UWC-10		UWC-13	UWC-4, 5	UWC-5	UWC-9, 13
Low-Risk Hazards								
Landslide	UWC-11			UWC-11		UWC-11		

a. See the introduction to this volume for explanation of mitigation types.

b. Note that the jurisdiction did not identify a need for expansion of financial capabilities, based on existing capabilities. The intent of this hazard mitigation plan is to expand the financial capability of the jurisdiction.

21.9 PUBLIC OUTREACH

Table 21-15 lists public outreach activities for this jurisdiction.

Table 21-15. Local Public Outreach

Local Outreach Activity	Date	Number of People Involved
Annual Emergency Action Plan seminar	December 16, 2020 October 28, 2021	31 Expected to be 30+
Monthly Board Of Director meetings	Monthly	Varies

21.10 INFORMATION SOURCES USED FOR THIS ANNEX

The following technical reports, plans, and regulatory mechanisms were reviewed to provide information for this annex.

- **Capital Improvement Plan:** The Capital Improvement Plan prioritizes projects that have been identified to improve District facilities, infrastructure, and equipment, including potential mitigation projects. The Capital Improvement Plan was used as a source of information while preparing this annex.
- **Santa Felicia Dam Emergency Action Plan (EAP):** Describes protocol for response activities to be conducted in the event of an emergency that threatens or damages the structural integrity of the Santa Felicia Dam. Includes procedures for training and preparedness, and notification and response actions to be conducted in the event of an emergency including procedures for

coordination with outside agencies. The EAP was reviewed during the development of the hazard mitigation action plans.

- **Time-Sensitive Emergency Action Plan Assessment:** This assessment was used to develop the Santa Felicia Dam EAP during the development of the hazard mitigation action plans.
- **Santa Felicia Dam Safety Improvement Project, Technical Memorandums (TMs) and Design Reports:** UWCD conducted and completed feasibility studies and multiple design phases for the existing outlet works improvement and retrofit project and the spillway improvement project, collectively referred to as the Santa Felicia Dam Safety Improvement Project. The TMs and design reports developed during these design phases included structural, hydraulic, and geotechnical analyses. These analyses were the basis of the development of the hazard mitigation action plans (UWC-4 and UWC-5).
- **Santa Felicia Dam 2017 Potential Failure Mode Analysis Study Report:** The purpose of the PFMA is to identify and describe potential failure modes (PFMs) at the Santa Felicia Dam and its appurtenant structures that could be failed under postulated loading conditions. Knowledge of the PFMs can be used to better understand the potential safety concerns, develop a project specific surveillance and monitoring program, and identify potential risk reduction measures. The 2017 PFMA was reviewed during the development of the hazard mitigation plan.
- **Oxnard Hueneme System Emergency Response Plan:** This plan describes protocol for response activities to be conducted in the event of an emergency that threatens or damages UWCD's El Rio Facility and the Oxnard-Hueneme Pipeline. Includes procedures for decontamination, pipeline isolation, and notification and response actions to be conducted in the event of an emergency. This document was reviewed during the development of the capability assessment.
- **Risk and Resilience Assessment:** The purpose of this assessment was to assess the risks to, and resilience of, the District's Oxnard-Hueneme system, covering: the risk of malevolent acts and natural hazards; the resilience of the pipes and constructed conveyances, physical barriers, source water, water collection and intake, pretreatment, treatment, storage and distribution facilities, electronic, computer, or other automated systems (including the security of such systems) which are utilized by the system; the monitoring practices of the system; the financial infrastructure of the system; the use, storage, or handling of various chemicals by the system; and the operation and maintenance of the system. This document was reviewed during the development of the capability assessment.
- **California Accidental Release Prevention (CalARP) Program:** As part of the program's effort in preventing and/or minimizing damage to the accidental releases of chlorine and ammonia that can cause serious harm to the public, hazard and seismic assessments were completed. The hazard assessments for chlorine and ammonia examined worst-case and alternative scenarios while the seismic assessment ensured chlorine and aqueous ammonia equipment and piping, their supports and their anchoring met CalARP seismic requirements. This document was reviewed during the development of the capability assessment.

The following outside resources and references were reviewed:

- **2015 Ventura County Multi-Hazard Mitigation Plan:** The 2015 HMP document addresses the local hazard mitigation planning requirements for Unincorporated Ventura County and other local participants. The 2015 VC HMP was reviewed and used during the development of the mitigation action plan.

- **Selecting and Accommodating Inflow Design Floods for Dams, FEMA P-94, Dated August 2013:** The main objectives of this document is to recommend appropriate procedures for selecting and accommodating the Inflow Design Flood based on current and accepted practices and to promote a reasonable degree of consistency and uniformity among state and federal agencies. Appropriate selection of the Inflow Design Flood is the first step in evaluating and designing a dam to address hydrologic potential failure modes and reduce risks to the public. This document was reviewed during the development of the capability assessment and the Adaptive Capacity for Climate Change.
- **Hydrometeorological Reports (HMR 58 and 59), California Department of Water Resources, Division of Safety of Dams (DSOD):** The Santa Felicia Dam Inflow Design Flood (IDF) of 220,000 cfs was developed using DSOD interim Hydrology Policy Modified HMR 58/59 (2012). The IDF was approved by the regulatory agencies. These reports were reviewed and used during the development of the hazard mitigation action plan (UWC-5).
- **Hazard Mitigation Plan Annex Development Toolkit:** The toolkit was used to support the identification of past hazard events and noted vulnerabilities, risk ranking, and the development of the mitigation action plan.

21.11 FUTURE NEEDS TO BETTER UNDERSTAND RISK/VULNERABILITY

UWCD will update the Santa Felicia Dam Vulnerability and Risk Assessment in 2022 in accordance with the Federal Energy Regulatory Commission's dam safety requirements. The Vulnerability and Risk Assessment includes evaluation of structures and facilities to identify weaknesses and or potential single or multiple points of failures. The outcome will include recommended mitigation measures to address these concerns.

21.12 ADDITIONAL COMMENTS

UWCD is currently coordinating with the Emergency Management Agencies (EMAs) of the Santa Felicia Dam impacted jurisdictions including the Ventura County Sheriff's Office of Emergency Services (VCSOES) to determine if they need assistance in developing local evacuation plans. UWCD will offer support, including technical support, to the EMAs as needed.

22. VENTURA COUNTY FIRE PROTECTION DISTRICT

22.1 LOCAL HAZARD MITIGATION PLANNING TEAM

Primary Point of Contact

Dustin Gardner, Fire Chief

165 Durley Ave

Camarillo, CA 93010

Telephone: 805-389-9704

e-mail Address: dustin.gardner@ventura.org

Alternate Point of Contact

Jeff Shea, Division Chief

165 Durley Ave

Camarillo, CA 93010

Telephone: 805-437-9400

e-mail Address: jeff.shea@ventura.org

This annex was developed by the local hazard mitigation planning team, whose members are listed in Table 22-1.

Table 22-1. Local Hazard Mitigation Planning Team Members

Name	Title
Dustin Gardner	Fire Chief
Chad Cook	Assistant Fire Chief
Jeff Shea	Division Chief
Gene Fong	Battalion Chief
John Spykerman	Assistant Fire Chief
Massoud Araghi	Fire Marshal
Tom Kasper	Business Services Manager
Corina Cagley	Fire Prevention Officer
Celine Moomey	Pre-Fire Specialist
Ryan Matheson	Fire Captain, Vegetation Management
David Kirby	Manager- Facilities and Construction
Debbie Conner	Management Assistant

22.2 JURISDICTION PROFILE

22.2.1 Overview

In 1928, the VCFPD was formed as a special district to provide fire protection to the county, with the exception of the four established cities. Since that time, six additional cities have become incorporated. Today, the VCFPD acts as the county fire department for unincorporated Ventura County and as the city fire department for seven cities (Camarillo, Moorpark, Ojai, Port Hueneme, Santa Paula, Thousand Oaks, and Simi Valley).

Composed of approximately 600 dedicated men and women, the Ventura County Fire Protection District is an all-hazard, full-service agency. VCFPD proudly provides fire protection, medical aid, rescue, hazardous materials response, and a variety of other services to the public. The Ventura County Board of Supervisors acts as the fire protection district's board of directors. These five elected supervisors appoint the fire chief and task him with providing fire protection services for the district.

VCFPD responds to calls from 33 strategically placed fire stations located throughout Ventura County. VCFPD firefighters are trained to provide the highest level of firefighting, rescue, and emergency medical care. In addition to fighting fires, VCFPD responds to medical emergencies, traffic accidents, land and water rescues, hazardous materials calls, environmental hazards, and a variety of public service requests.

The Ventura County Board of Supervisors assumes responsibility for the adoption of this plan; Ventura County Office of Emergency Services will oversee its implementation.

The District participates in the Public Protection Class Rating System and currently has a rating of 5.

22.2.2 Service Area

The District service area covers 848 square miles, serving a population of 850,000.

22.2.3 Assets

Table 22-2 summarizes the assets of the District and their value.

Table 22-2. Special-Purpose District Assets	
Asset	Value
Property	
N/A acres of land	Included with Critical Facilities values below
Equipment	
Aerials 7 @ \$1,500,000.00 ea. =	\$10,500,000.00
Type 1 Pumpers 52 @ \$710,000.00 ea. =	\$36,920,000.00
Type 3 Pumpers 11 @ \$350,000.00 ea. =	\$3,850,000.00
Heavy Rescue 1 @ \$1,000,000.00 ea. =	\$1,000,000.00
Rescues 6 @ \$450,000.00 ea. =	\$2,700,000.00
Squads 4 @ \$215,000.00 ea. =	\$215,000.00
Utilities 10 @ \$70,000.00 ea. =	\$700,000.00
Total:	\$56,530,000.00
Critical Facilities	
Old Fire Station 20—12727 Santa Paula-Ojai Road, Santa Paula, CA 93060	\$1,571,908
Fire Station 20—12000 Santa Paula-Ojai Road, Ojai, CA 93023	\$6,193,994
Fire Station 21—1201 E Ojai Ave, Ojai, CA 93023	\$3,674,182
Fire Station 22—466 S La Luna Ave, Ojai, CA 93023	\$3,061,690
Fire Station 23—15 Kunkle St, Oak View, CA 93022	\$6,501,775
Fire Station 25—5674 W Pacific Coast Highway, Ventura, CA 93001	\$4,549,938
Old Fire Station 26—12391 W Telegraph Rd, Santa Paula, CA 93060	\$2,963,446

Asset	Value
Fire Station 26—536 W Main St, Santa Paula, CA 93060	\$2,034,731
Old Fire Station 27—613 Old Telegraph Rd, Fillmore, CA 93015	\$2,693,274
Fire Station 27—133 C St, Fillmore, CA 93015	\$11,565,960
Fire Station 28—513 N Church St, Piru, CA 93040	\$2,618,824
Fire Station 29—114 S 10th St, Santa Paula, CA 93060	\$2,836,803
Fire Station 30—325 W Hillcrest Dr, Thousand Oaks, CA 91360	\$7,904,826
Fire Station 31—151 Dusenbergl Dr, Thousand Oaks, CA 91362	\$3,030,222
Fire Station 32—830 S Reino Rd, Newbury Park, CA 91320	\$3,199,846
Fire Station 33—33 Lake Sherwood Dr, Thousand Oaks, CA 91361	\$2,867,504
Fire Station 34—555 E Avenida de los Arboles, Thousand Oaks, CA 91360	\$2,798,426
Old Fire Station 35—2500 W Hillcrest Dr, Newbury Park, CA 91320	\$2,608,846
Fire Station 35—751 Mitchell Rd, Newbury Park, CA 91320	\$8,621,702
Fire Station 36—855 Deerhill Rd, Oak Park, CA 91377	\$3,290,415
Fire Station 37—2010 Upper Ranch Rd, Thousand Oaks, CA 91362	\$4,724,168
Fire Station 40—4185 Cedar Springs St, Moorpark, CA 93021	\$6,494,099
Fire Station 41—1910 Church St, Simi Valley, CA 93065	\$6,633,790
Fire Station 42—295 E High St, Moorpark, CA 93021	\$7,316,128
Fire Station 43—5874 E Los Angeles Ave, Simi Valley, CA 93063	\$8,554,926
Fire Station 44—1050 Country Club Dr, Simi Valley, CA 93065	\$6,098,820
Fire Station 45—790 Pacific Ave, Simi Valley, CA 93065	\$2,855,991
Fire Station 46—3265 N Tapo St, Simi Valley, CA 93063	\$2,995,683
Fire Station 47—2901 Erringer Rd, Simi Valley, CA 93065	\$5,505,516
Fire Station 50—189 S Las Posas Rd, Camarillo, CA 93010	\$10,717,068
Fire Station 51—3302 Turnout Park Circle, Oxnard, CA 93036	\$7,139,595
Fire Station 52—5353 Santa Rosa Rd, Camarillo, CA 93012	\$3,285,043
Fire Station 53—304 N Second St, Port Hueneme, CA 93041	\$4,681,186
Fire Station 54—2160 Pickwick Dr, Camarillo, CA 93010	\$6,989,158
Fire Station 55—403 Valley Vista Dr, Camarillo, CA 93010	\$2,789,216
Fire Station 56—11855 Pacific Coast Highway, Malibu, CA 90265	\$4,202,245
Fire Station 57—3356 Somis Rd, Somis, CA 93066	\$2,989,542
Fire Communications Center—160 Durley Ave, Camarillo, CA 93010	\$17,731,555
Headquarters—165 Durley Ave, Camarillo, CA 93010	\$21,716,588
Supply—2451 Latigo Ave, Oxnard, CA 93030	\$36,362,659
Training Center—102 Durley Ave, Camarillo, CA 93010	\$9,697,783
Total:	\$264,069,071

22.3 CURRENT TRENDS

The current (2021) population of Ventura County is estimated at 841,734, with a growth of -0.25% in the past year according to the most recent United States Census Data. Ventura County is the 14th largest county in California. And over the last ten-year period, Ventura County's population has seen growth of 2.02% since its 2010 population of 825,097.

22.4 CAPABILITY ASSESSMENT

This section describes an assessment of existing capabilities for implementing hazard mitigation strategies. The introduction at the beginning of this volume of the hazard mitigation plan describes the components included in the capability assessment and their significance for hazard mitigation planning.

Findings of the capability assessment were reviewed to identify opportunities to expand, initiate or integrate capabilities to further hazard mitigation goals and objectives. Where such opportunities were identified and determined to be feasible, they are included in the action plan. The “Analysis of Mitigation Actions” table in this annex identifies these as community capacity building mitigation actions. The findings of the assessment are presented as follows:

- An assessment of planning and regulatory capabilities is presented in Table 22-3.
- An assessment of fiscal capabilities is presented in Table 22-4.
- An assessment of administrative and technical capabilities is presented in Table 22-5.
- An assessment of education and outreach capabilities is presented in Table 22-6.
- Classifications under various community mitigation programs are presented in Table 22-7.
- The community’s adaptive capacity for the impacts of climate change is presented in Table 22-8.

Table 22-3. Planning and Regulatory Capability

Plan, Study or Program	Most Recent Update	Comment
The California Fire Code 2019	2019	Updated every three years at state-level
District Ordinances #29 and #31	2019	District-Specific Fire Code Amendments
Fire Hazard Reduction Program (FHRP)	continuous	Annual Program
Community Emergency Response Team (CERT) Program	continuous	Disaster Preparedness Education and Training
Ready, Set, Go! Program	continuous	Ventura County Emergency Preparedness Guide
VCFPD Regional Fire Services Standards of Cover	2017	To determine the distribution of the agency’s resources
Emergency Plans—Area Command	11/23/2015	
Emergency Plans—Brush Plan	02/28/2019	
Emergency Plans—Civil Unrest	12/19/2016	
Emergency Plans—Communications Failure Plan	05/27/2010	
Emergency Plans—Department Operations Center	10/13/2015	
Emergency Plans—Earthquake	10/20/2016	
Emergency Plans—Flooding	06/14/2016	
Emergency Plans—Heat	01/14/2014	
Emergency Plans—High Surf	06/14/2016	
Emergency Plans—Pandemic Plan	03/12/2020	
Emergency Plans—Staffing	10/26/2015	
Emergency Plans—Tsunami	05/03/2017	
Emergency Plans—Unit Strategic Fire Plan	05/25/2021	Updated annually
Emergency Plans—Urban Terrorism	05/20/2016	
Operational Procedure 1002—Response Levels	11/18/2020	

Plan, Study or Program	Most Recent Update	Comment
Operational Procedure 1006—Water Tender Response Staffing	08/09/2013	
Operational Procedure 1009—Mutual Aid, Ventura Op Area	10/24/2005	
Operational Procedure 1012—Emergency Coordinators	02/01/2008	
Operational Procedure 1100—Emergency Plans 1,2,3 and 4	11/15/2006	
Operational Procedure 2001—Incident Safety	01/15/2013	
Operational Procedure 2004—Contingency Planning/Accountability	07/10/2015	
Operational Procedure 3001—Incident Command	12/28/2005	
Operational Procedure 3003—Staging	09/09/2014	
Operational Procedure 3004—Evacuation of Citizens	06/02/2008	
Operational Procedure 3003—Road Closures	09/18/2007	
Operational Procedure 3009—Cal-OSHA Notification	04/14/2017	
Operational Procedure 3010—Incident Rehabilitation	12/06/2010	
Operational Procedure 3014—Juvenile Fire Setter Advisor	01/15/2013	
Operational Procedure 3015—Critical Incident Stress Debriefing	12/05/2001	
Operational Procedure 4006—Emergency Medical Dispatch	02/11/2004	
Operational Procedure 4008—Multi-Casualty Incidents	12/19/2013	
Operational Procedure 4011—Haz-Mat Patients, Pre Hospital Care	11/13/2013	
Operational Procedure 4500—Rescue Doctrine	11/29/2005	
Operational Procedure 4510—Collapse Rescue	11/29/2005	
Operational Procedure 4520—Rope Rescue	11/29/2005	
Operational Procedure 4530—Trench Rescue	11/29/2005	
Operational Procedure 4540—Confined Space Rescue	11/29/2005	
Operational Procedure 4550—Water Rescue	11/29/2005	
Operational Procedure 4560—Geologic Incidents	02/05/2007	
Operational Procedure 5200—Wildland Fire Doctrine	06/06/2015	
Operational Procedure 5202—Wildland Fire Operations	06/09/2015	
Operational Procedure 5203—Night Flying Fire Suppression	12/16/2016	
Operational Procedure 5204—Ventura Situational Awareness Tool	08/24/2016	
Operational Procedure 5205—ECP Support Package	08/12/2014	
Operational Procedure 5206—Unmanned Aerial Systems	09/14/2016	
Operational Procedure 6000—Hazardous Materials Response Doctrine	02/05/2007	
Operational Procedure 6007—Radiological Incidents	08/25/2011	
Operational Procedure 7003—Operational Worksheets	03/26/2019	

Plan, Study or Program	Most Recent Update	Comment
Operational Procedure 7003—Appendix 2 Wildland Fire Incident Command Work Sheet	01/12/2006	
Operational Procedure 7003—Appendix 3 Confined Space Rescue Resource Assignment Sheet Work Sheet	01/12/2006	
Operational Procedure 7003—Appendix 4 Collapse Rescue Resources Assignment Sheet Work Sheet	01/12/2006	
Operational Procedure 7003—Appendix 5 Trench Rescue Resource Assignment Sheet Work Sheet	01/12/2006	
Operational Procedure 7003—Appendix 6 Surf Rescue Resource Assignment Sheet Work Sheet	01/12/2006	
Operational Procedure 7003—Appendix 7 Swiftwater Rescue Resource Assignment Sheet/Work Sheet	01/12/2006	
Operational Procedure 7003—Appendix 8 Marine Disaster Resource Assignment Sheet Work Sheet	01/12/2006	
Operational Procedure 7003—Appendix 9 Area Hospitals	09/06/2005	
Operational Procedure 7003—Appendix 13 Hazardous Materials Incident Command Work Sheet	01/12/2006	
Operational Procedure 8010—Commercial Vessel Fires	02/05/2007	
Operational Procedure 8040—Camarillo Airport Aircraft Operations	02/05/2007	
Operational Procedure 8050—Railroad Incidents	02/05/2007	
AP 10103—Records Retention Schedule	06/13/2014	
AP 10105—Daily Journal, Fire Company	10/26/2016	
AP 10106—Significant Incident Documentation	12/23/2013	
AP 10501—Computer Technology Use	10/18/2019	
AP 10503—Technical Services, Request for	08/31/2001	
AP 10504—Internet Access and Use	10/18/2019	
AP 10610—Mapping and GIS System Modifications	10/10/2013	
AP 10611—Helispots	06/09/2014	
AP 10612—Tactical Pre-Plans and Supplemental Maps	06/09/2014	
AP 11100—Uniforms, General	11/05/2020	
AP 11118—Personal Protective Equipment, Maintenance & Inspection of	04/05/2021	
AP 11126—Body Armor, Care and Inspection of	02/17/2011	
Appendix 1—Body Armor, Care and Inspection of	02/17/2011	
AP 11201—Combined Leave	11/09/2007	
AP 11202—Shift Trades	08/10/2021	
AP 11203—Summons/Subpoena	04/25/2001	
AP 11205—Sick/Bereavement Leave, Usage of	03/09/2000	
AP 11206—Family Medical Leave	02/14/1994	
AP 11301—Staffing Levels	02/05/2002	
AP 11307—Apparatus Staffing, Personal Emergencies	02/28/2001	
AP 11401—Injury and Illness Prevention Program	03/29/2016	
AP 11502—Live-Fire Training	12/19/2016	

Plan, Study or Program	Most Recent Update	Comment
AP 11504—Captain Mentoring Program	04/09/2020	
AP 11505—California Incident Command Certification System	03/04/2021	
AP 11506—Paramedic Internship Program	03/05/2021	
AP 11508—Fire District California Incident Command Certification System Mentoring Team	03/04/2021	
AP 11509—Incident Management Team Participation	03/04/2021	
AP 11510—Community Emergency Response Team (CERT) Prog.	01/07/2016	
AP 11511—Staff Rides	12/19/2018	
AP 11804—Industrial Injury/Illness	09/05/2002	
AP 11806—Physical Fitness Program	02/11/2019	
AP 11808—National Fire Academy	05/24/2018	
AP 11810—Driver License	11/20/2017	
AP 12101—Tractor-Drawn Aerial Engineer and Operator	01/31/2017	
AP 12102—Vehicles and Apparatus, Operating	04/05/2018	
AP 12103—Water Rescue Equipment	05/30/2002	
AP 12104—Flight Request, Non-Emergency Incident	11/08/2006	
AP 12302—Inventory, Apparatus	07/11/2005	
AP 12300—Inventory, Apparatus: Appendices 1 – 6	04/29/2015	Engine 1, Engine Type 3, Quint, Ladder Truck, Rescue, PM Squad
AP 12300—Inventory, Apparatus: Appendix 7	02/16/2021	BC Vehicle
AP 12300—Inventory, Apparatus: Appendices 8 – 11	04/29/2015	Water Tender, Patrol, Utility, Light and Air
AP 12300—Inventory, Apparatus: Appendix 14	08/29/2016	HazMat 50
AP 12300—Inventory, Apparatus: Appendices 15 – 18	01/03/2017	US&R 40, US&R 54, US&R 54 (Cache Trailer, US&R 154
AP 12303—Fire Hose Inventory and Configuration	10/18/2019	
AP 12405—Tools/Equipment, Fire Station	12/18/2012	
AP 12406—Emergency Food & Water Supplies	11/17/2020	
AP 12501—Controlled Substances	07/08/2020	
AP 13003—Mandatory Worksite Postings	10/27/2016	
AP 13004—Fire District Property, Disposal of	05/08/2012	
AP 13005—Complaints	05/08/2020	
AP 13006—Security of Department Facilities	05/23/2013	
AP 13008—Department Equipment & Facilities, Use of	12/22/2016	
AP 13009—Theft, County Property	11/05/2012	
AP 13010—Libraries, Fire Station and Appendix 1 (Inventory)	02/16/2017	
AP 13014—Public Records Act Requests	05/22/2009	
AP 13015—Grant Management	02/23/2017	
AP 13103—Maintenance and Construction	10/26/2016	
AP 13105—Fire Hydrants, Inspection and Maintenance of	06/11/2001	
AP 13107—Knox Rapid Entry System	02/17/2017	
AP 13109—Fire Hydrants, Reflective Markers for	03/15/2004	

Plan, Study or Program	Most Recent Update	Comment
AP 13109—Appendix 2: Encroachment Permit Information	04/04/2016	
AP 13114—Incident Response Reporting	06/20/2013	
AP 13115—Fire Locks	08/09/2018	
AP 13202—Security of Fire Communications Center	12/04/2001	
AP 14001—Inspection Authority	09/02/2014	
AP 14002—Fire Safety Inspector Program	09/02/2014	
AP 14004—Movie Safety Officer	07/30/2001	
AP 14102—Community Service Volunteers	02/18/2016	
AP 14202—Burning Permits	04/19/2016	
AP 14301—Administrative Citation Program	07/22/2021	
AP 14302—Criminal Citations	07/22/2021	
AP 14303—Outdoor Fires for Recreation and Other Uses	03/28/2019	
AP 15008—Fire Communications Center Minimum Staffing Levels	02/06/2019	
AP 15010—Fire Communications Center Special Assignments and Training Opportunities	12/28/2017	
Fire Prevention Standards:		
501—Fire Apparatus Access	09/30/2019	Provides the minimum requirements for fire apparatus access roads. This standard also includes requirements for access road gates, fire lanes, and turnarounds/turnouts.
502—Premises Identification	10/18/2018	Provides the minimum requirements for property identification.
506—Knox Rapid Entry System	04/01/2017	Provides the minimum requirements for installation and use of the Knox Rapid Entry System.
509—Residential Fire Sprinklers	02/07/2020	Provides the minimum requirements for the design and installation of automatic fire sprinkler systems in one and two-family dwellings and manufactured homes
509C—Plan Submittal Sheet for Residential Fire Sprinklers	09/25/2020	Plan submittal sheet to be used on all residential fire sprinkler systems.
515—Defensible Space and Fuel Modification Zones	11/20/2020	Provides the minimum requirements for installation and maintenance of defensible space and fuel modification zones.
516—Composting, Mulch, and Organic Processing	02/05/2020	Provides the minimum requirements for processing, storage and application of composting, mulch and organic materials.
517—Application of Mulch and Chips in Defensible Space	11/20/2020	Provides the minimum requirements for application of mulch and wood chips within the defensible space of a structure.
518—Alternate Materials and Methods	12/21/2020	Provides requirements for filing a request for alternate materials and methods
519—Fire Watch	12/17/2020	Identifies when a fire watch is required and the minimum requirements for the fire watch.
14.5.3—Fire Hydrants	06/11/2011	Provides the minimum requirements for fire hydrants
14.6.10—Access and Water Supplies for Public Schools	05/27/2011	Provides the minimum requirements for access roads and water supply.

Plan, Study or Program	Most Recent Update	Comment
14.7.2—Installation of Commercial Fire Sprinklers	07/07/2011	Provides the minimum requirements for the design and installation of automatic fire sprinkler systems in commercial, industrial and multi-family dwellings.
14.7.3—Installation of Fire Alarms	02/23/2011	Provides the minimum requirements for the design and installation of automatic and manual fire alarm systems and fire sprinkler monitoring systems.
14.7.4—Fire Extinguishing Systems for Commercial Cooking Operations	05/13/2011	Provides the minimum requirements for the design, installation, testing and inspection of fire extinguishing systems for commercial cooking operations.
14.7.5—High-Piled Combustible Storage	03/30/2011	Provides the minimum requirements for high-piled combustible storage.
14.9.3—Fireworks Requirements	05/21/2014	Provides the minimum requirements for the public display of fireworks.
Fire Prevention Guidelines:		
401—Special Event Guideline	02/13/2020	Provides a summary of the Fire District's standard conditions for special events.
403—FHRP Abatement Assessment and Appeal Process Guideline	01/01/2020	Provides a summary of the process to file an appeal to a FHRP abatement assessment.
404—Recreational Fire Safety Guideline	02/14/2019	Provides a summary of safety guidelines for the use of recreational fires.
414—Re-Opening of Assembly Occupancies During COVID-19 Guideline	05/22/2020	Provides a summary of fire safety requirements for the re-opening of an assembly occupancy during the COVID-19 pandemic.
Crop and Orchard Warming Directive	01/29/2020	Provides a guide for the use of small warming fires during frost prevention activities. (VCFPD and Ventura County Air Pollution Control District)

Table 22-4. Fiscal Capability

Financial Resource	Accessible or Eligible to Use?
Community Development Block Grants	Yes
Capital Improvements Project Funding	No
Authority to Levy Taxes for Specific Purposes	No
User Fees for Water, Sewer, Gas or Electric Service	No
Incur Debt through General Obligation Bonds	No
Incur Debt through Special Tax Bonds	No
Incur Debt through Private Activity Bonds	No
Withhold Public Expenditures in Hazard-Prone Areas	No
State-Sponsored Grant Programs	Yes
Development Impact Fees for Homebuyers or Developers	Yes
Other	Yes
<i>If yes, specify:</i> Fire Prevention Fees, Emergency Incident Reimbursement, State Contracts, Federal Grants	

Table 22-5. Administrative and Technical Capability

Staff/Personnel Resource	Available?
Planners or engineers with knowledge of land development and land management practices <i>If Yes, Department /Position:</i> Fire Prevention Bureau	Yes
Engineers or professionals trained in building or infrastructure construction practices <i>If Yes, Department /Position:</i> Fire Prevention Bureau	Yes
Planners or engineers with an understanding of natural hazards <i>If Yes, Department /Position:</i> Emergency Services Bureau-Wildland and Fire Prevention/Planner	Yes
Staff with training in benefit/cost analysis <i>If Yes, Department /Position:</i> Business Services Bureau	Yes
Surveyors <i>If Yes, Department /Position:</i> Damage Inspection Specialists and Managers for fire damage assessment and all hazards	Yes
Personnel skilled or trained in GIS applications <i>If Yes, Department /Position:</i> Emergency Services Bureau / GIS Specialists and Analysts	Yes
Scientist familiar with natural hazards in local area	No
Emergency manager <i>If Yes, Department /Position:</i> Fire Chief, and all VCFPD Managers	Yes
Grant writers	No
Other <i>If Yes, Department /Position:</i> IT, RNs, HR Professionals, Fiscal Staff	Yes

Table 22-6. Education and Outreach Capability

Criterion	Response
Do you have a public information officer or communications office?	Yes
Do you have personnel skilled or trained in website development?	Yes
Do you have hazard mitigation information available on your website? <i>If yes, briefly describe:</i> Fire Hazard Reduction Plan is on website	Yes
Do you use social media for hazard mitigation education and outreach? <i>If yes, briefly describe:</i> Ready, Set, Go! Program and FHRP	Yes
Do you have any citizen boards or commissions that address issues related to hazard mitigation? <i>If yes, briefly describe:</i> Ojai Valley Fire Safe Council, Ventura Regional Fire Safe Council, Bell Canyon Fire Safe Council, Ventura Park Fire Safe Council and the Ventura Resource Conservation District. Also a non-profit called the C.R.E.W has received funding from CAL FIRE California Climate Investments grants for a community chipper program. Piru Wildfire Prevention Education is another group	Yes
Do you have any other programs in place that could be used to communicate hazard-related information? <i>If yes, briefly describe:</i> Signage Boards for FHRP Community Alerts; VC Alert and Ready, Set, Go! brochures	Yes
Do you have any established warning systems for hazard events? <i>If yes, briefly describe:</i> Dam Inundation Alarm at Station 28, Alert Wildfire Cameras throughout the County, and remote automated weather stations throughout the County	Yes

Table 22-7. Community Classifications

	Participating?	Classification	Date Classified
FIPS Code	Yes	111-91041	UNK
DUNS#	Yes	175795681	UNK
Community Rating System	No	No	N/A
Building Code Effectiveness Grading Schedule	No	No	N/A
Public Protection	Yes	03/3X	12/21/2018
Storm Ready	Yes	N/A	UNK
Firewise	Yes	N/A	UNK
Tsunami Ready	Yes	N/A	UNK

Table 22-8. Adaptive Capacity for Climate Change

Criterion	Jurisdiction Rating ^a
Technical Capacity	
Jurisdiction-level understanding of potential climate change impacts <i>Comment: We monitor fuel moistures throughout the region and we have remote automated weather stations to monitor temperatures and relative humidity, rainfall and wind.</i>	Medium
Jurisdiction-level monitoring of climate change impacts <i>Comment:</i>	Low
Technical resources to assess proposed strategies for feasibility and externalities <i>Comment: GIS, Wildfire Pre-Planner, Vegetation Management Planner</i>	Medium
Jurisdiction-level capacity for development of greenhouse gas emissions inventory <i>Comment:</i>	Low
Capital planning and land use decisions informed by potential climate impacts <i>Comment:</i>	Low
Participation in regional groups addressing climate risks <i>Comment:</i>	Low
Implementation Capacity	
Clear authority/mandate to consider climate change impacts during public decision-making processes <i>Comment:</i>	Low
Identified strategies for greenhouse gas mitigation efforts <i>Comment:</i>	Low
Identified strategies for adaptation to impacts <i>Comment:</i>	Low
Champions for climate action in local government departments <i>Comment:</i>	Low
Political support for implementing climate change adaptation strategies <i>Comment:</i>	Low
Financial resources devoted to climate change adaptation <i>Comment:</i>	Low
Local authority over sectors likely to be negatively impacted <i>Comment:</i>	Low

Criterion	Jurisdiction Rating ^a
Public Capacity	
Local residents' knowledge of and understanding of climate risk <i>Comment:</i>	Unsure
Local residents' support of adaptation efforts <i>Comment:</i>	Unsure
Local residents' capacity to adapt to climate impacts <i>Comment:</i>	Unsure
Local economy current capacity to adapt to climate impacts <i>Comment:</i>	Low
Local ecosystems capacity to adapt to climate impacts <i>Comment:</i>	Low

- a. High = Capacity exists and is in use; Medium = Capacity may exist, but is not used or could use some improvement; Low = Capacity does not exist or could use substantial improvement; Unsure= Not enough information is known to assign a rating.

22.5 INTEGRATION REVIEW

For hazard mitigation planning, “integration” means that hazard mitigation information is used in other relevant planning mechanisms, such as capital facilities planning, and that relevant information from those sources is used in hazard mitigation. This section identifies where such integration is already in place, and where there are opportunities for further integration in the future. Resources listed at the end of this annex were used to provide information. The progress reporting process described in Volume 1 of the hazard mitigation plan will document the progress of hazard mitigation actions related to integration and identify new opportunities for integration.

22.5.1 Existing Integration

Some level of integration has already been established between local hazard mitigation planning and the following other local plans and programs:

- **Cal Fire Danger Rating Tiers**—Fire severity regional maps
- **Dam Inundation Plan**—Emergency Plan for response to dam failure/flooding
- **GIS-based pre-application review process**—Maintain a GIS-based (Accella) pre-application review for new construction and major remodels in hazard areas, such levee break, high and/or very high wildfire areas.
- **Integration of the 2015 HMP into current/future planning documents**—Integrate the 2015 HMP, in particular the hazard analysis and mitigation strategy sections, into local planning documents, including general plans, emergency operations plans, and capital improvement plans.
- **Fuel Reduction Program, Chipper Program**—Maintain a fuel reduction program, such as the collection and disposal of dead fuel, within open spaces and around critical facilities and residential structures located within a SRA or LRA high or very high wildfire zone
- **Post-Fire Debris Flow Treatments**—Maintain post-fire debris flow hillslope and channel treatments, such as mulching, check dams, and debris racks, as needed.

- **Fuel Modification Program, Fire Hazard Reduction Plan**—Maintain a fuel modification program, which also includes residential maintenance requirements and enforcement, plan submittal and approval process, guidelines for planting, and a listing of undesirable plant species. Require builders and developers to submit their plans, complete with proposed fuel modification zones, to the local fire department for review and approval prior to beginning construction.
- **Public Education Program, Ready, Set, Go**—Continue to develop and promote public education programs in wildland fire safety and survival for all residents adjacent to wildland areas.
- **Water Reduction and Restrictions & Public Education**—Continue to implement water reduction and restrictions at district facilities; reduced or removed landscape vegetation and replaced it with drought tolerant vegetation. Also created a public viewing area at a fire station starting with a walking tour and plant identification for the public to use while planting their own yards.
- **National Terrorism Advisory System Bulletin**—Rating level, Department of Homeland Security (DHS) for threat preparation and planning as applied for preparatory action by the Fire District.
- **MARSEC USCG (Maritime Security U.S. Coast Guard)**—Threat rating system for our local Port of Hueneme, a Maritime Transportation Security Act regulated port as applied for preparatory action by the Fire District.
- Integrate the hazard analysis and mitigation strategy into the General Plan's Safety Element.
- Continue to participate in the NWS Tsunami Ready Program.
- Maintain a new vegetation management program that provides vegetation management services to elderly, disabled, or low- income property owners who lack the resources to remove flammable vegetation from around their homes.
- Maintain a fuel modification program for new construction by requiring builders and developers to submit their plans, complete with proposed fuel modification zones, to the local fire department for review and approval prior to beginning construction.
- Maintain a hazards fuel treatment program for areas that have been identified with overgrown/dead brush/trees to reduce the potential for tree-to-tree ignition. Ensure that a "maintenance now" component to provide continued fire resistance is part of the program.
- Maintain a vegetation management program in areas within and adjacent to rights-of-way and in close proximity to critical facilities to reduce the risk of tree failure and property damage and avoid creation of wind acceleration corridors within vegetated areas.
- Continue to work with local ranchers and oil fields to identify and create additional exit corridors for employees to use in the event of a wildfire.
- Continue to implement the hazard analysis and mitigation strategy into the district's emergency plans.
- Maintain post-fire debris flow hillslope and channel treatments, such mulching, check dams, and debris racks, as needed.

22.5.2 Opportunities for Future Integration

The capability assessment in this annex indicates opportunities to integrate this mitigation plan with other jurisdictional planning/regulatory capabilities. Capabilities were identified as integration opportunities if they can support or enhance the actions identified in this plan or be supported or enhanced by components of this plan. The capability assessment identified the following plans and programs that do not currently integrate hazard mitigation information but provide opportunities to do so in the future:

- **AB-38**—Applying the Wildland Fire Disclosure Act on Home Sales

Taking action to integrate each of these programs with the hazard mitigation plan was considered as a mitigation action to include in the action plan in this annex.

22.6 RISK ASSESSMENT

22.6.1 Jurisdiction-Specific Natural Hazard Event History

Table 22-9 lists past occurrences of natural hazards for which specific damage was recorded in this jurisdiction. Other hazard events that broadly affected the entire planning area, including this jurisdiction, are listed in the risk assessments in Volume 1 of this hazard mitigation plan.

Table 22-9. Past Natural Hazard Events

Type of Event	FEMA Disaster #	Date	Damage Assessment
COVID-19 Pandemic	DR-4482	January 20, 2020 – present September 30, 2021	\$181,280.00
Holser Fire		August 17, 2020	\$880,836.32 3,000 acres burned
Lime Fire		June 10, 2020	\$1,257,780.92 803 acres burned
Maria Fire	FM-5302	November 1, 2019 October 31, 2019	\$1,431,058.00 9,999 acres burned
Easy Fire	FM-5298 DR-5298	October 30, 2019	\$1,266,729.00 1,806 acres burned
Getty Fire	FM-5297	October 28, 2019	\$93,205.78
Saddleridge Fire	FM-5293	October 10, 2019	\$85,897.02
Wildfires (Hill/Woolsey)	DR-4407	November 8 – 25, 2018	\$10,718,300.00 Woolsey, LA & VC 96,949 acres
Thomas Fire	FM-5224 DR-4353	December 4, 2017	\$8,538,253.00
Springs Fire	FM-5024 DR-5024	May 2 – 11, 2013	\$369,392.00 24,251 acres burned
Guiberson Fire	FM-2839 DR-2839	September 22 – 29, 2009	\$533,819.00
Wildfires, Flooding, Mudflows, and Debris Flows (October 2007 Fires)	DR-1731	October 21 – March 31, 2008	\$81,578.00
Sesno Fire	DR-2789	October 13, 2008	\$142,434.00

Type of Event	FEMA Disaster #	Date	Damage Assessment
Shekell Fire	FM-2681 DR-2861	December 3 – 6, 2006	\$2,193,118.00 13,600 acres burned 7 structures burned
Day Fire	FM-2677 DR-2677	September 4, 2006	\$382,215.00
School Fire	FM-2586 DR-2568	November 17, 2005	\$1,013,284.30
Topanga Fire	FM-2583 DR-2583	September 28 – October 10, 2005 September 28	\$1,749,843.47 24, 175 acres burned 6 structures burned
Hurricane Katrina Evacuation	EM-3248	August 29 – October 1, 2005	\$621,740
Severe Storms, Flooding, Landslides, and Mud and Debris Flows	DR-1585	February 16 – 23, 2005	Data not available
Severe Storms, Flooding, Debris Flows, and Mudslides La Conchita	DR-1577	December 27, 2004 – January 11, 2005	\$1,828,411.00
Simi Fire		October 25, 2003	107,560 acres burned 48 structures lost
Wildfires, Flooding, Mudflow and Debris Flow	DR-1498	October 21, 2003 – March 31, 2003	Data not available
Westlake Fire		June 29, 2001	278 Acres burned
Severe Storms, Tornadoes, High Winds and Flooding	DR-1267	December 20 – 28, 1998	Data not available
Severe Winter Storms and Flooding	DR-1203	February 2 – April 30, 1998	Data not available
Severe Fires	EM-3120	October 21 – 31, 1996	Data not available
Grand Fire	Unknown	April 28, 1996	10,949 acres burned
Severe Winter Storms, Flooding, Landslides, Mud Flows	DR-1046	February 13 – April 19, 1995	Data not available
Severe Winter Storms, Flooding, Landslides, Mud Flows	DR-1044	January 3 – February, 1995	Data not available
Northridge Earthquake	DR-1008	January 17 – November 30, 1994	Data not available
Fires, Mud & Landslides, Soil Erosion, Flooding	DR-1005	October 26 – April 22, 1994	Data not available
Green Meadows Fire		October 26, 1993	38,477 acres burned 45 structures burned
Severe Storm, Winter Storm, Mud & Landslides, Flooding	DR-979	January 5 – March 20, 1993	Data not available
Snow Storm, Heavy Rain, High Winds, Flooding, Mudslide	DR-935	February 10 – 19, 1992	Data not available
Severe Freeze	DR-894	December 19, 1990 – January 3, 1991	Data not available
Bates Fire		April 4, 1989	193 acres burned
Piru Fire		January 1, 1988	12,068 acres burned
Severe Storms, High Tides, Flooding	DR-812	January 17 – 22, 1988	Data not available
Bradley Fire		November 11, 1986	9,229 acres burned
Ferndale Fire		October 14, 1985	46,809 acres burned 20 structures burned
Black Mountain Fire		July 3, 1985	1,324 acres burned
Wheeler Fire		July 1, 1985	122,724 acres burned

Type of Event	FEMA Disaster #	Date	Damage Assessment
Grass, Wildlands, Forest Fires	DR-739	June 26 – July 19, 1985	Data not available
Grimes Fire		May 7, 1984	11,164 acres burned 3,000 avocado & citrus trees burned
Coastal Storms, Floods, Slides, Tornadoes	DR-677	January 21 – March 30, 1983	Data not available
Severe Storms, Mudslides, Flooding	DR-615	January 8, 1980	Data not available
Happy Camp Fire		August 28, 1978	463 acres burned
Coastal Storms, Mudslides, Flooding	DR-547	February 15, 1978	Data not available
Carlisle Fire		November 15, 1977	1,368 acres burned
Los Robles Fire		June 22, 1976	2,245 acres burned 1 structure burned
Potrero Fire		September 26, 1973	12,297 acres burned 3 structures burned
Severe Storms, High Tides, Flooding	DR-364	February 8, 1973	Data not available
Forest, Brush Fires	DR-295	September 29, 1970	Data not available
Camarillo Heights Fire		September 26, 1970	183 acres burned 3 structures burned
Foothill Fire		September 25, 1970	4,731 acres burned 12 structures burned
Severe Storms, Flooding	DR-253	January 26, 1969	Records not kept
Timber Canyon Fire		October 16, 1967	10,841 acres burned 8 structures burned
Ditch Road Fire		October 16, 1967	1,245 acres burned 13 structures burned
Sence Ranch Fire		October 15, 1967	18,354 acres burned 76 structures burned
Devonshire-Parker Fire		October 15, 1967	23,088 acres burned 48 structures burned VC&LA Counties
Warring Canyon Fire		August 28, 1967	4,003 acres burned 1 structure burned
Heavy Rains, Flooding	DR-211	December 7, 1965	Records not kept
Polo Fire		March 7, 1964	684 acres burned
Flood ^a	DR-145	February 25, 1963	No data on file
Creek Road Fire		August 20, 1963	4,533 acres burned
Squaw Flats Fire		August 20, 1963	439 acres burned
Red Mountain Fire		January 5, 1963	1,389 acres burned
Culbert Lease Fire		December 4, 1962	5,314 acres burned 4 structures burned
Severe Storm ^a	DR-138	October 24, 1962	No data on file
Flood ^a	DR-122	March 6, 1962	No data on file
Donlon & Fletcher Fire		January 15, 1961	2,426 acres burned
Calumet Fire		October 21, 1958	17,212 acres burned 5 structures burned
Flood ^a	DR-82	April 4, 1958	No data on file
Fire ^a	DR-65	December 29, 1956	No data on file

Type of Event	FEMA Disaster #	Date	Damage Assessment
Lake Sherwood Fire		December 28, 1956	35,164 acres burned 20 structures burned
Flood ^a	DR-47	December 23, 1955	No data on file
Ventu Park Fire		November 7, 1955	13,956 acres burned 8 structures burned
Houston Fire		February 10, 1955	500 acres burned
Flood ^a	DR-15	February 5, 1954	No data on file
Wheeler Springs Fire		September 12, 1948	22,503 acres burned 17 structures burned
Thatcher Fire		June 1, 1947	44,003 acres burned 60 structures burned
Matilija Fire		September 7, 1932	220,000 acres burned

a. FEMA did not begin distinguishing declarations by county until 1964. Declarations prior to then are statewide, not county-specific.

Source: FEMA 2021

22.6.2 Hazard Risk Ranking

Table 22-10 presents a local ranking of all hazards of concern for which this hazard mitigation plan provides complete risk assessments. As described in detail in Volume 1, the ranking process involves an assessment of the likelihood of occurrence for each hazard, along with its potential impacts on people, property, and district operations. Mitigation actions primarily target hazards with high and medium rankings.

Calculations are from Unincorporated County areas and all cities, except Ventura, Oxnard, and Fillmore. Rankings were adjusted by Chief Fong with THIRA process, professional knowledge, and experience.

Table 22-10. Hazard Risk Ranking

Rank	Hazard	Risk Ranking Score	Risk Category
1	Wildfire	34	High
2	Severe Weather	24	Medium
2	Severe Storms	24	Medium
4	Flooding	23	Medium
5	Drought	22	Medium
5	Earthquake	22	Medium
5	Dam Failure	22	Medium
8	Landslide	16	Low
9	Sea Level Rise	4	Low
9	Tsunami	4	Low

22.6.3 Other Noted Vulnerabilities

Volume 1 of this hazard mitigation plan provides complete risk assessments for each identified hazard of concern. The following jurisdiction-specific issues have been identified based on a review of the results of the risk assessment, public involvement strategy, and other available resources:

- Wildfires—Ventura County has experienced the largest, most destructive, and longest duration wildfires in State recorded history, with 3 of the top 20 in the County according to CAL FIRE.
- Severe Weather—The extremes of climate change have induced long duration wind-events, freezing temperatures with frost kill, record high temperatures, increased lightning activity, and prolonged drought resulting in increased calls for service.
- Severe Storms—The jurisdiction has seen extreme storm systems bring the majority of precipitation in very condensed periods, which have impacted communities and infrastructure causing flooding, with associated mudslides in prior burn areas, and coastal flooding aggravated by storm surge and rising tides.

Actions addressing these issues were prioritized for consideration in the action plan in this annex.

22.7 STATUS OF PREVIOUS PLAN ACTIONS

Table 22-11 summarizes the actions that were recommended in the previous version of the hazard mitigation plan and their implementation status at the time this update was prepared.

Table 22-11. Status of Previous Plan Actions

Action Item from Previous Plan	Completed	Removed; No Longer Feasible	Carried Over to Plan Update	
			Check if Yes	Action # in Update
OA 1—Integrate the hazard analysis and mitigation strategy with the General Plan's Safety Element. <i>Comment: Hazard analysis and mitigation strategy is continuous.</i>			✓	VFP-4
OA 17—Implement post-fire debris flow hillslope and channel treatments, such as seeding, mulching, check dams, and debris racks, as needed. <i>Comment: Current programs following recent fires (Thomas Fire 2017 and Woolsey Fire, 2018) have been completed. Program will continue, following impacted wildland fire areas.</i>			✓	VFP-5
OA 21—Maintain hazards fuel treatment program for areas that have been identified with overgrown/dead brush/trees to reduce the potential for tree-to-tree ignition. Ensure that a "maintenance now" component to provide continued fire resistance is part of the program. <i>Comment: Continuing program, indefinitely; as part of the VCFPD Fire Hazard Reduction Program.</i>			✓	VFP-6
OA 22—Develop a vegetation management program in areas within and adjacent to rights-of-way and in close proximity to critical facilities to reduce the risk of tree failure and property damage and avoid creation of wind acceleration corridors within vegetated areas. <i>Comment: Continuing program as areas are identified.</i>			✓	VFP-7
VCFPD 1—Work with local ranchers and oil fields to identify and create additional exit corridors for employees to use in the event of a wildfire. <i>Comment: Continuing program.</i>			✓	VFP-8

22.8 HAZARD MITIGATION ACTION PLAN

Table 22-12 lists the actions that make up the hazard mitigation action plan for this jurisdiction.

Table 22-13 identifies the priority for each action. Table 22-14 summarizes the mitigation actions by hazard of concern and mitigation type.

Table 22-12. Hazard Mitigation Action Plan Matrix

Benefits New or Existing Assets	Objectives Met	Lead Agency	Support Agency	Estimated Cost	Sources of Funding	Timeline ^a
Action VFP-1 —Where appropriate, support retrofitting, purchase or relocation of structures located in hazard areas, prioritizing those that have experienced repetitive losses and/or are located in high- or medium-risk hazard areas.						
<u>Hazards Mitigated:</u> Existing	Wildfire, Severe Storms, Severe Weather, Landslide, Sea Level Rise, Tsunami, Earthquake, Dam Failure, Flooding 2, 6, 9, 11	VCFPD	GSA & Public Works	High	FEMA HMA (BRIC, FMA, HMGP), Staff Time, and General Funds	Short-term
Action VFP-2 —Actively participate in the plan maintenance protocols outlined in Volume 1 of this hazard mitigation plan.						
<u>Hazards Mitigated:</u> New & Existing	Wildfire, Severe Storms, Severe Weather, Landslide, Sea Level Rise, Tsunami, Drought, Earthquake, Dam Failure, Flooding 1, 4, 6, 8, 19	VCFPD	GSA & Public Works	Low	Staff Time, General Funds	Short-term
Action VFP-3 —Purchase generators for critical facilities and infrastructure that lack adequate backup power, including the Vehicle Maintenance Unit, which will be installed sometime between the end of 2021 and beginning of 2022.						
<u>Hazards Mitigated:</u> Existing	Dam Failure, Earthquake, Flooding, Landslide, Severe Weather, Severe Storms, Wildfire 2, 6, 7	VCFPD	GSA & Public Works	Low	Staff Time, General Funds, FEMA HMA (BRIC, HMGP)	Short-term
Action VFP-4 —Integrate the hazard analysis and mitigation strategy with the Ventura County General Plan's Safety Element.						
<u>Hazards Mitigated:</u> New & Existing	Wildfire, Severe Storms, Severe Weather, Landslide, Sea Level Rise, Tsunami, Drought, Earthquake, Dam Failure, Flooding 1, 4, 6, 8, 19	VCFPD	GSA, Public Works, CAL FIRE	Medium	FEMA HMA (BRIC, FMA, HMGP), Staff Time & General Funds	Ongoing
Action VFP-5 —Implement post-fire debris flow hillslope and channel treatments, such as seeding, mulching, check dams, and debris racks, as needed.						
<u>Hazards Mitigated:</u> New & Existing	Earthquake, Dam Failure, Severe Storms, Severe Weather, Flooding, Wildfire, Landslide, Drought 2, 4, 5, 6, 8, 10, 11, 13, 14, 15, 18	VCFPD	GSA, Public Works, CAL FIRE	Medium	FEMA HMA (BRIC, FMAP and HMGP), Staff Time & General Funds	Ongoing
Action VFP-6 —Maintain wildfire hazard fuel reduction program for areas that have been identified with overgrown or dead brush, trees and weeds to reduce the potential for tree-to-tree ignition. Ensure that a "maintenance now" component to provide continued fire resistance is part of the program.						
<u>Hazards Mitigated:</u> New & Existing	Wildfire 2, 4, 5, 6, 8, 10, 11, 13, 14, 15, 18, 19	VCFPD	CAL FIRE & USDA	Medium	FEMA HMA (BRIC, FMAP and HMGP), Staff Time & General Funds	Ongoing
Action VFP-7 —Develop a vegetation management program in areas within and adjacent to rights-of-way and in close proximity to critical facilities to reduce the risk of tree failure and property damage and avoid creation of wind acceleration corridors within vegetated areas.						
<u>Hazards Mitigated:</u> New & Existing	Severe Storms, Severe Weather, Flooding, Wildfire, Landslide, Drought 2, 4, 5, 6, 8, 10, 11, 13, 14, 15, 18, 19	VCFPD	CAL FIRE & USDA	Medium	FEMA HMA (BRIC, FMAP and HMGP), Staff Time & General Funds	Ongoing
Action VFP-8 —Work with local ranchers and oil fields to identify and create additional exit corridors for employees to use in the event of a wildfire.						
<u>Hazards Mitigated:</u> New & Existing	Wildfire 1, 2, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19	VCFPD	CAL FIRE & USDA	Low	FEMA HMA (BRIC, FMAP and HMGP), Staff Time & General Funds	Ongoing
Action VFP-9 —At select Fire Stations in the district, continue using reclaimed water and promoting water-saving measures by maintaining drought-tolerant demonstration gardens for community education and awareness.						
<u>Hazards Mitigated:</u> Existing	Drought 1, 2, 4, 13, 14, 15, 17, 18, 19	VCFPD	Local Water Utility Purveyors	Low	Staff Time & General Funds	Ongoing

Benefits New or Existing Assets	Objectives Met	Lead Agency	Support Agency	Estimated Cost	Sources of Funding	Timeline ^a
Action VFP-10—Implement a fuel modification program for new construction by requiring builders and developers to submit their plans, complete with proposed fuel modification zones, to the local fire department for review and approval prior to beginning construction.						
<u>Hazards Mitigated:</u> Wildfire						
New & Existing	1, 2, 4, 5, 6, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19	VCFPD	CAL FIRE & Local City Fire Depts.	Low	FEMA HMA (BRIC, FMAP and HMGP), Staff Time & General Funds	Ongoing
Action VFP-11 Develop and implement a Home Ignition Zone Assessment Program (Reference NFPA 1144) throughout the County's Fire Hazard Severity Zones.						
<u>Hazards Mitigated:</u> Wildfire						
New	1, 2, 4, 5, 6, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19	VCFPD	Ventura County Resource Conservation District	Medium	FEMA HMA (BRIC, FMA, HMGP), General Funds & Staff Time	Ongoing
Action VFP-12 Maintain new vegetation management program that provides vegetation management services to elderly, disabled, or low-income property owners who lack the resources to remove flammable vegetation from around their homes.						
<u>Hazards Mitigated:</u> Wildfire						
New & Existing	2, 4, 5, 8, 10, 13, 14, 15, 19	VCFPD		Medium	FEMA HMA (BRIC, FMAP and HMGP), Staff Time, General Funds	Ongoing

a. Short-term = Completion within 5 years; Long-term = Completion within 10 years; Ongoing= Continuing new or existing program with no completion date

Acronyms used here are defined at the beginning of this volume.

Table 22-13. Mitigation Action Priority

Action #	# of Objectives Met	Benefits	Costs	Do Benefits Equal or Exceed Cost?	Is Project Grant-Eligible?	Can Project Be Funded Under Existing Programs/ Budgets?	Implementation Priority ^a	Grant Pursuit Priority ^a
1	4	High	High	Yes	Yes	No	Medium	High
2	5	Medium	Low	Yes	No	Yes	High	Low
3	3	High	Low	Yes	Yes	Yes	High	High
4	5	Medium	Medium	Yes	Yes	Yes	High	Medium
5	11	Medium	Medium	Yes	Yes	No	Medium	Medium
6	12	High	Medium	Yes	Yes	Yes	High	High
7	12	Medium	Medium	Yes	Yes	Yes	High	Medium
8	18	Medium	Low	Yes	Yes	Yes	High	Medium
9	9	Medium	Low	Yes	No	Yes	High	Low
10	17	Medium	Low	Yes	Yes	Yes	High	Medium
11	17	Medium	Low	Yes	Yes	Yes	High	Medium
12	9	High	Medium	Yes	Yes	Yes	High	High

a. See the introduction to this volume for explanation of priorities.

Table 22-14. Analysis of Mitigation Actions

Hazard Type	Action Addressing Hazard, by Mitigation Type ^a							
	Prevention	Property Protection	Public Education & Awareness	Natural Resource Protection	Emergency Services	Structural Projects	Climate Resilient	Community Capacity Building ^b
High-Risk Hazards								
Wildfire	1, 2, 4, 5, 6, 7, 8, 10, 11, 12	1, 3, 5, 6, 10, 11, 12	4, 6, 11, 12	5, 6, 7, 8, 11, 12	3, 5, 6, 8, 11, 12	5	5, 6, 7, 12	2, 4, 5, 6, 7, 8, 10, 11, 12
Medium-Risk Hazards								
Dam Failure	1, 2, 4, 5	1, 3, 5	4	5	3, 5	5	5	2, 4, 5
Severe Weather	1, 2, 4, 5, 7	1, 3, 5	4	5, 7	3, 5	5	5, 7	2, 4, 5, 7
Severe Storms	VFP-1, 2, 4, 5, 7	VFP-1, 3, 5	VFP-4	VFP-5, 7	VFP-3, 5	VFP-5	VFP-5, 7	VFP-2, 4, 5, 7
Flooding	VFP-1, 2, 4, 5, 7	VFP-1, 3, 5	VFP-4	VFP-5, 7	VFP-3, 5	VFP-5	VFP-5, 7	VFP-2, 4, 5, 7
Drought	VFP-2, 4, 5, 7		VFP-4, 9	VFP-5, 7, 9	VFP-5	VFP-5	VFP-5, 7, 9	VFP-2, 4, 5, 7
Earthquake	VFP-1, 2, 4, 5	VFP-1, 3, 5	VFP-4	VFP-5	VFP-3, 5	VFP-5	VFP-5	VFP-2, 4, 5
Landslide	VFP-1, 2, 4, 5, 7	VFP-1, 3, 5	VFP-4	VFP-5, 7	VFP-3, 5	VFP-5	VFP-5, 7	VFP-2, 4, 5, 7
Low-Risk Hazards								
Sea Level Rise	VFP-1, 2, 4	VFP-1	VFP-4					VFP-2, 4
Tsunami	VFP-1, 2, 4	VFP-1	VFP-4					VFP-2, 4

a. See the introduction to this volume for explanation of mitigation types.

b. Note that the jurisdiction did not identify a need for expansion of financial capabilities, based on existing capabilities. The intent of this hazard mitigation plan is to expand the financial capability of the jurisdiction.

22.9 PUBLIC OUTREACH

Table 22-15 lists public outreach activities for this jurisdiction.

Table 22-15. Local Public Outreach

Local Outreach Activity	Date	Number of People Involved
Tweet about OES updating the HMP	08/05/2021	7
Retweet of OES updating the HMP	08/04/2021	23
Facebook post about OES updating the HMP	08/05/2021	4,312
Instagram post about OES updating the HMP	08/05/2021	9,656
Retweet of OES updating the HMP (English and Spanish)	08/16/2021	14
Nextdoor	08/05/2021	7,279

22.10 INFORMATION SOURCES USED FOR THIS ANNEX

The following technical reports, plans, and regulatory mechanisms were reviewed to provide information for this annex.

- **VCFPD Administrative Policies Manual** was used to list planning and regulatory capabilities for Table 22-3.
- **VCFPD Operational Procedures Manual** was used to list planning and regulatory capabilities for Table 22-3.

- **VCFPD Emergency Plans Manual** was used to list planning and regulatory capabilities for Table 22-3.
- **Fiscal and Facilities Records Systems** were used to list assets in Table 22-2 and damages in Table 22-8.
- **District Records on Hazards and Loss** were used to support the identification of past hazard events and noted vulnerabilities, the risk ranking, and the development of the mitigation action plan.

The following outside resources and references were reviewed:

- **Hazard Mitigation Plan Annex Development Toolkit** was used to support the identification of past hazard events and noted vulnerabilities, the risk ranking, and the development of the mitigation action plan.
- **CAL FIRE Archives** were used to gather data for Table 22-8 Past Natural Hazard Events.

23. VENTURA COUNTY OFFICE OF EDUCATION

23.1 LOCAL HAZARD MITIGATION PLANNING TEAM

Primary Point of Contact

Russ Olsen, Director of Risk Management
Ventura County Schools Self-Funding
Authority
5189A Verdugo Way
Camarillo, CA 93012
Telephone: 805-383-1970
e-mail Address: rolsen@vcoe.org

Alternate Point of Contact

Michelle Kelly, Risk Manager
Ventura County Schools Self-Funding
Authority
5189A Verdugo Way
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Telephone: 805-437-1504
e-mail Address: mkelly@vcoe.org

This annex was developed by the local hazard mitigation planning team, whose members are listed in Table 23-1.

Table 23-1. Local Hazard Mitigation Planning Team Members

Name	Title
Eric Reynolds, Ventura Unified SD	Director of Risk Management
Julie Tedder, Moorpark Unified SD	Administrative Assistant, Business Services
Martha Corona, Fillmore Unified SD	Director of Fiscal Services
Russ Olsen, Ventura County Schools Self-Funding Authority	Director of Risk Management
Michelle Kelly, Ventura County Schools Self-Funding Authority	Risk Manager

23.2 JURISDICTION PROFILE

23.2.1 Overview

Ventura County comprises 19 public K-12 school districts, 11 public charter schools, and the Ventura County Office of Education (VCOE), collectively called local educational agencies. The VCOE provides facility planning, construction, and maintenance oversight and guidance to the other local educational agencies. VCOE also operates specialized schools in the county.

Ventura County Schools Self-Funding Authority (VCSSFA) provides insurance programs, risk management programs, and emergency management programs assistance to the public K-12 school districts, 8 charter schools, and VCOE.

The Ventura County Board of Education/Ventura County Superintendent of Schools assumes responsibility for the adoption of this plan; VCSSFA will oversee its implementation.

23.2.2 Service Area

The Ventura County public school service area covers 258 school district locations including schools, offices, maintenance facilities, warehouses and transportation facilities serving a population of 132,000 students and 12,410 staff. Local educational agencies provide educational instruction, extracurricular activities, transportation and meals to students.

23.2.3 Assets

Table 23-2 summarizes the assets of the District and their value.

Table 23-2. Special-Purpose District Assets

Asset	Value
Property	
242 school locations and school district auxiliary locations	\$3,915,649,556
Equipment	
827 vehicles including buses, maintenance trucks, passenger cars, trailers, and mobile equipment	Unknown
Total:	Unknown
Critical Facilities	
Ventura County Office of Education, Administrative Office; 5189 Verdugo Way, Camarillo, CA 93012	\$11,602,900
Briggs Elementary School District, District Office; 12465 Foothill Road, Santa Paula, CA 93060	\$1,452,400
Conejo Valley Unified School District, Educational Center; 1400 E Janss Road, Thousand Oaks, CA 91362	\$4,835,400
Fillmore Unified School District, District Office; 627 Sespe Avenue, Fillmore, CA 93015	\$6,723,780
Hueneme Unified School District, District Office; 205 N Ventura Road, Port Hueneme, CA 93041	\$2,746,957
Mesa Union School District, District Office; 3901 N Mesa School Road, Somis, CA 93066	\$707,200
Moorpark Unified School District, District Office; 5297 Maureen Lane, Moorpark, CA 93021	\$20,800,600
Oak Park Unified School District, , District Office; 5801 Conifer Street, Oak Park, CA 91377	\$3,398,600
Ocean View School District, , District Office; 4200 Olds Road, Oxnard, CA 93033	\$3,262,300
Ojai Unified School District, , District Office; 414 East Ojai Avenue, Ojai, CA 93023	\$2,016,200
Oxnard School District, , District Office; 1051 South A Street, Oxnard, CA 93030	\$12,389,000
Oxnard Union High School District, , District Office; 1800 Solar Drive, 1 st Floor, Oxnard, CA 93036	\$15,575,317
Pleasant Valley School District, , District Office; 600 Temple Street, Camarillo, CA 93010	\$3,333,800
Rio Elementary School District, , District Office; 1800 Solar Drive, 3 rd Floor, Oxnard, CA 93036	\$7,775,983
Santa Paula Unified School District, District Office; 201 South Steckel Drive, Santa Paula, CA 93060	\$2,926,478
Simi Valley Unified School District, , District Office; 101 West Cochran Street, Simi Valley, CA 93065	\$46,598,400
Ventura Unified School District, , District Office; 255 West Stanley Avenue, Ventura, CA 93001	\$35,842,500
Total:	\$181,987,815

23.3 CURRENT TRENDS

The current (2021) population of Ventura County is estimated at 841,734, with a growth of -0.25% in the past year according to the most recent United States Census Data. Ventura County is the 14th largest county in California. And over the last ten-year period, Ventura County's population has seen growth of 2.02% since its 2010 population of 825,097.

23.4 CAPABILITY ASSESSMENT

This section describes an assessment of existing capabilities for implementing hazard mitigation strategies. The introduction at the beginning of this volume of the hazard mitigation plan describes the components included in the capability assessment and their significance for hazard mitigation planning.

Findings of the capability assessment were reviewed to identify opportunities to expand, initiate or integrate capabilities to further hazard mitigation goals and objectives. Where such opportunities were identified and determined to be feasible, they are included in the action plan. The “Analysis of Mitigation Actions” table in this annex identifies these as community capacity building mitigation actions. The findings of the assessment are presented as follows:

- Table 23-3 presents an assessment of planning and regulatory capabilities
- Table 23-4 presents an assessment of fiscal capabilities
- Table 23-5 presents an assessment of administrative and technical capabilities
- Table 23-6 presents an assessment of education and outreach capabilities
- Table 23-7 presents classifications under various community mitigation programs
- Table 23-8 Presents the community’s adaptive capacity for the impacts of climate change

Table 23-3. Planning and Regulatory Capability

Plan, Study or Program	Date of Most Recent Update	Comment
California Education Code, sections 17280 et seq.	2018	Design and approval of school buildings
California Building Code	2019	Standards for building design
Board Policy 3511	2019	Energy and Water Management
Board Policy 7110		Facilities Master Plan
Board Policy 7214		General Obligation Bonds
Emergency Operations Plan	2020	Preparation, response, recovery
California Department of General Services, Division of State Architect		Review and approval of new and modernized school buildings

Table 23-4. Fiscal Capability

Financial Resource	Accessible or Eligible to Use?
Community Development Block Grants	No
Capital Improvements Project Funding	Yes
Authority to Levy Taxes for Specific Purposes	No
User Fees for Water, Sewer, Gas or Electric Service	No
Incur Debt through General Obligation Bonds	Yes
Incur Debt through Special Tax Bonds	No
Incur Debt through Private Activity Bonds	No
Withhold Public Expenditures in Hazard-Prone Areas	No
State-Sponsored Grant Programs	Yes
Development Impact Fees for Homebuyers or Developers	No
Other	Yes

If yes, specify: Self-insurance program credit for safety and emergency preparation.

Table 23-5. Administrative and Technical Capability

Staff/Personnel Resource	Available?
Planners or engineers with knowledge of land development and land management practices	No
Engineers or professionals trained in building or infrastructure construction practices	Yes
<i>If Yes, Department /Position:</i> Varies by local educational agency/Director of Facilities, Bond Manager	
Planners or engineers with an understanding of natural hazards	No
Staff with training in benefit/cost analysis	Yes
<i>If Yes, Department /Position:</i> VCSSFA/Risk Manager	
Surveyors	No
Personnel skilled or trained in GIS applications	No
Scientist familiar with natural hazards in local area	No
Emergency manager	Yes
<i>If Yes, Department /Position:</i> Varies by local educational agency/Risk Manager, Emergency Technician	
Grant writers	Yes
<i>If Yes, Department /Position:</i> Department and title varies by local educational agency	

Table 23-6. Education and Outreach Capability

Criterion	Response
Do you have a public information officer or communications office?	Yes
Do you have personnel skilled or trained in website development?	Yes
Do you have hazard mitigation information available on your website?	No
Do you use social media for hazard mitigation education and outreach?	No
Do you have any citizen boards or commissions that address issues related to hazard mitigation?	No
Do you have any other programs in place that could be used to communicate hazard-related information?	Yes
<i>If yes, briefly describe:</i> Various mass notification systems -- telephone, text, e-mail	
Do you have any established warning systems for hazard events?	Yes
<i>If yes, briefly describe:</i> Various mass notification systems -- telephone, text, e-mail	

Table 23-7. Community Classifications

	Participating?	Classification	Date Classified
FIPS Code	Yes	N/A	N/A
DUNS#	Yes	078294390	N/A
Community Rating System	No	N/A	N/A
Building Code Effectiveness Grading Schedule	No	N/A	N/A
Public Protection	No	N/A	N/A
Storm Ready	No	N/A	N/A
Firewise	No	N/A	N/A
Tsunami Ready	No	N/A	N/A

Table 23-8. Adaptive Capacity for Climate Change

Criterion	Jurisdiction Rating ^a
Technical Capacity	
Jurisdiction-level understanding of potential climate change impacts <i>Comment: Climate change taught in some science classes, widespread use of solar panels, electric buses</i>	Medium
Jurisdiction-level monitoring of climate change impacts <i>Comment: Impact of local educational agency efforts difficult to measure or monitor</i>	Low
Technical resources to assess proposed strategies for feasibility and externalities <i>Comment: Such in-house resources do not exist</i>	Low
Jurisdiction-level capacity for development of greenhouse gas emissions inventory <i>Comment: Such in-house resources do not exist</i>	Low
Capital planning and land use decisions informed by potential climate impacts <i>Comment: Continued implementation of new solar panels, electrical storage batteries, electric buses</i>	Medium
Participation in regional groups addressing climate risks <i>Comment: Such in-house resources do not exist</i>	Low
Implementation Capacity	
Clear authority/mandate to consider climate change impacts during public decision-making processes <i>Comment: Authority/mandate centered on education, which can include climate change taught in some science classes</i>	Low
Identified strategies for greenhouse gas mitigation efforts <i>Comment: solar panels, electrical storage batteries, electric buses</i>	Medium
Identified strategies for adaptation to impacts <i>Comment: solar panels, electrical storage batteries, electric buses</i>	Medium
Champions for climate action in local government departments <i>Comment: Local educational agencies have had energy conservation specialists, but grants have expired.</i>	Low
Political support for implementing climate change adaptation strategies <i>Comment: Local authority limited to school sites</i>	Low
Financial resources devoted to climate change adaptation <i>Comment: As allowed by the state or supported by grant funding.</i>	Low
Local authority over sectors likely to be negative impacted <i>Comment: Local authority limited to students and staff on school campuses</i>	Low
Public Capacity	
Local residents' knowledge of and understanding of climate risk <i>Comment: Climate change taught in some science classes</i>	Medium
Local residents' support of adaptation efforts <i>Comment: Local educational agencies have little influence beyond school sites</i>	Low
Local residents' capacity to adapt to climate impacts <i>Comment: Local educational agencies have little influence beyond school sites</i>	Low
Local economy current capacity to adapt to climate impacts <i>Comment: Local educational agencies have little influence beyond school sites</i>	Low
Local ecosystems capacity to adapt to climate impacts <i>Comment: Local educational agencies study ecosystems, but have little influence beyond school grounds</i>	Low

- a. High = Capacity exists and is in use; Medium = Capacity may exist, but is not used or could use some improvement;
Low = Capacity does not exist or could use substantial improvement; Unsure= Not enough information is known to assign a rating.

23.5 INTEGRATION REVIEW

For hazard mitigation planning, “integration” means that hazard mitigation information is used in other relevant planning mechanisms, such as capital facilities planning, and that relevant information from those sources is used in hazard mitigation. This section identifies where such integration is already in place, and where there are opportunities for further integration in the future. Resources listed at the end of this annex were used to provide information on integration. The progress reporting process described in Volume 1 of the hazard mitigation plan will document the progress of hazard mitigation actions related to integration and identify new opportunities for integration.

23.5.1 Existing Integration

Some level of integration has already been established between local hazard mitigation planning and the following other local plans and programs:

- **Emergency Operations Plan**—A plan for preparing, responding, recovery from emergencies which includes mitigation.
- **Recommendations and Requirements for Wildfire: Preparation and Response**—Includes strategies for preventing property damage due to wildfire and strategies for preventing smoke intrusion into school buildings.

23.5.2 Opportunities for Future Integration

The capability assessment in this annex indicates opportunities to integrate this mitigation plan with other jurisdictional planning/regulatory capabilities. Capabilities were identified as integration opportunities if they can support or enhance the actions identified in this plan or be supported or enhanced by components of this plan. The capability assessment identified the following plans and programs that do not currently integrate hazard mitigation information but provide opportunities to do so in the future:

- **Comprehensive School Safety Plan**—Includes strategies for the education, prevention and response to crime, violence and emergencies on school campuses and at school-related events.

Taking action to integrate each of these programs with the hazard mitigation plan was considered as a mitigation action to include in the action plan in this annex.

23.6 RISK ASSESSMENT

23.6.1 Jurisdiction-Specific Natural Hazard Event History

Table 23-9 lists past occurrences of natural hazards for which specific damage was recorded in this jurisdiction. Other hazard events that broadly affected the entire planning area, including this jurisdiction, are listed in the risk assessments in Volume 1 of this hazard mitigation plan.

Table 23-9. Past Natural Hazard Events

Type of Event	FEMA Disaster #	Date	Damage Assessment
Severe Weather	N/A	February 28, 2021	Strong and gusty Santa Ana winds impacted the coastal valleys of Ventura county. Minor roof damage at some school sites
COVID-19 Pandemic	DR-4482	01/20/20 – continuing	N/A
Easy/Maria Fires	FM-5298/FM-5302	October 30, 2019	\$325,000
Heat Event		7/4/2018 to 7/6/2018	Extreme 2-day heat event broke records across the county.
Woolsey Fire / Hill Fire	DR-4407	November 8, 2018	\$7,932,865
Thomas Fire	DR-4353	December 4, 2017	\$12,451,877
Winter Storms	N/A	2/17/2017 to 2/18/2017	Rainfall amounts from 2 to 6 inches across coastal areas with up to around 10 inches in the local mountains produced numerous reports of flash flooding as well as mud and debris flows. Strong southerly winds with gusts up to 70 mph reported in some areas.
Springs Fire	FM-5024	May 2, 2013	Smoke damage to district buildings. 24,251 acres burned countywide.
Guiberson Fire	FM-2839	9/22/2009 to 9/29/2009	Smoke damage to district buildings. 17,500 acres burned countywide.
2007 Ranch Fire	FM-1731	October 21, 2007	Smoke damage to district buildings. 58,401 acres burned in both L.A. and eastern Ventura county near Piru
Severe Freeze Event	DR-1689	1/11/2007 to 1/17/2007	4 nights of below freezing temperatures
Shekell Complex Fire	FM-2681	12/3/2006 to 12/6/2006	Smoke damage to district buildings. 13,600 acres burned countywide.
Day Fire	FM-2677	9/4/2006 to 10/9/2006	Smoke damage to district buildings. 162,702 acres burned countywide.
Winter Storms	DR-1577	1/7/2005 to 1/11/2005	Flooding and erosion throughout the county.
Simi Fire	DR-1498/FM-2504	October 24, 2003	Smoke damage to district buildings. 108,204 acres burned countywide.
Ranch Fire	N/A	December 27, 1999	Smoke damage to district buildings. 4,372 acres burned countywide
Freeze Event	DR-1267	December 20, 1998	Unknown
Northridge Earthquake	DR-1008	January 17, 1994	Non-structural damage to a limited number of school sites in the eastern areas of the county
Sylmar Earthquake	N/A	February 9, 1971	Unknown
St. Francis Dam Failure	N/A	March 12, 1928	>530 people died; infrastructure and buildings throughout the county all eradicated in flood's path down the Santa Clara river valley to the Pacific Ocean.

23.6.2 Hazard Risk Ranking

Table 23-10 presents a local ranking of all hazards of concern for which this hazard mitigation plan provides complete risk assessments. As described in detail in Volume 1, the ranking process involves an assessment of the likelihood of occurrence for each hazard, along with its potential impacts on people, property, and district operations. Mitigation actions primarily target hazards with high and medium rankings.

Calculations are from Unincorporated County areas and all cities, then adjusted based on the location of district properties within those jurisdictions, and local experience.

Table 23-10. Hazard Risk Ranking

Rank	Hazard	Risk Ranking Score	Risk Category
1	Earthquake	33	High
2	Wildfire	24	Medium
2	Severe Storm	24	Medium
2	Severe Weather	24	Medium
5	Dam Failure	18	Medium
5	Flooding	18	Medium
7	Drought	9	Low
8	Landslide	7	Low
9	Sea Level Rise	2	Low
9	Tsunami	2	Low

23.6.3 Other Noted Vulnerabilities

Volume 1 of this hazard mitigation plan provides complete risk assessments for each identified hazard of concern. The following jurisdiction-specific issues have been identified based on a review of the results of the risk assessment, public involvement strategy, and other available resources:

- School buildings are built to withstand strong earthquakes. Non-structural hazards can still cause serious injury.
- Smoke intrusion has been the biggest cleanup expense due to wildfire. A small number of schools are located near open space, making them vulnerable to burning.
- Many child nutrition storage areas are without generators to preserve food during power outages.

Mitigation actions addressing these issues were prioritized for consideration in the action plan in this annex.

23.7 STATUS OF PREVIOUS PLAN ACTIONS

Table 23-11 summarizes the actions that were recommended in the previous version of the hazard mitigation plan and their implementation status at the time this update was prepared.

23.8 HAZARD MITIGATION ACTION PLAN

Table 23-12 lists the actions that make up the hazard mitigation action plan for this jurisdiction.

Table 23-13 identifies the priority for each action. Table 23-14 summarizes the mitigation actions by hazard of concern and mitigation type.

Table 23-11. Status of Previous Plan Actions

Action Item from Previous Plan	Completed	Removed; No Longer Feasible	Carried Over to Plan Update	
			Check if Yes	Action # in Update
OA 1—Integrate the hazard analysis and mitigation strategy with the General Plan's Safety Element. <i>Comment: Still needs to be implemented</i>			✓	VOE-5
OA 8—Adopt emergency water conservation measures and/or water conservation ordinance to limit irrigation. <i>Comment: Not adopted</i>		✓		
OA 11—Develop and implement plans to increase the building owner's general knowledge of and appreciation for the value of seismic upgrading of the building's structural and nonstructural elements. <i>Comment: School buildings are designed to withstand strong earthquakes. Efforts continue to implement and maintain non-structural earthquake safety.</i>			✓	VOE-6
OA 21—Maintain hazards fuel treatment program for areas that have been identified with overgrown/dead brush/trees to reduce the potential for tree-to-tree ignition. Ensure that a "maintenance now" component to provide continued fire resistance is part of the program. <i>Comment: Schools adjacent to open space continue to maintain brush clearance as required by the Ventura County Fire Protection District</i>			✓	VOE-7
VCOE 1—Convert high water volume landscape to native and other drought tolerant plants, hardscape, and synthetic turf in non-play areas. <i>Comment: Efforts continue to implement and maintain drought tolerant plants and hardscape.</i>			✓	VOE-8

Table 23-12. Hazard Mitigation Action Plan Matrix

Benefits New or Existing Assets	Objectives Met	Lead Agency	Support Agency	Estimated Cost	Sources of Funding	Timeline ^a
Action VOE-1—Where appropriate, support retrofitting of structures located in hazard areas, prioritizing those that have experienced repetitive losses and/or are located in high- or medium-risk hazard areas. <i>Hazards Mitigated:</i> Earthquake, Wildfire, Severe Storm, Severe Weather, Dam Failure, Flooding, Landslide, Sea Level Rise, Tsunami						
Existing	2, 6, 9, 11	Facilities		High	General Funds, FEMA HMA (BRIC, HMGP)	Short-term
Action VOE-2—Actively participate in the plan maintenance protocols outlined in Volume 1 of this hazard mitigation plan. <i>Hazards Mitigated:</i> Earthquake, Wildfire, Severe Storm, Severe Weather, Dam Failure, Flooding, Drought, Landslide, Sea Level Rise, Tsunami						
New & Existing	1, 4, 6, 8, 19	Administration		Low	Staff Time, General Funds	Short-term
Action VOE-3—Purchase generators for critical facilities and infrastructure that lack adequate backup power, including computer networks and child nutrition storage facilities <i>Hazards Mitigated:</i> Dam Failure, Earthquake, Flooding, Severe Weather, Wildfire						
Existing	2, 6, 11	Facilities		Medium	Staff Time, General Funds, FEMA HMA (BRIC, FMA, HMGP)	Short-term

Benefits New or Existing Assets	Objectives Met	Lead Agency	Support Agency	Estimated Cost	Sources of Funding	Timeline ^a
Action VOE-4 —Harden structures with secure door seals and windows to prevent smoke and ash intrusion during wildfire events.						
<u>Hazards Mitigated:</u> Wildfire						
Existing	2, 6, 9, 11	Facilities		High	Staff Time, General Funds, FEMA HMA (BRIC, FMA, HMGP), Obligation Bonds	Ongoing
Action VOE-5 —Integrate the hazard analysis and mitigation strategy with the General Plan's Safety Element.						
<u>Hazards Mitigated:</u> Earthquake, Wildfire, Severe Storm, Severe Weather, Dam Failure, Flooding, Drought, Landslide, Sea Level Rise, Tsunami						
New & Existing	1, 4, 6, 8, 19	Administration		Low	Staff Time, General Funds	Short-term
Action VOE-6 —Continue to develop and implement plans to comply with existing seismic mandates for structural elements and increase the general knowledge, appreciation for, and implementation of seismic upgrading of the building's nonstructural elements.						
<u>Hazards Mitigated:</u> Earthquake						
New & Existing	1, 4, 6, 19	Facilities		High	Staff Time, General Funds, FEMA HMA (BRIC HMGP)	Ongoing
Action VOE-7 —Maintain wildfire hazard fuel reduction program for areas that have been identified with overgrown or dead brush, trees and weeds to reduce the potential for tree-to-tree ignition. Ensure that a "maintenance now" component to provide continued fire resistance is part of the program. (Coordinates with Ventura County Fire Protection District Action VFP-6)						
<u>Hazards Mitigated:</u> Wildfire						
New & Existing	2, 4, 5, 6, 8, 10, 11, 13, 14, 15, 18, 19	VCFPD	Facilities, CAL FIRE & USDA	Medium	FEMA HMA (BRIC, FMAP and HMGP), Staff Time & General Funds	Ongoing
Action VOE-8 —Convert high water volume landscape to native and other drought tolerant plants, hardscape, and synthetic turf in non-play areas.						
<u>Hazards Mitigated:</u> Drought						
Existing	4, 13, 15	Facilities		Medium	Staff Time, General Funds, FEMA HMA (BRIC, HMGP)	Ongoing

a. Short-term = Completion within 5 years; Long-term = Completion within 10 years; Ongoing= Continuing new or existing program with no completion date

Acronyms used here are defined at the beginning of this volume.

Table 23-13. Mitigation Action Priority

Action #	# of Objectives Met	Benefits	Costs	Do Benefits Equal or Exceed Cost?	Is Project Grant-Eligible?	Can Project Be Funded Under Existing Programs/ Budgets?	Implementation Priority ^a	Grant Pursuit Priority ^a
VOE-1	4	High	High	Yes	Yes	No	Medium	High
VOE-2	5	Medium	Low	Yes	No	Yes	High	Low
VOE-3	3	High	Medium	Yes	Yes	No	Medium	High
VOE-4	4	Medium	High	No	Yes	No	Low	Medium
VOE-5	5	Medium	Low	Yes	No	Yes	High	Low
VOE-6	4	High	High	Yes	Yes	No	Medium	High
VOE-7	12	High	Medium	Yes	Yes	No	Medium	High
VOE-8	3	Low	Medium	No	Yes	Yes	Low	Medium

a. See the introduction to this volume for explanation of priorities.

Table 23-14. Analysis of Mitigation Actions

Hazard Type	Action Addressing Hazard, by Mitigation Type ^a							
	Prevention	Property Protection	Public Education & Awareness	Natural Resource Protection	Emergency Services	Structural Projects	Climate Resilient	Community Capacity Building ^b
High-Risk Hazards								
Earthquake		VOE-1, 6	VOE-2, 5, 6		VOE-3			VOE-2, 5
Wildfire	VOE-7	VOE-1, 4, 7	VOE-2, 5, 7	VOE-7	VOE-3, 7		VOE-7	VOE-2, 3, 5, 7
Severe Storm		VOE-1	VOE-2, 5					
Severe Weather		VOE-1	VOE-2, 5		VOE-3			VOE-2, 3, 5
Dam Failure		VOE-1	VOE-2, 5		VOE-3			VOE-2, 5
Flooding		VOE-1	VOE-2, 5		VOE-3			VOE-2, 5
Drought			VOE-2, 5	VOE-8				VOE-2, 5, 8
Landslide		VOE-1	VOE-2, 5					VOE-2, 5
Sea Level Rise		VOE-1	VOE-2, 5					VOE-2, 5
Tsunami		VOE-1	VOE-2, 5					VOE-2, 5

a. See the introduction to this volume for explanation of mitigation types.

b. Note that the jurisdiction did not identify a need for expansion of financial capabilities, based on existing capabilities. The intent of this hazard mitigation plan is to expand the financial capability of the jurisdiction.

23.9 PUBLIC OUTREACH

Table 23-15 lists public outreach activities for this jurisdiction.

Table 23-15. Local Public Outreach

Local Outreach Activity	Date	Number of People Involved
Post VCSSFA Risk Management Committee meeting announcements at VCSSFA Office, VCOE Outdoor posting and VCSSFA website	First Monday of each month	15 to 18 representative from various school districts
Allow public to comment during meetings	First Monday of each month	No members of the public have attended meetings where hazard mitigation has been discussed

23.10 INFORMATION SOURCES USED FOR THIS ANNEX

The following technical reports, plans, and regulatory mechanisms were reviewed to provide information for this annex.

- **VCSSFA Statement of Values** -- a list of properties and structures including values of structures and modeled values of contents

The following outside resources and references were reviewed:

- **Hazard Mitigation Plan Annex Development Toolkit**—The toolkit was used to support the identification of past hazard events and noted vulnerabilities, the risk ranking, and the development of the mitigation action plan.
- **Grants Portal**—contains documents about costs in response to cleanup after recent wildfires.

24. VENTURA COUNTY PUBLIC WORKS AGENCY— WATERSHED PROTECTION

24.1 LOCAL HAZARD MITIGATION PLANNING TEAM

Primary Point of Contact

Glenn Shephard, Director,
VCPWA-Watershed Protection
800 So. Victoria Avenue
Ventura, CA 93009-1610
Telephone: (805) 654-2040
e-mail Address: glenn.shephard@ventura.org

Alternate Point of Contact

Gerard Kapuscik, Mgr. SRG,
VCPWA-Watershed Protection
800 So. Victoria Avenue
Ventura, CA. 93009-1610
Telephone: (805) 648-9284
e-mail Address: gerard.kapuscik@ventura.org

This annex was developed by the local hazard mitigation planning team for Ventura County Public Works Agency—Watershed Protection (VCPWA-WP), whose members are listed in Table 24-1.

Table 24-1. Local Hazard Mitigation Planning Team Members

Name	Title
Eric Alger	Staff Services Specialist II, O&M, VCPWA-WP
Angela Bonfiglio Allen	Planner IV, ESS, WP&PD, VCPWA-WP
Deby Cisneros	Adm. Asst. II, SRG, VCPWA-WP
Masood Jilani	Eng. Mgr. II, D&CD, VCPWA-WP
Gerard Kapuscik	Mgr. SRG, VCPWA-WP
Pam Lindsey	Mgr. ESS, WP&PD, VCPWA-WP
Ewelina Mutkowska	Mgr. County Stormwater Program-VCPWA-WP
Kirk Norman	Eng. Mgr. II, D&CD, VCPWA-WP
Gabriel Ramirez	Eng. Tech IV, SRG, VCPWA-WP
Bruce Rindahl	Eng. Mgr. II, WR&TS, WP&PD, VCPWA-WP
Lara Shellenbarger	WRS III, WR, VCPWA-WP
Glenn Shephard	Director, VCPWA-WP
Yunsheng Su	Eng. IV, APS, WP&PD, VCPWA-WP
Nathan Summerville	Eng. IV, APS, WP&PD, VCPWA-WP
Martha Symes	Grants Specialist, SRG, VCPWA-WP
Mark Yaftali	Eng. III, O&MD, VCPWA-WP

24.2 JURISDICTION PROFILE

24.2.1 Overview

The VCPWA-WP, formerly known as the Ventura County Flood Control District, was initially formed on September 12, 1944, by an act of the California State Legislature. VCPWA-WP is a Dependent County Special District, governed by the Board of Supervisors, and administratively housed in the Ventura County Public Works Agency.

The mission of VCPWA-WP is to protect life, property, and community infrastructure from flood events, improve water resources management, and enhance the health and natural function of watersheds in Ventura County.

VCPWA-WP is the responsible local agency sponsor for federal flood control projects throughout Ventura County. VCPWA-WP also serves as the principal co-permittee and manages the implementation of the Ventura Countywide Stormwater Quality Management Program under the municipal National Pollutant Discharge Elimination System permit for urban stormwater runoff discharges in Ventura County. Finally, VCPWA-WP also manages FEMA's NFIP and CRS for unincorporated Ventura County.

The Ventura County Watershed Protection Board of Supervisors assumes responsibility for the adoption of this plan, and the Ventura County Public Works Director, through his designee, Glenn Shephard, acting in his capacity as Director of VCPWA-WP, will oversee its implementation.

24.2.2 Service Area

VCPWA-WP's service area is coterminous with boundaries of Ventura County, except for the offshore islands of Anacapa and San Nicholas. VCPWA-WP's service area is approximately 1,800 square miles and encompasses all 10 cities and the unincorporated areas of Ventura County.

24.2.3 Assets

Table 24-2 summarizes the assets of VCPWA-WP and their estimated current replacement value.

Table 24-2. VCPWA-WP Assets	
Asset	Value
Property	
N/A	N/A
Equipment	
Flood Warning System (FWS) Equipment	\$3,454,500
<i>Total:</i>	\$3,454,500
Critical Flood Protection Infrastructure Facilities	
Dams, Debris and Detention Basins	\$244,316,058
Flood/Stormwater Conveyance Channels	\$2,057,616,000
Levees	\$371,086,917
Pump Stations	\$22,799,085
<i>Total:</i>	\$2,699,272,560

24.3 CURRENT TRENDS

The current (2021) population of Ventura County is estimated at 841,734, with a growth of -0.25% in the past year according to the most recent United States Census Data. Ventura County is the 14th largest county in California. And over the last ten-year period, Ventura County's population has seen growth of 2.02% since its 2010 population of 825,097.

24.4 CAPABILITY ASSESSMENT

This section describes an assessment of existing capabilities for implementing hazard mitigation strategies. The introduction at the beginning of this volume of the hazard mitigation plan describes the components included in the capability assessment and their significance for hazard mitigation planning.

Findings of the capability assessment were reviewed to identify opportunities to expand, initiate or integrate capabilities to further hazard mitigation goals and objectives. Where such opportunities were identified and determined to be feasible, they are included in the action plan. The "Analysis of Mitigation Actions" table in this annex identifies these as community capacity building mitigation actions. The findings of the assessment are presented as follows:

- Table 24-3 presents an assessment of planning and regulatory capabilities
- Table 24-4 presents an assessment of fiscal capabilities
- Table 24-5 presents an assessment of administrative and technical capabilities
- Table 24-6 presents an assessment of education and outreach capabilities
- Table 24-7 presents classifications under various community mitigation programs
- Table 24-8 Presents the community's adaptive capacity for the impacts of climate change

Table 24-3. Planning and Regulatory Capability

Plan, Study or Program	Date of Most Recent Update	Comment
Annual Capital Improvement Plan Project Sheet Submittals	4/31/2021	5-Year Planning Horizon (FY 22-26)
District Detention Dams and Debris Basins Update	In Progress	Evaluation of 53 Debris and Detention Basins
District Facility Design Manual	In Progress	Guidance Standards Governing Flood Protection Projects Designed and Constructed by the VCPWA-Watershed Protection
District Design Hydrology Manual	July 2017	Design Hydrology Computational Guidelines and Input Data Parameters
Emergency Operations Roles & Responsibilities Matrix	March 2017	Categorization of Employees' Emergency Operations Roles and Responsibilities
Flood Mitigation Plan for Ventura County	3/1/2005	OES Planning Grant to VCPWA-WP to Prepare County's Plan Document
Flood Safety Plan for Ventura County	March 2017	Flood Safety Plan Outlines Ventura County's planned response to flood emergencies affecting Ventura County
Dam Inundation Mapping Studies for 8 State Sized Dams	1-2-20 thru 11-11-20	State Mandated Emergency Action Plans with Inundation Maps for Emergency Preparedness
VC Watershed Protection Ordinance No. WP-2	9/10/2013	Ordinance Codifying VCPWA-WP's Statutory Authorities, Powers, and Operational Practices

Table 24-4. Fiscal Capability

Financial Resource	Accessible or Eligible to Use?
Community Development Block Grants	Yes
Capital Improvements Project Funding	Yes
Authority to Levy Taxes for Specific Purposes	Yes
User Fees for Water, Sewer, Gas or Electric Service	Yes
<i>If yes, specify: VCPWA-WP, in accordance with applicable provisions found in the Ventura County Watershed Protection Act, (California Water Code Appendix, Chapter 46) is authorized to levy and collect taxes, assessments, and fees for its statutory powers to provide for the control of the flood and storm waters of the district, and to conserve such waters for beneficial and useful purposes as stipulated in Section 7 of its enabling act.</i>	
Incur Debt through General Obligation Bonds	Yes
Incur Debt through Special Tax Bonds	Yes
Incur Debt through Private Activity Bonds	No
Withhold Public Expenditures in Hazard-Prone Areas	No
State-Sponsored Grant Programs	Yes
Development Impact Fees for Homebuyers or Developers	Yes

Table 24-5. Administrative and Technical Capability

Staff/Personnel Resource	Available?
Planners or engineers with knowledge of land development and land management practices	Yes
<i>If Yes, Department /Position: VCPWA-WP Engineers I-II-II-IV Engineering Managers I-II-III Environmental Planners VCPWA-WP Director and Deputy Directors</i>	
Engineers or professionals trained in building or infrastructure construction practices	Yes
<i>If Yes, Department /Position: VCPWA-WP Engineers I-II-III-IV Engineer Managers I-II-III Environmental Planners VCPWA-WP Director and Deputy Directors</i>	
Planners or engineers with an understanding of natural hazards	Yes
<i>If Yes, Department /Position: VCPWA-WP Engineers I-II-III-IV Engineering Managers I-II-III Environmental Planners VCPWA-WP Director and Deputy Directors</i>	
Staff with training in benefit/cost analysis	Yes
<i>If Yes, Department /Position: VCPWA-WP Engineers I-II-III-IV Engineering Managers I-II-III Staff Services Manager III VCPWA-WP Director and Deputy Directors</i>	

Staff/Personnel Resource		Available?
Surveyors		Yes
If Yes, Department /Position:	VCPWA-WP relies on the VCPWA-Engineering Services Department-County Surveyors Office to perform survey work required in the development of flood protection project engineering design and development efforts. Depending on County Surveyors Office workload considerations, and certain specialized survey work required by VCPWA-WP, the County Surveyors Office may perform the requested survey work utilizing in-house staff, or contract with outside survey service vendors.	
Personnel skilled or trained in GIS applications		Yes
If Yes, Department /Position:	VCPWA-WP Engineering Techs III & IV Engineers I-II-III-IV Engineering Managers I-II-III Environmental Planners VCPWA-WP Director and Deputy Directors	
Scientist familiar with natural hazards in local area		Yes
If Yes, Department /Position:	VCPWA-WP Environmental Planners	
Emergency manager		Yes
If Yes, Department /Position:	VCPWA-WP Pursuant to the 2010 VCPWA-WP National Incident Management System Implementation Plan, the Director of Watershed Protection is tasked to coordinate all VCPWA-WP operations during emergencies, including serving as VCPWA-WP Primary Point of Contact with the VCPWA-Duty Officer and the VCSOES Emergency Operations Center Commander and/or VCSOES Duty Officer.	
Grant writers		Yes
If Yes, Department /Position:	VCPWA-WP Engineers I-II-III Engineer Managers I-II-III Environmental Planners Staff Services Specialist I Staff Services Manager III	

Table 24-6. Education and Outreach Capability

Criterion	Response
Do you have a public information officer or communications office?	Yes
If yes, briefly describe:	VCPWA contracts with Consortium Communications, to help craft and disseminate public information and outreach campaigns. VCPWA-WP, as one of the 5-departments in VCPWA, regularly avails itself of Consortium's public information and outreach technical support services, including an active, vigorous, and robust VCPWA social media presence on Facebook, Twitter, and Instagram. VCPWA Online Facebook Twitter
Do you have personnel skilled or trained in website development?	Yes
Do you have hazard mitigation information available on your website?	Yes
If yes, briefly describe:	VCPWA-WP was responsible for the creation and is responsible for the maintenance of the County of Ventura's Flood Information Website (vcfloodinfo.com) through the National Flood Insurance Program's Community Rating System (CRS). That website features FEMA's flood insurance rate maps which allows the public to determine if their property is affected by flood hazards, information about flood safe requirements for building in a floodplain, become better informed on how to hire a contractor, obtain information on flood insurance, and much more. Additionally, there is a link on this webpage to the 2015 Ventura County Multi-Hazard Mitigation Plan which will be updated to reflect the current Ventura County Multi-Jurisdiction Hazard Mitigation Plan, 2021 Plan Update process currently underway. (http://www.vcfloodinfo.com/resources/ventura-county-hazards-mitigation-plan)

Criterion	Response
Do you use social media for hazard mitigation education and outreach?	Yes
If yes, briefly describe:	VCPWA-WP, as one of 20+ planning partners in the HMP 2021 Plan Update process, has partnered with VCSOES in ongoing, evolving, and interactive proactive social media outreach regarding hazard mitigation plan development public information and outreach initiatives. Recently, VCPWA-WP provided VCSOES with photos of the completed Fresno Canyon Diversion Project which was funded by \$5M in FEMA HMGP Grant Funding. Project photos and information in both English and Spanish, were featured in a VCSOES Twitter post this week showcasing the County's Fresno Canyon Diversion Project under the messaging theme: "Hazard Mitigation in Action!" https://twitter.com/Venturaoes/status/1427391467534704640?s=20 (English) https://twitter.com/Venturaoes/status/1427391498052505646?s=20 (Spanish) VCPWA-WP is partnering with VCSOES to develop a 4-5 minute long video, in both English and Spanish, which will provide viewers with a pithy explanation of hazard mitigation as a thought construct, provide an overview of the current hazard mitigation plan 2021 update planning process underway, including milestone timelines and progress, and highlighting key mitigation projects that have been accomplished in Ventura County with FEMA HMGP grant funding (such as the Fresno Canyon Diversion Project) to bring these planning concepts more tangible and closer to home. The video will be posted on the readyventuracounty.org website and will be made available to planning partners for distribution via their existing social media, online, and texting messaging ecosystems.
Do you have any citizen boards or commissions that address issues related to hazard mitigation?	Yes
If yes, briefly describe:	VCPWA-WP actively participated in the 2015 VC HMP Plan Development process and currently is actively participating in the HMP-2021 Plan Update Process managed by the Ventura County Sheriff's Office of Emergency Services (VCSOES). VCPWA-WP's Director, Glenn Shephard, and SRG Manager Gerard Kapuscik are both members and active participants in the Core Planning Team and the Steering Committee tasked with advisory support to the team.
Do you have any other programs in place that could be used to communicate hazard-related information?	Yes
If yes, briefly describe:	Ventura County's VC Alert Emergency Notification System allows members of the public to send a text message to VCNOTIFY to 888777 which will allow them to receive real-time alerts and advisories directly from the County. Residents can register multiple contact methods and request to be alerted to a home phone, cell phone, business phone, e-mail and/or hearing-impaired receiving device. Residents can also register up to five different addresses such as a home address, work address, school address, or business address. Additionally, VCPWA has a similar text notification system for all Public Works Employees which can be used for similar real-time text alerts and advisories.
Do you have any established warning systems for hazard events?	Yes
If yes, briefly describe:	VCPWA-WP operates a Flood Warning System (FWS) composed of 90 self-reporting rain gages and 30 self-reporting stream gages countywide. The FWS also receives telemetered data for 65 additional rain gages and 23 stream gages operated by other agencies including the United States Geological Survey, Los Angeles Department of Public Works, and the California Department of Water Resources. The critical rain and stream gage information collected and reported in real time are used in the hydrologic models for determining the amount of runoff from storm events information is provided to VCSOES in real time and is an important data source utilized for potential emergency event evacuation notifications triggered by high-flow rate storm flood events.

Table 24-7. Community Classifications

	Participating?	Classification	Date Classified
FIPS Code	Yes	111-91042	Pre-2005
DUNS#	Yes	066691122	Unknown
Community Rating System	Yes	Class 5 Rating	5/1/2016
Building Code Effectiveness Grading Schedule	Yes	Class 3 Rating	2019
Public Protection	No	N/A	N/A
Storm Ready	Yes	N/A	2011
Firewise	No	N/A	N/A
Tsunami Ready	Yes	N/A	2012

Table 24-8. Adaptive Capacity for Climate Change

Criterion	Jurisdiction Rating ^a
Technical Capacity	
Jurisdiction-level understanding of potential climate change impacts	High
<i>Comment: Given the nature of the diverse interdisciplinary teams (engineers, environmental scientists, hydrologists, etc.), there is a keen situational awareness of climate change impacts on flood protection facilities and the need to mitigate those hazards. VCPWA-WP Staff contributed to the Projected Changes in Ventura County Climate Study completed in 2019 by the Western Regional Climate Center, Desert Research Institute (wrcc.dri.edu/climate/reports). VCPWA-WP also contributes to the Watersheds Coalition of Ventura County's Integrated Regional Water Management Plan updates, including the Climate Change Vulnerability Assessment and project selection process. Furthermore, VCPWA-WP has incorporated into its levee improvement process the planning for one percent annual chance (formerly 100-year) flood protection plus an additional 10 percent to address the uncertainty of climate change impacts.</i>	
Jurisdiction-level monitoring of climate change impacts	High
<i>Comment: VCPWA-WP operates and maintains a system of 100 self-reporting rain gages, 47 self-reporting stream gages, and 16 self-reporting weather gages. VCPWA-WP also receives telemetered data from 65 additional rain gages and 23 stream gages operated by other agencies including the U.S.G.S., Los Angeles Department of Public Works, and California Department of Water Resources (DWR). All the data from this system is maintained by VCPWA-WP and includes records of over 150 years. The continuing long term data sets will be used to analyze and quantify the long-term impacts of climate change on hydrologic processes.</i>	
Technical resources to assess proposed strategies for feasibility and externalities	Medium
<i>Comment: VCPWA-WP utilizes its Flood Warning System (FWS) system data to populate and continuously update its hydrologic and hydraulic modeling in support of flood control facility improvement designs.</i>	
Jurisdiction-level capacity for development of greenhouse gas emissions inventory	Low
<i>Comment: VCPWA-WP obtains assistance from environmental consultants to evaluate the potential GHG emissions that would be associated with specific projects, both temporary and long-term impacts. These analyses are presented in the Environmental Impact Reports prepared for flood protection projects. These results inform mitigation measures needed to reduce potential GHG impacts.</i>	
Capital planning and land use decisions informed by potential climate impacts	High
<i>Comment: With respect to capital planning decisions, see answers above. With respect to land use decisions, VCPWA-WP does not have land use decision-making power. However, VCPWA-WP staff reviews applications submitted under the CEQA process for unincorporated Ventura County and all cities in the County, as well as adjoining counties. The applicants are required to evaluate their projects' flood risk impacts using the Ventura County Hydrology Manual. Based on the results, they are also required to retain storm runoff exceeding pre-project levels.</i>	
Participation in regional groups addressing climate risks	High
<i>Comment: VCPWA-WP staff participates in decision-making by the Watersheds Coalition of Ventura County (local body that implements state-level Integrated Regional Water Management planning), Ventura County General Plan climate adaptation updates and implementation of strategies for action, Beach Erosion Authority for Control and Nourishment (BEACON) relating to sea level rise and increasing coastal erosion impacts along the Ventura County coast. VCPWA-WP leads the countywide effort among all City and County floodplain managers addressing coastal and riverine flood modeling and mapping technical review and comments to FEMA, partners with local non-governmental organizations (The Nature Conservancy and others) to advance preservation of floodplain properties to prevent development on lands at risk of flooding countywide.</i>	

Criterion	Jurisdiction Rating ^a
Implementation Capacity	
Clear authority/mandate to consider climate change impacts during public decision-making processes	High
<i>Comment:</i> VCPWA-WP, as a state-created, county-dependent special district is required to comply with several state laws addressing climate change impacts, including but not limited to the California Global Warming Solutions Act of 2006 and Senate Bill 97 enacted in 2007 to amend the CEQA statute to address GHG emissions and impacts. Additionally, VCPWA-WP is required to comply with the 2040 General Plan for Ventura County, which notes: "...the County developed an integrated approach to addressing climate change in the General Plan by incorporating related policies and programs throughout the General Plan elements, such that the General Plan will also serve as the County's Climate Action Plan. VCPWA-WP staff also functions as staff for several groundwater sustainability agencies, including the Fox Canyon Groundwater Management Agency, tasked with developing Groundwater Sustainability Plans for medium and high priority over drafted groundwater basins, in compliance with the Sustainable Groundwater Management Act (SGMA).	
Identified strategies for greenhouse gas mitigation efforts	Low
<i>Comment:</i> Interim VCPWA Teleworking policy in place. Hybrid and electric models are replacing aging fleet vehicles to the extent feasible, as administered by the Ventura County General Services Agency. Agricultural irrigation efficiency assistance by Fox Canyon Groundwater Management Agency. A GHG inventory with 2015 as the baseline year was prepared to support the Ventura County General Plan update and will be updated every five years. The greatest contribution was transportation (36%). VC General Plan 2040 Policies created for the purpose of mitigating GHGs are listed below. Please refer to the General Plan for the numerous related Implementation Programs (FB=Financing and Budgeting; IGC=Inter-Governmental Coordination; JP=Joint Partnerships with the Private Sector; RDR=Regulation and Development Review; SO=Services and Operations): Conservation and Open Space Element (COS) COS-1.13: The County shall continue to work in partnership with agencies, organizations, and entities responsible for the protection, management, and enhancement of the county's biological resources. (IGC) COS-1.15: The County shall establish and support a countywide target for the County, cities in Ventura County, agencies, organizations, businesses, and citizens to plant two million trees throughout the county by 2040. (SO, JP, IGC) COS-3.2: The County shall encourage the planting of trees and the protection of existing urban forests and native woodlands, savannahs, and tree canopy throughout the county, including along State or County designated scenic roadways and in residential and commercial zones throughout the county, especially those located within designated disadvantaged communities. (MPSP, RDR) COS-3.3: The County shall give overhead utility undergrounding within high fire hazard areas and Scenic Resource Areas priority when allocating County Utility Undergrounding Funds. (MPSP, FB) COS-7.4: The County shall require discretionary development for oil and gas exploration and production to use electrically powered equipment from 100 percent renewable sources and cogeneration, where feasible, to reduce air pollution and greenhouse gas emissions from internal combustion engines and equipment. (RDR) COS-7.7: The County shall require new discretionary oil wells to use pipelines to convey oil and produced water; oil and produced water shall not be trucked. (RDR) COS-8.1: The County shall promote the development and use of renewable energy resources (e.g., solar, thermal, wind, tidal, bioenergy, hydroelectricity) to reduce dependency on petroleum-based energy sources. (IGC, RDR) COS-8.2: The County shall encourage the State, community choice aggregation programs, and energy utility companies to provide programs, rebates, and incentives for energy efficiency installation and retrofit projects. (IGC) COS-8.3: The County shall facilitate the coordination of its Climate Action Plan implementation and maintenance with the cities in the county, the Air Pollution Control District (APCD), and other organizations to promote countywide collaboration on addressing climate change. (SO, IGC) COS-8.4: The County, as a signatory to a legal entity created under a Joint Powers Authority with neighboring communities, shall continue to serve as an active member of the Clean Power Alliance or similar organization providing local customer access to electricity generated from low carbon renewable energy sources in excess of State requirements. (SO, IGC) COS-8.5: The County shall work with utility providers to offer residents options to purchase and use renewable energy resources. (SO, IGC, JP) COS-8.6: The County shall support the transition to zero net energy and zero net carbon buildings, including electrification of new buildings. (RDR) COS-8.7: The County shall promote sustainable building practices that incorporate a "whole systems" approach for design and construction that consumes less energy, water, and other non-renewable resources, such as by facilitation passive ventilation and effective use of daylight. (RDR)	

Criterion	Jurisdiction Rating ^a
COS-8.8: The County shall encourage the integration of features that support the generation, transmission, efficient use, and storage of renewable energy sources in discretionary development. (RDR) COS-8.9: The County shall encourage discretionary development to include the planting of shade trees on each property and within parking areas to reduce radiation heat production. (RDR) COS-8.10: The County shall encourage battery energy storage systems as an option for optimizing the management of electricity generated by renewable resources. (RDR) COS-9.1: The County shall preserve natural open space resources through: the concentration of development in Urban Areas and Existing Communities; use of cluster or compact development techniques in discretionary development adjacent to natural open space resources; maintaining large lot sizes in agricultural, rural, and open space areas; discouraging conversion of lands currently used for agricultural production or grazing; limiting development in areas constrained by natural hazards; and encouraging agricultural and ranching interests to maintain natural habitat in open space areas where the terrain or soil is not conducive to agricultural production or grazing. (RDR) COS-9.3: The County shall place a high priority on preserving open space lands for recreation, habitat protection, and overall community benefit. (MPSP) COS-10.1: The County shall maintain and refer to the General Plan and its integrated greenhouse gas (GHG) Reduction Strategy as the County's comprehensive plan for reducing community-wide GHG emissions in the unincorporated County. (RDR) COS-10.2: The County shall work toward achieving a community-wide GHG emissions reduction target of 41 percent below 2015 levels by 2030. (RDR) COS-10.3: The County shall work toward achieving longer-term, post-2030 community-wide GHG emissions reduction goals, as follows: 61 percent below 2015 levels by 2040 and 80 percent below 2015 levels by 2050. (RDR) COS-10.4: The County shall reduce GHG emissions in both existing and new development through a combination of measures included in the GHG Strategy, which includes new and modified regulations, financing and incentive-based programs, community outreach and education programs, partnerships with local or regional agencies, and other related actions. (RDR)	
Identified strategies for adaptation to impacts	High
Comment: The 2015 Ventura County Local Hazard Mitigation Plan identified the following overarching mitigation actions (OA) that could be implemented: OA 4: Relocate or reinforce bike trails, parking lots, and other beach access amenities away from the shoreline to restore the beach/shoreline in sea-level rise/coastal erosion areas. OA 5: Restore habitat and improve flood protection for low-lying areas by employing innovative techniques such as constructing levees coupled with gently sloping tidal marshes to help protect from storm wave action and tidal surge. OA 7: Develop a water conservation public outreach program to increase awareness about the drought, fines, and penalties for overuse and solutions for conserving water. OA 8: Adopt emergency water conservation measures and/or water conservation ordinance to limit irrigation. OA 13: Reinforce roads/bridges from flooding through protection activities, including elevating the roads/bridges and installing/widening culverts beneath the roads/bridges or upgrading storm drains. OA 14: Acquire, relocate, or elevate residential structures, particularly those that have been identified as repetitive loss properties, within the 100-year floodplain. OA 16: Implement landslide stabilization and/or protection measures. Stabilization measures include grading the unstable portion of the slope to a lower gradient, construction of rock buttresses and retaining walls, and drainage improvements. Protection measures include containment and/or diversion of the moving debris, such as walls, berms, ditches, and catchment basins. OA 19: Create a new vegetation management program that provides vegetation management services to elderly, disabled, or low-income property owners who lack the resources to remove flammable vegetation from around their homes. OA 20: Implement a fuel modification program for new construction by requiring builders and developers to submit their plans, complete with proposed fuel modification zones, to the local fire department for review and approval prior to beginning construction. OA 21: Develop a hazards fuel treatment program for areas that have been identified as overgrown or contain dead brush and trees to reduce the potential for tree-to-tree ignition. Ensure that the program includes a "maintenance now" component to provide continued fire resistance. VC General Plan 2040 Policies are listed below (FB=Financing and Budgeting; IGC=Inter-Governmental Coordination; JP=Joint Partnerships with the Private Sector; MPSP=Master Plans, Strategies, and Programs; PI=Public Information; PSR=Planning Studies and Reports; RDR=Regulation and Development Review; SO=Services and Operations):	

Criterion	Jurisdiction Rating ^a
Conservation and Open Space Element (COS) COS-2.2: The County shall support activities that trap or add sand through beach nourishment, dune restoration, and other adaptation strategies to enhance or create beaches in areas susceptible to sea-level rise and coastal flooding. (MPSP) COS-2.10: The County shall work with Federal, State, and local jurisdictions, agencies, and organizations to monitor saltwater intrusion and take proactive steps to reduce intrusion, including: working to maintain and restore coastal wetlands buffers; enhancing groundwater management to prevent excessive pumping in order to restore groundwater levels needed to reduce saltwater intrusion; and implementing mitigation measures to prevent saltwater intrusion into estuaries and groundwater basins including, but not limited to, implementation of reactive barriers and use of pumps to divert saltwater. (PSR, IGC, JP) COS-3.2: The County shall encourage the planting of trees and the protection of existing urban forests and native woodlands, savannahs, and tree canopy throughout the county, including along State or County designated scenic roadways and in residential and commercial zones throughout the county, especially those located within designated disadvantaged communities. (MPSP, RDR) COS-3.3: The County shall give overhead utility undergrounding within high fire hazard areas and Scenic Resource Areas priority when allocating County Utility Undergrounding Funds. (MPSP, FB) COS-5.3: The County shall encourage landowners to participate in voluntary programs that reduce soil erosion and increase soil productivity. To this end, the County shall promote coordination between the Natural Resources Conservation Service, Ventura County Resource Conservation District, University of California Cooperative Extension, and other similar agencies and organizations. (RDR) Land Use and Community Character Element (LU) LU-1.1: The County shall continue to promote orderly and compact development by: working with cities in Ventura County and the Ventura Local Agency Formation Commission to promote and maintain reasonable city boundaries and Spheres of Influence to prevent growth-inducing urban development in unincorporated areas; and require unincorporated urban development to be located in areas designated as Existing Communities and unincorporated urban centers consistent with the Guidelines for Orderly Development and as defined in Policy LU-1.2. (RDR, IGC) LU-11.3: The County shall require new commercial and industrial developments to be designed to be generally compact, grouped and consolidated into functional units providing for sufficient off-street parking and loading facilities, maximize pedestrian and vehicle safety, reduce vehicle miles traveled (VMT), encourage electric vehicle charging, and minimize land use conflicts and traffic congestion. The County shall require that commercial and industrial discretionary development is designed to provide adequate buffering (e.g., walls, landscaping, setbacks) and operational conditions (e.g., hours of operation, and scheduling of deliveries) to minimize adverse impacts (e.g., noise, glare, and odors) on adjoining and adjacent residential areas. (RDR) LU-11.4: The County shall encourage discretionary development on commercial- and industrial-designated land to incorporate sustainable technologies, including energy- and water-efficient practices and low- and zero-carbon practices. (RDR) LU-16.5: The County shall encourage discretionary commercial development to promote ease of pedestrian/bicycle access to encourage walk-in business, while providing sufficient off-street parking. (RDR) LU-16.9: The County shall encourage discretionary development to be oriented and landscaped to enhance natural lighting, solar access, and passive heating or cooling opportunities to maximize energy efficiency. (RDR) LU-18.5: The County shall encourage stakeholders in designated disadvantaged communities who are vulnerable to sea level rise or other climate change impacts to have the opportunity to learn about and participate in the decision-making process for adaptation planning within Ventura County. (PI) LU-22.2: The County shall maintain and annually review the General Plan Implementation Programs before the preparation of the County's Annual Budget. As part of this process, the County shall update the prioritization of programs based on applicability, relevance, timing of initiation, and availability of funding. (PSR, SO) Circulation, Transportation, and Mobility Element (CTM) CTM-2.1: The County shall prepare and adopt Complete Streets Design Guidelines to be used when constructing new roadways or improving existing roadways where Complete Streets would be appropriate/feasible. The Complete Streets Design Guidelines shall employ a context-sensitive approach to planning and designing the road and street network to reflect the distinct agricultural, rural, or urban character of a particular location. (MPSP) CTM-2.2: The County shall plan a roadway system that has adequate capacity and is designed to provide reasonable and safe use by vehicles, public transportation, bicycles, and pedestrians with minimum delay pursuant to LOS standards described in Policy CMT-1.2. The road system should follow Federal Highway Administration classification as identified on Figure 4-4. (MPSP)	

Criterion	Jurisdiction Rating ^a
CTM-2.3: The County shall require discretionary development with access onto a County road to have the access point(s) designed and built to County standards. (RDR)	
CTM-2.4: The County shall strive to provide safe operating conditions for all appropriate modes and uses of County roadways. (RDR, MPSP, SO)	
CTM-2.5: The County shall coordinate the development and maintenance of all transportation facilities with emergency service providers to ensure continued emergency service operation and service levels. (ICG)	
CTM-2.6: The County shall work with Caltrans, Southern California Association of Governments (SCAG), Ventura County Transportation Commission (VCTC), and cities in the county to plan, develop, and maintain regional transportation facilities and services, and to identify existing and future transportation corridors that should be linked across jurisdictional boundaries so that sufficient right-of-way may be preserved. (IGC)	
CTM-2.7: The County shall coordinate with VCTC to implement and update the Congestion Management Plan (CMP). The County shall also encourage consideration of multimodal performance measures as part of future updates to the CMP. (MPSP, IGC)	
CTM-2.8: For those portions of the County's Regional Road Network currently not designated as part of the CMP, the County shall coordinate with VCTC to formally designate applicable County maintained roadways as part of the CMP. (MPSP, IGC)	
CTM-2.9: The County shall work with the VCTC and Caltrans to reprioritize the re-striping of SR 118 from Vineyard Avenue to Darling Road on the CMP and the Caltrans list of projects to provide for an additional lane in each direction of travel. (IGC)	
CTM-2.10: The County shall work with public and private schools to identify and expand safe routes to school, where feasible. (IGC)	
CTM-2.11: The County shall establish land use patterns that promote shorter travel distances between residences, employment centers, and retail and service-oriented uses to support the use of public transportation, walking, bicycling, and other forms of transportation that reduce reliance on single-passenger automobile trips. (RDR, MPSP)	
CTM-2.12: The County shall coordinate with the cities in the county and VCTC to plan and implement a system of bicycle lanes and multi-use trails that link the cities, unincorporated communities, schools including colleges and universities, commercial/retail, employment centers, health care service facilities, public transportation, and other points of interest. (MPSP, IGC)	
CTM-2.13: The County shall strive to eliminate "gaps" in roadways, bikeways, and pedestrian networks by planning for and seeking funding to construct necessary improvements to remove barriers and improve transportation system connectivity as well as connections that support first and last mile accessibility to and from public transportation. (MPSP, PSR, FB)	
CTM-2.14: When designing new bicycle facilities, or modifying existing roadways with bicycle facilities, the County shall prioritize and install features to improve the safety and visibility of bicyclists. (MPSP)	
CTM-2.15: The County shall rely on the guidelines and design standards for bicycle and pedestrian facilities established by the California Manual on Uniform Traffic Control Devices (CAMUTCD) and supporting guidelines provided by the Federal Highway Administration, Caltrans, and American Association of State Highway and Transportation Officials (AASHTO). (MPSP, PSR, SO)	
CTM-2.16: The County shall consider the safety and accessibility of pedestrians when preparing transportation plans, studies, and reports. (MPSP)	
CTM-2.17: The County shall support regional bicycle efforts to improve infrastructure that will make biking more attractive to residents and tourists. (IGC, SO, JP)	
CTM-2.18: The County shall require discretionary development in designated Existing Communities to construct roadways to urban standards and Complete Streets principles, including curb, gutter, sidewalks, and bike lanes when there is a nexus for improvement. The County shall rely on the guidelines and design standards for the CAMUTCD, Caltrans in the Highway Design Manual, and Complete Streets Guidelines (pursuant to Deputy Directive-64-R2), Federal Highway Administration, AASHTO. (RDR)	
CTM-2.19: The County shall continue to examine and update safety metrics for CEQA impact analysis as appropriate. Options include but are not limited to queue spill-back at intersections; mid-block unprotected crossings; and increased crossing distances. (RDR)	
CTM-2.20: The County shall improve pedestrian safety at intersections and mid-block locations in Existing Communities through approved features consistent with the CAMUTCD, Highway Design Manual, Federal Highway Administration, AASHTO, and the National Cooperative Highway Research Program Report 498 (Application of Pedestrian Crossing Treatments for Streets and Highways). (RDR, SO)	
CTM-2.21: Within Existing Communities, the County shall provide/retrofit separated or buffered pedestrian and bicycle paths from the outside travel lane along County Road Network roads that are designated Overweight Vehicle Corridors and	

Criterion	Jurisdiction Rating ^a
Surface Transportation Assistance Act designated Terminal Access Routes. Where the application or retrofitting of separated or buffered facilities is not feasible, the County shall prioritize alternative pedestrian and bicycle connections that encourage and attract pedestrian and bicycle traffic off designated Overweight Vehicle Corridors or Surface Transportation Assistance Act designated truck routes. (MPSP) CTM-2.22: The County shall seek funding sources first for construction of new sidewalks in designated disadvantaged communities and then for sidewalk maintenance, particularly in low-income areas. (FB) CTM-2.23: The County shall continue to work with VCTC, Naval Base Ventura County, and local public transportation regional bus service providers to promote the expansion of a safe, efficient, convenient, integrated, and cost-effective intercommunity and countywide public transportation and bus service that provides county residents with access to employment, commercial services, health and medical facilities, social services, educational facilities and institutions, and personal business destinations. (IGC) CTM-2.24: The County shall work with VCTC and local public transportation providers to address the needs of non-drivers living in rural areas to provide public transportation and paratransit service. (IGC) CTM-2.25: The County shall support the recommendations of the California State Rail Plan for Amtrak trains, including track and signalization upgrades, increasing service frequencies by additional round-trip service to regional destinations north and south of Ventura County, improving passenger information and comfort, and reducing travel time. (IGC) CTM-2.26: When railroad rights-of-way are abandoned, the County shall evaluate the feasibility of acquiring the land for public use as public transportation, bicycle, pedestrian, or equestrian paths. (MPSP) CTM-2.27: The County shall require that discretionary development be subject to the following permit conditions of approval, where feasible, to minimize traffic impacts by incorporating pedestrian and bicycle pathways, bicycle racks and lockers, ridesharing programs, transit improvements (bus turnouts, shelters, benches), and/or transit subsidies for employees or residents of the proposed development. (RDR) CTM-3.1: The County shall identify and prioritize components of a bicycle network to increase public access and ridership on bicycle routes. (MPSP, SO) CTM-3.2: The County shall develop a bicycle network for all user types and routes across the county. (MPSP, SO, PI) CTM-3.3: The County shall encourage the development of a bicycle network that connects to regional destinations such as parks, trails, educational institutions, employment centers, transit, park, and ride lots, and tourist destinations. (IGC) CTM-3.4: The County shall promote bicycle network connectivity between Ventura County communities as well as Santa Barbara and Los Angeles Counties. (IGC) CTM-3.5: The County shall plan for bicycle network connectivity in rural, agricultural, and open space areas in a way that supports and complements business and agricultural activities in those areas. (JP) CTM-3.6: The County shall support the Complete Streets effort by, when feasible, constructing bicycle lanes on County maintained roads listed in the VCTC Bicycle Wayfinding Plan. (SO, JP, IGC) CTM-3.7: The County shall encourage the construction of a bicycle trail along the Santa Paula Branch Line Railroad in the unincorporated area between the cities of Ventura and Santa Paula. (SO, JP, IGC) CTM-3.8: The County shall use clear and consistent message and placement for on- and off-street regional bikeways and to regional destinations. (PI, SO) CTM-3.9: The County shall actively pursue outside funding opportunities for bicycle network improvements. (FB, JP) CTM-3.10: The County shall require adequate bicycle storage facilities (e.g., bicycle racks, lockers) for discretionary development as determined by allowable land uses at a given site. (RDR) CTM-4.1: The County shall work with Caltrans and VCTC to reduce VMT by facilitating the efficient use of existing transportation facilities; striving to provide viable modal choices that make driving alone an option rather than a necessity; supporting variable work schedules to reduce peak period VMT; and providing more direct routes for pedestrians and bicyclists. (MPSP, SO) CTM-4.2: The County shall encourage bicycling, walking, public transportation, and other forms of alternative transportation to reduce VMT, traffic congestion, and GHG emissions. (PI) CTM-4.3: The County shall work with a broad range of agencies (e.g., Caltrans, VCTC, Amtrak, Ventura County APCD, public transportation providers, and shared mobility vendors) to encourage and support programs that increase vehicle occupancy including the provision of traveler information, shuttles, and preferential parking for carpools/vanpools. (IGC, PI) CTM-4.4: The County shall coordinate with Caltrans and VCTC to identify future park-and-ride lots within the unincorporated areas of Ventura County to facilitate more carpooling, vanpooling, and public transportation use. (IGC) CTM-6.1: The County shall support the integration of emerging technologies that increase the routine use of alternative transportation options to decrease single-passenger automobile travel. (MPSP)	

Criterion	Jurisdiction Rating ^a
CTM-6.3: As part of new roadway planning and design as part of discretionary development, the County shall promote the use of permeable paving and other passive drainage features such as bio-swales to prevent flooding, particularly in urban areas. (RDR, SO) CTM-6.4: The County shall support the development of alternative fueling stations (e.g., electric and hydrogen) and vehicle-to-infrastructure (V2I) technology for emerging technologies. (SO) CTM-6.5: The County shall support the installation of electric vehicle charging stations, where feasible, at County facilities, parking lots, park-and-ride lots, truck stops, and new development. (RDR, SO) CTM-6.6: The County shall encourage developments and street systems that support the use of properly licensed Neighborhood Electric Vehicles where appropriate. (MPSP) CTM-6.7: The County shall encourage and support car share operators at multimodal facilities including transportation hubs, passenger rail stations, and park-and-ride lots. (RDR) CTM-6.8: The County shall evaluate the feasibility and work to establish requirements for shared micro-mobility (e.g., bike sharing) vendors within unincorporated areas. (RDR) CTM-6.9: The County shall encourage Mobility-as-a-Service (MaaS) providers to park between service calls versus driving within unincorporated communities. (RDR, SO) CTM-6.10: The County shall encourage Mobility-as-a-Service (MaaS) providers to coordinate with public transportation providers that serve unincorporated areas to increase the attractiveness of public transportation through the provision of free or subsidized public transportation patron first and last mile connections within unincorporated communities. (IGC, JP) Public Facilities, Services, and Infrastructure Element (PFS) PFS-1.2: The County shall monitor the projected impacts of climate change and natural disasters to make adaptive improvements and upgrades to public facilities and services. (SO) PFS-1.3: The County shall review plans for constructing new essential public facility, such as a hospital, health care facility, emergency shelter, emergency command center, or emergency communications facility, so that these facilities are located outside of at-risk areas whenever feasible. If such a location is infeasible, then the County shall require the use of construction methods and site design features to minimize potential damage to these facilities. (RDR, SO) PFS-1.10: The County shall operate and maintain County facilities in an efficient manner that meets community needs while conserving financial and natural resources. (SO) PFS-2.1: The County shall encourage energy efficiency, GHG reduction features, and resiliency planning into County facility and service plans and operations. (PSR, SO) PFS-2.2: The County shall encourage the incorporation of sustainable design features in community facilities to reduce energy demand and environmental impacts, such as solar reflective roofing, permeable pavement, and incorporation of shade trees. (SO, IGC) PFS-2.3: The County shall prioritize energy efficiency and water conservation as key design features when constructing, purchasing, leasing, retrofitting, or expanding County facilities. (SO) PFS-2.4: The County shall provide recycling and composting receptacles and use of biodegradable or recycled-material products at County facilities and events, where feasible. (SO) PFS-2.5: The County shall encourage its employees to reduce the number and distance of single-occupancy vehicle work trips. (SO) PFS-2.6: The County shall review market-available technologies for alternative fuel vehicles and prioritize purchase of vehicles to reduce GHG emissions where economically feasible. (SO) PFS-2.8: The County shall include electrical vehicle charging station infrastructure in a new County-initiated facility construction to the extent feasible. The County shall also look for opportunities to install EV charging stations as part of any major renovation, retrofit or expansion of County facilities. (SO) PFS-4.4: The County shall encourage wastewater treatment facilities to provide the maximum feasible protection and enhancement of groundwater resources. (SO, IGC) PFS-4.6: The County shall encourage public wastewater system operators to upgrade existing wastewater treatment systems to reclaim water suitable for reuse for landscaping, irrigation, and groundwater recharge. (SO, IGC) PFS-5.4: The County shall continue to provide educational and informational materials to restaurants, grocery stores, and other food providers, as part of food facility inspections, to support donation of safe, unused food to non-profit service agencies. PFS-5.5: The County shall support the beneficial reuse of agricultural wastes for activities such as composting and energy generation. (RDR, SO) PFS-5.6: The County shall promote value-added alternatives to solid waste management, such as compost, energy, biochar, and wood products to avoid open burning of agricultural biomass wastes. (SO, PI)	

Criterion	Jurisdiction Rating ^a
PFS-6.3: The County shall monitor projected climate change impacts, and coordinate with local, regional, state, and federal agencies to identify existing and potential projected impacts and develop strategies to maintain and improve flood control facilities accordingly. (SO, IGC)	
PFS-6.4: The County shall coordinate with local, regional, state, and federal agencies to identify existing and potential infrastructure improvements to increase water retention to respond to drought conditions. (SO, IGC)	
PFS-7.2: The County shall work with utility companies to modernize and upgrade transmission lines and associated equipment to reduce the risk of fire in areas with a high wildfire hazard risk. (JP)	
PFS-7.6: The County shall work with utility providers to implement smart grid technologies as part of new developments and infrastructure projects. (JP)	
PFS-12.4: The County, in coordination with local water agencies and the Fire Protection District, shall require new discretionary development to comply with applicable standards for fire flows and fire protection. (RDR, IGC)	
Hazards and Safety Element (HAZ)	
HAZ-1.1: The County shall continue to require development to incorporate design measures that enhance fire protection in areas of high fire risk. This shall include but is not limited to incorporation of fire-resistant structural design, use of fire-resistant landscaping, and fuel modification around the perimeter of structures. (RDR, PI)	
HAZ-1.2: The County shall require adherence to defensible space standards, or vegetation “clear zones,” for all existing and new structures in areas that are designated as Hazardous Fire Areas by the Ventura County Fire Protection District and High Fire Hazard Severity Zones by the California Department of Forestry and Fire Protection. (CAL FIRE) (IGC, PI, RDR)	
HAZ-1.3: The County shall continue to recognize the role of fire in local ecosystems by supporting controlled burns and other fire prevention measures. (IGC)	
HAZ-1.4: The County shall require the recordation of a Notice of Fire Hazard with the County Recorded for all new discretionary entitlements (including subdivisions and land use permits) within areas designated as Hazardous Fire Areas by the Ventura County Fire Department or High Fire Hazard Severity Zones by CAL FIRE. (RDR)	
HAZ-1.6: The County shall continue to develop and distribute educational materials and conduct educational outreach activities informing the public about wildfire risk and protection strategies. (PSR, IGC, PI)	
HAZ-3.1: The County shall continue to actively plan for sea level rise by using the best available science to analyze critical vulnerabilities, identify measures to conserve coastal resources, minimize impacts on residents and businesses, maintain public services, and strengthen resiliency. (MPSP)	
HAZ-3.2: County-initiated infrastructure projects sited along or seaward of Highway 101, such as bridges and levees, that will provide 100 years or more of service, shall be planned with the potential to be easily modified to accommodate 100-years of projected sea level rise in accordance with the H++ extreme risk aversion sea level rise scenario. (PSR, IGC)	
HAZ-3.3: To the extent feasible, the County shall incorporate education elements into coastal adaptation projects to inform the public about the risks of sea level rise and option for adaptation. (RDR, SO, JP)	
HAZ-10.1: The County shall strive to reduce air pollutants from stationary and mobile sources to protect human health and welfare, focusing efforts on shifting patterns and practices that contribute to the areas with the highest pollution exposures and health impacts. (MPSP, RDR, SO, IGC, PI, JP)	
HAZ-10.5: The County shall work with applicants for discretionary development projects to incorporate bike facilities, solar water heating, solar space heating, incorporation of electric appliances and equipment, the use of zero and/or near zero emission vehicles and other measures to reduce air pollution impacts and reduce GHG emissions. (RDR)	
HAZ-10.6: The County shall continue to work with the APCD and VCTC to develop and implement Transportation Control Measures (TCM) programs consistent with the APCD’s Air Quality Management Program (AQMP) to facilitate public transit and alternative transportation modes within the county. (IGC, FB)	
HAZ-10.7: When purchasing new County vehicles, the County shall give strong preference to fuel efficient vehicles, including the use of zero emission vehicles when feasible. (SO, FB)	
HAZ-10.8: The County shall promote alternative modes of transportation that reduce single-occupancy vehicle (SOV) travel and enhance “last mile” transportation options to improve air quality. (IGC, JP, PI)	
HAZ-11.1: The County shall identify and protect critical infrastructure locations that are vulnerable to damage from extreme heat. (SO, FB, PSR, IGC)	
HAZ-11.2: The County shall partner with SCAG, utilities, nonprofit organizations, and other entities to implement future and ongoing heat-related climate change initiatives. The County’s partnership in ongoing programs and future initiatives could include helping other organizations increase participation in existing programs through education and promotion, and by using and integrating them in County programs and activities, where feasible. (JP)	
HAZ-11.3: The County shall work with public, private, and nonprofit partners to limit impacts of climate change on Designated Disadvantaged Communities by focusing planning efforts and interventions on communities with the highest	

Criterion	Jurisdiction Rating ^a
need and ensuring representatives of these communities have a role in the decision-making process for directing climate change response. (MPSP, SO) HAZ-11.4: The County shall support efforts of agencies and organizations that provide effective education and outreach to Designated Disadvantaged Communities on the effects of climate change, including increasing temperatures, wildfires, flooding, sea level rise, poor air quality, extreme weather events, disease prevention, and other public health effects. (PI) HAZ-11.5: The County shall work with State and County health agencies and local organizations to provide educational programs and resources targeted at reducing the impacts of exposure to sun and heat. (ICG, JP, PI) HAZ-11.6: The County shall expand partnerships with local governments, non-government organizations, churches, and businesses to provide additional cooling centers, particularly in designated disadvantaged communities. (SO, IGC, JP, PI) HAZ-11.7: The County shall encourage development to include new building designs or retrofits to improve building performance through strategic building design features, including insulation to reduce energy usage, solar-reflective white roofs, solar panels, green roofs (vegetation on roofs), and battery storage for energy. (RDR) HAZ-11.8: The County shall work with utility providers to underground overhead power lines (both existing and as part of discretionary development) to increase the resilience of the energy grid and reduce wildfire potential, especially in Existing Communities. (JP) HAZ-11.9: The County shall promote the use of urban greening techniques, such as cool pavement technology, parking lot shading, landscaping, and other methods to offset climate change impacts and reduce GHG emissions for discretionary development and County-initiated projects. (RDR, FB, SO) HAZ-11.10: The County shall promote the use of solar photovoltaic carports for discretionary development and County initiated projects. (RDR) Agriculture Element (AG) AG-1.1: The County shall continue to protect and preserve agricultural land by directing growth away from productive agricultural lands into cities, unincorporated urban areas, or existing communities and by supporting the acquisition or voluntary dedication of agriculture conservation easements. (RDR, MPSP) AG-3.2: The County shall encourage and support the use of Integrated Pest Management practices to reduce pesticide use and human health risks. (JP, PI) AG-3.3: The County shall collaborate with the agricultural community to provide information on Integrated Pest Management and agricultural products and practices in Ventura County. (JP, PI) AG-4.1: The County shall strive to enhance access to and consumption of fresh, local produce by encouraging direct connections between local farmers/ranchers and markets, restaurants, institutions, schools, hospitals, food banks, and other businesses. (JP) AG-4.3: The County shall encourage the use of technology that supports agricultural production, while enhancing environmental sustainability and natural resource conservation. (JP) AG-5.1: The County shall encourage farmers to reduce fertilizer application and transition to products that reduce or avoid nitrous oxide (N₂O) emissions, such as organic composting and enhanced efficiency fertilizers. (MPSP) AG-5.2: The County shall encourage and support the transition to electric- or renewable-powered or lower emission agricultural equipment in place of fossil fuel-powered equipment, when feasible. (PI, JP) AG-5.3: The County shall encourage farmers to convert fossil fuel-powered irrigation pumps to systems powered by electric or renewable energy sources, such as solar-power, and encourage electric utilities to eliminate or reduce stand-by charges. (SO) AG-5.4: The County shall encourage farmers to continue and enhance the water-saving irrigation techniques designed to reduce water consumption. (RDR, JP) AG-5.5: The County shall encourage and support the efforts of resource conservation districts, farmers, and other stakeholders to expand carbon farming practices, such as reduced tilling, cover-cropping, composting, biochar, and other activities that both reduce GHG emissions and increase carbon sequestration and storage, when feasible. (JP) AG-6.1: The County shall support and monitor research on the effects of a changing climate on the agricultural industry within Ventura County. (PSR) AG-6.2: The County shall engage the agricultural sector to understand the tolerance of current crop mixes to withstand the impacts of climate change, including increased temperatures, disease, and pests, and explore options to diversify crops. (JP) Water Resources Element (WR) WR-3.1: The County shall encourage the use of non-potable water, such as tertiary treated wastewater and household graywater, for industrial, agricultural, environmental, and landscaping needs consistent with appropriate regulations. (RDR)	

Criterion	Jurisdiction Rating ^a
WR-3.2: The County shall require the use of water conservation techniques for discretionary development, as appropriate. Such techniques include low flow plumbing fixtures in new construction that meet or exceed the California Plumbing Code, use of graywater or reclaimed water for landscaping, retention of stormwater runoff for direct use and/or groundwater recharge, and landscape water efficiency standards that meet or exceed the standards in the California Model Water Efficiency Landscape Ordinance. WR-3.3: The County shall require discretionary development to incorporate low impact development design features and best management practices, including integration of stormwater capture facilities, consistent with County's Stormwater Permit. (RDR) WR-3.4: The County shall strive for efficient use of potable water in County buildings and facilities through conservation measures and technological advancements. (SO) WR-4.1: The County shall work with water suppliers, water users, groundwater management agencies, and groundwater sustainability agencies to implement the Sustainable Groundwater Management Act (SGMA) and manage groundwater resources within the sustainable yield of each basin to ensure that county residents, businesses, agriculture, government, and the environment have reliable, high-quality groundwater to serve existing and planned land uses during prolonged drought years. (IGC, RDR, SO) WR-4.3: The County shall support groundwater recharge and multi-benefit projects consistent with SGMA and the Integrated Regional Water Management Plan to ensure the long-term sustainability of groundwater. (IGC, RDR, SO) WR-4.4: The County shall encourage the use of in-stream water flow and recycled water for groundwater recharge while balancing the needs of urban and agricultural uses, and healthy ecosystems, including in-stream waterflows needed for endangered species protection. (RDR) WR-6.1: The County should support the appropriate agencies in their efforts to effectively manage and enhance water quantity and quality to ensure long-term, adequate availability of high quality and economically viable water for agricultural uses, consistent with water use efficiency programs. (IGC) WR-6.2: The County should support programs designed to increase agricultural water use efficiency and secure long-term water supplies for agriculture. (PI) WR-6.3: The County should encourage the use of reclaimed irrigation water and treated urban wastewater for agricultural irrigation in accordance with federal and state requirements to conserve untreated groundwater and potable water supplies. (IGC, RDR, SO) Economic Vitality Element (EV) EV-4.4: The County shall identify appropriate locations to allow for development of renewable energy generation and storage facilities and encourage the development of innovative approaches to renewable energy deployment, including solar power, wind power, wave energy, distributed power systems and micro-grids, and other appropriate renewable sources and storage and distribution systems. (MPSP, JP)	
Champions for climate action in local government departments Comment: The Ventura County Board of Supervisors adopted the 2040 General Plan on September 15, 2020, which includes the above referenced reduction measures and adaptation strategies. As a result, effective October 15, 2020, VCPWA-WP, and other County departments are directed to incorporate climate action in their policies, procedures, and operational practices.	High
Political support for implementing climate change adaptation strategies Comment: See above.	High
Financial resources devoted to climate change adaptation Comment: Pursuant to the Board of Supervisors policy direction to all County departments, including VCPWA-WP, to incorporate climate action in their policies, procedures, and operational practices, it is anticipated that additional financial resources will be required to accomplish this policy directive. And those additional financial resources, be they repurposing a portion of existing VCPWA-WP revenue streams or new, climate action dedicated grant revenue funding streams, will be identified in future fiscal year budgets for consideration and adoption by the Ventura County Watershed Protection Board of Supervisors.	Medium
Local authority over sectors likely to be negative impacted Comment: VCPWA-WP has proprietary authority over flood protection facilities that it designs, constructs, operates, and maintains in its flood protection asset portfolio. It also has permitting authority over watercourses designated as red line channels by its ordinance (WP-2). VCPWA-WP provides staffing and technical assistance to the VCPWA-Engineering Services Department in their role of implementation of the Ventura County Floodplain Management Ordinance No. 4521 and Well Ordinance No. 4468.	Medium

Criterion	Jurisdiction Rating ^a
Public Capacity	
Local Residents' knowledge of and understanding of climate risk <i>Comment: Not enough objectively credible information is known to VCPWA-WP staff to assign a rating.</i>	Unsure
Local Residents' support of adaptation efforts <i>Comment: Not enough objectively credible information is known to VCPWA-WP staff to assign a rating.</i>	Unsure
Local Residents' capacity to adapt to climate impacts <i>Comment: Not enough objectively credible information is known to VCPWA-WP staff to assign a rating.</i>	Unsure
Local economy current capacity to adapt to climate impacts <i>Comment: Not enough objectively credible information is known to VCPWA-WP staff to assign a rating.</i>	Unsure
Local ecosystems capacity to adapt to climate impacts <i>Comment: Local ecosystems are stressed by the current multi-year drought that has created favorable conditions for repeated fires (just since 2017, Thomas, Woolsey, Easy, Maria, etc.). Once fire devastates local ecosystems, they are unable to quickly recover in the absence of sufficient rainfall. Non-native, invasive vegetation then can quickly gain a foothold, potentially fueling future fires.</i>	Low

- a. High = Capacity exists and is in use; Medium = Capacity may exist but is not used or could use some improvement;
Low = Capacity does not exist or could use substantial improvement; Unsure= Not enough information is known to assign a rating.

24.5 INTEGRATION REVIEW

For hazard mitigation planning, “integration” means that hazard mitigation information is used in other relevant planning mechanisms, such as capital facilities planning, and that relevant information from those sources is used in hazard mitigation. This section identifies where such integration is already in place, and where there are opportunities for further integration in the future. Resources listed at the end of this annex were used to provide information on integration. The progress reporting process described in Volume 1 of the hazard mitigation plan will document the progress of hazard mitigation actions related to integration and identify new opportunities for integration.

24.5.1 Existing Integration

Some level of integration has already been established between local hazard mitigation planning and the following other local plans and programs:

- VCPWA-WP’s Integrated Watershed Protection Plan Project Prioritization Process
- VCPWA-WP 5 Year Capital Improvement Projects Plan—Annual Update and Prioritized Project Ranking Process
- VCPWA-WP’s Preparation of Annual Recertifications and Cycle Verification of Class V Rating for Unincorporated Ventura County under FEMA’s Community Rating System Program
- Ventura County Flood Safety Plan
- Ventura County 2040 General Plan Implementation Actions Under the Following Plan Elements:
 - Public Facilities, Services, and Infrastructure
 - Conservation and Open Space
 - Hazards and Safety
 - Water Resources
 - Economic Vitality

- Unincorporated Communities' Area Plans
- Appendix B, Climate Change
- Ventura County Integrated Regional Water Management Plan Updates (IRWM) and Eligible Project List Development for IRWM Grant Funding Opportunities Provided by the State
- Ventura River Watershed Management Plan
- Ventura County Transportation Commission Transportation Emergency Preparedness Plan
- Ventura County Local Coastal Plan Update, VC Resilient Coastal Adaptation Project

24.5.2 Opportunities for Future Integration

The capability assessment in this annex indicates opportunities to integrate this mitigation plan with other jurisdictional planning/regulatory capabilities. Capabilities were identified as integration opportunities if they can support or enhance the actions identified in this plan or be supported or enhanced by components of this plan. The capability assessment identified the following plans and programs that do not currently integrate hazard mitigation information but provide opportunities to do so in the future:

- Ventura County Integrated Regional Water Management Plan Updates (IRWM) Climate Change Vulnerability Assessment (new section in IRWMP 2019)
- Ventura County Active Transportation Plan (ongoing)
- Climate resiliency, Fire Safe Council, programs led by Ventura County Resource Conservation District
- Groundwater Sustainability Plans (FCGMA, Mound Basin, Fillmore and Piru groundwater sustainability agency, Cuyama groundwater sustainability agency, Upper Ventura groundwater sustainability agency)
- Naval Base of Ventura County
- Urban Water Management Plans (County of Ventura, its 10 cities, and water districts required to develop them)
- Prop 1 IRWM Disadvantaged Community Involvement Program Needs Assessment Report (completed by fall 2021). Includes surveys and meetings with community members to identify water management needs of disadvantaged communities and tribal communities.
- Watershed Management Program (WMP) for Ventura County including Ventura River, Calleguas Creek, Santa Clara River, upper Malibu Creek, and Coastal Watersheds of Ventura County. WMP development results from a Los Angeles Regional Water Quality Control Board (Region 4) decision that by September 11, 2023, Ventura County is required to meet compliance with the 2021 Regional Municipal Stormwater (MS4) National Pollutant Discharge Elimination System (NPDES) Permit Order No. CAS004004, Order No. R4-2021-0105. The Ventura County WMP will be developed by the County, Watershed Protection, and 10 incorporated cities.

Taking action to integrate each of these programs with the hazard mitigation plan was considered as a mitigation action to include in the action plan in this annex.

24.6 RISK ASSESSMENT

24.6.1 Jurisdiction-Specific Natural Hazard Event History

Table 24-9 lists past occurrences of natural hazards for which specific damage was recorded in this jurisdiction. Other hazard events that broadly affected the entire planning area, including this jurisdiction, are listed in the risk assessments in Volume 1 of this hazard mitigation plan.

Table 24-9. Past Natural Hazard Events

Type of Event	FEMA Disaster #	Date	Damage Assessment
COVID-19 Pandemic	DR-4482	January 20, 2020 and continuing	\$Unknown
Maria Fire	FM-5302	November 1, 2019	\$Unknown
Easy Fire	FM-5298	October 1, 2019	\$Unknown
Saddleridge Fire	FM-5293	October 10, 2019	\$Unknown
Severe Storms & Flooding	State	February 3, 2019	\$Unknown
Wildfires	DR-4407	November 8-25, 2018	\$Unknown
Wildfires, Flooding, Mudflows, and Debris Flows	DR-4353	Dec 4, 2017-January 31, 2018	\$165,110-PA & HMGP-Gauges
Thomas Fire	FM-5224	December 4, 2017	\$Unknown
Wildfire	FM-5189	July 9, 2017	\$5,000,000-HMGP-Fresno Cyn.
Winter Storms	State	February 1, 2017	\$Unknown
Springs Fire	FM-5024	May 2-11, 2013	\$Unknown
Winter Storms	State	February 20, 2013	\$Unknown
Winter Storms	State	February 19 – 26, 2011	\$Unknown
Ormond Beach Breach	None	January 18, 2010	\$162,933 VCPWA-WP Internal Data
Guiberson Fire	FM-2839	September 22-29, 2009	\$Unknown
Wildfires, Flooding, Mudflows, and Debris Flows	DR-1731	October 21, 2007-March 31, 2008	\$16,650-CDAA-Gauges
Severe Freeze	DR-1689	January 11-17, 2007	\$Unknown
Shekell Fire	FM-2681	December 3 – 6, 2006	\$Unknown
Day Fire	FM-2677	September 25-30, 2006	\$55,867-CDAA-Gauges & Stop Log
School Fire	FM-2586	November 18-23, 2005	\$Unknown
Topanga Fire	FM-2583	September 28-October 10, 2005	\$Unknown
Severe Storms, Flooding, Landslides, Mud and Debris Flows	DR-1585	February 16, 23, 2005	\$735,657 HMGP North Simi, FEMA, \$3,656,067, CDAA \$973,722, PDM Fresno Canyon Diversion \$55,499
Severe Storms, Flooding, Debris Flows and Mudslides	DR-1577	December 27, 2004 – January 11, 2005	FEMA \$13,293,182 CDAA \$110,636
Wildfires, Flooding, Mudflow and Debris Flow	DR-1498	October 31, 2003 – March 31, 2004	\$46,875-HMGP Gauges FEMA \$265,310, CDDA \$1,740,850
Severe Storms, Tornadoes, High Winds, and Flooding	DR-1267	December 20 – 28, 1988	\$Unknown
Severe Winter Storms and Flooding	DR-1203	February 2 – April 30, 1998	\$ 5,464,863 FEMA \$1,742,593 CDAA

Type of Event	FEMA Disaster #	Date	Damage Assessment
Severe Fires	EM-3120	October 21 – 31, 1996	\$Unknown
Severe Winter Storms, Flooding, Landslides, and Mud Flows	DR-1046	February 13 – April 19, 1996	\$Unknown
Severe Winter Storms, Flooding, Landslides, and Mud Flows	DR-1044	January 3 – February, 1995	\$Unknown
Northridge Earthquake	DR-1008	January 17 – November 30, 1994	\$Unknown
Fires, Mud & Landslides, Soil Erosion, and Flooding	DR-1005	October 26, 1993 – April 22, 1994	\$881,390
Severe Storm, Winter Storm, Mud & Landslides and Flooding	DR-979	January 5 – March 20, 1993	\$Unknown
Snow Storm, Heavy Rain, High Winds, Flooding and Mudslide	DR-935	February 10-19, 1992	\$5,335,410
Severe Freeze	DR-894	December 19, 1990 – January 3, 1991	\$Unknown
Severe Storms, High Tides & Flooding	DR-812	January 17 – 22, 1988	\$Unknown
Grass, Wildlands, & Forrest Fires	DR-739	June 26 – July 19, 1985	\$Unknown
Coastal Winter Storms, Floods, Slides and Tornadoes	DR-677	January 21 – March 30, 1983 February 26 – March 1, 1983	\$4,098,650 \$14,181,650
Severe Storms, Mudslides & Flooding	DR-615	January 8, 1980	\$5,464,869
Coastal Storms, Mudslides & Flooding	DR-547	February 15, 1978	\$Unknown
Severe Storms, High Tides & Flooding	DR-364	February 8, 1973	\$1,800,000
Forest & Brush Fires	DR-295	September 29, 1970	\$Unknown
Severe Storms & Flooding	DR-253	January 26, 1969	\$15,770,000
Heavy Rains & Flooding	DR-211	February 25, 1965	\$Unknown

24.6.2 Hazard Risk Ranking

Table 24-10 presents a local ranking of all hazards of concern for which this hazard mitigation plan provides complete risk assessments. As described in detail in Volume 1, the ranking process involves an assessment of the likelihood of occurrence for each hazard, along with its potential impacts on people, property, and district operations. Mitigation actions primarily target hazards with high and medium rankings.

Table 24-10. Hazard Risk Ranking

Rank	Hazard	Risk Ranking Score	Risk Category
1	Dam Failure	34	High
2	Severe Storms ^a	24	High
2	Severe Weather ^a	24	High
4	Flooding ^a	18	High
5	Earthquake	32	Medium
6	Wildfire	24	Medium
7	Landslide ^b	18	Medium
8	Sea Level Rise	12	Low
8	Tsunami	12	Low

Rank	Hazard	Risk Ranking Score	Risk Category
10	Drought	9	Low

- a. Risk Category adjusted based on local knowledge and past natural hazard events
- b. Score based only on Very High susceptibility category

24.6.3 Other Noted Vulnerabilities

Volume 1 of this hazard mitigation plan provides complete risk assessments for each identified hazard of concern. The following jurisdiction-specific issues have been identified based on a review of the results of the risk assessment, public involvement strategy, and other available resources:

- Based on the fact that virtually all of VCPWA-WP's critical facility assets were constructed to provide flood protection and/or are geospatially located proximate to and/or in flood plains, and as documented in Table 1.8 Past Natural Hazard Events above, during the aforementioned 56-year period, VCPWA-WP's critical facility flood protection assets experienced \$81 Million in damage from flooding, severe storms and severe weather events, VCPWA-WP has ranked Flood risks as "High" in Table 1.9 above.
- Matilija Dam in the Ventura River watershed is vulnerable to seismic failure. Many communities are at risk of inundation. Implementation of the Matilija Dam Ecosystem Restoration Project (MDERP) would address this risk while also opening 17 miles of habitat for endangered steelhead trout. MDERP comprises several downstream flood protection and water supply reliability components that must precede removal of the dam, some of which have been completed or are at various stages of completion (alternatives analysis, design, or construction).
- VCPWA-WP is currently engaged in preliminary design engineering and CEQA work in support of levee retrofit and/or flood-protection enhancement projects required to certify all its levees in full-compliance with Federal Levee Certification requirements. Major levee rehabilitation and ultimate certification projects in Ventura County mentioned in the Action Plan Items below include: Calleguas Creek Levee-Somis Flood Wall (CC-2) located in the City of Camarillo, the Santa Clara River Levee upstream of Hwy 101 (SCR-1) located in the City of Oxnard, the Ventura River Levee (VR-1) located in the City of San Buenaventura, the Ventura River Levee (VR-2) located in the unincorporated community of Casitas Spring, and the Live Oak Acres Levee located in the near the unincorporated community of Oak View. VCPWA-WP is working closely with FEMA, the United States Army Corps of Engineers (USACE), as well as affected cities, residents, and property owners throughout Ventura County to marshal scarce Federal, State, and local funding resources necessary to complete five very important levee retrofit public safety and flood protection projects. Once all VCPWA-WP's levee retrofit projects are completed, VCPWA-WP's levees will fully comply with applicable Federal Levee Certification requirements found in 44 CFR 65.10. At best, full completion of VCPWA-WP's five levee rehab projects will require a minimum of five to ten years, and could take longer, depending on final engineering design plan results, environmental considerations, and availability of project funding required to construct the rehab projects.
- San Nicholas, Santa Monica, and Santa Paula Pump Stations lift stormwater from low elevation coastal neighborhoods and discharge directly to the Pacific Ocean. The Santa Monica and Santa Paula Pump Station outlets are frequently clogged during high tide and heavy surf events, causing the pumps to shut off and requiring manual removal of sand to ensure the coastal communities do not flood. With sea level rise, the risk increases. While not currently afflicted with the propensity for sand to clog its outlet, San Nicholas Pump Station is vulnerable to failure as sea level rises. In addition, San Nicholas Pump Station was retrofitted in 2004 to

include a secondary pumping system to divert urban runoff into the sewer conveyance system operated by Channel Island Beach Community Services District for treatment at the Oxnard Wastewater Treatment Plant. This diversion system allows the County and Watershed Protection to meet compliance with dry weather Bacteria Total Maximum Daily Load (TMDL) for Channel Island Harbor Beaches (Resolution No. R2007-017). The diversion system does not work during wet days, defined as rain event of 0.1 inch or more and within 72 hours after eligible rain event stops. The County and Watershed Protection are in the process of evaluating feasible options to stop stormwater discharge from San Nicholas Pump Station into Kiddie Beach to comply with the TMDL during wet weather. The pumps in each facility are over 40 years old and do not have on site backup generators, making them vulnerable to power failures, which cause alarms to sound signaling the need for immediate emergency response. All three facilities need constant repair due to corrosive salt air and water. Upgrades are needed, but more land is required for truly effective solutions, and adjacent land is occupied by high value coastal residences.

- Ormond Lagoon is a coastal estuary open to the ocean only during rain events and for a variable period thereafter depending on time between rain events, tides, etc. Sea level rise may reduce the ability of storm runoff from Ormond Lagoon Waterway and *tšumaš* Creek to breach the lagoon and flow into the Pacific Ocean. Without a Beach Elevation Management Plan (BEMP), the adjacent Oxnard Wastewater Treatment Plant, Advanced Water Purification Facility, New Indy paper recycling plant, Halaco Superfund Site, local residences, and roads are all vulnerable to flooding from storm water backed up in the lagoon. It is likely that the current BEMP will need to be adjusted as sea level rise occurs to avoid flooding to the adjacent areas. Restoration of a large Ormond Wetlands complex may help reduce flood potential.

Mitigation actions addressing these issues were prioritized for consideration in the action plan in this annex.

24.7 STATUS OF PREVIOUS PLAN ACTIONS

Table 24-11 summarizes the actions that were recommended in the previous version of the hazard mitigation plan and their implementation status at the time this update was prepared.

Table 24-11. Status of Previous Plan Actions

Action Item from Previous Plan	Completed	Removed; No Longer Feasible	Carried Over to Plan Update	
			Check if Yes	Action # in Update
VCWPD 1—Complete the General Plan Update. In 2015, the Resource Management Agency, Planning Division initiated a General Plan Update project that is expected to take 5 years to complete. As part of the General Plan Update, the County will be considering the adoption of a number of new elements that will include land use policies that will apply to new land use development projects within the Unincorporated area of the County. In addition, the Resource Management Agency, Planning Division is currently working on Phase II of an update to its Local Coastal Program ("LCP Update"). The relevant issues that the General Plan Update and LCP Update will address include the following: • Climate change, including (but not limited to) sea level rise and coastal resiliency policies for new development along the coast. • Wildlife movement overlay zone that will limit new development within flood-prone areas (e.g., riparian corridors). • Limitations on new development within Environmentally Sensitive Habitat Areas (e.g., the Santa Monica Mountains that are characterized by steep slopes, relatively intact native habitat, and coastal areas subject to flooding hazards); and • Changes to the permitting requirements for brush removal in open space areas (e.g., areas with steep slopes that are prone to erosion, mudslide, and flood hazards). <i>Comment: The Ventura County General Plan Update was completed and approved by the Board of Supervisors in October 2020. The update addressed climate change and sea level rise. A Habitat Connectivity and Wildlife Corridors ordinance was passed by the Board of Supervisors in 2019, which established development standards intended to preserve wildlife corridors in certain overlay zones. Development requirements in the unincorporated areas of the County are enforced by the County's Resource Management Agency as part of the normal planning and building permit process. The Coastal Area Plan which is part of the Local Coastal Program was updated in April 2017 and approved by the California Coastal Commission in July 2017. The updated Coastal Area Plan includes policies to protect Environmentally Sensitive Habitat Areas such as coastal dunes.</i>	✓			
VCWPD 2—Revise existing landslide/debris flow maps to include potential runout areas and include the runout area with a classification scheme for probability. Present landslide/debris flow maps only include the main slide mass or body and not the potential areas of effect from potential future movement. <i>Comment: After the Thomas, Woolsey, and Maria fires Debris Flow maps were prepared in early 2018 for emergency repair planning purposes for major Watershed Protection jurisdictional channels significantly impacted by the wildfires. Major streams impacted by the Thomas, Woolsey, Maria, and Easy Fires were all mapped. The mapping focuses on identifying at-risk areas resulting from 1% annual chance flood flows with after fire debris bulking applied.</i>	✓			
VCWPD 4—Integrate alluvial fan management measures for oil, agriculture, and development to include stormwater runoff, sediment transport, and alluvial fan geomorphology from geologic perspective. Alluvial fans are presently considered only from hydrologic/hydraulic models. <i>Comment: Alluvial fan management is regulated by the Ventura County Public Works Agency Engineering Services (VCPWA-ES) Department, Land Development Division with support from VCPWA-WP as part of the site review for grading permits associated with agricultural, oil and development projects. Geology and Engineering disciplines are utilized during these reviews to consider potential alluvial fan hazards typically not associated with the riverine environment. The reviews are performed on a project-by-project basis as many projects are not within the alluvial fan environment.</i>	✓			

Action Item from Previous Plan	Completed	Removed; No Longer Feasible	Carried Over to Plan Update	
			Check if Yes	Action # in Update
VCWPD 5—Upgrade the County of Ventura's Flood warning system. The existing ALERT (<i>Automated Local Evaluation in Real Time</i>) system is utilizing radio technology from the 1980s. <i>Comment:</i> VCPWA-WP successfully secured a total of \$3,174,181 in three rounds of Flood Emergency Response Grants in 2014, 2016, and 2018. These three grants which funded the update of older ALERT legacy flood warning systems throughout Southern California to a new radio protocol called ALERT2. All three Flood Emergency Response Grants for Southern California were managed by Ventura County. Participating agencies included: Ventura County, County of Orange, Los Angeles County, San Bernardino County, Riverside County, San Diego County, National Weather Service Oxnard, National Weather Service San Diego, Santa Barbara County, San Luis Obispo County and Coachella Valley Water District ALERT2 incorporates the use of GPS timing with timed transmissions among other enhancements like faster transmission rates. The faster rates facilitate sending more data in a shorter time slot. This makes the radio transmissions shorter. Some of the timed data check ins being received are now at a higher frequency rate in some cases going from 12-hour check-ins to receiving 5-minute data every hour. ALERT2 also makes the warning system much more reliable. The timed transmissions reduce the radio signal collusions where data can be lost to almost nothing making the ALERT2 a much more reliable system when it comes to data loss. The timed transmissions during an event are still considered real time as no transmissions are more than two minutes old.	✓			
VCWPD 6—Continue modernizing and streamlining the Ventura County Watershed Protection's Integrated Watershed Protection Plan and establish collaborative, cost-sharing, multi-benefit project partnerships with public and private sector agencies and organizations, aimed at improving community resiliency to flood risk hazards, floodplain management, groundwater, and environmental protection, and securing a sustainable water supply for urban and agricultural customers. <i>Comment:</i> An Integrated Watershed Protection Plan is used by VCPWA-WP to rank projects for prioritizing funding and inclusion in VCPWA-WP's 5-Year Capital Improvement Plan. The plan encourages collaboration and cost-sharing among public and private sector agencies and organizations on multi-purpose projects which integrate project objectives for flood control, floodplain management, groundwater recharge, recreation, and environmental enhancement. A cost sharing collaboration for Runkle Canyon resulted in completed improvements to rehabilitate infrastructure and increase flood safety by creating a sustainable funding source through a special assessment to properties that benefit from the improvements. A similar model has also been used for an area impacted by flood risks from Santa Paula Creek. Through collaboration and cost-sharing with the City of Oxnard, a linear park is planned together with the improvement to the flood channel conveyance capacity of tšumaš Creek.			✓	VCPWA-WP-2
VCWPD 7—Undertake public outreach initiatives aimed at increasing property owner awareness of the risks of flooding, including coastal flooding from sea-level rise and actions that residents can take to reduce the risk of loss of life and property damage. <i>Comment:</i> VCPWA-WP actively participates in CA Flood Preparedness Week activities during the month of October annually, which provides helpful information to residents, businesses, and schools on proactive steps that everyone should take to reduce their risk to loss of life and property damage from flood events, including coastal flooding from sea level rise. The County also mails flood safety information to all properties within a FEMA defined floodplain which often includes coastal residents vulnerable to coastal erosion and sea level rise. Another outreach activity is to provide flood risk information to realtors and lenders who serve residents looking for new housing.	✓			
VCWPD 8—Stabilize landslide-prone areas through stability improvement measures, including interceptor drains, in situ soil piles, drained earth buttresses, subdrains, removal of slide areas, and dewatering ground. <i>Comment:</i> Landslide prone areas are stabilized as development is proposed within these areas. Should development or access to development be proposed in these areas and are not able to be relocated away from the hazard then geologic and engineering studies are required to provide recommendations for mitigation strategies to stabilize the ground that include factors of safety against future movement.	✓			

Action Item from Previous Plan	Completed	Removed; No Longer Feasible	Carried Over to Plan Update	
			Check if Yes	Action # in Update
VCWPD 9—Acquire, relocate and/or floodproof critical facilities located within the 100-year floodplain, as financially feasible. Projects will be undertaken by the Ventura County Public Works Agency and other applicable County agencies. Where feasible, acquired lands will be considered for passive open space. <i>Comment:</i> VCPWA-WP and other County Agencies routinely consider the feasibility, practicality, and affordability of relocating and or floodproofing critical facilities located within the 100-year flood plain during routine project engineering design efforts, and in the preparation of project alternatives analyses in applicable CEQA documentation. Further, the Ventura County 2040 General Plan provides the following two policies providing direction to flood-proof critical facilities located within flood plains or in areas subject to sea-level rise <i>Public Facilities, Services, and Infrastructure Element (PFS): PFS-1.3: The County shall review plans for constructing new essential public facility, such as a hospital, health care facility, emergency shelter, emergency command center, or emergency communications facility, so that these facilities are located outside of at-risk areas whenever feasible. If such a location is infeasible, then the County shall require the use of construction methods and site design features to minimize potential damage to these facilities.</i> <i>Hazards and Safety Element (HAZ): HAZ-3.2: County-initiated infrastructure projects sited along or seaward of Highway 101, such as bridges and levees, that will provide 100 years or more of service, shall be planned with the potential to be easily modified to accommodate 100-years of projected sea level rise in accordance with the H++ extreme risk aversion sea level rise scenario</i>			✓	VCPWA-WP-5
VCWPD 10—Reinforce and maintain County roads, bridges, ditches, and culverts from flooding through various flood proofing measures. <i>Comment:</i> Ventura County Public Works Agency Roads and Transportation Department (VCPWA-RT) is responsible for the operation and maintenance of County roads, bridges, ditches, and culverts in the unincorporated areas of Ventura County. VCPWA-RT conducts annual ditch cleaning and culvert cleaning before winter storm season to maintain the capacity of ditches and proper drainage flow to mitigate roadway flooding in rural areas of the county. In addition to the annual cleaning of ditches and culverts, the VCPWA-RT is actively working to rehabilitate Bridge Road Bridge (#442) which is currently in design and environmental permitting phase and is expected to be completed in 2023. Replacement of Catalina Drive Bridge (#384) was completed in May 2020 and replacement of Casitas Vista Road Bridge (#327) was completed in September 2020. Mupu Road Bridge and the Wheeler Canyon Road Bridge improvements projects were completed in 2016-2017. The VCPWA-RT is developing a Bridge Management Program to maintain County bridges. The program will identify and prioritize VCPWA-RT's 158 bridge structures which include 81 bridges on the National Bridge Inventory and 77 other structures. This program will identify budget needs, and schedules for preventive maintenance as well as budget for required rehabilitation or replacement of VCPWA-RT maintained bridges for short and long-term planning needs. The Bridge Management Program is expected to be completed in calendar year 2021. In 2020-2021, VCPWA-WP continued to clean flood control channels and catch basins to prepare for winter storm seasons. VCPWA-WP also secured Proposition 1 grant funding for the Santa Ana Bridge and Camino Cielo Bridge replacement projects which are managed by VCPWA-RT (both are components of the MDERP). The design of Camino Cielo Bridge is progressing towards 30% milestone. For the Santa Ana Bridge project, a construction contract was awarded in March 2021 with an estimated completion date of December 2022.			✓	VCPWA-WP-5

Action Item from Previous Plan	Completed	Removed; No Longer Feasible	Carried Over to Plan Update	
			Check if Yes	Action # in Update
VCWPD 11—Work with FEMA Region IX to address any floodplain management issues that may have arisen/arise from the countywide DFIRM, Community Assessment Visits, and/or DWR. <i>Comment:</i> VCPWA-WPD staff have worked closely with FEMA Region IX and CA Department of Water Resources (DWR) staff on a regular basis to address floodplain management issues. In coordination with FEMA Region IX, floodplain managers from the county and cities meet quarterly to discuss and address issues facing the floodplain management communities. The County continues to work with FEMA in moving forward with the Physical Map Revisions (PMR) for Santa Clara River watershed. The mapping projects for the Ventura River watershed and the Californian Coastal Analysis and Mapping Project were completed with maps effective 1/29/2021. County staff worked closely with FEMA on the public outreach for the completed mapping projects ahead of the effective dates to inform residents and encourage flood insurance purchase. County staff worked closely with FEMA and DWR on the dam break analysis and mapping and successfully achieved approval. All eight (8) state sized dams Ventura County maintains have approved inundation maps.			✓	VCPWA-WP-10
VCWPD 12—Increase the Unincorporated Ventura County's participation in the NFIP by maintaining a CRS Class 6 CRS rating, if not improving to a Class 5 or better rating, which through enhanced floodplain management activities allows property owners to receive increasing discounts on their NFIP flood insurance premiums. <i>Comment:</i> Since May 1, 2016, unincorporated Ventura County has achieved a Class 5 rating in the NFIP's CRS administered by FEMA. A CRS rating reflects the extent to which a community has exceeded the NFIP's minimum standards for flood hazard mitigation and credits those efforts through flood insurance premium discounts. This Class 5 rating allows owners of floodplain properties in the unincorporated Ventura County to receive annual discounts of up to 25% on flood insurance premiums. FEMA listed the county's class 5 rating in the CRS program on April 1, 2021. In May of 2018, FEMA performed a Cycle Verification confirming Class 5 status. The next Cycle Verification is due in 2023. Additionally, in compliance with CRS program protocols, yearly recertification documentation continues to be submitted by VCPWA-WP to FEMA between Cycle Verifications. The most recent recertification was submitted July 28, 2021 and the next recertification will be due by August 1st of 2022.			✓	VCPWA-WP-7
VCWPD 14—Engage in preliminary design engineering, project feasibility analysis, and CEQA work for the Calleguas Creek Levee (CC-2) in Camarillo, the Santa Clara River Levee (SCR-1) in Oxnard, the Ventura River Levee (VR-1) in Ventura, and the Ventura River Levee (VR-2) in the Unincorporated area of Casitas Springs. <i>Comment:</i> The County of Ventura, working in close coordination with federal and state agencies, continues to progress the design engineering and environmental permitting, and in some cases, the construction of projects required to rehabilitate levees owned by the County. A DWR Local Levee Assistance Program (LLAP) grant provided funding for the hydrologic and hydraulic analysis, geologic investigation, and alternative analysis for the preliminary design of the rehabilitation of the Calleguas Creek and Somis Drain Levee System (CC-2) in the City of Camarillo, and for the Ventura River Levee (VR-2) in the unincorporated community of Casitas Springs, which will ultimately lead to certification of these levees by the County, and accreditation of that certification by FEMA. The predesign study for CC-2 was completed in March 2021. That LLAP grant also provided funding to advance design engineering work, CEQA report preparation, and required environmental permitting approvals for both the Santa Clara River Levee (SCR-1) in Oxnard, and the Ventura River Levee (VR-1) in Ventura. Finally, the Sespe Creek Levee (SC-2) rehabilitation from HWY 126 to Old Telegraph Road was completed in the fall of 2017. Phase I levee rehabilitation construction work required to support the eventual certification of the Santa Clara River Levee (SCR-3) in Oxnard was completed by the County in June of 2018. Phase II of SCR-3 is planned for construction beginning in the 2022-23 fiscal year. Ongoing coordination between the County and the USACE, under the Section 408 Permit envelope, is underway for both the SCR-1 and VR-1 levees. For VR-1, the County submitted 60% design plans to USACE for review in early 2021.			✓	VCPWA-WP-6

Action Item from Previous Plan	Completed	Removed; No Longer Feasible	Carried Over to Plan Update	
			Check if Yes	Action # in Update
VCWPD 15—As part of the Memorandum of Agreement / Memorandum of Understanding with The Nature Conservancy (TNC): partner with TNC on acquisition, restoration, and mitigation planning processes; partner on grant proposals; participate in negotiations with land use owners; carry-out restoration projects; hold titles to floodplain properties as appropriate; and hold or co-hold with TNC multipurpose easements.			✓	VCPWA-WP-8
<i>Comment:</i> In November 2020, VCPWA-WP collaborated with TNC as well as the Santa Clara River Conservancy and the University of California at Santa Barbara to identify privately-owned parcels within the Santa Clara River one-percent annual chance flood zone that could be acquired, preserved with a conservation easement, and whose habitat quality could be enhanced. VCPWA-WP included acquisition and enhancement of the parcels in its SCR-3 Levee Rehab and Habitat Enhancement Project grant application to the California Department of Water Resources' Coastal Watershed Flood Risk Reduction grant program. TNC and SCRC submitted letters of support. On June 1, 2021, DWR issued a recommendation to fund five grants, including \$3.125 million for the SCR-3 Project, of which \$625,000 is budgeted for the habitat acquisition and enhancement. A 15-day public comment period regarding this recommendation ended on June 15, 2021. VCPWA-WP also coordinated with TNC and other NGOs such as Ojai Valley Land Conservancy and Friends of the Santa Clara River during preparation of its original (2010) and follow up (2015 & 2018) Community Rating System applications, Activity 420-Open Space, to document and quantify all lands preserved as open space within the one-percent annual chance flood zone throughout Ventura County. Through its participation in the Santa Clara River Watershed Committee and other organizations, VCPWA-WP also encourages all entities considering acquisition and preservation of open space to prioritize those parcels within the one-percent annual chance floodplain. In 2019, TNC reached out to VCPWA-WP to assist in developing multi-benefit project ideas to enhance stream water quality, in compliance with National Pollutant Discharge Elimination System /MS4 permit requirements. TNC, in collaboration with the City of Oxnard and State Coastal Conservancy, is developing the Ormond Beach Restoration and Access Plan (OBRAP). VCPWA-WP has provided input on the plan, including recommendations on approaches to incorporate its existing flood control facilities such as the Ormond Lagoon Waterway into the project while still protecting adjacent developed areas from flooding. In January 2021, VCPWA-WP began enlarging a portion of tšumaš Creek, another tributary to Ormond Lagoon. Project completion is anticipated by February 2022 and VCPWA-WP continues to seek grant funding to continue the channel enlargement upstream. The tšumaš Creek project is also covering the channel from Hueneme Road northward to provide a surface on which the City of Oxnard could install a linear park connecting an underserved community to Ormond Beach and coastal recreation areas (VCPWA-WP has assisted the City in preparation of three grant applications for this purpose, though to date no grant has been awarded). This linear park feature is reflected in the OBRAP. VCPWA-WP has carried out several habitat restoration projects, including removal of giant reed (<i>Arundo donax</i>) and other invasive species and either native plant installation or passive recruitment in the Ventura River, Santa Clara River, and Calleguas Creek watersheds. This work is ongoing.				

Action Item from Previous Plan	Completed	Removed; No Longer Feasible	Carried Over to Plan Update	
			Check if Yes	Action # in Update
VCWPD 16—Develop a Post Disaster Assessment and Planning Data Base. WPD will collect Ventura County's OES Post Disaster Damage Reports. This information will be geo-referenced and stored in a special database as a shape file. VCPWA-WP will compare the disaster information with existing DFIRM maps, and existing repetitive loss inventory data for monitoring and identification of flood prone areas (Hot Spots). Following the identification of damaged structures, VCPWA-WP will research and document if damaged structures were affected by local drainage problems, such as a plugged culvert, or unintended drain blockage. If not, consider the type of drainage system. If drainage system is local, refer the problem to PWA-Transportation for future mitigation, or if it is within VCPWA-WP's facilities, VCPWA-WP to assess problem and potential solution.			✓	VCPWA-WP-3
<i>Comment: In January of 2018, VCPWPD piloted the creation of a geospatially referenced post disaster damage assessment storyboard after the Thomas Fire which captured many of the features mentioned in this action plan item. Efforts to refine, improve, and standardize that storyboard to cover critical facility-assets found in the asset management portfolios of VCPWA-Roads and Transportation, Water and Sanitation Department, and Watershed Protection will be explored and further developed in an action item entry for the next five-year plan development period.</i>				

24.8 HAZARD MITIGATION ACTION PLAN

Table 24-12 lists the actions that make up the hazard mitigation action plan for this jurisdiction.

Table 24-13 identifies the priority for each action. Table 24-14 summarizes the mitigation actions by hazard of concern and mitigation type.

Table 24-12. Hazard Mitigation Action Plan Matrix

Benefits New or Existing Assets	Objectives Met	Lead Agency	Support Agency	Estimated Cost	Sources of Funding	Timeline ^a
Action VCPWA-WP-1—Support and actively participate in countywide initiatives and plan maintenance protocols identified in Volume 1 of the hazard mitigation plan, prioritizing VCPWA-WP's involvement in geographical areas of the county which have experienced severe repetitive losses and/or are in high- or medium-risk hazard areas identified in Watershed Protection's jurisdictional annex.						
<u>Hazards Mitigated:</u> Drought, Dam Failure, Earthquake, Flood, Landslide, Sea Level Rise, Severe Storm, Severe Weather, Tsunami, and Wildfire						
Existing & New	1, 2, 4, 5, 6, 7, 8, 9, 10, 11, 13, 14, 15, 16, 17, 18, 19	VCISOES and Ventura County Departments	VCPWA-WP	Low	VCPWA-WP Structural Revenues augmented by FEMA Grants (BRIC and HMGP) and County General Funds, as required	Ongoing

Benefits New or Existing Assets	Objectives Met	Lead Agency	Support Agency	Estimated Cost	Sources of Funding	Timeline ^a
Action VCPWA-WP-2—Refine the Integrated Watershed Protection Plan to update the identification and prioritization of multi-hazard mitigation projects, which incorporate dam failure, drought, earthquake, landslide, sea-level rise, severe storm and weather, and tsunami hazard mitigation features to advance the inclusion of multi-hazard mitigation projects in Capital Improvement Project (CIP) project planning, design, and implementation actions. Ensure that the unique vulnerabilities of disadvantaged, socially vulnerable, and historically underrepresented communities are identified, considered, and reflected appropriately in the project prioritization ranking process through coordination and engagement with representatives of these communities, multi-stakeholder watershed groups, and nonprofit partners. <u>Hazards Mitigated:</u> Dam Failure, Drought, Earthquake, Flooding, Landslide, Sea Level Rise, Severe Storm, Severe Weather, and Tsunami						
New & Existing	1, 2, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19	VCPWA-WP	Ventura County Departments, Cities, Special-Purpose Districts, and NGOs.	Medium	VCPWA-WP Structural Revenues augmented by FEMA Grants (BRIC, FMA, and HMGP) and County General Funds, as required	Ongoing
Action VCPWA-WP-3—Implement a Post Disaster Critical Facilities Risk Impact Assessment Program designed to capture and geo-reference perishable data after significant events (e.g., preliminary damage estimates, damage photos, event mapping, etc.) in support of future hazard mitigation efforts including the implementation and maintenance of the HMP. Leverage applications (Maintstar v15, ArcGIS Online) to capture information related to VCPWA-RT, W&S, and WP critical facility asset impacts, and establish a centralized location to document and archive critical facilities geospatial data related to disaster events which will facilitate the development and optimize the pursuit of grant funding for future hazard mitigation projects. <u>Hazards Mitigated:</u> Dam Failure, Drought, Earthquake, Flood, Landslide, Sea Level Rise, Severe Storm, Severe Weather, Tsunami, and Wildfire						
New & Existing	1, 2, 4, 6, 8, 9, 10, 11, 12, 13, 16, 17, 18, 19	VCPWA-WP	Ventura County Departments, Cities, Special-Purpose Districts, and NGOs.	Low	VCPWA-WP Structural Revenues augmented by FEMA Grants (BRIC) and County General Funds, as required	Short Term
Action VCPWA-WP-4—Improve public awareness and community response to flood event emergencies by upgrading and modernizing the Flood Warning System (FWS) optimized to leverage multi-social media venues. Expand the public outreach of the FWS through targeted marketing based on web-site analytics and develop multiple language interfaces to better reflect the linguistic and cultural diversity found in Ventura County communities. <u>Hazards Mitigated:</u> Flood, Landslide, Sea Level Rise, Severe Storms, Severe Weather, Tsunami						
New & Existing	1, 2, 6, 7, 12, 17, 18, 19	VCPWA-WP	DWR, NOAA, VCSOES, Ventura County Departments, Cities, Special-Purpose Districts, community and tribal leaders, community councils, and NGOs	Medium	VCPWA-WP Structural Revenues augmented by DWR and FEMA Grants (BRIC and HMGP) and County General Funds, as required	Short Term
Action VCPWA-WP-5—Prioritize efforts to upgrade County bridges, culverts, dams, debris and detention basins, flood conveyance channel and pipeline infrastructure, pump stations, roads, water and wastewater community infrastructure, and other critical facilities required to provide adequate flood-proofing protection and enhance the resiliency of vital community lifelines in Ventura County. <u>Hazards Mitigated:</u> Dam Failure, Earthquake, Flood, Landslide, Sea Level Rise, Severe Storm, Severe Weather, Tsunami and Wildfire						
New & Existing	1, 2, 5, 6, 8, 9, 10, 11, 13, 16, 18, 19	VCPWA Departments	Ventura County Departments, Cities, Special-Purpose Districts	High	VCPWA-WP Structural Revenues augmented by FEMA Grants (BRIC, HMGP) DWR, VCTC, Caltrans and County General Funds, as required	Long Term

Benefits New or Existing Assets	Objectives Met	Lead Agency	Support Agency	Estimated Cost	Sources of Funding	Timeline ^a
Action VCPWA-WP-6 —Complete project feasibility analyses, design engineering and CEQA work for the Calleguas Creek Levee (CC-2) in Camarillo, the Santa Clara River Levee (SCR-1) in Oxnard, the Santa Paula Creek Flood Protection Project in Santa Paula, the Ventura River Levee (VR-1) in Ventura, the Ventura River Levee (VR-2) in the unincorporated community of Casitas Springs, and the Live Oak Acres Levee near the unincorporated community of Oak View required to evidence local compliance with Federal Levee Certification Regulations (44 CFR 65.10)						
Hazards Mitigated: Dam Failure, Earthquake, Flood, Landslide, Sea Level Rise, Severe Storm, Severe Weather, and Tsunami						
New & Existing	1, 2, 5, 6, 8, 9, 10, 11, 13, 16, 18, 19	VCPWA-WP	Ventura County Departments and Cities of Camarillo, Oxnard, and San Buenaventura	High	VCPWA-WP Structural Revenues augmented by FEMA Grants (BRIC and HMGP) DWR-LLAP Grants USACE, and County General Funds, as required	Long Term
Action VCPWA-WP-7 —Strengthen the unincorporated area's participation in the NFIP by maintaining a CRS Class 5 Rating; and pursue a renewed emphasis on the planning and implementation of flood mitigation projects for repetitive loss properties eligible for grant funding under FEMA's Building Resilient Infrastructure and Communities (BRIC) program with the goal of reducing the number of repetitive loss properties in Ventura County.						
Hazards Mitigated: Flood, Landslide, Sea Level Rise, Severe Storm, Severe Weather, Tsunami						
New & Existing	1, 2, 4, 6, 9, 10, 11, 12, 13, 16, 18, 19	VCPWA-WP	Ventura County Departments, DWR, FEMA	High	VCPWA-WP Structural Revenues augmented by Grants (FMA, BRIC, HMGP) and County General Funds, as required	Ongoing
Action VCPWA-WP-8 —Partner with the Nature Conservancy, Santa Clara River Conservancy, Ojai Valley Land Conservancy, and other NGOs in cooperative efforts to acquire floodplain properties, carry out restoration projects, and enhance resiliency to natural disasters with green design elements included in hazard mitigation projects where feasible.						
Hazards Mitigated: Dam Failure, Drought, Flood, Landslide, Sea Level Rise, Severe Storms, Severe Weather, Tsunami, and Wildfire						
New & Existing	1, 2, 5, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18	VCPWA-WP	Ventura County Departments, TNC, SCRC, OVLC, DWR, CDFW, State Coastal Conservancy	High	VCPWA-WP Structural Revenues augmented by Grants (FMA, BRIC, HMGP, DWR, SCC, etc.) and County General Funds, as required	Ongoing
Action VCPWA-WP-9 —Advance planning, feasibility analyses, preliminary design, and ultimate construction of multi-benefit stormwater capture projects through a regionally collaborative approach; as well as pursue strategies to maximize stormwater as a resource (enhance recycled water, stormwater capture and sanitary system diversion, and groundwater recharge) where possible in infrastructure planning and implementation of VCPWA-WP stormwater capital projects.						
Hazards Mitigated: Drought, Flood, Sea Level Rise, Severe Storm, and Severe Weather						
New	1, 2, 9, 10, 11, 12, 14, 15, 16, 17, 18, 19	VCPWA-WP	Ventura County Departments, SWRCB, LARWQCB, DWR, SGMAs, NGOs and Private Landowners	High	VCPWA-WP Structural Revenues augmented by FEMA Grants (BRIC & HMGP) DWR, IRWM, LARWQCB, SWRCB) and County General Funds, as required	Ongoing

Benefits New or Existing Assets	Objectives Met	Lead Agency	Support Agency	Estimated Cost	Sources of Funding	Timeline ^a
Action VCPWA-10 —Coordinate with FEMA Region IX to proactively address flood plain management and flood risk mapping issues that could adversely impact local hazard mitigation project planning and implementation efforts which may arise from updates to the Countywide DFIRMs, Community Assistance Visits, and/or other risk mapping initiatives.						
<u>Hazards Mitigated:</u> Flood, Sea Level Rise, Severe Storm, and Weather						
New & Existing	1, 2, 4, 6, 8, 9, 10, 11, 12, 16, 17, 18, 19	VCPWA-WP	Ventura County Departments, DWR, FEMA, Cities, NGOs, and Private Landowners	Medium	VCPWA-WP Structural Revenues augmented by FEMA Grants (BRIC & HMGP) DWR, and County General Funds, as required	Ongoing
Action VCPWA-11 —Work closely with CA Division of Safety of Dams (DSOD), County Sheriff Office of Emergency Services (OES), and other Federal, State, and local agencies to update and refine the Emergency Action Plans (EAPs) for the state size dams owned by the County.						
<u>Hazards Mitigated:</u> Dam Failure, Flood, Earthquake, Severe Storms and Weather						
New & Existing	1, 2, 4, 7, 8, 12, 17, 18	VCPWA-WP	Ventura County Departments, FEMA, DWR, Cities, NGOs, and Private Landowners	Medium	VCPWA-WP Structural Revenues augmented by FEMA Grants (BRIC), DWR, and County General Funds, as required	Short-Term
Action VCPWA-12 —Complete project feasibility analyses, design engineering, CEQA, and implementation of the removal of Matilija Dam, reconstruction of the Camino Cielo Bridge crossing, and work with the Casitas Municipal Water District to reconstruct the Robles Diversion, as well as complete the construction of flood protection projects in the unincorporated community of Meiners Oaks in compliance with DSOD requirements.						
<u>Hazards Mitigated:</u> Dam Failure, Drought, Earthquake, Flood, Severe Storm and Weather						
New & Existing	1, 2, 4, 6, 8, 9, 10, 11, 12, 13, 14, 15, 17, 18, 19	VCPWA-WP	Ventura County Departments, Casitas Municipal Water District, Bureau of Reclamation, Caltrans, CDFW, DSOD, DWR, FEMA, USACE, NGOs	High	VCPWA-WP Structural Revenues augmented by FEMA Grants (BRIC & HMGP) CDFW, DWR, NFWF, NRCS, SCC, WCB, and NGO's and County and Casitas General Funds, as required	Long-Term
Action VCPWA-13 —Collaborate with the City of Oxnard, Nature Conservancy, and State Coastal Conservancy to advance planning, design, and implementation of the Ormond Beach Restoration and Access Plan (OBRAP), particularly those components alleviating flooding along the Ormond Lagoon Waterway and creating public access along <i>tšumaš</i> Creek. This supports the City of Oxnard's Action OXN-12						
<u>Hazards Mitigated:</u> Drought, Flood, Severe Weather, Severe Storms, Sea Level Rise, Tsunami						
New & Existing	1, 2, 3, 9, 12, 13, 14, 15, 17, 18, 19	City of Oxnard	VCPWA-WP	High	City Structural Revenues augmented by FEMA Grants (BRIC), CDFG	Ongoing

Benefits New or Existing Assets	Objectives Met	Lead Agency	Support Agency	Estimated Cost	Sources of Funding	Timeline ^a
Action VCPWA-14 —Coordinate efforts to plan, develop, and ultimately construct multi-benefit, flood resiliency and other risk hazard mitigation projects with the Watershed Coalition of Ventura County (WCVC) 3-Watershed Councils, its Disadvantaged Community Committee, and nonprofit partners by increasing outreach and engagement with disadvantaged and socially vulnerable communities and tribal groups to better understand their unique community-lifeline vulnerabilities, facilitate the development of flood hazard mitigation multi-benefit projects, and align and leverage advocacy efforts to optimize grant funding opportunities.						
<u>Hazards Mitigated:</u> Flood, Severe Weather, Severe Storms and Weather, Sea Level Rise, Tsunami						
New & Existing	1, 2, 4, 8, 9, 10, 11, 12, 14, 15, 16, 17, 18, 19	VCPWA-WP	County of Ventura Departments, Cities, Special-Purpose Districts, community and tribal leaders, community councils, WCVC, and NGOs	Medium	VCPWA-WP Structural Revenues augmented by FEMA Grants (BRIC & HMGP) DWR, IRWM, and City and County General Funds as required	Ongoing
Action VCPWA-WP-15 —Complete construction of the SCR-3 Levee Rehab Project consisting of 2400 linear feet of flood protection beginning from the east end of Reach 3 and ending north of the Union Pacific Railroad embankment. The flood protection consists of earthen levee embankment, sheet pile, reinforced concrete floodwalls, floodgate, rock riprap bank protection, and drainage improvements. When completed, this project will provide flood protection from a 1%-annual chance flood event to over 3,800 structures and nearly 6,400 residents of North Oxnard along the South Bank of the Santa Clara River.						
<u>Hazards Mitigated:</u> Dam Failure, Earthquake, Flood, Landslide, Sea Level Rise, Severe Storm, Severe Weather, and Tsunami						
New & Existing	1, 2, 5, 6, 8, 9, 10, 11, 13, 16, 18, 19	VCPWA-WP	Ventura County Departments and City of Oxnard	High	VCPWA-WP Structural Revenues augmented by FEMA Grants (HMGP) DWR (Coastal Watershed Flood Risk Reduction and LLAP), and City and County General Funds as required	Short-Term
Action VCPWA-WP-16 —Continue to participate in the National Weather Service's (NWS) StormReady and TsunamiReady Programs.						
<u>Hazards Mitigated:</u> Severe Storms, Severe Weather, Tsunami, Flood, Dam Failure, Landslide, Sea Level Rise						
New & Existing	1, 2, 7, 8, 17	Ventura County Public Works	Ventura County Sheriff's OES	Low	Staff Time, General Funds	Ongoing

a. Short-term = Completion within 5 years; Long-term = Completion within 10 years; Ongoing= Continuing new or existing program with no completion date

Acronyms used here are defined at the beginning of this volume.

Table 24-13. Mitigation Action Priority

Action #	# of Objectives Met	Benefits	Costs	Do Benefits Equal or Exceed Cost?	Is Project Grant-Eligible?	Can Project Be Funded Under Existing Programs/ Budgets?	Implementation Priority ^a	Grant Pursuit Priority ^a
1	17	Medium	Low	Yes	Yes	Yes-only at a level that is "Minimally Necessary to Comply"	Medium	Medium
2	16	Medium	Medium	Yes	Yes	No	Medium	Medium
3	14	Medium	Low	Yes	Yes	Yes-only at a level that is "Minimally Necessary to Comply"	Medium	Medium
4	8	Medium	Medium	Yes	Yes	Yes-only at a level that is "Minimally Necessary to Comply"	Medium	Medium
5	12	High	High	Yes	Yes	No	Medium	High
6	12	Medium	High	No	Yes	No	Low	Medium

Action #	# of Objectives Met	Benefits	Costs	Do Benefits Equal or Exceed Cost?	Is Project Grant-Eligible?	Can Project Be Funded Under Existing Programs/ Budgets?	Implementation Priority ^a	Grant Pursuit Priority ^a
7	12	Medium	High	Yes	Yes	Maintaining Class 5-CRS Rating: Yes. Reducing Severe Repetitive Loss Property Exposure: No.	Low	Medium
8	13	High	High	Yes	Yes	Establishing Partnerships with NGOs: Yes Acquiring flood plain properties, carrying out restoration projects, and including green design elements: No	Low	Medium
9	12	High	High	Yes	Yes	Advance planning and feasibility analysis: Yes. Perform Final Design and Construction: No	Medium	High
10	13	Medium	Medium	Yes	Yes	Coordination with FEMA: Yes. New Hazard Mitigation Project Planning and Execution: No	Medium	Medium
11	8	High	Medium	Yes	Yes	Coordination with FEMA, DWR, and DSOD: Yes Emergency Action Plan Refinements: No	Medium	High
12	15	High	High	Yes	Yes	No	Medium	High
13	11	High	High	Yes	Yes	Collaboration with City of Oxnard: Yes. OBRAP Flood Mitigation Project Design and Implementation Actions: No	Medium	High
14	14	High	Medium	Yes	Yes	Coordination efforts with WCVVC, its DAC, and NGOs: Yes. Flood Mitigation Project Design and Implementation Actions: No	Medium	High
15	12	High	Medium	Yes	Yes	Yes. Project has received \$5 Million in grant awards from FEMA and DWR, which will augment VCPWA-WP's Zone 2 project funding	High	Low
16	5	Medium	Low	Yes	No	Yes	Medium	Low

a. See the introduction to this volume for explanation of priorities.

Table 24-14. Analysis of Mitigation Actions

Hazard Type	Action Addressing Hazard, by Mitigation Type ^a							
	Prevention	Property Protection	Public Education & Awareness	Natural Resource Protection	Emergency Services	Structural Projects	Climate Resilient	Community Capacity Building
High-Risk Hazards								
Dam Failure	VCPWA-WP-11	VCPWA-WP-7	VCPWA-WP-1, 2, 16	VCPWA-WP-8, 13	VCPWA-WP-4, 11	VCPWA-WP-5, 6, 12, 15	VCPWA-WP-5, 6, 8	VCPWA-WP-1, 2, 3, 14, 16
Severe Storms	VCPWA-WP-10, 11	VCPWA-WP-7	VCPWA-WP-1, 2, 4, 16	VCPWA-WP-8, 9, 13	VCPWA-WP-4, 11	VCPWA-WP-5, 6, 12, 13, 15	VCPWA-WP-5, 6, 8	VCPWA-WP-1, 2, 3, 10, 14, 16
Severe Weather	VCPWA-WP-10, 11	VCPWA-WP-7	VCPWA-WP-1, 2, 4, 16	VCPWA-WP-8, 9, 13	VCPWA-WP-4, 11	VCPWA-WP-5, 6, 12, 13, 15	VCPWA-WP-5, 6, 8	VCPWA-WP-1, 2, 3, 4, 7, 10, 14, 16
Flooding	VCPWA-WP-10, 11	VCPWA-WP-7	VCPWA-WP-1, 2, 4, 16	VCPWA-WP-8, 9, 13	VCPWA-WP-4, 11	VCPWA-WP-5, 6, 12, 13, 15	VCPWA-WP-5, 6, 8, 12	VCPWA-WP-1, 2, 3, 4, 7, 10, 14, 16
Medium-Risk Hazards								
Earthquake	VCPWA-WP-11		VCPWA-WP-1, 2		VCPWA-WP-11	VCPWA-WP-5, 6	VCPWA-WP-12	VCPWA-WP-1, 2, 3
Wildfire			VCPWA-WP-1	VCPWA-WP-8				VCPWA-WP-1, 2, 3
Landslides			VCPWA-WP-1, 2, 4, 16	VCPWA-WP-8	VCPWA-WP-4	VCPWA-WP-5, 6		VCPWA-WP-1, 2, 3, 4, 16
Low-Risk Hazards								
Sea Level Rise	VCPWA-WP-10	VCPWA-WP-7	VCPWA-WP-1, 2, 4, 16	VCPWA-WP-8, 9, 13	VCPWA-WP-4	VCPWA-WP-5, 6, 13, 15	VCPWA-WP-5, 6, 8	VCPWA-WP-1, 2, 3, 4, 7, 10, 14, 16
Tsunami		VCPWA-WP-7	VCPWA-WP-1, 2, 4, 16	VCPWA-WP-8, 13	VCPWA-WP-4	VCPWA-WP-5, 6, 13, 15		VCPWA-WP-1, 2, 3, 4, 7, 14, 16
Drought			VCPWA-WP-1, 2	VCPWA-WP-8, 9, 13		VCPWA-WP-12, 13	VCPWA-WP-5, 6, 8	VCPWA-WP-1, 2, 3, 14

a. See the introduction to this volume for explanation of mitigation types.

24.9 PUBLIC OUTREACH

Table 24-15 lists public outreach activities for this jurisdiction.

Table 24-15. Local Public Outreach

Local Outreach Activity	Date	Number of People Involved
Multi-Hazard Mitigation Plan 2020 Progress Report to Ventura County Board of Supervisors	7-28-20	Annual Report Approved without express Board or Public Comments during Board's Adoption of Consent Agenda Items for this Remote Zoom Meeting
Multi-Hazard Mitigation Plan 2021 Progress Report to Ventura County Board of Supervisors	7-21-21	Annual Report Approved without express Board or Public Comments during Board's Adoption of Consent Agenda Items for this Remote Zoom Meeting
Ventura County Sheriff's Office of Emergency Services' Multi-Jurisdictional Hazard Mitigation Plan Development Public Outreach/Emergency Preparedness Workshops Planned During Month of September 2021	9-15-21 9-16-21 9-22-21 9-23-21	Unknown

24.10 INFORMATION SOURCES USED FOR THIS ANNEX

The following technical reports, plans, and regulatory mechanisms were reviewed to provide information for this annex.

- **Ventura County 2040 General Plan:** Evaluated Plan Implementation Actions under the following Plan Elements: (a) Public Facilities, Services, and Infrastructure, (b) Conservation and Open Space, (c) Hazards and Safety, (d) Water Resources, (e) Economic Vitality, (f) Unincorporated Communities' Area Plans, and (g) Appendix B: Climate Change which helped Watershed Protection perform its capability assessment and frame the development of its Hazard Mitigation Plan Action Items with more granular-precision and purposeful-effect.
- **VCPWA-WP's Integrated Watershed Protection Plan Project Prioritization Process:** Explored possible opportunities to better integrate the development of multi-benefit flood protection project partnerships with public and private sector agencies and organizations aimed at improving community resiliency to flood hazard risk, flood plain management, groundwater conservation, stormwater capture, environmental protection, and helping to secure a sustainable water supply for agricultural and urban users.
- **VCPWA-WP 5-Year Capital Improvement Projects Plan, Annual Update:** Confirmed inclusion of flood protection projects in VCPWA-WP's current 5-year portfolio which address a mix of high, medium, and low hazard risks found in VCPWA-WP's current Jurisdiction Annex, keying-up those projects as entries in VCPWA-WP's new 5-year Action Plan portfolio, including seven levee rehabilitation projects which when completed will ultimately result in local compliance with Federal Levee Certification regulations found in 44CFR 65.10.
- **Ventura County Flood Mitigation and Safety Plans:** Consulted current plan documents to identify opportunities of alignment and optimization of VCPWA-WP's new 5-Year Action Plan submittal with the baseline framework found in these historical County flood mitigation and safety plan documents.
- **VCPWA-WP's Preparation of Annual Recertifications and Cycle Verification of Class V Rating for Unincorporated Ventura County under FEMA's Community Rating System Program:** Consulted the current Class 5 Rating program performance and reporting requirements to ensure continuation of this rating, as well as identified opportunities for renewed emphasis on the planning and implementation of flood mitigation projects for repetitive loss properties eligible for grant funding under FEMA's Building Resilient Infrastructure and Communities (BRIC) program with the goal of reducing the number of repetitive loss properties in Ventura County.
- **Ventura County Emergency Services Planning Documents:** Reviewed emergency services planning documents prepared by the Ventura County Sheriff's Office of Emergency Services to gain a better understanding of how best to facilitate appropriate development of VCPWA-WP's new 5-year Action Plan submittal by complementing and supplementing countywide risk hazard emergency planning rubric defined by County's Emergency Action Plan, as well as refine Emergency Action Plans for the state-sized dams owned by the County.
- **Ventura County Integrated Regional Water Management Plan (IRWMP) Updates and DAC Public Outreach Engagement Initiative::** Explored framing potential opportunities to better coordinate joint efforts to plan, develop, and ultimately construct multi-benefit, flood resiliency and other risk hazard mitigation projects contained in VCPWA-WP's new 5-Year Action Plan submittal by increasing outreach and engagement with disadvantaged and socially vulnerable communities and tribal groups to better understand their unique community-lifeline

vulnerabilities, facilitate the development of flood hazard mitigation multi-benefit projects, and align and leverage advocacy efforts to optimize grant funding opportunities.

- Watershed Management Program (WMP) for Ventura County including Ventura River, Calleguas Creek, Santa Clara River, upper Malibu Creek, and Coastal Watersheds of Ventura County due to Los Angeles Regional Water Quality Control Board (Region 4) by September 11, 2023 to meet compliance with 2021 Regional Municipal Stormwater (MS4) National Pollutant Discharge Elimination System (NPDES) Permit Order No. CAS004004, Order No. R4-2021-0105. The Ventura County WMP will be developed by the County, Watershed Protection, and ten incorporated cities.

The following outside resources and references were reviewed:

- **Hazard Mitigation Plan Annex Development Toolkit**—The toolkit was used to support the identification of past hazard events and noted vulnerabilities, the risk ranking, and the development of the mitigation action plan.

25. VENTURA REGIONAL SANITATION DISTRICT

25.1 LOCAL HAZARD MITIGATION PLANNING TEAM

Primary Point of Contact

Tina Rivera, Director of Finance
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Alternate Point of Contact

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This annex was developed by the local hazard mitigation planning team, whose members are listed in Table 25-1.

Table 25-1. Local Hazard Mitigation Planning Team Members

Name	Title
Sandy Warren (through 6-30-21)	Management Analyst
Tina Rivera	Director of Finance
Eddie Pettit	Senior Engineer
Jo Cavanaugh	Safety Officer
Richard Jones	Director of Operations

25.2 JURISDICTION PROFILE

25.2.1 Overview

The Ventura Regional Sanitation District (VRSD) is a special district created in 1970 to provide sanitation services to cities and unincorporated areas of Ventura County. The District provides solid waste disposal services via the Toland Road Landfill and also offers a variety of water and wastewater-related services under contract to selected special districts and private entities. A nine-member appointed Board of Directors oversees the District. VRSD has approximately 60 employees. The District's operations are funded solely by fees for the services it provides.

The VRSD Board of Directors assumes responsibility for the adoption of this plan; the Executive General Manager will oversee its implementation.

25.2.2 Service Area

The District service area covers approximately 200 square miles, serving a population of approximately 600,000 in the cities of Camarillo, Fillmore, Ojai, Oxnard, Port Hueneme, Santa Paula, Thousand Oaks, and Ventura, as well as unincorporated County areas.

25.2.3 Assets

Table 25-2 summarizes the assets of the District and their value.

Table 25-2. Special-Purpose District Assets	
Asset	Value
Property	
449 acres of land	(unknown)
Equipment	
Landfill & water/wastewater operations equipment	\$9,121,492
Landfill gas above-ground pipework	\$825,000
Landfill liner	\$1,500,000
<i>Total:</i>	<i>\$11,446,492</i>
Critical Facilities	
Toland Road Landfill (active) 3500 Toland Road, Santa Paula, CA 93060	\$2,627,200
Bailard Landfill (inactive) 4105 W. Gonzales Road, Oxnard, CA 93030	\$943,800
Malibu Bay Club (Wastewater Treatment Plant) 4100 Pacific Coast Highway, Malibu CA 90265	\$3,587,976
<i>Total:</i>	<i>\$7,158,976</i>

25.3 CURRENT TRENDS

From 1970 to 2019, Ventura County's population grew from approximately 370,000 to 846,000, an overall increase of approximately 128 percent. VRSD expanded its solid waste disposal capacity over the years to keep pace with projected needs. In March 2021, VRSD received approval from the Ventura County Board of Supervisors to proceed with the Toland Optimization Plan, which removes the prior mandated 2027 landfill closure date, eliminates the lifetime limit of 15 million tons, and allows for the landfill to be filled to the 1,435-foot elevation approved in 1996. The landfill will be able to keep pace with any population growth.

25.4 CAPABILITY ASSESSMENT

This section describes an assessment of existing capabilities for implementing hazard mitigation strategies. The introduction at the beginning of this volume of the hazard mitigation plan describes the components included in the capability assessment and their significance for hazard mitigation planning.

Findings of the capability assessment were reviewed to identify opportunities to expand, initiate or integrate capabilities to further hazard mitigation goals and objectives. Where such opportunities were identified and determined to be feasible, they are included in the action plan. The "Analysis of Mitigation Actions" table in this annex identifies these as community capacity building mitigation actions. The findings of the assessment are presented as follows:

- Table 25-3 presents an assessment of planning and regulatory capabilities
- Table 25-4 presents an assessment of fiscal capabilities
- Table 25-5 presents an assessment of administrative and technical capabilities
- Table 25-6 presents an assessment of education and outreach capabilities
- Table 25-7 presents classifications under various community mitigation programs
- Table 25-8 Presents the community's adaptive capacity for the impacts of climate change

Table 25-3. Planning and Regulatory Capability

Plan, Study or Program	Date of Most Recent Update
Joint Technical Document	5/21
Stormwater Pollution Prevention Plan	9/20
Spill Prevention Control and Countermeasure Plan	9/20
Hazardous Materials Business Plan	3/21

Table 25-4. Fiscal Capability

Financial Resource	Accessible or Eligible to Use?
Community Development Block Grants	No
Capital Improvements Project Funding	Yes
Authority to Levy Taxes for Specific Purposes	No
User Fees for Water, Sewer, Gas or Electric Service <i>If yes, specify:</i> Landfill Disposal Services	Yes
Incur Debt through General Obligation Bonds	No
Incur Debt through Special Tax Bonds	No
Incur Debt through Private Activity Bonds	No
Withhold Public Expenditures in Hazard-Prone Areas	No
State-Sponsored Grant Programs	Yes
Development Impact Fees for Homebuyers or Developers	No

Table 25-5. Administrative and Technical Capability

Staff/Personnel Resource	Available?
Planners or engineers with knowledge of land development and land management practices <i>If Yes, Department /Position:</i> Director Of Operations, Senior Engineer	Yes
Engineers or professionals trained in building or infrastructure construction practices	No
Planners or engineers with an understanding of natural hazards <i>If Yes, Department /Position:</i> Director of Operations, Senior Engineer	Yes
Staff with training in benefit/cost analysis <i>If Yes, Department /Position:</i> Director of Finance	Yes
Surveyors	No
Personnel skilled or trained in GIS applications	No
Scientist familiar with natural hazards in local area	No
Emergency manager <i>If Yes, Department /Position:</i> Safety Officer	Yes
Grant writers	No

Table 25-6. Education and Outreach Capability

Criterion	Response
Do you have a public information officer or communications office?	No
Do you have personnel skilled or trained in website development?	No
Do you have hazard mitigation information available on your website?	No
Do you use social media for hazard mitigation education and outreach?	No
Do you have any citizen boards or commissions that address issues related to hazard mitigation?	No
Do you have any other programs in place that could be used to communicate hazard-related information?	Yes
<i>If yes, briefly describe:</i> Hazardous Materials Business Plan / Spill Prevention Control and Countermeasure Plan	
Do you have any established warning systems for hazard events?	Yes
<i>If yes, briefly describe:</i> Listed in the Hazardous Materials Business Plan and included in training	

Table 25-7. Community Classifications

	Participating?	Classification	Date Classified
FIPS Code	No	N/A	N/A
DUNS#	Yes	030382014	N/A
Community Rating System	No	N/A	N/A
Building Code Effectiveness Grading Schedule	No	N/A	N/A
Public Protection	No	N/A	N/A
Storm Ready	No	N/A	N/A
Firewise	No	N/A	N/A
Tsunami Ready	No	N/A	N/A

Table 25-8. Adaptive Capacity for Climate Change

Criterion	Jurisdiction Rating ^a
Technical Capacity	
Jurisdiction-level understanding of potential climate change impacts <i>Comment: Participate in GHG study sponsored by NASA and the California Air Resources Board</i>	High
Jurisdiction-level monitoring of climate change impacts <i>Comment: Required to monitor GHG at active and closed landfills</i>	High
Technical resources to assess proposed strategies for feasibility and externalities <i>Comment: Work with several landfill gas consultants and state and federal agencies to reduce GHG emissions at our sites</i>	High
Jurisdiction-level capacity for development of greenhouse gas emissions inventory <i>Comment: Required to monitor and report GHG generation at active and closed landfills</i>	High
Capital planning and land use decisions informed by potential climate impacts <i>Comment: Increase in annual budget in order to upgrade systems to reduce climate impacts</i>	High
Participation in regional groups addressing climate risks <i>Comment: Participate in statewide study of GHG sponsored by NASA and the California Air Resources Board</i>	High
Implementation Capacity	
Clear authority/mandate to consider climate change impacts during public decision-making processes <i>Comment: We are required by District rule and regulation to reduce impacts to the environment</i>	High
Identified strategies for greenhouse gas mitigation efforts <i>Comment: Required to monitor and report GHG generation at active and closed landfills</i>	High

Criterion	Jurisdiction Rating ^a
Identified strategies for adaptation to impacts <i>Comment: Provide health & safety cooling stations for employees</i>	Medium
Champions for climate action in local government departments <i>Comment: Our scope of authority is specific as defined by state legislation.</i>	Low
Political support for implementing climate change adaptation strategies <i>Comment: Our scope of authority is specific as defined by state legislation.</i>	Low
Financial resources devoted to climate change adaptation <i>Comment: Our scope of authority is specific as defined by state legislation.</i>	Low
Local authority over sectors likely to be negative impacted <i>Comment: Our scope of authority is specific as defined by state legislation.</i>	Low
Public Capacity	
Local residents' knowledge of and understanding of climate risk <i>Comment: Our scope of authority is specific as defined by state legislation.</i>	Low
Local residents' support of adaptation efforts <i>Comment: Our scope of authority is specific as defined by state legislation.</i>	Low
Local residents' capacity to adapt to climate impacts <i>Comment: Our scope of authority is specific as defined by state legislation.</i>	Low
Local economy current capacity to adapt to climate impacts <i>Comment: Our scope of authority is specific as defined by state legislation.</i>	Low
Local ecosystems capacity to adapt to climate impacts <i>Comment: Our scope of authority is specific as defined by state legislation.</i>	Low

- a. High = Capacity exists and is in use; Medium = Capacity may exist, but is not used or could use some improvement;
Low = Capacity does not exist or could use substantial improvement; Unsure= Not enough information is known to assign a rating.

25.5 INTEGRATION REVIEW

For hazard mitigation planning, “integration” means that hazard mitigation information is used in other relevant planning mechanisms, such as capital facilities planning, and that relevant information from those sources is used in hazard mitigation. This section identifies where such integration is already in place, and where there are opportunities for further integration in the future. Resources listed at the end of this annex were used to provide information on integration. The progress reporting process described in Volume 1 of the hazard mitigation plan will document the progress of hazard mitigation actions related to integration and identify new opportunities for integration.

25.5.1 Existing Integration

Some level of integration has already been established between local hazard mitigation planning and the following other local plans and programs:

- Joint Technical Document—Planning and control document for landfill operations and maintenance
- Stormwater Pollution Prevention plan—This program is how stormwater and run off are handled at the landfill
- Spill Prevention Control and Countermeasure Plan

- **Hazard Materials Business Plan**—this plan defines and establishes location of all hazard materials at VRSD facilities

25.5.2 Opportunities for Future Integration

The capability assessment in this annex indicates opportunities to integrate this mitigation plan with other jurisdictional planning/regulatory capabilities. Capabilities were identified as integration opportunities if they can support or enhance the actions identified in this plan or be supported or enhanced by components of this plan. The capability assessment identified the following plans and programs that do not currently integrate hazard mitigation information but provide opportunities to do so in the future:

- **Capital Improvement Projects**—Capital improvement project proposals may take into consideration hazard mitigation potential as a means of evaluating project prioritization.
- **Post-Disaster Recovery Plan**—The District does not have a recovery plan and intends to develop one as a mitigation planning action during the next five years. The plan will build on the mitigation goals and objectives identified in the mitigation plan.

Taking action to integrate each of these programs with the hazard mitigation plan was considered as a mitigation action to include in the action plan in this annex.

25.6 RISK ASSESSMENT

25.6.1 Jurisdiction-Specific Natural Hazard Event History

Table 25-9 lists past occurrences of natural hazards for which specific damage was recorded in this jurisdiction. Other hazard events that broadly affected the entire planning area, including this jurisdiction, are listed in the risk assessments in Volume 1 of this hazard mitigation plan.

Table 25-9. Past Natural Hazard Events

Type of Event	FEMA Disaster #	Date	Damage Assessment
Covid- 19	DR-4482	1/20/21	\$116,525
Easy Fire	FM-5298	10/30/2019	\$2,196,235
Thomas Fire	FM-5224	December 4, 2017	\$1,732,810

25.6.2 Hazard Risk Ranking

Table 25-10 presents a local ranking of all hazards of concern for which this hazard mitigation plan provides complete risk assessments. As described in detail in Volume 1, the ranking process involves an assessment of the likelihood of occurrence for each hazard, along with its potential impacts on people, property, and district operations. Mitigation actions primarily target hazards with high and medium rankings.

Table 25-10. Hazard Risk Ranking

Rank	Hazard	Risk Ranking Score	Risk Category
1	Wildfire	36	High
2	Landslide	33	High
3	Earthquake	32	Medium
4	Severe Storm	24	Medium
4	Severe Weather	24	Medium
6	Dam Failure	24	Medium
7	Flooding	18	Medium
8	Sea Level Rise	12	Medium
9	Tsunami	10	Low
10	Drought	9	Low

25.6.3 Other Noted Vulnerabilities

Volume 1 of this hazard mitigation plan provides complete risk assessments for each identified hazard of concern. The following jurisdiction-specific issues have been identified based on a review of the results of the risk assessment, public involvement strategy, and other available resources:

- Underground Fires.
- Wind Storms—often halts operations and spreads debris which requires additional labor to clean-up

Mitigation actions addressing these issues were prioritized for consideration in the action plan in this annex.

25.7 HAZARD MITIGATION ACTION PLAN

Table 25-11 lists the actions that make up the hazard mitigation action plan for this jurisdiction.

Table 25-12 identifies the priority for each action. Table 25-13 summarizes the mitigation actions by hazard of concern and mitigation type.

Table 25-11. Hazard Mitigation Action Plan Matrix

Benefits New or Existing Assets	Objectives Met	Lead Agency	Support Agency	Estimated Cost	Sources of Funding	Timeline ^a
Action VRS-1—Where appropriate, support retrofitting, purchase or relocation of structures located in hazard areas, prioritizing those that have experienced repetitive losses and/or are located in high- or medium-risk hazard areas.						
<u>Hazards Mitigated:</u> Earthquake, Flooding, Landslide, Severe Weather, Wildfire, Severe Storms, Dam Failure						
Existing	2, 6, 9, 11	VRSD		High	Grant Funding- FEMA HMA (BRIC, FMA, HMGP)	Short-term
Action VRS-2—Actively participate in the plan maintenance protocols outlined in Volume 1 of this hazard mitigation plan.						
<u>Hazards Mitigated:</u> Earthquake, Flooding, Landslide, Severe Weather, Tsunami, Wildfire, Severe Storms, Dam Failure, Drought, Sea Level Rise						
New & Existing	1, 4, 6, 8, 19	VRSD		Low	Staff Time, General Funds	Short-term

Benefits New or Existing Assets	Objectives Met	Lead Agency	Support Agency	Estimated Cost	Sources of Funding	Timeline ^a
Action VRS-3—Purchase generators for critical facilities and infrastructure that lack adequate backup power, including Landfill gas extraction and Flares						
<u>Hazards Mitigated:</u>	Earthquake, Flooding, Landslide, Severe Weather, Tsunami, Wildfire, Severe Storms, Dam Failure					
Existing	2, 6, 7	VRSD		Medium	Staff Time, Grant Funding- FEMA HMA (BRIC, HMGP)	Long-term
Action VRS-4—Develop a post disaster action plan that includes grant funding, debris removal components, and warehousing of critical infrastructure components						
<u>Hazards Mitigated:</u>	Earthquake, Flooding, Landslide, Severe Weather, Tsunami, Wildfire, Severe Storms, Dam Failure					
Existing/Future	2, 8, 19	VRSD		Medium	Staff Time, General Funds, Grant Funding- FEMA HMA (BRIC, FMA, HMGP)	Long-Term
Action VRS-5—Create/implement wildfire preparedness plan with emphasis on defensible space and access issues						
<u>Hazards Mitigated:</u>	Wildfire					
Existing	5, 11, 14, 17, 19	VRSD		Medium	Staff Time, General Funds, Grant Funding- FEMA HMA (BRIC, FMAP and HMGP)	Short-term
Action VRS-6—Slope stabilization and drainage control features around water reservoirs						
<u>Hazards Mitigated:</u>	Earthquake, Flooding, Landslide, Severe Weather, Wildfire, Severe Storms, Dam Failure					
Existing	5, 9, 11, 14	VRSD		High	Staff Time, General Funds, Grant Funding- FEMA HMA (BRIC, FMA, HMGP)	Ongoing

a. Short-term = Completion within 5 years; Long-term = Completion within 10 years; Ongoing= Continuing new or existing program with no completion date

Acronyms used here are defined at the beginning of this volume.

Table 25-12. Mitigation Action Priority

Action #	# of Objectives Met	Benefits	Costs	Do Benefits Equal or Exceed Cost?	Is Project Grant-Eligible?	Can Project Be Funded Under Existing Programs/ Budgets?	Implementation Priority ^a	Grant Pursuit Priority ^a
1	4	High	High	Yes	Yes	No	Medium	High
2	5	Medium	Low	Yes	No	No	High	Low
3	3	High	Medium	Yes	Yes	No	Medium	High
4	3	Medium	Medium	Yes	Yes	No	Medium	Medium
5	5	Medium	Medium	Yes	Yes	Yes	Medium	Medium
6	4	High	High	Yes	Yes	Yes	Medium	High

a. See the introduction to this volume for explanation of priorities.

Table 25-13. Analysis of Mitigation Actions

Hazard Type	Action Addressing Hazard, by Mitigation Type ^a							
	Prevention	Property Protection	Public Education & Awareness	Natural Resource Protection	Emergency Services	Structural Projects	Climate Resilient	Community Capacity Building ^b
High-Risk Hazards								
Wildfire		VRS-1, 5	VRS-2	VRS-5, 6	VRS-2, 5, 6	VRS-6	VRS-5	VRS-2, 4
Landslide		VRS-1	VRS-2	VRS-6	VRS-2, 6	VRS-6		VRS-2, 4
Medium-Risk Hazards								
Earthquake		VRS-1	VRS-2	VRS-6	VRS-2	VRS-6		VRS-2, 4
Severe Storm		VRS-1	VRS-2	VRS-6	VRS-2	VRS-6		VRS-2, 4
Severe Weather		VRS-1	VRS-2	VRS-	VRS-2	VRS-6		VRS-2, 4
Dam Failure		VRS-1	VRS-2	VRS-6	VRS-2	VRS-6		VRS-2, 4
Flooding		VRS-1	VRS-2	VRS-6	VRS-2	VRS-6		VRS-2, 4
Sea Level Rise		VRS-1	VRS-2					VRS-2
Low-Risk Hazards								
Tsunami		VRS-1	VRS-2		VRS-2			VRS-2, 4
Drought		VRS-1	VRS-2					VRS-2

a. See the introduction to this volume for explanation of mitigation types.

b. Note that the jurisdiction did not identify a need for expansion of administrative and technical or financial capabilities, based on existing capabilities. The intent of this hazard mitigation plan is to expand the financial capability of the jurisdiction.

25.8 INFORMATION SOURCES USED FOR THIS ANNEX

The following technical reports, plans, and regulatory mechanisms were reviewed to provide information for this annex.

- **Joint Technical Document**—Used to inform the capability assessment.
- **Title V Reports**—Used to inform the capability assessment.
- **Stormwater Pollution Prevention Plan**—Used to inform the capability assessment.

The following outside resources and references were reviewed:

- **Hazard Mitigation Plan Annex Development Toolkit**—The toolkit was used to support the identification of past hazard events and noted vulnerabilities, the risk ranking, and the development of the mitigation action plan.

Appendix A. Planning Partner Expectations

A. PLANNING PARTNER EXPECTATIONS

The federal Disaster Mitigation Act (DMA) of 2000 (Public Law 106-390), commonly known as the 2000 Stafford Act amendments, was approved by Congress on October 10, 2000. This act required state and local governments to develop hazard mitigation plans as a condition for federal grant assistance. Among other things, this legislation reinforces the importance of pre-disaster infrastructure mitigation planning to reduce disaster losses nationwide. DMA 2000 is aimed primarily at the control and streamlining of the administration of federal disaster relief and programs to promote mitigation activities. Prior to 2000, federal legislation provided funding for disaster relief, recovery, and some hazard mitigation planning. The DMA improves upon the planning process by emphasizing the importance of communities planning for disasters before they occur.

The Disaster Mitigation Act defines a “local government” as:

Any county, municipality, city, town, public authority, school district, special district, intrastate district, council of governments (regardless of whether the council of governments is incorporated as a nonprofit corporation under State law), regional or interstate government entity, or agency or instrumentality of a local government; any Indian tribe or authorized tribal organization, or Alaska Native village or organization; and any rural community, unincorporated town or village, or other public entity

Any local government wishing to pursue funding afforded under FEMA Hazard Mitigation Grant Programs must have an approved hazard mitigation plan in order to be eligible to apply for these funds.

One of the goals of the multi-jurisdictional approach to hazard mitigation planning is to achieve compliance with the Disaster Mitigation Act (DMA) for all participating members in the planning effort. DMA compliance must be certified for each member in order to maintain eligibility for the benefits under the DMA. Whether the planning process generates ten individual plans or one large plan that has a chapter for each partner jurisdiction, the following items must be addressed by each planning partner to achieve DMA compliance:

- **Participate in the Process.** It must be documented in the plan that each planning partner “participated” in the process that generated the plan. Participation can vary based on the type of planning partner (i.e.: City vs. a Special-Purpose District). However, the level of participation must be defined and the extent for which this level of participation has been met for each partner must be contained in the plan context.
- **Consistency Review.** Review of existing documents pertinent to each jurisdiction to identify policies or recommendations that are not consistent with those documents reviewed in producing the “parent” plan or have policies and recommendations that complement the hazard mitigation initiatives selected (i.e.: comp plans, basin plans or hazard-specific plans).

- **Action Review.** For plan updates, a review of the strategies from your prior action plan to determine those that have been accomplished and how they were accomplished; and why those that have not been accomplished were not completed.
- **Update Localized Risk Assessment.** Personalize the Risk Assessment for each jurisdiction by removing any hazards not associated with the defined jurisdictional area (e.g. tsunami and coastal erosion hazards for inland jurisdictions) or redefining vulnerability based on a hazard's impact to a jurisdiction. This phase will include:
 - A ranking of the risk
 - A description of the number and type of structures at risk
 - An estimate of the potential dollar losses to vulnerable structures
 - A general description of land uses and development trends within the community, so that mitigation options can be considered in future land use decisions.
- **Capability Assessment.** Each planning partner must identify and review their individual regulatory, technical, and financial capabilities with regards to the implementation of hazard mitigation actions.
- **Prioritize Mitigation Recommendations.** Identify and prioritize mitigation recommendations specific to each jurisdiction's defined area.
- **Create an Action Plan.**
- **Incorporate Public Participation.** Each jurisdiction must present the Plan to the public for comment at least once, within two weeks prior to adoption.
- **Plan Adoption.** The updated plan must be adopted by each jurisdiction following FEMA approval.

One of the benefits to multi-jurisdictional planning is the ability to pool resources. This means more than monetary resources. Resources such as staff time, meeting locations, media resources, technical expertise will all need to be utilized to generate a successful plan. In addition, these resources can be pooled such that decisions can be made by a peer group applying to the whole and thus reducing the individual level of effort of each planning partner. This will be accomplished by the formation of a steering committee made up of planning partners and other "stakeholders" within the planning area. The size and makeup of this steering committee will be determined by the planning partnership. This body will assume the decision-making responsibilities on behalf of the entire partnership. This will streamline the planning process by reducing the number of meetings that will need to be attended by each planning partner. The assembled Steering Committee for this effort will meet monthly on an as needed basis as determined by the planning team, and will provide guidance and decision making during all phases of the plan's development.

With the above participation requirements in mind, each partner is expected to aid this process by being prepared to develop its section of the plan. To be an eligible planning partner in this effort, each planning partner shall provide the following:

- A. *If you haven't already submitted* a "Letter of Intent (LOI) to participate" or Resolution to participate (see Exhibit A); you must submit an LOI.
- B. Designate a lead and alternate points of contact for this effort. The lead will be listed as the hazard mitigation point of contact for your jurisdiction in the plan.

- C. If requested, provide support in the form of a mailing list and public information materials, such as newsletters, newspapers, or direct mailed brochures, required to implement the public engagement strategy developed by the Steering Committee.
- D. Participate in the entire process (from first partner meeting to plan completion). There will be many ways as this plan evolves to participate. Opportunities such as:
 - a. Attending online Steering Committee meetings
 - b. Attending online public meetings
 - c. Completing the phased Jurisdiction Annex Process
 - d. Participating in public review and comment periods prior to adoption

At each of these meetings, attendance will be recorded. Attendance records will be used to document participation for each planning partner. No thresholds will be established as minimum levels of participation. However, each planning partner should attempt to attend all possible meetings and events.

- E. Designate a Local Planning Team. Each planning partner will be asked to identify a lead point of contact and an alternate point of contact for their jurisdiction as well as other resources within that jurisdiction that can support or enhance the mitigation actions from this plan. For municipal planning partners, participants should include, at a minimum, representation from Planning, Public Works and Emergency Management. For Special Purpose Districts, participants should include anyone responsible for facilities management and/or emergency management. All phases of the Jurisdictional Annex process should be conducted through these local planning teams.
- F. Complete all 3 phases of the Jurisdictional Annex process. Volume 2 of the plan consists of jurisdictional specific components of the plan required under section 2016, 44CFR for multi-jurisdictional local hazard mitigation plans. It is mission-critical to the ultimate approval of this plan update that these annexes are created or updated in accordance with the requirements. To achieve this compliance, the Core Planning Team (CPT) will deploy the Jurisdictional Annex process in the following 3 phases over the course of this plan update process:
 - Phase 1 - Jurisdiction Profiles and Prior Action Review
 - Phase 2 - Core Capability Assessment
 - Phase 3 - Risk Ranking and Action Plan Development

Complete and thorough technical assistance will be available to all planning partners during this phased process. Phase 1 will be deployed in May 2021 with specified deadlines, and the response to each phase by the Planning Partnership will be aggregated by the CPT.

Failure to meet deadlines specified for Phases 1 and 2 will not jeopardize and planning partner's eligibility for coverage under the plan. However, it is important to note that, if a planning partner does not meet the deadline for Phase 1, it is expected that the information submitted during Phase 2 will include all of the information requested under Phases 1 and 2. The ultimate deadline for this phased process will be the deadline for Phase 3.

Failure to submit a complete Jurisdictional Annex by the specified deadline for Phase 3 will result in a planning partner's removal from the Partnership for failure to meet the specified planning partner expectations.

Phase 3 will include a mandatory workshop that will focus on action plan development and prioritization. Attendance at the Phase 3 workshop will be tracked, and each planning partner must send at least one representative to the workshop to fully meet the participation requirements defined for this plan update process.

At a minimum, two workshops will be conducted - one for municipal planning partners and one for special district planning partners to provide guidance on action plan development specific to the differing capabilities between these two planning partner types.

- G. Each partner will be asked to perform a “consistency review” of all technical studies, plans, ordinances specific to hazards to determine the existence of any not consistent with the same such documents reviewed in the preparation of the County (parent) Plan. For example, if your community has a floodplain management plan that makes recommendations that are not consistent with any of the County’s Basin Plans, that plan will need to be reviewed for probable incorporation into the plan for your area.
- H. Each partner will be asked to review the Risk Assessment and identify hazards and vulnerabilities specific to its jurisdiction. Contract resources will provide the jurisdiction-specific mapping and technical consultation to aid in this task, but the determination of risk and vulnerability will be up to each partner.
- I. Each partner will be asked to review and determine if the mitigation recommendations chosen in the parent plan will meet the needs of its jurisdiction. Projects within each jurisdiction consistent with the parent plan recommendations will need to be identified, prioritized, and reviewed to determine their benefits vs. costs.
- J. Each partner will be required to create its own action plan that identifies each project, who will oversee the task, how it will be financed, and when it is estimated to occur.
- K. Each partner will be required to formally adopt the plan.

Templates and instructions to aid in the compilation of this information will be provided to all committed planning partners. Each partner will be asked to complete their templates in a timely manner and according to the timeline specified.

NOTE: Once this plan is completed, and DMA compliance has been determined for each partner, maintaining that eligibility will be dependent upon each partner implementing the plan implementation-maintenance protocol identified in the plan.

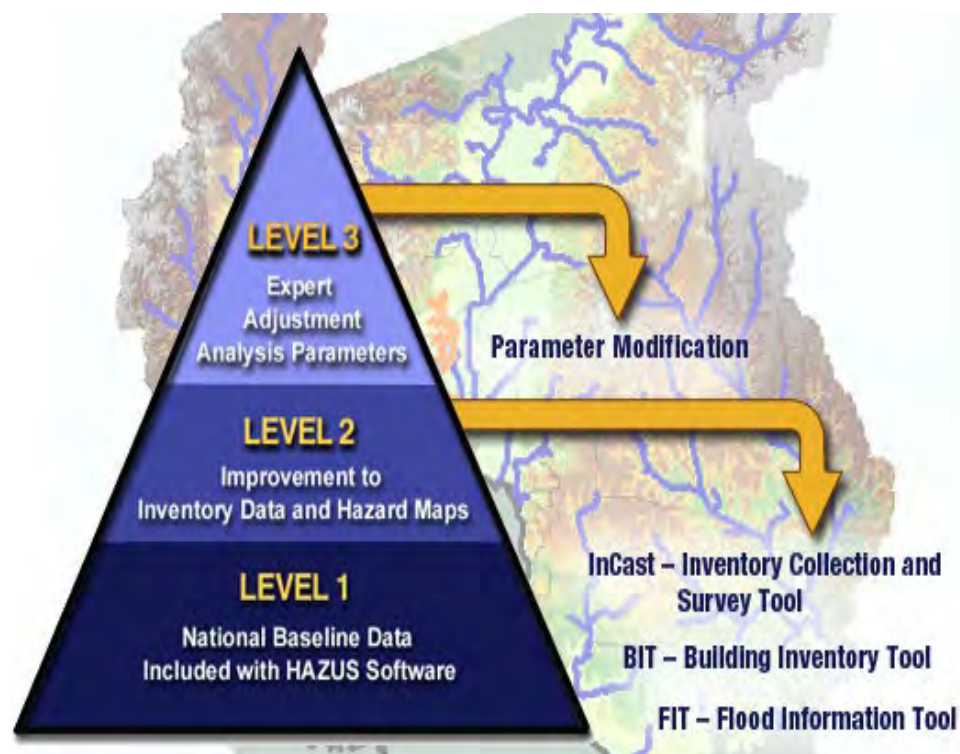
Exhibit A
Planning Team Contact information

Name	Representing	Address	e-mail
Bonnie Luke	Ventura County Sheriff's Office of Emergency Services	800 South Victoria Avenue Ventura, CA 93009	BonnieK.Luke@ventura.org
Kathy Gibson	Ventura County Sheriff's Office of Emergency Services	800 South Victoria Avenue Ventura, CA 93009	kathy.gibson@ventura.org
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Glenn Shephard	Ventura County Public Works Agency Watershed Protection	800 South Victoria Avenue Ventura, CA 93009	glenn.shephard@ventura.org
Gerard Kapuscik	Ventura County Public Works Agency Watershed Protection	800 South Victoria Avenue Ventura, CA 93009	gerard.kapuscik@ventura.org
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Richard Paschal	Ventura County Information Technology Services	1957 Eastman Avenue Ventura, CA 93003	Richard.Paschal@ventura.org
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Megan Brotherton	Tetra Tech, Inc.	737 Bishop Street, Suite 2340 Honolulu, HI 96813	megan.brotherton@tetrattech.com
Carol Bauman	Tetra Tech, Inc.		carol.bauman@tetrattech.com

Exhibit C. Overview of Hazus

Overview of Hazus (Multi-Hazard)

Hazus, is a nationally applicable standardized methodology and software program that contains models for estimating potential losses from earthquakes, floods, tsunamis, and hurricane winds. Hazus was developed by the Federal Emergency Management Agency (FEMA) under contract with the National Institute of Building Sciences (NIBS). NIBS maintains committees of wind, flood, earthquake and software experts to provide technical oversight and guidance to Hazus development. Loss estimates produced by Hazus are based on current scientific and engineering knowledge of the effects of hurricane winds, floods, and earthquakes. Estimating losses is essential to decision-making at all levels of government, providing a basis for developing mitigation plans and policies, emergency preparedness, and response and recovery planning.



Hazus uses state-of-the-art geographic information system (GIS) software to map and display hazard data and the results of damage and economic loss estimates for buildings and infrastructure. It also allows users to estimate the impacts of hurricane winds, floods, tsunamis, and earthquakes on populations. The latest release, Hazus 4.0, is an updated version of Hazus that incorporates many new features which improve both the speed and functionality of the models. For information on

software and hardware requirements to run Hazus 4.0, see Hazus Hardware and Software Requirements.

Hazus Analysis Levels

Hazus provides for three levels of analysis:

- A Level 1 analysis yields a rough estimate based on the nationwide database and is a great way to begin the risk assessment process and prioritize high-risk communities.

- A Level 2 analysis requires the input of additional or refined data and hazard maps that will produce more accurate risk and loss estimates. Assistance from local emergency management personnel, city planners, GIS professionals, and others may be necessary for this level of analysis.
- A Level 3 analysis yields the most accurate estimate of loss and typically requires the involvement of technical experts such as structural and geotechnical engineers who can modify loss parameters based on to the specific conditions of a community. This level analysis will allow users to supply their own techniques to study special conditions such as dam breaks and tsunamis. Engineering and other expertise is needed at this level.

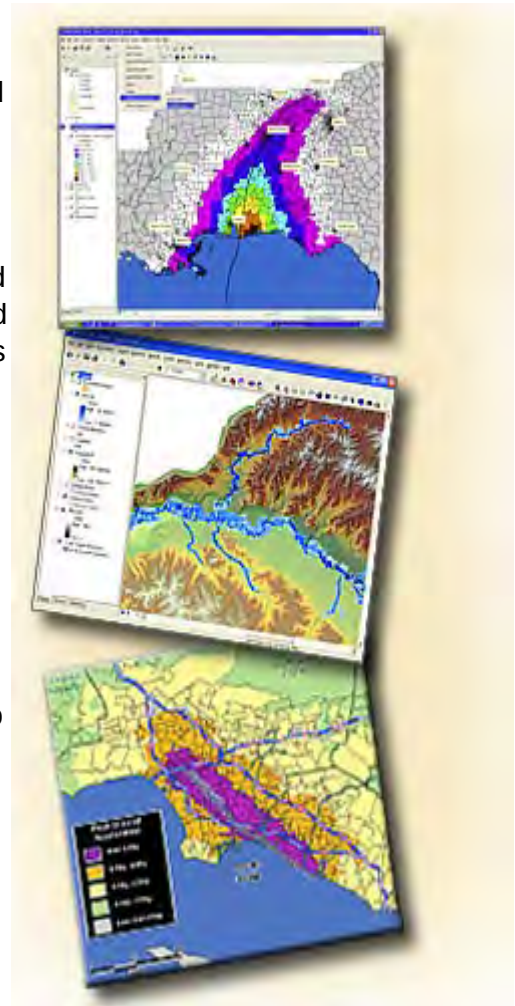
Three data input tools have been developed to support data collection. The Comprehensive Data Management System helps users collect and manage local building data for more refined analyses than are possible with the national level data sets that come with Hazus. The system has expanded capabilities for multi-hazard data collection. Hazus includes an enhanced Building Inventory Tool allows users to import building data and is most useful when handling large datasets, such as tax assessor records. The Flood Information Tool helps users manipulate flood data into the format required by the Hazus flood model. All Three tools are included in the Hazus MR1 Application DVD.

Hazus Models

The Hazus Hurricane Wind Model gives users in the Atlantic and Gulf Coast regions and Hawaii the ability to estimate potential damage and loss to residential, commercial, and industrial buildings. It also allows users to estimate direct economic loss, post-storm shelter needs and building debris. In the future, the model will include the capability to estimate wind effects in island territories, storm surge, indirect economic losses, casualties, and impacts to utility and transportation lifelines and agriculture. Loss models for other severe wind hazards will be included in the future. Details about the Hurricane Wind Model.

The Hazus Flood Model is capable of assessing riverine and coastal flooding. It estimates potential damage to all classes of buildings, essential facilities, transportation and utility lifelines, vehicles, and agricultural crops. The model addresses building debris generation and shelter requirements. Direct losses are estimated based on physical damage to structures, contents, and building interiors. The effects of flood warning are taken into account, as are flow velocity effects. Details about the Flood Model.

The Hazus Earthquake Model, The Hazus earthquake model provides loss estimates of damage and loss to buildings, essential facilities, transportation and utility lifelines, and population based on scenario or probabilistic earthquakes. The model addresses debris generation, fire-following, casualties, and shelter requirements. Direct losses are estimated based on physical damage to structures, contents, inventory, and building interiors. The earthquake model also includes the Advanced



Engineering Building Module for single- and group-building mitigation analysis. Details about the Earthquake Model.

The Hazus Tsunami Model represents the first new disaster module for the Hazus software in almost 15 years and is the culmination of work completed on the Hazus Tsunami Methodology Development (FEMA, 2013) by a team of tsunami experts, engineers, modelers, emergency planners, economists, social scientists, geographic information system (GIS) analysts, and software developers. A Tsunami Oversight Committee provided technical direction and review of the methodology development. New features with the model include:

- **Territory Analysis:** This release represents the first time that analysis will be available for U.S. territories (Guam, American Samoa, Commonwealth of Northern Mariana Islands and U.S. Virgin Islands).
- **New Point Format:** The Hazus General Building Stock for the Tsunami release will use a new National Structure Inventory point format (details in User Release Notes available with download).
- **Case Studies:** The Tsunami Module will require user-provided data, so the Hazus Team has provided five case study datasets for users, which will be available on the MSC download site.
- **Two Types of Damage Analysis:** Users will be able to run both near-source (Earthquake + Tsunami) and distant-source (Tsunami only) damage analysis.

Additionally, Hazus can perform multi-hazard analysis by providing access to the average annualized loss and probabilistic results from the hurricane wind, flood, and earthquake models and combining them to provide integrated multi-hazard reports and graphs. Hazus also contains a third-party model integration capability that provides access and operational capability to a wide range of natural, man-made, and technological hazard models (nuclear and conventional blast, radiological, chemical, and biological) that will supplement the natural hazard loss estimation capability (hurricane wind, flood, tsunami and earthquake) in Hazus.

Appendix B. Annex Instructions and Templates

Appendix B.1

Instructions and Templates for Municipality Annexes

INSTRUCTIONS FOR COMPLETING CITY/COUNTY ANNEX TEMPLATE

Jurisdictional annex templates for the 2022 *Ventura County Multi-Jurisdictional Hazard Mitigation Plan* update will be completed in three phases. **This document provides instructions for completing all phases of the template for cities and counties.**

The target timeline for completion is as follows:

- **Phase 1**—Team, Profile, Trends, and Previous Plan Status
 - **Deploy:** May 10, 2021
 - **Due:** June 21, 2021 by close of business
- **Phase 2**—Capability Assessment, Integration Review, and Information Sources
 - **Deploy:** July 6, 2021
 - **Due:** August 20, 2021 by close of business
- **Phase 3**—Risk Assessment, Action Plan, Information Sources, Future Needs, and Additional Comments
 - **Deploy:** September 9, 2021
 - **Mandatory Phase 3 Workshop:** September 22, 2021
 - **Due:** October 25, 2021 by close of business, Pacific Time. **No due date extensions!**

Please direct any questions and return your completed Phase 3 template in electronic format to:

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A Note About Formatting

The template for the annex is a Microsoft Word document in a format that will be used in the final plan. Partners are asked to use this template so that a uniform product will be completed for each partner.

Content should be entered directly into the template rather than creating text in another document and pasting it into the template. Text from another source may alter the formatting of the document.

The section and table numbering in the document will be updated when completed annexes are combined into the final document. Please do not adjust any of the numbering.

For planning partners who participated in the 2015 planning effort, relevant information has been brought over to the 2022 template. Fields that require attention have been highlighted using the following color coding:

- **Yellow:** Text has been brought over from 2015 Plan and should be reviewed and updated as needed.
- **Pink:** This is a new field that will require information that was not included in 2015.

Un-highlight each field that you update so that reviewers will know an edit has been made.

New planning partners will need to complete the template in its entirety.

PHASE 1 INSTRUCTIONS**CHAPTER TITLE**

In the chapter title at the top of Page 1, type in the complete official name of your municipality (e.g., City of Pleasantville, West County). Do not change the chapter number. Revise only the jurisdiction name. If your jurisdiction's name has already been entered, verify that wording and spelling are correct; revise as needed.

LOCAL HAZARD MITIGATION PLANNING TEAM**Points of Contact**

Provide the name, title, mailing address, telephone number, and e-mail address for the primary point of contact for your jurisdiction. This should be the person responsible for monitoring, evaluating and updating the annex for your jurisdiction. This person should also be the principle liaison between your jurisdiction and the Steering Committee overseeing development of this plan.

In addition, designate an alternate point of contact. This would be a person to contact should the primary point of contact be unavailable or no longer employed by the jurisdiction.

Note: Both of these contacts should match the contacts that were designated in your jurisdiction's letter of intent to participate in this planning process. If you have changed the primary or secondary contact, let the planning team know by inserting a comment into the document.

Who Should Be on the Local Mitigation Planning Team

The Local Hazard Mitigation Planning Team is responsible for developing your jurisdiction's annex to the hazard mitigation plan. Team membership should represent agencies with authority to regulate development and enforce local ordinances or regulatory standards, such as building/fire code enforcement, emergency management, emergency services, floodplain management, parks and recreation, planning/ community development, public information, public works/ engineering, stormwater management, transportation, or infrastructure.

Participating Planning Team

Populate Table 1-1 with the names of staff from your jurisdiction who participated in preparing this annex or otherwise contributed to the planning process for this hazard mitigation plan.

JURISDICTION PROFILE

Provide information specific to your jurisdiction as indicated, in a style similar to the examples provided below. This should be information that will not be provided in the overall mitigation plan document.

Location and Features

Describe the community's location, size and prominent features, in a statement similar to the example below:

EXAMPLE: The City of Jones is in the northwest portion of Smith County, along the Pacific Coast in northern California. It is almost 150 miles northeast of San Francisco. The city's total area is 4.2 square miles, with boundaries generally extending north-south from State Highway 111 to the

Johnson River and east-west from Coast Road to East Frank Avenue. The City of Allen is to the north, unincorporated county is to the west, the City of Bethany is to the south, and the Pacific Ocean is to the west.

Jones is home to the University of Arbor, Bickerson Manufacturing, and the western portion of Soosoo National Park. Significant geographic features include the Watery River, which flows southwest across the city, Lake Splash in the city's northwest corner, and the foothills of the Craggy Mountains on the east side.

History

Describe the community's history, focusing on economy and development, and note its year of incorporation, in a statement similar to the example below:

EXAMPLE: The City of Jones was incorporated in 1858. The area was settled during the gold rush in the 1850s as a supply center for miners. As the gold rush died down, timber and fishing became the area's major economic resources. By 1913, the Jones Teachers College, a predecessor to today's University of Arbor, was founded. Recently, the presence of the college has come to shape Jones' population into a young and educated demographic. In 1981 the City developed the Jones Marsh and Wildlife Sanctuary, an environmentally friendly sewage treatment enhancement system.

With numerous annexations since its original incorporation, the city's area has almost doubled. Today it features a commercial core in the center of the city, with mostly residential areas to the north and south, the university to the west and the national park on the east.

Governing Body Format

Describe the community's key governance elements and staffing, in a statement similar to the example below:

EXAMPLE: The City of Jones is governed by a five-member city council. The City consists of six departments: Finance, Environmental Services, Community Development, Public Works, Police, and the City Manager's Office. The City has 13 commissions and task forces, which report to the City Council. The City currently employs a total of 155 employees (full-time equivalent).

The City Council assumes responsibility for the adoption of this plan; the City Manager will oversee its implementation.

CURRENT TRENDS

Population

Provide the most current population estimate for your jurisdiction based on an official means of tracking (e.g., the U.S. Census or state agency that develops population estimates). Describe the current estimate and recent population trends in a statement similar to the example below.

EXAMPLE: According to California Department of Finance, the population of Jones as of July 2020 was 17,280. Since 2010, the population has grown at an average annual rate of 1.2 percent, though that rate is declining, with an annual average of only 0.8 percent since 2015.

Development

In the highlighted text that says “Describe trends in general,” provide a brief description of your jurisdiction’s recent development trends in a statement similar to the example below:

EXAMPLE: Anticipated future development for Jones is low to moderate, consisting primarily of residential growth. Recent development has been mostly infill. There has been a focus on affordable housing and a push for more secondary mother-in-law units. Future growth in the City will be managed as identified in the City’s 2018 general plan. City actions, such as those relating to land use, annexations, zoning, subdivision and design review, redevelopment, and capital improvements, must be consistent with the plan.

Complete the table titled “Recent and Expected Future Development Trends.” Note:

- The portion of the table requesting the number of permits by year is specifically looking for development permits for **new** construction. If your jurisdiction does not have the ability to differentiate between permit types, list the total number of permits and indicate “N/A” (not applicable) for the permit sub-types.
- If your jurisdiction does not have the ability to track permits by hazard area, delete the bullet list of hazard areas and insert a qualitative description of where development has occurred.

STATUS OF PREVIOUS PLAN ACTIONS

Note that this section only applies to jurisdictions that are conducting updates to previously approved hazard mitigation plans. If your jurisdiction has not previously participated in an approved plan, enter an “X” in the box at the beginning of this section and do not complete the section. We will remove this section from your final annex.

Also note that this section is further back in the annex than the rest of the Phase 1 content. Some Phase 2 sections are included before it.

All action items identified in prior mitigation plans must be reconciled in this update. Action items must all be marked as **ONE** of the following; check the appropriate box (place an X) and provide information as follows:

- **Completed**—If an action has been completed since the prior plan was prepared, check the “Completed” box and **provide a date of completion in the comment section**. If an action has been initiated and is an ongoing program (e.g. annual outreach event), you may mark it as completed and **note that it is ongoing in the comments**. If an action addresses an ongoing program you would like to continue to include in your action plan, see the “Carried Over to Plan Update” bullet below.
- **Removed**—If action items are to be removed because they are no longer feasible, a reason must be given. Lack of funding does not mean that it is no longer feasible, unless the sole source of funding for an action is no longer available. **Place a comment in the comment section explaining why the action is no longer feasible or barriers that prevented the action from being implemented (e.g., “Action no longer considered feasible due to lack of political support.”)**. If the wording and/or intent of a previously identified action is unclear, this can be a reason for removal. A change in community priorities may also be a reason for removal and should be discussed in the comments.
- **Carried Over to Plan Update**—If an action is in progress, is ongoing, or has not been initiated and you would like to carry it over to the plan update, check the “Check if Yes” column under “Carried Over to Plan Update.” Selecting this option indicates that the action will be included in the mitigation action

plan for this update. If you are carrying over an action to the update, **include a comment describing any action that has been taken or why the action was not taken** (specifically, any barriers or obstacles that prevented the action from moving forward or slowed progress). Leave the last column, “Action # in Update,” blank at this point. This will be filled in after completing the updated action plan in Phase 3.

Ensure that you have provided **a status and a comment for each action.**

HAZARD MITIGATION ACTION PLAN INPUT

When preparing the hazard mitigation action plan in Phase 3, all action items from your jurisdiction’s previous hazard mitigation plan that are marked as “Carried Over to Plan Update” will need to be included in the action plan.

THIS COMPLETES PHASE 1

PHASE 2 INSTRUCTIONS

CAPABILITY ASSESSMENT

Note that it is unlikely that one person will be able to complete all sections of the capability assessment alone. The primary preparer will likely need to reach out to other departments within the local government for information. It may be beneficial to provide these individuals with background information about this planning process, as input from them will be needed again during Phase 3 of the annex development.

Planning and Regulatory Capability

In the table titled “Planning and Regulatory Capability,” indicate “Yes” or “No” for each listed code, ordinance, requirement or planning document in each of the following columns:

- **Local Authority**—Enter “Yes” if your jurisdiction has prepared or adopted the identified item; otherwise, enter “No.” If yes, then enter the code, ordinance number, or plan name and its date of adoption in the comments column. ***Note: If you enter yes, be sure to provide a comment with the appropriate code, ordinance or plan and date of adoption.***
- **Other Jurisdiction Authority**—Enter “Yes” if another agency (e.g., a state agency or special purpose district) enforces or administers the identified item in a way that may impact your jurisdiction or if any state or federal regulations or laws would prohibit local implementation of the identified item; otherwise, enter “No.” ***Note: If you enter yes, be sure to provide a comment indicating the other agency and its relevant authority.***
- **State Mandated**—Enter “Yes” if state laws or other requirements enable or require the listed item to be implemented at the local level; otherwise, enter “No.” ***Note: If you enter yes, be sure to provide a comment describing the relevant state mandate.***
- **Integration Opportunity**—Enter “Yes” if there are obvious ways that the code, ordinance or plan can be coordinated with the hazard mitigation plan. Consider the following:
 - If you answered “Yes” in the Local Authority column for this item, then enter “Yes” for integration opportunity if any of the following are true:
 - The item already addresses hazards and their impacts and should be updated to reflect new information about risk from this hazard mitigation plan
 - The item does not address hazards and their impacts but is due for an update in the next 5 years and could be updated in a way that does address hazards and impacts
 - The item identifies projects for implementation and these could be reviewed to determine if they can be modified to help address hazard mitigation goals
 - The item identifies projects for implementation and some of these should be considered for inclusion in the hazard mitigation action plan for your jurisdiction
 - If you answered “No” in the Local Authority column for this item, then enter “Yes” for integration opportunity if your jurisdiction will develop the item over the next 5 years

Note: Each capability with a “Yes” answer to Integration Opportunity will be discussed in more detail later in the annex. You may wish to keep notes when assessing the Integration Opportunity or review the “Integration with Other Planning Initiatives” section below.
- **Comments**—Enter the code number and adoption date for any local code indicated as being in place; provide other comments as appropriate to describe capabilities for each entry. **DO NOT OVERLOOK THIS STEP**

For the categories “General Plan” and “Capital Improvement Plan,” answer the specific questions shown, in addition to completing the four columns indicating level of capability.

Development and Permit Capability

Complete the table titled “Development and Permitting Capabilities.”

Fiscal Capability

Complete the table titled “Fiscal Capability” by indicating whether each of the listed financial resources is accessible to your jurisdiction. Enter “Yes” if the resource is fully accessible to your jurisdiction. Enter “No” if there are limitations or prerequisites that may hinder your use of this resource.

Administrative and Technical Capability

Complete the table titled “Administrative and Technical Capability” by indicating whether your jurisdiction has access to each of the listed personnel resources. Enter “Yes” or “No” in the column labeled “Available?”. If yes, then enter the department and position title. If you have contract support with these capabilities, you can still answer “Yes.” Indicate in the department row that this resource is provided through contract.

Education and Outreach Capability

Complete the table titled “Education and Outreach.”

HAZARD MITIGATION ACTION PLAN INPUT

When preparing the hazard mitigation action plan in Phase 3, review all the above capability assessment tables and consider including actions to provide a capability that your jurisdiction does not currently have, update a capability that your jurisdiction does have, or implement an action that is recommended in an existing plan or program.

National Flood Insurance Program Compliance

Complete the table titled “National Flood Insurance Program Compliance.”

Community Classifications

Complete the table titled “Community Classifications” to indicate your jurisdiction’s participation in various national programs related to natural hazard mitigation. For each program enter “Yes” or “No” in the second column to indicate whether your jurisdiction participates. If yes, then enter the classification that your jurisdiction has earned under the program in the third column and the date on which that classification was issued in the fourth column; enter “N/A” in the third and fourth columns if your jurisdiction is not participating. If you do not know your current classification, information is available at the following websites:

- **FIPS Code**— <https://www.census.gov/geographies/reference-files/2018/demo/popest/2018-fips.html>

- **DUNS #**— <https://www.dnb.com/duns-number.html>
- **Community Rating System**— <https://www.fema.gov/floodplain-management/community-rating-system>
- **Building Code Effectiveness Grading Schedule**— <https://www.isomitigation.com/bcegs/iso-s-building-code-effectiveness-grading-schedule-bcegs.html>
- **Public Protection Classification**— <https://www.isomitigation.com/ppc/>
- **Storm Ready**— <https://www.weather.gov/stormready/communities>
- **Firewise**— <http://www.firewise.org/usa-recognition-program/map-of-active-participants.aspx>
- **Tsunami Ready**— <https://www.weather.gov/tsunamiready/communities>

Adaptive Capacity for Climate Change

Consider climate change impact concerns such as the following:

- Reduced snowpack
- Increased wildfires
- Sea level rise
- Inland flooding
- Threats to sensitive species
- Loss in agricultural productivity
- Public health and safety.

With those impacts in mind, complete the table titled “Adaptive Capacity for Climate Change” by indicating your jurisdiction’s capacity for each listed criterion as follows:

- **High**—The capacity exists and is in use.
- **Medium**—The capacity may exist, but is not used or could use some improvement.
- **Low**—The capacity does not exist or could use substantial improvement.
- **Unsure**—Not enough information is known to assign a rating.

This is a subjective assessment, but providing a few words of explanation is useful. It is highly recommended that you complete this table with an internal planning team after reviewing the results of the other capability assessment tables.

HAZARD MITIGATION ACTION PLAN INPUT

When preparing the hazard mitigation action plan in Phase 3, review all the adaptive capacity criteria and consider including actions to improve the rating for those rated medium or low, to make use of the capacity for those rated high, or to acquire additional information for those rated unsure.

INTEGRATION REVIEW

For hazard mitigation planning, “integration” means that hazard mitigation information is used in other relevant planning mechanisms, such as general planning and capital facilities planning, and that relevant information from those sources is used in hazard mitigation. FEMA recommends integration as follows:

- Integrate hazard mitigation plan goals with community objectives (e.g. incorporate the goals for risk reduction and safety into the policies of other plans).
- Use the risk assessment to inform plans and policies (e.g. incorporate risk assessment findings into land use plans, site plan review, emergency operations plans).
- Implement mitigation actions through existing mechanisms (e.g. include mitigation projects in the capital improvement plan).
- Think about mitigation before and after a disaster (e.g. build recovery planning on existing mitigation plans and goals).

After reviewing the plans, programs and ordinances identified in the capability assessment tables, identify all plans and programs that have already been integrated with the hazard mitigation plan, and those that offer opportunities for future integration. The simplest way to do this is to review the Planning and Regulatory Capabilities table to see which items were marked as “Yes” under the Integration Opportunity column.

Existing Integration

In the highlighted bullet list, list items for which you entered “Yes” under the Integration Opportunity column of the “Planning and Regulatory Capability” table because the plan or ordinance already addresses potential impacts or includes specific projects that should be included as action items in the mitigation action plan. Consider listing items marked as Completed in the “Status of Previous Plan Actions” table if they were indicated as being ongoing actions. Provide a brief description of how the plan or ordinance is integrated. Examples are as follows:

- **Capital Improvement Plan**—The capital improvement plan includes projects that can help mitigate potential hazards. The City will act to ensure consistency between the hazard mitigation plan and the current and future capital improvement plans. The hazard mitigation plan may identify new possible funding sources for capital improvement projects and may result in modifications to proposed projects based on results of the risk assessment.
- **Building Code and Fire Code**—The City’s adoption of the 2016 California building and fire codes incorporated local modifications to account for the climatic, topographic and geographic conditions that exist in the City.
- **General Plan**—The general plan includes a Safety Element to protect the community from unreasonable risk by establishing policies and actions to avoid or minimize the following hazards:
 - Geologic and seismic hazards
 - Fire hazards
 - Hazardous materials
 - Flood control
 - Impacts from climate change.

- **Climate Action Plan**—The City’s Climate Action Plan includes projects for reducing greenhouse gas emissions and adapting to likely impacts of climate change. These projects were reviewed to identify cross-planning initiatives that serve both adaptation and mitigation objectives.

HAZARD MITIGATION ACTION PLAN INPUT

When preparing the hazard mitigation action plan in Phase 3, any plans that fall into the “Existing Integration” category should be reviewed and elements from them should be included in the action plan as appropriate.

Opportunities for Future Integration

List any remaining items that say “Yes” in the Integration Opportunity column in the Planning and Regulatory Capabilities table and explain the process by which integration could occur. Examples follow:

- **Zoning Code**—The City is conducting a comprehensive update to its zoning code. Additional mitigation and abatement measures will be considered for incorporation into the code.
- **Capital Improvement Projects**—Capital improvement project proposals may take into consideration hazard mitigation potential as a means of evaluating project prioritization.
- **Post-Disaster Recovery Plan**—The City does not have a recovery plan and intends to develop one as a mitigation planning action during the next five years. The plan will build on the goals and objectives identified in the hazard mitigation plan.

After you have accounted for all items marked as “Yes” under the Integration Opportunity column, consider other programs you may have in place in your jurisdiction that include routine consideration and management of hazard risk. Examples of such programs may include: tree pruning programs, right-of-way mowing programs, erosion control or stream maintenance programs, etc. Add any such programs to the integration discussion and provide a brief description of how these programs manage (or could be adapted to manage) risk from hazards.

HAZARD MITIGATION ACTION PLAN INPUT

When preparing the hazard mitigation action plan in Phase 3, an action to integrate any identified “Opportunities for Future Integration” should be considered for inclusion in the action plan.

INFORMATION SOURCES USED FOR THIS ANNEX

Note that this section will ultimately describe all information sources used to develop this annex, but that only the sources used for Phases 1 and 2 will be listed at this point. Additional sources will be added with the preparation of the Phase 3 annex.

This section should describe what resources you used to complete the annex and how you used them. Several items are started for you, but be sure to update and enhance any descriptions. Providing this information is a requirement to pass the state and FEMA review process.

THIS COMPLETES PHASE 2

PHASE 3 INSTRUCTIONS

RISK ASSESSMENT

Jurisdiction-Specific Natural Hazard Event History

In the table titled “Past Natural Hazard Events,” list in chronological order (most recent first) any natural hazard event that has caused damage to your jurisdiction. If it was a federally declared disaster, include the FEMA Disaster #, otherwise enter N/A in that column. Include the date of the event and the estimated dollar amount of damage it caused. You are welcome to include any events, but special attention should be made to include major storms and federally declared disasters. Refer to the table below that lists hazard events in the planning area.

Table 1. Presidential Disaster Declarations for the Planning Area.

[illegible]

We recommend including most large-scale disasters, unless you know that there were no impacts on your jurisdiction. Specifically, we recommend that you include these events if you have damage estimate information or can provide a brief description of impacts that occurred within your community. In addition to these events, refer to the NOAA NCDC storm events database included in the toolkit. We recommend conducting a search for the name of your jurisdiction in order to identify events with known impacts. Other potential sources of damage information include the following

- Preliminary damage estimates your jurisdiction filed with the county or state
- Insurance claims data
- Newspaper archives
- Emergency management documents (general plan safety element, emergency response plan, etc.)
- Resident input.

If you do not have estimates for costs of damage caused, list “Not Available” in the “Damage Assessment” column or list a brief description of the damage rather than a dollar value (e.g., Main Street closed as a result of flooding, downed trees and residential damage). Note that tracking such damage is a valid and useful mitigation action if your jurisdiction does not currently track such information.

Hazard Risk Ranking

Risk ranking identifies which hazards pose the greatest risk to the community, based on how likely it is for each hazard to occur (this is called the community’s exposure) and how great an impact each hazard will have if it does occur (this is called the community’s vulnerability). Every jurisdiction has differing degrees of risk exposure and vulnerability and therefore needs to rank risk for its own area. The risk ranking for each jurisdiction has been calculated in the “Loss Matrix” spreadsheet included in the annex preparation toolkit. The ranking is on the basis of risk ranking scores for each hazard that were calculated based on the hazard’s probability of occurrence and its potential impact on people, property and the economy.

The results for your jurisdiction have already been entered into the “Hazard Risk Ranking” table in your Phase 3 annex template. The hazard with the highest risk rating is listed at the top of table and was given a rank of 1; the hazard with the second highest rating is listed second with a rank of 2; and so on. Two hazards with equal risk ranking scores were given the same rank. Hazards were assigned to “High,” Medium,” or “Low” risk categories based on the risk ranking score. If you wish to review the calculations in detail, the appendix at the end of these instructions describes the calculation methodology that the spreadsheet uses.

Review the hazard risk ranking information that is included in your annex. If these results differ from what you know based on substantiated data and documentation, you may alter the ranking and risk categories based on this knowledge. If you do so, indicate the reason for the change in your template. For example:

“Drought was ranked as low; however, the jurisdiction’s economy is heavily reliant on water-using industries, such as agriculture or manufacturing, so this hazard should be ranked as medium.”

HAZARD MITIGATION ACTION PLAN INPUT

When preparing the hazard mitigation action plan in Phase 3, you will need to have at least one mitigation action for each hazard ranked as “high” or “medium.”

Jurisdiction-Specific Vulnerabilities

Repetitive Loss Properties

A repetitive loss property is any property for which FEMA has paid two or more flood insurance claims in excess of \$1,000 in any rolling 10-year period since 1978. In the space provided, the following information has been included in your annex based on data provided by FEMA:

- The number of any FEMA-identified repetitive-loss properties in your jurisdiction.
- The number of any FEMA-identified severe-repetitive-loss properties in your jurisdiction.
- The number (if any) of repetitive-loss or severe-repetitive-loss properties in your jurisdiction that have been mitigated. Mitigated for this exercise means that flood protection has been provided to the structure.

HAZARD MITIGATION ACTION PLAN INPUT

When preparing the hazard mitigation action plan in Phase 3, if your jurisdiction has any repetitive loss properties, you should strongly consider including a mitigation action that addresses mitigating these properties.

Other Noted Vulnerabilities

Review the results of the risk assessment included in the toolkit, your jurisdiction's natural events history, and any relevant public comments/input, then develop a few sentences that discuss specific hazard vulnerabilities. You do not need to develop a sentence for every hazard, but identify a few issues you would like to highlight. Also list any known hazard vulnerabilities in your jurisdiction that may not be apparent from the risk assessment and other information provided.

Spending some time thinking about the results of the risk assessment and other noted vulnerabilities will be a big help in the development of your hazard mitigation action plan. The following are examples of vulnerabilities you could identify through this exercise:

- About 45 percent of the population lives in the 0.2 percent annual chance flood hazard area, where flood insurance is generally not required.
- A magnitude 7.5 earthquake on the Smithburg Fault is estimated to produce nearly 1 million tons of structure debris.
- Over the past 10 years, the jurisdiction has experienced more than \$6 million in damage from severe storm events.
- More than 50 buildings are located in areas that would be permanently inundated with 12 inches of sea level rise.
- The results of the public survey indicated that 40 percent of Smithburg residents would not be able to be self-sufficient for 5 days following a major event.
- An urban drainage issue at a specific location results in localized flooding every time it rains.
- One area of the community frequently loses power due to a lack of tree maintenance.

- A critical facility, such as a police station, is not equipped with a generator.
- A neighborhood has the potential to have ingress and egress cut off as the result of a flood or earthquake (e.g. a bridge is the only access).
- Substantial number of buildings in one area of the community are unreinforced masonry or soft-story construction.
- An area along the river is eroding and threatening public and/or private property.
- A large visitor population that may not be aware of tsunami risk.

HAZARD MITIGATION ACTION PLAN INPUT

When preparing the hazard mitigation action plan in Phase 3, consider including actions to address the jurisdiction-specific vulnerabilities listed in this section.

HAZARD MITIGATION ACTION PLAN

Hazard Mitigation Action Plan Matrix

The hazard mitigation action plan is the heart of your jurisdictional annex. This is where you will identify the actions your jurisdiction would like to pursue with this plan.

Select Recommended Actions

All of the work that you have done thus far should provide you with ideas for actions. Throughout these instructions, green boxes labeled “Hazard Mitigation Action Plan Input” have indicated information that needs to be considered in the selection of mitigation actions. The following sections describe how to consider these and other information sources to develop a list of potential actions.

Be sure to consider the following factors in your selection of actions:

- Select actions that are consistent with the overall purpose, goals, and objectives of the hazard mitigation plan.
- Identify actions where benefits exceed costs.
- Include any action that your jurisdiction has committed to pursuing, regardless of grant eligibility.
- Know what is and is not grant-eligible under various federal grant programs (see the fact sheet on FEMA hazard mitigation grant programs in the annex preparation toolkit and the table below).

Table 2. Federal Hazard Mitigation Grant Program Eligibility by Action Type

Eligible Activities	Hazard Mitigation Grant Program	BRIC	Flood Mitigation Assistance
Mitigation Projects			
Property Acquisition and Structure Demolition	√	√	√
Property Acquisition and Structure Relocation	√	√	√
Structure Elevation	√	√	√
Mitigation Reconstruction	√	√	√
Dry Floodproofing of Historic Residential Structures	√	√	√
Dry Floodproofing of Non-residential Structures	√	√	√
Generators	√	√	
Localized Flood Risk Reduction Projects	√	√	√
Non-Localized Flood Risk Reduction Projects	√	√	
Structural Retrofitting of Existing Buildings	√	√	√
Non-structural Retrofitting of Existing Buildings and Facilities	√	√	√
Safe Room Construction	√	√	
Wind Retrofit for One- and Two-Family Residences	√	√	
Infrastructure Retrofit	√	√	√
Soil Stabilization	√	√	√
Wildland fire Mitigation	√	√	
Post-Disaster Code Enforcement	√		
Advance Assistance	√		
5 Percent Initiative Projects*	√		
Aquifer and Storage Recovery**	√	√	√
Flood Diversion and Storage**	√	√	√
Floodplain and Stream Restoration**	√	√	√
Green Infrastructure**	√	√	√
Miscellaneous/Other**	√	√	√
Hazard Mitigation Planning	√	√	√
Technical Assistance			√
Management Costs	√	√	√

* FEMA allows increasing the 5% initiative amount under the Hazard Mitigation Grant Program up to 10% for a presidential major disaster declaration. The additional 5% initiative funding can be used for activities that promote disaster-resistant codes for all hazards. As a condition of the award, either a disaster-resistant building code must be adopted or an improved Building Code Effectiveness Grading Schedule is required.

** Indicates that any proposed action will be evaluated on its own merit against program requirements. Eligible projects will be approved provided funding is available.

Material Previously Developed for This Annex**Capability Assessment Section—Planning and Regulatory Capability Table, Fiscal Capability Table, Administrative and Technical Capability Table, Education and Outreach Table, and Community Classification Table**

Review these tables and consider the following:

- For any capability that you do not currently have, consider whether your jurisdiction should have this capability. If so, consider including an action to develop/acquire the capability.
- For any capability that you do currently have, consider whether this capability can be leveraged to increase or improve hazard mitigation in the jurisdiction.
- If any capabilities listed in the Planning and Regulatory Capabilities table have not been updated in more than 10 years, consider an action to review and update the capability and, as appropriate, incorporate hazard mitigation principles or information obtained in the risk assessment.
- Consider including actions that are identified in other plans and programs (capital improvement plans, strategic plans, etc.) as actions in this plan.

Capability Assessment Section—National Flood Insurance Program Compliance table

Review the table and consider the following:

- If you have no certified floodplain managers and you have flood risk, consider adding an action to provide key staff members with training to obtain certification.
- If your flood damage prevention was last updated in or before 2004, you should identify an action to update your ordinance to ensure it is compliant with current NFIP requirements.
- If you have any outstanding NFIP compliance issues, be sure to add an action to address them.
- If flood hazard maps do not adequately address the flood risk within your jurisdiction, consider actions to request new mapping or conduct studies.
- If you wish to begin to participate in CRS or you already to participate and would like to improve your classification, consider this as an action.
- If the number of flood insurance policies in your jurisdiction is low relative to the number of structures in the floodplain, consider an action that will promote flood insurance in your jurisdiction.

Capability Assessment Section— Adaptive Capacity for Climate Change Table

Consider your responses to this section:

- For criteria that you listed as medium or low, think of ways you could improve this rating (see adaptive capacity portion of the mitigation best practices catalog).
- For criteria you listed as high, think about how you can leverage this capacity to improve or enhance mitigation or continue to improve this capacity.
- For criteria that you were unable to provide responses for, consider ways you could improve your understanding of this capacity (see mitigation best practices and adaptive capacity catalog).

Integration Review Section

Review the items you identified in this section and consider an action that specifically says what the plan, code, ordinance etc. is and how it will be integrated. For items that address land use, include them in the prepopulated action in your template that reads as follows:

“Integrate the hazard mitigation plan into other plans, ordinances and programs that dictate land use decisions in the community, including _____.”

Risk Ranking Section

You must identify at least one mitigation action that is clearly defined and actionable (i.e. not a preparedness or response action) for every hazard that is categorized in the risk ranking as “high” or “medium” risk.

Jurisdiction-Specific Vulnerabilities Section

Review the vulnerability issues that you identified in this section and consider actions to address them (see mitigation best practices catalog). Two examples are shown in the table below.

Table 3. Example Actions to Address Jurisdiction-Specific Vulnerabilities

Noted Vulnerability	Example Mitigation Action
About 45 percent of the population lives in the 0.2 percent annual chance flood hazard area where flood insurance is generally not required.	Implement an annual public information initiative that targets residents in the 0.2 percent annual chance flood hazard area. Provide information on the availability of relatively low cost flood insurance policies.
An urban drainage issue results in localized flooding every time it rains.	Replace undersized culverts that are contributing to localized flooding. Priority areas include: • The corner of Main Street and 1st Street • Old Oak subdivision.

Status of Previous Plan Actions Section

If your jurisdiction participated in a previous hazard mitigation plan, be sure to include any actions that were identified as “carry over” actions.

Other Sources

Mitigation Best Practices Catalog

A catalog that includes best practices identified by FEMA and other agencies, as well as recommendations from the steering committee and other stakeholders, is included in your toolkit. Review the catalog and identify actions your jurisdiction should consider for its action plan.

Public Input

Review input received during the process, specifically the public survey results included in your toolkit.

Common Actions for All Partners

The following six actions have been prepopulated in your annex template; **these six actions should be included in every annex and should not be removed**:

- Where appropriate, support retro-fitting, purchase or relocation of structures located in high hazard areas, prioritizing those structures that have experienced repetitive losses and/or are located in high or medium ranked hazard.
- Integrate the hazard mitigation plan into other plans, ordinances and programs that dictate land use decisions within the community.
- Actively participate in the plan maintenance protocols outlined in Volume 1 of this hazard mitigation plan.
- Continue to maintain good standing and compliance under the NFIP through implementation of floodplain management programs that, at a minimum, meet the NFIP requirements:
 - Enforce the flood damage prevention ordinance.
 - Participate in floodplain identification and mapping updates.
 - Provide public assistance/information on floodplain requirements and impacts.
- Identify and pursue strategies to increase adaptive capacity to climate change.
- Purchase generators for critical facilities and infrastructure that lack adequate back-up power.

In addition, the core planning team recommends that every planning partner strongly consider the following actions:

- Develop and implement a program to capture perishable data after significant events (e.g. high water marks, preliminary damage estimates, damage photos) to support future mitigation efforts including the implementation and maintenance of the hazard mitigation plan.
- Support the County-wide initiatives identified in Volume I of the hazard mitigation plan.
- Develop a post-disaster recovery plan and a debris management plan.
- Develop and/or update plans that support or enhance continuity of operations following disasters.

The specifics of all these common actions should be adjusted as needed for the particulars of each community.

Complete the Table

Complete the table titled “Hazard Mitigation Action Plan Matrix” for all the actions you have identified and would like to include in the plan:

- Enter the action number (see box on next page) and description. **If the action is carried over from your previous hazard mitigation plan, return to the “Status of Previous Plan Actions” table you completed in Phase 1 and enter the new action number in the column labeled “Action # in Update.”**
- Indicate whether the action mitigates hazards for new and/or existing assets.
- Identify the specific hazards the action will mitigate (note: you must list each hazard by name; simply indicating “all hazards” is not deemed acceptable).
- Identify by number the mitigation plan objectives that the action addresses (see toolkit).
- Indicate who will be the lead in administering the action. This will most likely be a department within your jurisdiction (e.g. planning or public works). If you wish to indicate more than one department as responsible for the action, clearly identify one as the lead agency and list the others in the “supporting agency” column.

- Enter an estimated cost in dollars if known; otherwise, enter “High,” “Medium,” or “Low,” as determined for the prioritization process described in the following section.
- Identify funding sources for the action. If it is a grant, include the grant-providing agency as well as funding sources for any required cost share. Refer to your fiscal capability assessment to identify possible sources of funding and refer to the table on page 15 of these instructions for project eligibility for FEMA’s hazard mitigation assistance grant programs.
- Indicate the time line as “short-term” (1 to 5 years) or “long-term” (5 years or greater) or “ongoing” (a continual program)

Action Numbering

Actions are to be numbered using the three-letter code for your jurisdiction shown below, followed by a hyphen and the action's sequential number:

- Ventura, County of—VCO-1, VCO-2...
- Camarillo, City of—CAM-1, CAM-2...
- Fillmore, City of—FIL-1, FIL-2...
- Moorpark, City of —MPK-1, MPK-2...
- Ojai, City of —OJC-1, OJC-2...
- Oxnard, City of —OXN-1, OXN-2...
- Port Hueneme, City of —PTH-1, PTH-2...
- Santa Paula, City of —STP-1, STP-2...
- Simi Valley, City of —SIM-1, SIM-2...
- Thousand Oaks, City of —THO-1, THO-2...
- Ventura, City of —VEN-1, VEN-2...

Mitigation Action Priority

Complete the information in the table titled “Mitigation Action Priority” as follows:

- **Action #**—Indicate the action number from the Hazard Mitigation Action Plan Matrix table.
- **# of Objectives Met**—Enter the number of objectives the action will meet.
- **Benefits**—Enter “High,” “Medium” or “Low” as follows:
 - High—Action will provide an immediate reduction of risk exposure for life and property.
 - Medium—Action will have a long-term impact on the reduction of risk exposure for life and property, or action will provide an immediate reduction in the risk exposure for property.
 - Low—Long-term benefits of the action are difficult to quantify in the short term.
- **Cost**—Enter “High,” “Medium” or “Low” as follows:
 - High—Existing funding will not cover the cost of the action; implementation would require new revenue through an alternative source (for example, bonds, grants, and fee increases).
 - Medium—The action could be implemented with existing funding but would require a re-apportionment of the budget or a budget amendment, or the cost of the action would have to be spread over multiple years.
 - Low—The action could be funded under the existing budget. The action is part of or can be part of an ongoing existing program.
- **Do Benefits Exceed the Cost?**—Enter “Yes” or “No.” This is a qualitative assessment. Enter “Yes” if the benefit rating (high, medium or low) is the same as or higher than the cost rating (high benefit/high cost; high benefit/medium cost; medium benefit/low cost; etc.). Enter “No” if the benefit rating is lower than the cost rating (medium benefit/high cost, low benefit/medium cost; etc.)
- **Is the Action Grant-Eligible?**—Enter “Yes” or “No.” Refer to the fact sheet on FEMA hazard mitigation grant programs in the annex preparation toolkit and the table on page 15 of these instructions.

- **Can Action Be Funded Under Existing Program Budgets?**—Enter “Yes” or “No.” In other words, is this action currently budgeted for, or would it require a new budget authorization or funding from another source such as grants?
- **Implementation Priority**— Enter “High,” “Medium” or “Low” as follows:
 - High Priority—An action that meets multiple objectives, has benefits that exceed costs, and has a secured source of funding. Action can be completed in the short term (1 to 5 years).
 - Medium Priority—An action that meets multiple objectives, has benefits that exceed costs, and is eligible for funding though no funding has yet been secured for it. Action can be completed in the short term (1 to 5 years), once funding is secured. Medium-priority actions become high-priority actions once funding is secured.
 - Low Priority—An action that will mitigate the risk of a hazard, has benefits that do not exceed the costs or are difficult to quantify, has no secured source of funding, and is not eligible for any known grant funding. Action can be completed in the long term (1 to 10 years). Low-priority actions may be eligible for grant funding from programs that have not yet been identified.
- **Grant Pursuit Priority**— Enter “High,” “Medium” or “Low” as follows:
 - High Priority—An action that meets identified grant eligibility requirements, has high benefits, and is listed as high or medium implementation priority; local funding options are unavailable or available local funds could be used instead for actions that are not eligible for grant funding.
 - Medium Priority—An action that meets identified grant eligibility requirements, has medium or low benefits, and is listed as medium or low implementation priority; local funding options are unavailable.
 - Low Priority—An action that has not been identified as meeting any grant eligibility requirements.

Actions identified as high-grant-pursuit priority actions should be closely reviewed for consideration when grant funding opportunities arise.

Note: If a jurisdiction wishes to identify an action as high priority that is outside of the prioritization scheme for high priorities, a note indicating so should be inserted and a rationale should be provided.

Analysis of Mitigation Actions

In the table titled “Analysis of Mitigation Actions,” for each combination of hazard type and mitigation type, enter the numbers of all recommended actions that address that hazard type and can be categorized as that mitigation type. The mitigation types are as follows:

- **Prevention**—Government, administrative or regulatory actions that influence the way land and buildings are developed to reduce hazard losses. Includes planning and zoning, floodplain laws, capital improvement programs, open space preservation, and stormwater management regulations.
- **Property Protection**—Modification of buildings or structures to protect them from a hazard or removal of structures from a hazard area. Includes acquisition, elevation, relocation, structural retrofit, storm shutters, and shatter-resistant glass.
- **Public Education & Awareness**—Actions to inform residents and elected officials about hazards and ways to mitigate them. Includes outreach projects, real estate disclosure, hazard information centers, and school-age and adult education.

- **Natural Resource Protection**—Actions that minimize hazard loss and preserve or restore the functions of natural systems. Includes sediment and erosion control, stream corridor restoration, watershed management, forest and vegetation management, wetland restoration and preservation, and green infrastructure.
- **Emergency Services**—Actions that protect people and property during and immediately after a hazard event. Includes warning systems, emergency response services, and the protection of essential facilities.
- **Structural Projects**—Actions that involve the construction of structures to reduce the impact of a hazard. Includes dams, setback levees, floodwalls, retaining walls, and safe rooms.
- **Climate Resilience**—Actions that incorporate methods to mitigate and/or adapt to the impacts of climate change. Includes aquifer storage and recovery activities, incorporating future conditions projections in project design or planning, or actions that specifically address jurisdiction-specific climate change risks, such as sea-level rise or urban heat island effect.
- **Community Capacity Building**—Actions that increase or enhance local capabilities to adjust to potential damage, to take advantage of opportunities, or to respond to consequences. Includes staff training, memorandums of understanding, development of plans and studies, and monitoring programs.

This exercise demonstrates that the jurisdiction has selected a comprehensive range of actions. This table must show at least one action to address each “high” and “medium” ranked hazard. Planning partners should aim to identify at least one action for each mitigation type, but this is not required.

An example of a completed “Analysis of Mitigation Actions” table is provided below. Note that an action can be more than one mitigation type.

Sample Completed Table – Analysis of Mitigation Actions

Hazard Type	Action Addressing Hazard, by Mitigation Type							
	Prevention	Property Protection	Public Education & Awareness	Natural Resource Protection	Emergency Services	Structural Projects	Climate Resilience	Community Capacity Building
High-Risk Hazards								
Dam Failure	EX-2, 3, 4, 5, 6	EX-1, 6	EX-4, 6		EX-8, 11			EX-3, 4, 8, 9, 10
Drought	EX-2	EX-1	EX-4					EX-3, 4, 8, 9, 10
Medium-Risk Hazards								
Earthquake	EX-2, 3, 4, 5, 7	EX-1, 7	EX-4		EX-8, 11			EX-3, 4, 8, 9
Flooding	EX-2, 3, 4, 5, 6, 7	EX-1, 6, 7	EX-4, 6	EX-9	EX-8, 11	EX-6		EX-3, 4, 8, 9, 10
Landslide	EX-2, 3, 4, 5, 7	EX-1, 7	EX-4		EX-8, 11			EX-3, 4, 8, 9, 10
Low-Risk Hazards								
Severe Weather	EX-2, 3, 4, 5, 7	EX-1, 7, 9	EX-4		EX-8, 9, 11		EX-8, 7	EX-3, 4, 8, 9, 10
Wildfire	EX-2, 3, 4, 5, 7	EX-1, 7, 9	EX-4, 9	EX-9	EX-8, 11			EX-3, 4, 8, 9, 10

PUBLIC OUTREACH

FEMA requirements for public outreach will be met by the County’s engagement efforts and are included in the main part of the plan. These may include public meetings, a StoryMap, surveys, etc. If individual jurisdictions want to have a more robust outreach for their local community, the public outreach table in each annex may be used to memorialize those local efforts.

This table should record local public outreach efforts made by your jurisdiction to inform the community of the plan update process. Examples may include local surveys on hazard awareness/preparedness, social media blasts, press releases, and outreach to local groups (CERT, senior citizen organizations, etc.) **This section is optional.**

INFORMATION SOURCES USED FOR THIS ANNEX

This section should describe what resources you used to complete the annex and how you used them. The sources used for Phases 1 and 2 should have been entered previously. List any additional sources used for the preparation of the Phase 3 annex. Review to ensure that all materials used in all three phases are identified. Providing this information is a requirement to pass the state and FEMA review process.

FUTURE NEEDS TO BETTER UNDERSTAND RISK/VULNERABILITY

In this section, identify any future studies, analyses, reports, or surveys your jurisdiction needs to better understand its vulnerability to identified or currently unidentified risks. These could be needs based on federal or state agency mandates. **This section is optional.**

ADDITIONAL COMMENTS

Use this section to add any additional information pertinent to hazard mitigation and your jurisdiction not covered in this template. **This section is optional.**

THIS COMPLETES PHASE 3

APPENDIX— Risk Ranking Calculation Methodology

The instructions below describe the methodology for how risk rankings were derived in the “Loss Matrix” spreadsheet provided with the annex preparation toolkit. The risk-ranking for each hazard assessed its probability of occurrence and its potential impact on people, property, and the economy. Refer to the Loss Matrix spreadsheet in order to follow along.

Probability of Occurrence

A probability factor is assigned based on how often a hazard is likely to occur. The probability of occurrence of a hazard event is generally based on past hazard events in an area, although weight can be given to expected future probability of occurrence based on established return intervals and changing climate conditions. For example, if your jurisdiction has experienced two damaging floods in the last 25 years, the probability of occurrence is high for flooding and scores a 3 under this category. If your jurisdiction has experienced no damage from landslides in the last 100 years, your probability of occurrence for landslide is low, and scores a 1 under this category. Each hazard was assigned a probability factor as follows:

- High—Hazard event is likely to occur within 25 years (Probability Factor = 3)
- Medium—Hazard event is likely to occur within 100 years (Probability Factor = 2)
- Low—Hazard event is not likely to occur within 100 years (Probability Factor = 1)
- None—There is no exposure to the hazard and no probability of occurrence (Probability Factor = 0)

Potential Impacts of Each Hazard

The impact of each hazard is divided into three categories: impacts on people, impacts on property, and impacts on the economy. These categories are also assigned weighted values. Impact on people was assigned a weighting factor of 3, impact on property was assigned a weighting factor of 2 and impact on the economy was assigned a weighting factor of 1.

Impact factors for each category (people, property, economy) are described below:

- **People**—Values are assigned based on the percentage of the total *population exposed* to the hazard event. The degree of impact on individuals will vary and is not measurable, so the calculation assumes for simplicity and consistency that all people exposed to a hazard because they live in a hazard zone will be equally impacted when a hazard event occurs. Impact factors were assigned as follows:
 - High—25 percent or more of the population is exposed to a hazard (Impact Factor = 3)
 - Medium—10 percent to 24 percent of the population is exposed to a hazard (Impact Factor = 2)
 - Low—9 percent or less of the population is exposed to the hazard (Impact Factor = 1)
 - No impact—None of the population is exposed to a hazard (Impact Factor = 0)
- **Property**—Values are assigned based on the percentage of the total *property value exposed* to the hazard event:
 - High—25 percent or more of the total replacement value is exposed to a hazard (Impact Factor = 3)
 - Medium—10 percent to 24 percent of the total replacement value is exposed to a hazard (Impact Factor = 2)
 - Low—9 percent or less of the total replacement value is exposed to the hazard (Impact Factor = 1)

- No impact—None of the total replacement value is exposed to a hazard (Impact Factor = 0)
- **Economy**—Values were assigned based on the percentage of the total *property value vulnerable* to the hazard event. Values represent estimates of the loss from a major event of each hazard in comparison to the total replacement value of the property exposed to the hazard. For some hazards, such as wildland fire and landslide, vulnerability may be considered to be the same or a portion of exposure due to the lack of loss estimation tools specific to those hazards.
 - High—Estimated loss from the hazard is 10 percent or more of the total replacement value (Impact Factor = 3)
 - Medium—Estimated loss from the hazard is 5 percent to 9 percent of the total replacement value (Impact Factor = 2)
 - Low—Estimated loss from the hazard is 4 percent or less of the total replacement value (Impact Factor = 1)
 - No impact—No loss is estimated from the hazard (Impact Factor = 0).

Impacts on People

The percent of the total population exposed to each hazard of concern with a defined extent and location (e.g. floodplain) can be found in the loss estimate matrix in the **green highlighted column**. For those hazards that do not have a defined extent and location the entire population or a portion of the population is considered to be exposed, depending on the hazard. For the drought hazard, it is common for jurisdictions to list “low” or “none,” because all people in the planning area would be exposed to drought, but impacts to the health and safety of individuals are expected to be minimal.

Impacts on Property

The percent of the total value exposed to each hazard of concern with a defined extent and location (e.g. floodplain) can be found in the loss estimate matrix in the **blue highlighted column**. For those hazards that do not have a defined extent and location (e.g. severe weather) the entire building stock is generally considered to be exposed. For the drought hazard, it is common for jurisdictions to list “low” or “none,” because all structures in the planning area would be exposed to drought, but impacts to structures are expected to be minimal.

Impacts on the Economy

The loss estimates for each hazard of concern that was modeled (i.e. dam failure, flood, earthquake) can be found in the loss estimate matrix in the **purple highlighted column**. For those hazards that have a defined extent and location, but do not have modelled loss results, loss estimates can be the same as exposure or a portion thereof. For example, a large percentage of the building stock may be exposed to landslide or wildland fire risk, but it would not be expected that one event that resulted in loss to all exposed structures would occur. For those hazards that do not have a defined extent and location, exposure is based on the hazard type.

Risk Rating for Each Hazard

A risk rating for each hazard was determined by multiplying the assigned probability factor by the sum of the weighted impact factors for people, property and the economy:

$$\text{Risk Rating} = \text{Probability Factor} \times \text{Weighted Impact Factor \{people + property + economy\}}$$

This is the number that is shown in the risk ranking table in your template. Generally, score of 30 or greater receive a “high” rating, score between 15 and 30 receive a “medium” rating, and score of less than 15 receives a “low” rating.

1. JURISDICTION NAME

1.1 LOCAL HAZARD MITIGATION PLANNING TEAM

Primary Point of Contact

Name, Title
Street Address
City, State ZIP
Telephone: xxx-xxx-xxxx
e-mail Address: xxx@xxx.xxx

Alternate Point of Contact

Name, Title
Street Address
City, State ZIP
Telephone: xxx-xxx-xxxx
e-mail Address: xxx@xxx.xxx

This annex was developed by the local hazard mitigation planning team, whose members are listed in Table 1-1.

Table 1-1. Local Hazard Mitigation Planning Team Members

Name	Title

1.2 JURISDICTION PROFILE

1.2.1 Location and Features

[jurisdiction name] is in [general location description]

The current boundaries generally extend from [describe], encompassing an area of [area in square miles].

[general description of key features]

1.2.2 History

[jurisdiction name] was incorporated in [date]. [brief historical summary]

1.2.3 Governing Body Format

[general description].

The [name of adopting body] assumes responsibility for the adoption of this plan; [name of oversight agency] will oversee its implementation.

1.3 CURRENT TRENDS

1.3.1 Population

According to [identify data source], the population of [jurisdiction name] as of [month year] was [population]. Since [year], the population has grown at an average annual rate of [number] percent.

1.3.2 Development

DESCRIBE TRENDS IN GENERAL.

Identifying previous and future development trends is achieved through a comprehensive review of permitting since completion of the previous plan and in anticipation of future development. Tracking previous and future growth in potential hazard areas provides an overview of increased exposure to a hazard within a community. Table 1-2 summarizes development trends in the performance period since the preparation of the previous hazard mitigation plan, as well as expected future development trends.

Table 1-2. Recent and Expected Future Development Trends						
Criterion	Response					
Has your jurisdiction annexed any land since the preparation of the previous hazard mitigation plan? <i>If yes, give the estimated area annexed and estimated number of parcels or structures.</i>	Yes/No					
Is your jurisdiction expected to annex any areas during the performance period of this plan? <i>If yes, describe land areas and dominant uses.</i> <i>If yes, who currently has permitting authority over these areas?</i>	Yes/No					
Are any areas targeted for development or major redevelopment in the next five years? <i>If yes, briefly describe, including whether any of the areas are in known hazard risk areas</i>	Yes/No					
How many permits for new construction were issued in your jurisdiction since the preparation of the previous hazard mitigation plan?	2016	2017	2018	2019	2020	
	Single Family					
	Multi-Family					
	Other					
	Total					
Provide the number of new-construction permits for each hazard area or provide a qualitative description of where development has occurred.	- Special Flood Hazard Areas: # - Landslide: # - High Liquefaction Areas: # - Tsunami Inundation Area: # - Wildfire Risk Areas: #					

Criterion	Response
Describe the level of buildout in the jurisdiction, based on your jurisdiction’s buildable lands inventory. If no such inventory exists, provide a qualitative description.	

1.4 CAPABILITY ASSESSMENT

This section describes an assessment of existing capabilities for implementing hazard mitigation strategies. The introduction at the beginning of this volume of the hazard mitigation plan describes the components included in the capability assessment and their significance for hazard mitigation planning.

Findings of the capability assessment were reviewed to identify opportunities to expand, initiate or integrate capabilities to further hazard mitigation goals and objectives. Where such opportunities were identified and determined to be feasible, they are included in the action plan. The “Analysis of Mitigation Actions” table in this annex identifies these as community capacity building mitigation actions. The findings of the assessment are presented as follows:

- An assessment of planning and regulatory capabilities is presented in Table 1-3.
- Development and permitting capabilities are presented in Table 1-4.
- An assessment of fiscal capabilities is presented in Table 1-5.
- An assessment of administrative and technical capabilities is presented in Table 1-6.
- An assessment of education and outreach capabilities is presented in Table 1-7.
- Information on National Flood Insurance Program (NFIP) compliance is presented in Table 1-8.
- Classifications under various community mitigation programs are presented in Table 1-9.
- The community’s adaptive capacity for the impacts of climate change is presented in Table 1-10.

Table 1-3. Planning and Regulatory Capability

	Local Authority	Other Jurisdiction Authority	State Mandated	Integration Opportunity?
Codes, Ordinances, & Requirements				
Building Code	Yes/No	Yes/No	Yes/No	Yes/No
Comment: Enter Comment				
Zoning Code	Yes/No	Yes/No	Yes/No	Yes/No
Comment: Enter Comment				
Subdivisions	Yes/No	Yes/No	Yes/No	Yes/No
Comment: Enter Comment				
Stormwater Management	Yes/No	Yes/No	Yes/No	Yes/No
Comment: Enter Comment				
Post-Disaster Recovery	Yes/No	Yes/No	Yes/No	Yes/No
Comment: Enter Comment				
Real Estate Disclosure	Yes/No	Yes/No	Yes/No	Yes/No
Comment: Enter Comment				
Growth Management	Yes/No	Yes/No	Yes/No	Yes/No
Comment: Enter Comment				
Site Plan Review	Yes/No	Yes/No	Yes/No	Yes/No
Comment: Enter Comment				
Environmental Protection	Yes/No	Yes/No	Yes/No	Yes/No
Comment: Enter Comment				
Flood Damage Prevention	Yes/No	Yes/No	Yes/No	Yes/No
Comment: Enter Comment				
Emergency Management	Yes/No	Yes/No	Yes/No	Yes/No
Comment: Enter Comment				
Climate Change	Yes/No	Yes/No	Yes/No	Yes/No
Comment: Enter Comment				
Other	Yes/No	Yes/No	Yes/No	Yes/No
Comment: Enter Comment				
Planning Documents				
General Plan	Yes/No	Yes/No	Yes/No	Yes/No
Is the plan compliant with Assembly Bill 2140? Yes/No				
Comment: Enter Comment				
Capital Improvement Plan	Yes/No	Yes/No	Yes/No	Yes/No
How often is the plan updated?				
Comment: Enter Comment				
Disaster Debris Management Plan	Yes/No	Yes/No	Yes/No	Yes/No
Comment: Enter Comment				
Floodplain or Watershed Plan	Yes/No	Yes/No	Yes/No	Yes/No
Comment: Enter Comment				
Stormwater Plan	Yes/No	Yes/No	Yes/No	Yes/No
Comment: Enter Comment				
Urban Water Management Plan	Yes/No	Yes/No	Yes/No	Yes/No
Comment: Enter Comment				

	Local Authority	Other Jurisdiction Authority	State Mandated	Integration Opportunity?
Habitat Conservation Plan Comment: Enter Comment	Yes/No	Yes/No	Yes/No	Yes/No
Economic Development Plan Comment: Enter Comment	Yes/No	Yes/No	Yes/No	Yes/No
Shoreline Management Plan Comment: Enter Comment	Yes/No	Yes/No	Yes/No	Yes/No
Community Wildfire Protection Plan Comment: Enter Comment	Yes/No	Yes/No	Yes/No	Yes/No
Forest Management Plan Comment: Enter Comment	Yes/No	Yes/No	Yes/No	Yes/No
Climate Action Plan Comment: Enter Comment	Yes/No	Yes/No	Yes/No	Yes/No
Emergency Operations Plan Comment: Enter Comment	Yes/No	Yes/No	Yes/No	Yes/No
Threat & Hazard Identification & Risk Assessment (THIRA) Comment: Enter Comment	Yes/No	Yes/No	Yes/No	Yes/No
Post-Disaster Recovery Plan Comment: Enter Comment	Yes/No	Yes/No	Yes/No	Yes/No
Continuity of Operations Plan Comment: Enter Comment	Yes/No	Yes/No	Yes/No	Yes/No
Public Health Plan Comment: Enter Comment	Yes/No	Yes/No	Yes/No	Yes/No
Other Comment: Enter Comment	Yes/No	Yes/No	Yes/No	Yes/No

Table 1-4. Development and Permitting Capability

Criterion	Response
Does your jurisdiction issue development permits? If no, who does? If yes, which department? Enter Response	Yes/No
Does your jurisdiction have the ability to track permits by hazard area?	Yes/No
Does your jurisdiction have a buildable lands inventory?	Yes/No

Table 1-5. Fiscal Capability

Financial Resource	Accessible or Eligible to Use?
Community Development Block Grants	Yes/No
Capital Improvements Project Funding	Yes/No
Authority to Levy Taxes for Specific Purposes	Yes/No
User Fees for Water, Sewer, Gas or Electric Service	Yes/No
<i>If yes, specify:</i> Enter Response	
Incur Debt through General Obligation Bonds	Yes/No
Incur Debt through Special Tax Bonds	Yes/No
Incur Debt through Private Activity Bonds	Yes/No
Withhold Public Expenditures in Hazard-Prone Areas	Yes/No
State-Sponsored Grant Programs	Yes/No
Development Impact Fees for Homebuyers or Developers	Yes/No
Other	Yes/No
<i>If yes, specify:</i> Enter Response	

Table 1-6. Administrative and Technical Capability

Staff/Personnel Resource	Available?
Planners or engineers with knowledge of land development and land management practices	Yes/No
<i>If Yes, Department /Position:</i> Enter Response	
Engineers or professionals trained in building or infrastructure construction practices	Yes/No
<i>If Yes, Department /Position:</i> Enter Response	
Planners or engineers with an understanding of natural hazards	Yes/No
<i>If Yes, Department /Position:</i> Enter Response	
Staff with training in benefit/cost analysis	Yes/No
<i>If Yes, Department /Position:</i> Enter Response	
Surveyors	Yes/No
<i>If Yes, Department /Position:</i> Enter Response	
Personnel skilled or trained in GIS applications	Yes/No
<i>If Yes, Department /Position:</i> Enter Response	
Scientist familiar with natural hazards in local area	Yes/No
<i>If Yes, Department /Position:</i> Enter Response	
Emergency manager	Yes/No
<i>If Yes, Department /Position:</i> Enter Response	
Grant writers	Yes/No
<i>If Yes, Department /Position:</i> Enter Response	
Other	Yes/No
<i>If Yes, Department /Position:</i> Enter Response	

Table 1-7. Education and Outreach Capability

Criterion	Response
Do you have a public information officer or communications office?	Yes/No
Do you have personnel skilled or trained in website development?	Yes/No
Do you have hazard mitigation information available on your website?	Yes/No
<i>If yes, briefly describe:</i> Enter Response	
Do you use social media for hazard mitigation education and outreach?	Yes/No
<i>If yes, briefly describe:</i> Enter Response	
Do you have any citizen boards or commissions that address issues related to hazard mitigation?	Yes/No
<i>If yes, briefly describe:</i> Enter Response	
Do you have any other programs in place that could be used to communicate hazard-related information?	Yes/No
<i>If yes, briefly describe:</i> Enter Response	
Do you have any established warning systems for hazard events?	Yes/No
<i>If yes, briefly describe:</i> Enter Response	

Table 1-8. National Flood Insurance Program Compliance

Criterion	Response
What local department is responsible for floodplain management?	Enter Response
Who is your floodplain administrator? (department/position)	Enter Response
Are any certified floodplain managers on staff in your jurisdiction?	Yes/No
What is the date that your flood damage prevention ordinance was last amended?	Enter Response
Does your floodplain management program meet or exceed minimum requirements?	Meets/Exceeds
<i>If exceeds, in what ways?</i> Enter Response	
When was the most recent Community Assistance Visit or Community Assistance Contact?	Enter Response
Does your jurisdiction have any outstanding NFIP compliance violations that need to be addressed?	Yes/No
<i>If so, state what they are.</i> Enter Response	
Are any RiskMAP projects currently underway in your jurisdiction?	Yes/No
<i>If so, state what they are.</i> Enter Response	
Do your flood hazard maps adequately address the flood risk within your jurisdiction?	Yes/No
<i>If no, state why.</i> Enter Response	
Does your floodplain management staff need any assistance or training to support its floodplain management program?	Yes/No
<i>If so, what type of assistance/training is needed?</i> Enter Response	
Does your jurisdiction participate in the Community Rating System (CRS)?	Yes/No
<i>If yes, is your jurisdiction interested in improving its CRS Classification?</i> Yes/No	
<i>If no, is your jurisdiction interested in joining the CRS program?</i> Yes/No	
How many flood insurance policies are in force in your jurisdiction? ^a	Enter Response
<i>What is the insurance in force?</i> \$	
<i>What is the premium in force?</i> \$	

Criterion	Response
How many total loss claims have been filed in your jurisdiction? ^a	Enter Response
How many claims are still open or were closed without payment?	Enter Response
What were the total payments for losses? \$	
a. According to FEMA statistics as of MONTH XX, 20XX	

Table 1-9. Community Classifications

	Participating?	Classification	Date Classified
FIPS Code	Yes/No		Date
DUNS #	Yes/No		Date
Community Rating System	Yes/No		Date
Building Code Effectiveness Grading Schedule	Yes/No		Date
Public Protection	Yes/No		Date
Storm Ready	Yes/No		Date
Firewise	Yes/No		Date
Tsunami Ready	Yes/No		Date

Table 1-10. Adaptive Capacity for Climate Change

Criterion	Jurisdiction Rating ^a
Technical Capacity	
Jurisdiction-level understanding of potential climate change impacts	High/Medium/Low
Comment: Enter Comment	
Jurisdiction-level monitoring of climate change impacts	High/Medium/Low
Comment: Enter Comment	
Technical resources to assess proposed strategies for feasibility and externalities	High/Medium/Low
Comment: Enter Comment	
Jurisdiction-level capacity for development of greenhouse gas emissions inventory	High/Medium/Low
Comment: Enter Comment	
Capital planning and land use decisions informed by potential climate impacts	High/Medium/Low
Comment: Enter Comment	
Participation in regional groups addressing climate risks	High/Medium/Low
Comment: Enter Comment	
Implementation Capacity	
Clear authority/mandate to consider climate change impacts during public decision-making processes	High/Medium/Low
Comment: Enter Comment	
Identified strategies for greenhouse gas mitigation efforts	High/Medium/Low
Comment: Enter Comment	
Identified strategies for adaptation to impacts	High/Medium/Low
Comment: Enter Comment	
Champions for climate action in local government departments	High/Medium/Low
Comment: Enter Comment	

Criterion	Jurisdiction Rating ^a
Political support for implementing climate change adaptation strategies <i>Comment:</i> Enter Comment	High/Medium/Low
Financial resources devoted to climate change adaptation <i>Comment:</i> Enter Comment	High/Medium/Low
Local authority over sectors likely to be negative impacted <i>Comment:</i> Enter Comment	High/Medium/Low
Public Capacity	
Local residents knowledge of and understanding of climate risk <i>Comment:</i> Enter Comment	High/Medium/Low
Local residents support of adaptation efforts <i>Comment:</i> Enter Comment	High/Medium/Low
Local residents' capacity to adapt to climate impacts <i>Comment:</i> Enter Comment	High/Medium/Low
Local economy current capacity to adapt to climate impacts <i>Comment:</i> Enter Comment	High/Medium/Low
Local ecosystems capacity to adapt to climate impacts <i>Comment:</i> Enter Comment	High/Medium/Low

- a. High = Capacity exists and is in use; Medium = Capacity may exist, but is not used or could use some improvement; Low = Capacity does not exist or could use substantial improvement; Unsure= Not enough information is known to assign a rating.

1.5 INTEGRATION REVIEW

For hazard mitigation planning, “integration” means that hazard mitigation information is used in other relevant planning mechanisms, such as general planning and capital facilities planning, and that relevant information from those sources is used in hazard mitigation. This section identifies where such integration is already in place, and where there are opportunities for further integration in the future. Resources listed at the end of this annex were used to provide information on integration. The progress reporting process described in Volume 1 of the hazard mitigation plan will document the progress of hazard mitigation actions related to integration and identify new opportunities for integration.

1.5.1 Existing Integration

Some level of integration has already been established between local hazard mitigation planning and the following other local plans and programs:

- Plan or Program Name—Description
- Plan or Program Name—Description
- Plan or Program Name—Description
- Plan or Program Name—Description
- Plan or Program Name—Description

1.5.2 Opportunities for Future Integration

The capability assessment presented in this annex indicates opportunities to integrate this mitigation plan with other jurisdictional planning/regulatory capabilities. Capabilities were identified as integration opportunities if they can support or enhance the actions identified in this plan or be supported or enhanced by components of this plan. The capability assessment identified the following plans and programs that do not currently integrate hazard mitigation information but provide opportunities to do so in the future:

- Plan or Program Name—Description
- Plan or Program Name—Description
- Plan or Program Name—Description
- Plan or Program Name—Description
- Plan or Program Name—Description

Taking action to integrate each of these programs with the hazard mitigation plan was considered as a mitigation action to include in the action plan presented in this annex.

1.6 RISK ASSESSMENT

1.6.1 Jurisdiction-Specific Natural Hazard Event History

Table 1-11 lists past occurrences of natural hazards for which specific damage was recorded in this jurisdiction. Other hazard events that broadly affected the entire planning area, including this jurisdiction, are listed in the risk assessments in Volume 1 of this hazard mitigation plan.

Table 1-11. Past Natural Hazard Events			
Type of Event	FEMA Disaster #	Date	Damage Assessment
Insert event type		Date	\$
Insert event type		Date	\$
Insert event type		Date	\$
Insert event type		Date	\$
Insert event type		Date	\$
Insert event type		Date	\$
Insert event type		Date	\$
Insert event type		Date	\$
Insert event type		Date	\$
Insert event type		Date	\$
Insert event type		Date	\$
Insert event type		Date	\$
Insert event type		Date	\$
Insert event type		Date	\$
Insert event type		Date	\$
Insert event type		Date	\$

1.6.2 Hazard Risk Ranking

Table 1-12 presents a local ranking of all hazards of concern for which this hazard mitigation plan provides complete risk assessments. As described in detail in Volume 1, the ranking process involves an assessment of the likelihood of occurrence for each hazard, along with its potential impacts on people, property and the economy. Mitigation actions target hazards with high and medium rankings.

Table 1-12. Hazard Risk Ranking			
Rank	Hazard	Risk Ranking Score	Risk Category
1			High/Medium/Low
2			High/Medium/Low
3			High/Medium/Low
4			High/Medium/Low
5			High/Medium/Low
6			High/Medium/Low
7			High/Medium/Low
8			High/Medium/Low
9			High/Medium/Low

1.6.3 Jurisdiction-Specific Vulnerabilities

Volume 1 of this hazard mitigation plan provides complete risk assessments for each identified hazard of concern. This section provides information on a few key vulnerabilities for this jurisdiction. Available jurisdiction-specific risk maps of the hazards are provided at the end of this annex.

Repetitive Loss Properties

Repetitive loss records are as follows:

- Number of FEMA-identified Repetitive-Loss Properties: XX
- Number of FEMA-identified Severe-Repetitive-Loss Properties: XX
- Number of Repetitive-Loss Properties or Severe-Repetitive-Loss Properties that have been mitigated: XX

Other Noted Vulnerabilities

The following jurisdiction-specific issues have been identified based on a review of the results of the risk assessment, public involvement strategy, and other available resources:

- Insert as appropriate.
- Insert as appropriate.
- Insert as appropriate.

Mitigation actions addressing these issues were prioritized for consideration in the action plan presented in this annex.

1.7 STATUS OF PREVIOUS PLAN ACTIONS

If your jurisdiction has no previous hazard mitigation plan, please enter an “X” in the box at right and do not complete this section.

Table 1-13 summarizes the actions that were recommended in the previous version of the hazard mitigation plan and their implementation status at the time this update was prepared.

Table 1-13. Status of Previous Plan Actions				
Action Item from Previous Plan	Completed	Removed; No Longer Feasible	Carried Over to Plan Update	
			Check if Yes	Action # in Update
Insert Action Number & Text				
Comment: Enter Comment				
Insert Action Number & Text				
Comment: Enter Comment				
Insert Action Number & Text				
Comment: Enter Comment				
Insert Action Number & Text				
Comment: Enter Comment				
Insert Action Number & Text				
Comment: Enter Comment				
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Insert Action Number & Text				
Comment: Enter Comment				
Insert Action Number & Text				
Comment: Enter Comment				
Insert Action Number & Text				
Comment: Enter Comment				
Insert Action Number & Text				
Comment: Enter Comment				

1.8 HAZARD MITIGATION ACTION PLAN

Table 1-14 lists the identified actions, which make up the hazard mitigation action plan for this jurisdiction.

Table 1-15 identifies the priority for each action. Table 1-16 summarizes the mitigation actions by hazard of concern and mitigation type.

Table 1-14. Hazard Mitigation Action Plan Matrix

Benefits New or Existing Assets	Objectives Met	Lead Agency	Support Agency	Estimated Cost	Sources of Funding	Timeline ^a
Action xxx-1 —Where appropriate, support retrofitting, purchase or relocation of structures located in hazard areas, prioritizing those that have experienced repetitive losses and/or are located in high- or medium-risk hazard areas.						
<i>Hazards Mitigated:</i> Enter Response						
Existing	Enter Response	Enter Response	Enter Response	High	HMGP, PDM, FMA	Short-term
Action xxx-2 —Integrate the hazard mitigation plan into other plans, ordinances and programs that dictate land use decisions in the community, including						
<i>Hazards Mitigated:</i> Enter Response						
New & Existing	Enter Response	Enter Response	Enter Response	Low	Staff Time, General Funds	Ongoing
Action xxx-3 —Actively participate in the plan maintenance protocols outlined in Volume 1 of this hazard mitigation plan.						
<i>Hazards Mitigated:</i> Enter Response						
New & Existing	Enter Response	Enter Response	Enter Response	Low	Staff Time, General Funds	Short-term
Action xxx-4 —Continue to maintain good standing and compliance under the NFIP through implementation of floodplain management programs that, at a minimum, meet the NFIP requirements: - Enforce the flood damage prevention ordinance. - Participate in floodplain identification and mapping updates. - Provide public assistance/information on floodplain requirements and impacts.						
<i>Hazards Mitigated:</i> Enter Response						
New & Existing	Enter Response	Enter Response	Enter Response	Low	Staff Time, General Funds	Ongoing
Action xxx-5 —Identify and pursue strategies to increase adaptive capacity to climate change including but not limited to the following:						
<i>Hazards Mitigated:</i> Enter Response						
New & Existing	Enter Response	Enter Response	Enter Response	Low	Staff Time, General Funds	Short-term
Action xxx-6 —Purchase generators for critical facilities and infrastructure that lack adequate backup power, including						
<i>Hazards Mitigated:</i> Dam failure, earthquake, flooding, landslide, severe weather, tsunami, wildfire						
Existing	Enter Response	Enter Response	Enter Response			
Action xxx-7 —Description						
<i>Hazards Mitigated:</i> Enter Response						
Enter Response	Enter Response	Enter Response	Enter Response	Enter Response	Enter Response	Enter Response
Action xxx-8 —Description						
<i>Hazards Mitigated:</i> Enter Response						
Enter Response	Enter Response	Enter Response	Enter Response	Enter Response	Enter Response	Enter Response

Benefits New or Existing Assets	Objectives Met	Lead Agency	Support Agency	Estimated Cost	Sources of Funding	Timeline ^a
Action xxx-9—Description						
<u>Hazards Mitigated:</u> Enter Response						
Enter Response	Enter Response	Enter Response	Enter Response	Enter Response	Enter Response	Enter Response
Action xxx-10—Description						
<u>Hazards Mitigated:</u> Enter Response						
Enter Response	Enter Response	Enter Response	Enter Response	Enter Response	Enter Response	Enter Response
Action xxx-11—Description						
<u>Hazards Mitigated:</u> Enter Response						
Enter Response	Enter Response	Enter Response	Enter Response	Enter Response	Enter Response	Enter Response
Action xxx-12—Description						
<u>Hazards Mitigated:</u> Enter Response						
Enter Response	Enter Response	Enter Response	Enter Response	Enter Response	Enter Response	Enter Response
Action xxx-13—Description						
<u>Hazards Mitigated:</u> Enter Response						
Enter Response	Enter Response	Enter Response	Enter Response	Enter Response	Enter Response	Enter Response
Action xxx-14—Description						
<u>Hazards Mitigated:</u> Enter Response						
Enter Response	Enter Response	Enter Response	Enter Response	Enter Response	Enter Response	Enter Response
Action xxx-15—Description						
<u>Hazards Mitigated:</u> Enter Response						
Enter Response	Enter Response	Enter Response	Enter Response	Enter Response	Enter Response	Enter Response
Action xxx-16—Description						
<u>Hazards Mitigated:</u> Enter Response						
Enter Response	Enter Response	Enter Response	Enter Response	Enter Response	Enter Response	Enter Response
Action xxx-17—Description						
<u>Hazards Mitigated:</u> Enter Response						
Enter Response	Enter Response	Enter Response	Enter Response	Enter Response	Enter Response	Enter Response
Action xxx-18—Description						
<u>Hazards Mitigated:</u> Enter Response						
Enter Response	Enter Response	Enter Response	Enter Response	Enter Response	Enter Response	Enter Response
Action xxx-19—Description						
<u>Hazards Mitigated:</u> Enter Response						
Enter Response	Enter Response	Enter Response	Enter Response	Enter Response	Enter Response	Enter Response
Action xxx-20—Description						
<u>Hazards Mitigated:</u> Enter Response						
Enter Response	Enter Response	Enter Response	Enter Response	Enter Response	Enter Response	Enter Response

a. Short-term = Completion within 5 years; Long-term = Completion within 10 years; Ongoing= Continuing new or existing program with no completion date

Acronyms used here are defined at the beginning of this volume.

Table 1-15. Mitigation Action Priority

Action #	# of Objectives Met	Benefits	Costs	Do Benefits Equal or Exceed Cost?	Is Project Grant-Eligible?	Can Project Be Funded Under Existing Programs/ Budgets?	Implementation Priority ^a	Grant Pursuit Priority ^a
1	3	High	High	Yes	Yes	No	Medium	High
2	7	Medium	Low	Yes	No	Yes	High	Low
3	3	Low	Low	Yes	No	Yes	High	Low
4	6	Medium	Low	Yes	No	Yes	High	Low
5	7	Medium	Low	Yes	No	Yes	High	Medium
6	3	High	Medium	Yes	Yes	No	Medium	High
7								
8								
9								
10								
11								

a. See the introduction to this volume for explanation of priorities.

Table 1-16. Analysis of Mitigation Actions

Hazard Type	Action Addressing Hazard, by Mitigation Type ^a							
	Prevention	Property Protection	Public Education & Awareness	Natural Resource Protection	Emergency Services	Structural Projects	Climate Resilience	Community Capacity Building
High-Risk Hazards								
Medium-Risk Hazards								
Low-Risk Hazards								

a. See the introduction to this volume for explanation of mitigation types.

1.9 PUBLIC OUTREACH

Table 1-17 lists public outreach activities in connection with this hazard mitigation plan update for this jurisdiction.

Table 1-17. Local Public Outreach		
Local Outreach Activity	Date	Number of People Involved

1.10 INFORMATION SOURCES USED FOR THIS ANNEX

The following technical reports, plans, and regulatory mechanisms were reviewed to provide information for this annex.

- **[jurisdiction name] Municipal Code**—The municipal code was reviewed for the full capability assessment and for identifying opportunities for action plan integration.
- **[jurisdiction name] Flood Damage Prevention Ordinance**—The flood damage prevention ordinance was reviewed for compliance with the National Flood Insurance Program.
- <INSERT DOCUMENT NAME AND DESCRIPTION OF HOW IT WAS USED>
- <INSERT DOCUMENT NAME AND DESCRIPTION OF HOW IT WAS USED>
- <INSERT DOCUMENT NAME AND DESCRIPTION OF HOW IT WAS USED>
- <INSERT DOCUMENT NAME AND DESCRIPTION OF HOW IT WAS USED>
- <INSERT DOCUMENT NAME AND DESCRIPTION OF HOW IT WAS USED>

The following outside resources and references were reviewed:

- **Hazard Mitigation Plan Annex Development Toolkit**—The toolkit was used to support the identification of past hazard events and noted vulnerabilities, the risk ranking, and the development of the mitigation action plan.
- <INSERT DOCUMENT NAME AND DESCRIPTION OF HOW IT WAS USED>

1.11 FUTURE NEEDS TO BETTER UNDERSTAND RISK/VULNERABILITY

Insert text, if any; otherwise, delete section

1.12 ADDITIONAL COMMENTS

Insert text, if any; otherwise, delete section

INSTRUCTIONS FOR COMPLETING SPECIAL-PURPOSE DISTRICT ANNEX TEMPLATE

Jurisdictional annex templates for the 2022 *Ventura County Multi-Jurisdictional Hazard Mitigation Plan* update will be completed in three phases. **This document provides instructions for completing all phases of the template for special-purpose districts.**

The target timeline for completion is as follows:

- **Phase 1**—Team, Profile, Trends, and Previous Plan Status
 - **Deploy:** May 10, 2021
 - **Due:** June 21, 2021 by close of business
- **Phase 2**—Capability Assessment, Integration Review, and Information Sources
 - **Deploy:** July 6, 2021
 - **Due:** August 20, 2021 by close of business
- **Phase 3**—Risk Assessment, Action Plan, Information Sources, Future Needs, and Additional Comments
 - **Deploy:** September 9, 2021
 - **Mandatory Phase 3 Workshop:** September 23, 2021
 - **Due:** October 25, 2021 by close of business, Pacific Time. **No due date extensions!**

Please direct any questions and return your completed Phase 3 template in electronic format to:

Megan Brotherton
Tetra Tech
Phone: (808) 339-9119
E-mail: megan.brotherton@tetrattech.com

A Note About Formatting

The template for the annex is a Microsoft Word document in a format that will be used in the final plan. Partners are asked to use this template so that a uniform product will be completed for each partner.

Content should be entered directly into the template rather than creating text in another document and pasting it into the template. Text from another source may alter the formatting of the document.

The section and table numbering in the document will be updated when completed annexes are combined into the final document. Please do not adjust any of the numbering.

For planning partners who participated in the 2015 planning effort, relevant information has been brought over to the 2022 template. Fields that require attention have been highlighted using the following color coding:

- **Yellow:** Text has been brought over from 2015 Plan and should be reviewed and updated as needed.
- **Pink:** This is a new field that will require information that was not included in 2015.

Please un-highlight each field that you update so that reviewers will know an edit has been made.

New planning partners will need to complete the template in its entirety.

Appendix B.2

Instructions and Templates for Special Purpose District Annexes

PHASE 1 INSTRUCTIONS

CHAPTER TITLE

In the chapter title at the top of Page 1, type in the complete official name of your district (e.g. West County Fire Protection District #1, Johnsonville Flood Protection District). Do not change the chapter number. Revise only the jurisdiction name. If your jurisdiction's name has already been entered, verify that wording and spelling are correct; revise as needed.

LOCAL HAZARD MITIGATION PLANNING TEAM

Points of Contact

Provide the name, title, mailing address, telephone number, and e-mail address for the primary point of contact for your jurisdiction. This should be the person responsible for monitoring, evaluating, and updating the annex for your jurisdiction. This person should also be the principle liaison between your jurisdiction and the Steering Committee overseeing development of this plan.

In addition, designate an alternate point of contact. This would be a person to contact should the primary point of contact be unavailable or no longer employed by the jurisdiction.

Note: Both of these contacts should match the contacts that were designated in your jurisdiction's letter of intent to participate in this planning process. If you have changed the primary or secondary contact, let the planning team know by inserting a comment into the document.

Participating Planning Team

Populate Table 1-1 with the names of staff from your jurisdiction who participated in preparing this annex or otherwise contributed to the planning process for this hazard mitigation plan.

JURISDICTION PROFILE

Overview

Provide a brief summary description of the following:

- The purpose of the jurisdiction
- The date of inception
- The type of organization
- The number of employees
- Funding sources
- The type of governing body, and who has adoptive authority.

This should be information that is specific to your jurisdiction and will not be provided in the overall, planning area-wide mitigation plan document. Provide a statement similar to the example below:

EXAMPLE: *The Johnsonville Community Services District is a special district created in 1952 to provide water and sewer service. A five-member elected Board of Directors governs the District. The Board assumes responsibility for the adoption of this plan; the General Manager will oversee its implementation. The District currently employs a staff of 21. Funding comes primarily through rates and revenue bonds.*

Service Area

Provide a brief description of the following:

- Who the District's customers are and an approximation of how many are currently served
- The area served, in square miles
- The geographic extent of the service area

This should be information that is specific to your jurisdiction and will not be provided in the overall, planning area-wide mitigation plan document. Provide a statement similar to the example below:

EXAMPLE: *The Johnsonville Community Services District serves unincorporated areas of Jones County east of the City of Smithburg, including the communities of Johnsonville, Creeks Corner, Jones Hill, Fields Landing, King Salmon, and Freshwater. The current total service area is 3.3 square miles. As of April 30, 2020, the District serves 7,305 water connections and 6,108 sewer connections.*

Assets

List District-owned assets in the categories shown on the table (and described in the sections below). Include an approximate value for each asset and a subtotal value for identified assets in each category.

Property

Provide an approximate value for any land owned by the District.

Equipment

List equipment owned by the District that is used in times of emergency or that, if incapacitated, could severely impact the service area (vehicles, generators, pumps, etc.). Provide an approximate replacement value for each item. Equipment of similar type may be listed as a single category (e.g., "3 diesel-powered generators"). For water and sewer districts, include mileage of pipeline under this category.

Critical Facilities

List District-owned facilities that are vital to maintain services to the service area. Include the address of each facility. Provide an approximate replacement value for each line. Critical facilities are generally defined as facilities owned by the District that are critical to District operations and to public health or safety and that are especially important following hazard events, including but not limited to the following:

- Structures or facilities that produce, use, or store hazardous materials (highly volatile, flammable, explosive, toxic and/or water-reactive materials)

- Hospitals, nursing homes, and housing facilities likely to contain occupants who may not be sufficiently mobile to avoid death or injury during a natural hazard event
- Mass gathering facilities that may be used as evacuation shelters (such as schools or community centers)
- Transportation infrastructure such as roads, bridges and airports that provide sources for evacuation before, during and after natural hazard events
- Police stations, fire stations, government facilities, vehicle equipment and storage facilities, and emergency operation centers that are needed for response activities before, during and after a natural hazard event
- Public utility facilities such as drinking water, stormwater, and wastewater systems that are vital to providing normal services to damaged areas before, during and after natural hazard events.

The table below shows an example of assets to be listed in this section.

Sample Completed Table – Special District Assets	
Asset	Value
Property	
11.5 Acres	\$5,750,000
Equipment	
Total length of pipe 40 miles (\$1.32 million per mile X 40 miles)	\$52,800,000
4 Emergency Generators	\$250,000
Total:	\$53,050,000
Critical Facilities	
Administrative Buildings – 357 S. Jones Street	\$2,750,000
Philips Pump Station – 111 Fifth Avenue N.	\$377,000
Total:	\$3,127,000

NOTE: Placeholders in the table of assets request **ADDRESSES** for critical facilities. These addresses will not be included in the final published annex, but are needed in order to perform risk mapping and risk analysis for the hazard mitigation plan. Include the addresses in the table if convenient. If not, then provide a separate document listing all critical facilities and addresses for use in development of the hazard mitigation plan.

CURRENT TRENDS

Provide a brief description of previous growth trends in the service area and anticipated future increase or decrease in services (if applicable). This should be information that is specific to your jurisdiction and will not be provided in the overall, planning area-wide mitigation plan document. Provide a statement similar to the example below:

EXAMPLE: *The Johnsonville Community Services District originally was formed to serve only the Johnsonville area. The District's service area expanded throughout the years to include the full area served today. Total customers have increased by 3 percent since 2010. Population in the service area is not projected to change significantly over the next 10 years, and the District has no plans to expand its service area.*

STATUS OF PREVIOUS PLAN ACTIONS

Note that this section applies only to jurisdictions that are conducting updates to previously approved hazard mitigation plans. If your jurisdiction has not previously participated in an approved plan, enter an “X” in the box at the beginning of this section and do not complete the section. We will remove this section from your final annex.

Also note that this section is further back in the annex than the rest of the Phase 1 content. Some Phase 2 sections are included before it.

The hazard mitigation plan update must describe the status of all action items from each jurisdiction’s previous hazard mitigation plan. Each action item must be marked as ONE of the options below by checking the appropriate box (place an X) and providing the following information:

- **Completed**—If an action has been completed since the prior plan was prepared, check the “Completed” box and provide a date of completion in the comment section. If an action has been initiated and is an ongoing program (e.g. annual outreach event), you may mark it as completed and note that it is ongoing in the comments. If an action addresses an ongoing program you would like to continue to include in your action plan, see the “Carried Over to Plan Update” bullet below.
- **Removed**—If action items are to be removed because they are no longer feasible, a reason must be given. Lack of funding does not mean that it is no longer feasible, unless the sole source of funding for an action is no longer available. Place a comment in the comment section explaining why the action is no longer feasible or barriers that prevented the action from being implemented (e.g., “Action no longer considered feasible due to lack of political support.”). If the wording and/or intent of a previously identified action is unclear, this can be a reason for removal. A change in community priorities may also be a reason for removal and should be discussed in the comments.
- **Carried Over to Plan Update**—If an action is in progress, is ongoing, or has not been initiated and you would like to carry it over to the plan update, check the “Check if Yes” column under “Carried Over to Plan Update.” Selecting this option indicates that the action will be included in the mitigation action plan for this update. If you are carrying over an action to the update, include a comment describing any action that has been taken or why the action was not taken (specifically, any barriers or obstacles that prevented the action from moving forward or slowed progress). Leave the last column, “Action # in Update,” blank at this point. This will be filled in after completing the updated action plan in Phase 3.

Ensure that you have provided a status and a comment for each action.

HAZARD MITIGATION ACTION PLAN INPUT

When preparing the hazard mitigation action plan in Phase 3, all action items from your jurisdiction’s previous hazard mitigation plan that are marked as “Carried Over to Plan Update” will need to be included in the action plan.

THIS COMPLETES PHASE 1

PHASE 2 INSTRUCTIONS

CAPABILITY ASSESSMENT

Note that it is unlikely that one person will be able to complete all sections of the capability assessment alone. The primary preparer will likely need to reach out to other departments within the local government for information. It may be beneficial to provide these individuals with background information about this planning process, as input from them will be needed again during Phase 3 of the annex development.

Planning and Regulatory Capability

List any federal, state, local or district ordinances, plans, or policies that apply to your jurisdiction and relate to hazard mitigation. Provide the date of last update and any comments as appropriate. The table below shows an example of items to be listed in this section.

Sample Completed Table – Planning and Regulatory Capability

Plan, Study or Program	Date of Most Recent Update	Comment
District Design Standards	2010	
Capital Improvement Program	Updated annually	covers 5 year timeframe
Emergency Operations Plan	2000	
Facility Maintenance Manual	1990	
State Building Code	2016	
Division of State Architects		Review of all building and site design features is required prior to construction

Fiscal Capability

Complete the table titled “Fiscal Capability” by indicating whether each of the listed financial resources is accessible to your jurisdiction. Enter “Yes” if the resource is fully accessible to your jurisdiction. Enter “No” if there are limitations or prerequisites that may hinder your use of this resource.

Administrative and Technical Capability

Complete the table titled “Administrative and Technical Capability” by indicating whether your jurisdiction has access to each of the listed personnel resources. Enter “Yes” or “No” in the column labeled “Available?”. If yes, then enter the department and position title. If you have contract support with these capabilities, you can still answer “Yes.” Indicate in the department row that this resource is provided through contract.

Education and Outreach Capability

Complete the table titled “Education and Outreach.”

HAZARD MITIGATION ACTION PLAN INPUT

When preparing the hazard mitigation action plan in Phase 3, review all the above capability assessment tables and consider including actions to provide a capability that your jurisdiction does not currently have, update a capability that your jurisdiction does have, or implement an action that is recommended in an existing plan or program.

Community Classifications

Complete the table titled “Community Classifications” to indicate your jurisdiction’s participation in various national programs related to natural hazard mitigation. For each program enter “Yes” or “No” in the second column to indicate whether your jurisdiction participates. If yes, then enter the classification that your jurisdiction has earned under the program in the third column and the date on which that classification was issued in the fourth column; enter “N/A” in the third and fourth columns if your jurisdiction is not participating. If you do not know your current classification, information is available at the following websites:

- **FIPS Code**— <https://www.census.gov/geographies/reference-files/2018/demo/popest/2018-fips.html>
- **DUNS #**— <https://www.dnb.com/duns-number.html>
- **Community Rating System**— <https://www.fema.gov/floodplain-management/community-rating-system>
- **Building Code Effectiveness Grading Schedule**— <https://www.isomitigation.com/bcegs/iso-s-building-code-effectiveness-grading-schedule-bcegs.html>
- **Public Protection Classification**— <https://www.isomitigation.com/ppc/>
- **Storm Ready**— <https://www.weather.gov/stormready/communities>
- **Firewise**— <http://www.firewise.org/usa-recognition-program/map-of-active-participants.aspx>
- **Tsunami Ready**— <https://www.weather.gov/tsunamiready/communities>

Adaptive Capacity for Climate Change

Consider climate change impact concerns such as the following:

- Reduced snowpack
- Increased wildfires
- Sea level rise
- Inland flooding
- Threats to sensitive species
- Loss in agricultural productivity
- Public health and safety.

With those impacts in mind, complete the table titled “Adaptive Capacity for Climate Change” by indicating your jurisdiction’s capacity for each listed criterion as follows:

- **High**—The capacity exists and is in use.
- **Medium**—The capacity may exist, but is not used or could use some improvement.
- **Low**—The capacity does not exist or could use substantial improvement.
- **Unsure**—Not enough information is known to assign a rating.

This is a subjective assessment, but providing a few words of explanation is useful. It is highly recommended that you complete this table with an internal planning team after reviewing the results of the other capability assessment tables.

HAZARD MITIGATION ACTION PLAN INPUT

When preparing the hazard mitigation action plan in Phase 3, review all the adaptive capacity criteria and consider including actions to improve the rating for those rated medium or low, to make use of the capacity for those rated high, or to acquire additional information for those rated unsure.

INTEGRATION REVIEW

For hazard mitigation planning, “integration” means that hazard mitigation information is used in other relevant planning mechanisms, such as capital facilities planning, and that relevant information from those sources is used in hazard mitigation. FEMA recommends integration as follows:

- Integrate hazard mitigation plan goals with community objectives (e.g. incorporate the goals for risk reduction and safety into the policies of other plans).
- Use the risk assessment to inform plans and policies (e.g. incorporate risk assessment findings into emergency operations plans).
- Implement mitigation actions through existing mechanisms (e.g. include mitigation projects in the capital improvement plan).
- Think about mitigation before and after a disaster (e.g. build recovery planning on existing mitigation plans and goals).

After reviewing the plans, programs and ordinances identified in the capability assessment tables, identify all plans and programs that have already been integrated with the hazard mitigation plan, and those that offer opportunities for future integration.

Existing Integration

In the highlighted bullet list, provide a brief description of integrated plans or ordinances and how each is integrated. Consider listing items marked as Completed in the “Status of Previous Plan Actions” table if they were indicated as being ongoing actions. Examples are as follows:

- **Capital Improvement Plan**—The capital improvement plan includes projects that can help mitigate potential hazards. The District will act to ensure consistency between the hazard mitigation plan and the current and future capital improvement plans. The hazard mitigation plan may identify new possible funding sources for capital improvement projects and may result in modifications to proposed projects based on results of the risk assessment.
- **Emergency Operations Plan**—The results of the risk assessment were used in the development of the emergency operations plan.

- **Facilities Plan**—The results of the risk assessment and mapped hazard areas are used in facility planning for the District. Potential sites are reviewed for hazard risks, and appropriate mitigation measures are considered in building and site design.

HAZARD MITIGATION ACTION PLAN INPUT

When preparing the hazard mitigation action plan in Phase 3, any plans that fall into the “Existing Integration” category should be reviewed and elements from them should be included in the action plan as appropriate.

Opportunities for Future Integration

List any plans or programs that offer the potential for future integration and describe the process by which integration will occur. Examples follow:

- **Capital Improvement Projects**—Capital improvement project proposals may take into consideration hazard mitigation potential as a means of evaluating project prioritization.
- **Post-Disaster Recovery Plan**—The District does not have a recovery plan and intends to develop one as a mitigation planning action during the next five years. The plan will build on the mitigation goals and objectives identified in the mitigation plan.

Consider other programs you may have in place in your jurisdiction that include routine consideration and management of hazard risk. Examples of such programs may include: tree pruning programs, right-of-way mowing programs, erosion control or stream maintenance programs, etc. Add any such programs to the integration discussion and provide a brief description of how these program manage (or could be adapted to manage) risk from hazards.

HAZARD MITIGATION ACTION PLAN INPUT

When preparing the hazard mitigation action plan in Phase 3, an action to integrate any identified “Opportunities for Future Integration” should be considered for inclusion in the action plan.

INFORMATION SOURCES USED FOR THIS ANNEX

Note that this section will ultimately describe all information sources used to develop this annex, but that only the sources used for Phases 1 and 2 will be listed at this point. Additional sources will be added with the preparation of the Phase 3 annex.

This section should describe what resources you used to complete the annex and how you used them. Several items are started for you, but be sure to update and enhance any descriptions. Providing this information is a requirement to pass the state and FEMA review process.

THIS COMPLETES PHASE 2

PHASE 3 INSTRUCTIONS

RISK ASSESSMENT

Jurisdiction-Specific Natural Hazard Event History

In the table titled “Past Natural Hazard Events,” list in chronological order (most recent first) any natural hazard event that has caused damage to your jurisdiction. If it was a federally declared disaster, include the FEMA Disaster #, otherwise enter N/A in that column. Include the date of the event and the estimated dollar amount of damage it caused. You are welcome to include any events, but special attention should be made to include major storms and federally declared disasters. Refer to the table below that lists hazard events in the planning area.

Table 1. Past Natural Hazard Events

[illegible]

We recommend including most large-scale disasters, unless you know that there were no impacts on your jurisdiction. Specifically, we recommend that you include these events if you have damage estimate information or can provide a brief description of impacts that occurred within your community. In addition to these events, refer to the NOAA NCDC storm events database included in the toolkit. We recommend conducting a search for the name of your jurisdiction in order to identify events with known impacts. Other potential sources of damage information include the following

- Preliminary damage estimates your jurisdiction filed with the county or state
- Insurance claims data
- Newspaper archives
- Emergency management documents (general plan safety element, emergency response plan, etc.)
- Resident input.

If you do not have estimates for costs of damage caused, list “Not Available” in the “Damage Assessment” column or list a brief description of the damage rather than a dollar value (e.g., Main Street closed as a result of flooding, downed trees and residential damage). Note that tracking such damage is a valid and useful mitigation action if your jurisdiction does not currently track such information.

Hazard Risk Ranking

Risk ranking identifies which hazards pose the greatest risk to the community, based on how likely it is for each hazard to occur (this is called the community’s exposure) and how great an impact each hazard will have if it does occur (this is called the community’s vulnerability). Every jurisdiction has differing degrees of risk exposure and vulnerability and therefore needs to rank risk for its own area. Risk rankings for cities and the county have been calculated in the “Loss Matrix” spreadsheet included in the annex preparation toolkit. These rankings are on the basis of risk ranking scores for each hazard that were calculated based on the hazard’s probability of occurrence and its potential impact on people, property and the economy.

The risk ranking methodology used for cities and counties is not usable for special-purpose districts because the risk-related mapping generally does not align with the boundaries of districts. To rank risk for your District, use the following procedure:

- Find the risk ranking scores in the Loss Matrix spreadsheet (on the “Risk Ranking Summary” tab) for the county overall and for any cities whose area overlaps that of your District.
- For each hazard, generate a risk ranking score for your District by calculating the average of the scores for those other jurisdictions.
- Rank the hazards based on those average scores:
 - Assign the rank of 1 to the hazard with the highest risk ranking score, the rank of 2 to the hazard with the second highest ranking score; and so on.
 - Assign the same rank to any two hazards with equal risk ranking scores
- If the resulting ranking differs from what you know based on substantiated data and documentation, alter the scores and ranking as needed based on this knowledge.

- Assign each hazard to the risk category of “High,” Medium,” or “Low” based on the risk rating score:
 - Low for scores of 0 to 15
 - Medium for scores of 16 to 30
 - High for scores greater than 30

Enter the results of this analysis in the “Hazard Risk Ranking” table in the template; enter the hazards in order of ranking, with 1 at the top of the table.

HAZARD MITIGATION ACTION PLAN INPUT

When preparing the hazard mitigation action plan in Phase 3, you will need to have at least one mitigation action for each hazard ranked as “high” or “medium.”

Jurisdiction-Specific Vulnerabilities

Review the results of the risk assessment included in the toolkit, your jurisdiction’s natural events history, and any relevant public comments/input, then develop a few sentences that discuss specific hazard vulnerabilities. You do not need to develop a sentence for every hazard, but identify a few issues you would like to highlight. Also list any known hazard vulnerabilities in your jurisdiction that may not be apparent from the risk assessment and other information provided.

Spending some time thinking about the results of the risk assessment and other noted vulnerabilities will be a big help in the development of your hazard mitigation action plan. The following are examples of vulnerabilities you could identify through this exercise:

- Over the past 10 years, the jurisdiction has experienced more than \$1 million in damage to critical assets from severe storm events.
- 17 critical assets are in areas that would be permanently inundated with 12 inches of sea level rise.
- One significant District asset is not equipped with a generator and four District buildings are unreinforced masonry or soft-story construction.
- An area along the river is eroding and threatening a District-owned treatment facility.

HAZARD MITIGATION ACTION PLAN INPUT

When preparing the hazard mitigation action plan in Phase 3, consider including actions to address the jurisdiction-specific vulnerabilities listed in this section.

HAZARD MITIGATION ACTION PLAN

Hazard Mitigation Action Plan Matrix

The hazard mitigation action plan is the heart of your jurisdictional annex. This is where you will identify the actions your jurisdiction would like to pursue with this plan.

Select Recommended Actions

All of the work that you have done thus far should provide you with ideas for actions. Throughout these instructions, green boxes labeled “Hazard Mitigation Action Plan Input” have indicated information that needs to be considered in the selection of mitigation actions. The following sections describe how to consider these and other information sources to develop a list of potential actions.

Be sure to consider the following factors in your selection of actions:

- Select actions that are consistent with the overall purpose, goals, and objectives of the hazard mitigation plan.
- Identify actions where benefits exceed costs.
- Include any action that your jurisdiction has committed to pursuing, regardless of grant eligibility.
- Know what is and is not grant-eligible under various federal grant programs (see the fact sheet on FEMA hazard mitigation grant programs in the toolkit and the table on the next page).

Material Previously Developed for This Annex

Capability Assessment Section—Planning and Regulatory Capability Table, Fiscal Capability Table, Administrative and Technical Capability Table, and Education and Outreach Table

Review these tables and consider the following:

- For any capability that you do not currently have, consider whether your jurisdiction should have this capability. If so, consider including an action to develop/acquire the capability.
- For any capability that you do currently have, consider whether this capability can be leveraged to increase or improve hazard mitigation in the jurisdiction.
- If any items listed in the Planning and Regulatory Capabilities table have not been updated in more than 10 years, consider an action to review and update the capability and, as appropriate, incorporate hazard mitigation principles or information obtained in the risk assessment.
- Consider including actions that are identified in other plans and programs (capital improvement plans, strategic plans, etc.) as actions in this plan.

Capability Assessment Section— Adaptive Capacity for Climate Change Table

Consider your responses to this section:

- For criteria that you listed as medium or low, think of ways you could improve this rating (see adaptive capacity portion of the mitigation best practices catalog).
- For criteria you listed as high, think about how you can leverage this capacity to improve or enhance mitigation or continue to improve this capacity.
- For criteria that you were unable to provide responses for, consider ways you could improve your understanding of this capacity (see mitigation best practices and adaptive capacity catalog).

Table 2. Federal Hazard Mitigation Grant Program Eligibility by Action Type

Eligible Activities	Hazard Mitigation Grant Program	BRIC	Flood Mitigation Assistance
Mitigation Projects			
Property Acquisition and Structure Demolition	√	√	√
Property Acquisition and Structure Relocation	√	√	√
Structure Elevation	√	√	√
Mitigation Reconstruction	√	√	√
Dry Floodproofing of Non-residential Structures	√	√	√
Generators	√	√	
Localized Flood Risk Reduction Projects	√	√	√
Non-Localized Flood Risk Reduction Projects	√	√	
Structural Retrofitting of Existing Buildings	√	√	√
Non-structural Retrofitting of Existing Buildings and Facilities	√	√	√
Safe Room Construction	√	√	
Infrastructure Retrofit	√	√	√
Soil Stabilization	√	√	√
Wildfire Mitigation	√	√	
Post-Disaster Code Enforcement	√		
Advance Assistance	√		
5 Percent Initiative Projects*	√		
Aquifer and Storage Recovery**	√	√	√
Flood Diversion and Storage**	√	√	√
Floodplain and Stream Restoration**	√	√	√
Green Infrastructure**	√	√	√
Miscellaneous/Other**	√	√	√
Hazard Mitigation Planning	√	√	√
Technical Assistance			√
Management Costs	√	√	√

* FEMA allows increasing the 5% initiative amount under the Hazard Mitigation Grant Program up to 10% for a presidential major disaster declaration. The additional 5% initiative funding can be used for activities that promote disaster-resistant codes for all hazards. As a condition of the award, either a disaster-resistant building code must be adopted or an improved Building Code Effectiveness Grading Schedule is required.

** Indicates that any proposed action will be evaluated on its own merit against program requirements. Eligible projects will be approved provided funding is available.

Integration Review Section

Review the items you identified in this section and consider an action that specifically says what the plan, code, ordinance etc. is and how it will be integrated.

Risk Ranking Section

You must identify at least one mitigation action that is clearly defined and actionable (i.e. not a preparedness or response action) for every hazard that is categorized in the risk ranking as “high” or “medium” risk.

Jurisdiction-Specific Vulnerabilities Section

Review the vulnerability issues that you identified in this section and consider actions to address them (see mitigation best practices catalog).

Status of Previous Plan Actions Section

If your jurisdiction participated in a previous hazard mitigation plan, be sure to include any actions that were identified as “carry over” actions.

Other Sources

Mitigation Best Practices Catalog

A catalog that includes best practices identified by FEMA and other agencies, as well as recommendations from the steering committee and other stakeholders, is included in your toolkit. Review the catalog and identify actions your jurisdiction should consider for its action plan.

Public Input

Review input received during the process, specifically the public survey results included in your toolkit.

Common Actions for All Partners

The following three actions have been prepopulated in your annex template; **these three actions should be included in every annex and should not be removed:**

- Where appropriate, support retro-fitting, purchase or relocation of structures located in high hazard areas, prioritizing those structures that have experienced repetitive losses and/or are located in high or medium ranked hazard.
- Actively participate in the plan maintenance protocols outlined in Volume 1 of this hazard mitigation plan.
- Purchase generators for critical facilities and infrastructure that lack adequate back-up power.

In addition, the core planning team recommends that every planning partner strongly consider the following actions:

- Identify and pursue strategies to increase adaptive capacity to climate change.
- Develop and implement a program to capture perishable data after significant events (e.g. high water marks, preliminary damage estimates, damage photos) to support future mitigation efforts including the implementation and maintenance of the hazard mitigation plan.
- Support the County-wide initiatives identified in Volume I of the hazard mitigation plan.
- Develop a post-disaster recovery plan and a debris management plan.
- Develop and/or update plans that support or enhance continuity of operations following disasters.

The specifics of all these common actions should be adjusted as needed for the particulars of each community.

Complete the Table

Complete the table titled “Hazard Mitigation Action Plan Matrix” for all the actions you have identified and would like to include in the plan:

- Enter the action number (see box at right) and description. **If the action is carried over from your previous hazard mitigation plan, return to the “Status of Previous Plan Actions” table you completed in Phase 1 and enter the new action number in the column labeled “Action # in Update.”**
- Indicate whether the action mitigates hazards for new and/or existing assets.
- Identify the specific hazards the action will mitigate (note: you must list each hazard by name; simply indicating “all hazards” is not deemed acceptable).
- Identify by number the mitigation plan objectives that the action addresses (see toolkit).
- Indicate who will be the lead in administering the action. This will most likely be a department within your jurisdiction (e.g. planning or public works). If you wish to indicate more than one department as responsible for the action, clearly identify one as the lead agency and list the others in the “supporting agency” column.
- Enter an estimated cost in dollars if known; otherwise, enter “High,” “Medium,” or “Low,” as determined for the prioritization process described in the following section.
- Identify funding sources for the action. If it is a grant, include the grant-providing agency as well as funding sources for any required cost share. Refer to your fiscal capability assessment to identify possible sources of funding and refer to the table on page 14 of these instructions for project eligibility for FEMA’s hazard mitigation assistance grant programs.
- Indicate the time line as “short-term” (1 to 5 years) or “long-term” (5 years or greater) or “ongoing” (a continual program)

Action Numbering

Actions are to be numbered using the three-letter code for your jurisdiction shown below, followed by a hyphen and the action’s sequential number:

- Cal State/Channel Islands—CSU-1, CSU-2...
- Calleguas Municipal Water—CAL-1, CAL-2...
- Casitas Municipal Water—CAS-1, CAS-2...
- Channel Is. Beach CSD—CIB-1, CIB-2...
- Conejo Recreation & Park—CRP-1, CRP-2...
- Ojai Valley Sanitary—OVS-1, OVS-2...
- Pleasant Valley Recreation & Park—PLV-1, PLV-2...
- Saticoy Sanitary—SAT-1, SAT-2...
- Triunfo Water & Sanitation—TRI-1, TRI-2...
- United Water Conservation—UWC-1, UWC-2...
- Ventura County Fire Protection—VFP-1, VFP-2...
- Ventura County Office of Education—VOE-1, VOE-2...
- Ventura County Watershed Protection—VWP-1, VWP-2...
- Ventura County Emergency Services—VES-1, VES-2...
- Ventura Regional Sanitation—VRS-1, VRS-2

Mitigation Action Priority

Complete the information in the table titled “Mitigation Action Priority” as follows:

- **Action #**—Indicate the action number from the Hazard Mitigation Action Plan Matrix table.
- **# of Objectives Met**—Enter the number of objectives the action will meet.
- **Benefits**—Enter “High,” “Medium” or “Low” as follows:
 - High—Action will provide an immediate reduction of risk exposure for life and property.
 - Medium—Action will have a long-term impact on the reduction of risk exposure for life and property, or action will provide an immediate reduction in the risk exposure for property.
 - Low—Long-term benefits of the action are difficult to quantify in the short term.

- **Cost**—Enter “High,” “Medium” or “Low” as follows:
 - High—Existing funding will not cover the cost of the action; implementation would require new revenue through an alternative source (for example, bonds, grants, and fee increases).
 - Medium—The action could be implemented with existing funding but would require a re-apportionment of the budget or a budget amendment, or the cost of the action would have to be spread over multiple years.
 - Low—The action could be funded under the existing budget. The action is part of or can be part of an ongoing existing program.
- **Do Benefits Exceed the Cost?**—Enter “Yes” or “No.” This is a qualitative assessment. Enter “Yes” if the benefit rating (high, medium or low) is the same as or higher than the cost rating (high benefit/high cost; high benefit/medium cost; medium benefit/low cost; etc.). Enter “No” if the benefit rating is lower than the cost rating (medium benefit/high cost, low benefit/medium cost; etc.)
- **Is the Action Grant-Eligible?**—Enter “Yes” or “No.” Refer to the fact sheet on FEMA hazard mitigation grant programs in the annex preparation toolkit and the table on page 14 of these instructions.
- **Can Action Be Funded Under Existing Program Budgets?**—Enter “Yes” or “No.” In other words, is this action currently budgeted for, or would it require a new budget authorization or funding from another source such as grants?
- **Implementation Priority**— Enter “High,” “Medium” or “Low” as follows:
 - High Priority—An action that meets multiple objectives, has benefits that exceed costs, and has a secured source of funding. Action can be completed in the short term (1 to 5 years).
 - Medium Priority—An action that meets multiple objectives, has benefits that exceed costs, and is eligible for funding though no funding has yet been secured for it. Action can be completed in the short term (1 to 5 years), once funding is secured. Medium-priority actions become high-priority actions once funding is secured.
 - Low Priority—An action that will mitigate the risk of a hazard, has benefits that do not exceed the costs or are difficult to quantify, has no secured source of funding, and is not eligible for any known grant funding. Action can be completed in the long term (1 to 10 years). Low-priority actions may be eligible for grant funding from programs that have not yet been identified.
- **Grant Pursuit Priority**— Enter “High,” “Medium” or “Low” as follows:
 - High Priority—An action that meets identified grant eligibility requirements, has high benefits, and is listed as high or medium implementation priority; local funding options are unavailable or available local funds could be used instead for actions that are not eligible for grant funding.
 - Medium Priority—An action that meets identified grant eligibility requirements, has medium or low benefits, and is listed as medium or low implementation priority; local funding options are unavailable.
 - Low Priority—An action that has not been identified as meeting any grant eligibility requirements.

Actions identified as high-grant-pursuit priority actions should be closely reviewed for consideration when grant funding opportunities arise.

Note: If a jurisdiction wishes to identify an action as high priority that is outside of the prioritization scheme for high priorities, a note indicating so should be inserted and a rationale should be provided.

Analysis of Mitigation Actions

In the table titled “Analysis of Mitigation Actions,” for each combination of hazard type and mitigation type, enter the numbers of all recommended actions that address that hazard type and can be categorized as that mitigation type. The mitigation types are as follows:

- **Prevention**—Government, administrative or regulatory actions that influence the way land and buildings are developed to reduce hazard losses. Includes planning and zoning, floodplain laws, capital improvement programs, open space preservation, and stormwater management regulations.
- **Property Protection**—Modification of buildings or structures to protect them from a hazard or removal of structures from a hazard area. Includes acquisition, elevation, relocation, structural retrofit, storm shutters, and shatter-resistant glass.
- **Public Education & Awareness**—Actions to inform residents and elected officials about hazards and ways to mitigate them. Includes outreach projects, real estate disclosure, hazard information centers, and school-age and adult education.
- **Natural Resource Protection**—Actions that minimize hazard loss and preserve or restore the functions of natural systems. Includes sediment and erosion control, stream corridor restoration, watershed management, forest and vegetation management, wetland restoration and preservation, and green infrastructure.
- **Emergency Services**—Actions that protect people and property during and immediately after a hazard event. Includes warning systems, emergency response services, and the protection of essential facilities.
- **Structural Projects**—Actions that involve the construction of structures to reduce the impact of a hazard. Includes dams, setback levees, floodwalls, retaining walls, and safe rooms.
- **Climate Resilience**—Actions that incorporate methods to mitigate and/or adapt to the impacts of climate change. Includes aquifer storage and recovery activities, incorporating future conditions projections in project design or planning, or actions that specifically address jurisdiction-specific climate change risks, such as sea-level rise or urban heat island effect.
- **Community Capacity Building**—Actions that increase or enhance local capabilities to adjust to potential damage, to take advantage of opportunities, or to respond to consequences. Includes staff training, memorandums of understanding, development of plans and studies, and monitoring programs.

This exercise demonstrates that the jurisdiction has selected a comprehensive range of actions. This table must show at least one action to address each “high” and “medium” ranked hazard. Planning partners should aim to identify at least one action for each mitigation type, but this is not required.

An example of a completed “Analysis of Mitigation Actions” table is provided below. Note that an action can be more than one mitigation type.

Sample Completed Table – Analysis of Mitigation Actions

Hazard Type	Action Addressing Hazard, by Mitigation Type							
	Prevention	Property Protection	Public Education & Awareness	Natural Resource Protection	Emergency Services	Structural Projects	Climate Resilience	Community Capacity Building
High-Risk Hazards								
Dam Failure	EX-2, 3, 4, 5, 6	EX-1, 6	EX-4, 6		EX-8, 11			EX-3, 4, 8, 9, 10
Drought	EX-2	EX-1	EX-4					EX-3, 4, 8, 9, 10
Medium-Risk Hazards								
Earthquake	EX-2, 3, 4, 5, 7	EX-1, 7	EX-4		EX-8, 11			EX-3, 4, 8, 9
Flooding	EX-2, 3, 4, 5, 6, 7	EX-1, 6, 7	EX-4, 6	EX-9	EX-8, 11	EX-6		EX-3, 4, 8, 9, 10
Landslide	EX-2, 3, 4, 5, 7	EX-1, 7	EX-4		EX-8, 11			EX-3, 4, 8, 9, 10
Low-Risk Hazards								
Severe Weather	EX-2, 3, 4, 5, 7	EX-1, 7, 9	EX-4		EX-8, 9, 11		EX-8, 7	EX-3, 4, 8, 9, 10
Wildfire	EX-2, 3, 4, 5, 7	EX-1, 7, 9	EX-4, 9	EX-9	EX-8, 11			EX-3, 4, 8, 9, 10

PUBLIC OUTREACH

FEMA requirements for public outreach will be met by the County's engagement efforts and are included in the main part of the plan. These may include public meetings, a StoryMap, surveys, etc. If individual jurisdictions want to have a more robust outreach for their local community, the public outreach table in each annex may be used to memorialize those local efforts.

This table should record local public outreach efforts made by your jurisdiction to inform the community of this hazard mitigation plan update process. Examples may include local surveys on hazard awareness/preparedness, social media blasts, press releases, and outreach to local groups (CERT, senior citizen organizations, etc.) **This section is optional.**

INFORMATION SOURCES USED FOR THIS ANNEX

This section should describe what resources you used to complete the annex and how you used them. The sources used for Phases 1 and 2 should have been entered previously. List any additional sources used for the preparation of the Phase 3 annex. Review to ensure that all materials used in all three phases are identified. Providing this information is a requirement to pass the state and FEMA review process.

FUTURE NEEDS TO BETTER UNDERSTAND RISK/VULNERABILITY

In this section, identify any future studies, analyses, reports, or surveys your jurisdiction needs to better understand its vulnerability to identified or currently unidentified risks. These could be needs based on federal or state agency mandates. **This section is optional.**

ADDITIONAL COMMENTS

Use this section to add any additional information pertinent to hazard mitigation and your jurisdiction not covered in this template. **This section is optional.**

THIS COMPLETES PHASE 3

1. DISTRICT NAME

1.1 LOCAL HAZARD MITIGATION PLANNING TEAM

Primary Point of Contact

Name, Title
Street Address
City, State ZIP
Telephone: xxx-xxx-xxxx
e-mail Address: xxx@xxx.xxx

Alternate Point of Contact

Name, Title
Street Address
City, State ZIP
Telephone: xxx-xxx-xxxx
e-mail Address: xxx@xxx.xxx

This annex was developed by the local hazard mitigation planning team, whose members are listed in Table 1-1.

Table 1-1. Local Hazard Mitigation Planning Team Members			
Name		Title	

1.2 JURISDICTION PROFILE

1.2.1 Overview

Insert Narrative Profile Information, per Instructions.

The [name of adopting body] assumes responsibility for the adoption of this plan; [name of oversight agency] will oversee its implementation.

All fire districts should include the following sentence (non-fire special purpose districts should delete the sentence):

The District participates/does not participate in the Public Protection Class Rating System and currently has a rating of #.

1.2.2 Service Area

The District service area covers [area in square miles], serving a population of [population].

1.2.3 Assets

Table 1-2 summarizes the assets of the District and their value.

Table 1-2. Special Purpose District Assets	
Asset	Value
Property	
[number] acres of land	\$ [value]
Equipment	
[description]	\$ [value]
[description]	\$ [value]
[description]	\$ [value]
[description]	\$ [value]
[description]	\$ [value]
Total:	\$ [value]
Critical Facilities	
[description – Include Address]	\$ [value]
[description – Include Address]	\$ [value]
[description – Include Address]	\$ [value]
[description – Include Address]	\$ [value]
Total:	\$ [value]

1.3 CURRENT TRENDS

Insert summary description of service trends.

1.4 CAPABILITY ASSESSMENT

This section describes an assessment of existing capabilities for implementing hazard mitigation strategies. The introduction at the beginning of this volume of the hazard mitigation plan describes the components included in the capability assessment and their significance for hazard mitigation planning.

Findings of the capability assessment were reviewed to identify opportunities to expand, initiate or integrate capabilities to further hazard mitigation goals and objectives. Where such opportunities were identified and determined to be feasible, they are included in the action plan. The “Analysis of Mitigation Actions” table in this annex identifies these as community capacity building mitigation actions. The findings of the assessment are presented as follows:

- An assessment of planning and regulatory capabilities is presented in Table 1-3.
- An assessment of fiscal capabilities is presented in Table 1-4.
- An assessment of administrative and technical capabilities is presented in Table 1-5.

- An assessment of education and outreach capabilities is presented in Table 1-6.
- Classifications under various community mitigation programs are presented in Table 1-7.
- The community's adaptive capacity for the impacts of climate change is presented in Table 1-8.

Table 1-3. Planning and Regulatory Capability

Plan, Study or Program	Date of Most Recent Update	Comment
Name of code, ordinance, policy, program or plan		
Name of code, ordinance, policy, program or plan		
Name of code, ordinance, policy, program or plan		
Name of code, ordinance, policy, program or plan		
Name of code, ordinance, policy, program or plan		

Table 1-4. Fiscal Capability

Financial Resource	Accessible or Eligible to Use?
Community Development Block Grants	Yes/No
Capital Improvements Project Funding	Yes/No
Authority to Levy Taxes for Specific Purposes	Yes/No
User Fees for Water, Sewer, Gas or Electric Service	Yes/No
<i>If yes, specify:</i> Enter Response	
Incur Debt through General Obligation Bonds	Yes/No
Incur Debt through Special Tax Bonds	Yes/No
Incur Debt through Private Activity Bonds	Yes/No
Withhold Public Expenditures in Hazard-Prone Areas	Yes/No
State-Sponsored Grant Programs	Yes/No
Development Impact Fees for Homebuyers or Developers	Yes/No
Other	Yes/No
<i>If yes, specify:</i> Enter Response	

Table 1-5. Administrative and Technical Capability

Staff/Personnel Resource	Available?
Planners or engineers with knowledge of land development and land management practices <i>If Yes, Department /Position:</i> Enter Response	Yes/No
Engineers or professionals trained in building or infrastructure construction practices <i>If Yes, Department /Position:</i> Enter Response	Yes/No
Planners or engineers with an understanding of natural hazards <i>If Yes, Department /Position:</i> Enter Response	Yes/No
Staff with training in benefit/cost analysis <i>If Yes, Department /Position:</i> Enter Response	Yes/No
Surveyors <i>If Yes, Department /Position:</i> Enter Response	Yes/No
Personnel skilled or trained in GIS applications <i>If Yes, Department /Position:</i> Enter Response	Yes/No
Scientist familiar with natural hazards in local area <i>If Yes, Department /Position:</i> Enter Response	Yes/No
Emergency manager <i>If Yes, Department /Position:</i> Enter Response	Yes/No
Grant writers <i>If Yes, Department /Position:</i> Enter Response	Yes/No
Other <i>If Yes, Department /Position:</i> Enter Response	Yes/No

Table 1-6. Education and Outreach Capability

Criterion	Response
Do you have a public information officer or communications office?	Yes/No
Do you have personnel skilled or trained in website development?	Yes/No
Do you have hazard mitigation information available on your website? <i>If yes, briefly describe:</i> Enter Response	Yes/No
Do you use social media for hazard mitigation education and outreach? <i>If yes, briefly describe:</i> Enter Response	Yes/No
Do you have any citizen boards or commissions that address issues related to hazard mitigation? <i>If yes, briefly describe:</i> Enter Response	Yes/No
Do you have any other programs in place that could be used to communicate hazard-related information? <i>If yes, briefly describe:</i> Enter Response	Yes/No
Do you have any established warning systems for hazard events? <i>If yes, briefly describe:</i> Enter Response	Yes/No

Table 1-7. Community Classifications

	Participating?	Classification	Date Classified
FIPS Code	Yes/No		Date
DUNS#	Yes/No		Date
Community Rating System	Yes/No		Date
Building Code Effectiveness Grading Schedule	Yes/No		Date
Public Protection	Yes/No		Date
Storm Ready	Yes/No		Date
Firewise	Yes/No		Date
Tsunami Ready	Yes/No		Date

Table 1-8. Adaptive Capacity for Climate Change

Criterion	Jurisdiction Rating ^a
Technical Capacity	
Jurisdiction-level understanding of potential climate change impacts Comment: Enter Comment	High/Medium/Low
Jurisdiction-level monitoring of climate change impacts Comment: Enter Comment	High/Medium/Low
Technical resources to assess proposed strategies for feasibility and externalities Comment: Enter Comment	High/Medium/Low
Jurisdiction-level capacity for development of greenhouse gas emissions inventory Comment: Enter Comment	High/Medium/Low
Capital planning and land use decisions informed by potential climate impacts Comment: Enter Comment	High/Medium/Low
Participation in regional groups addressing climate risks Comment: Enter Comment	High/Medium/Low
Implementation Capacity	
Clear authority/mandate to consider climate change impacts during public decision-making processes Comment: Enter Comment	High/Medium/Low
Identified strategies for greenhouse gas mitigation efforts Comment: Enter Comment	High/Medium/Low
Identified strategies for adaptation to impacts Comment: Enter Comment	High/Medium/Low
Champions for climate action in local government departments Comment: Enter Comment	High/Medium/Low
Political support for implementing climate change adaptation strategies Comment: Enter Comment	High/Medium/Low
Financial resources devoted to climate change adaptation Comment: Enter Comment	High/Medium/Low
Local authority over sectors likely to be negative impacted Comment: Enter Comment	High/Medium/Low

Criterion	Jurisdiction Rating ^a
Public Capacity	
Local residents knowledge of and understanding of climate risk <i>Comment:</i> Enter Comment	High/Medium/Low
Local residents support of adaptation efforts <i>Comment:</i> Enter Comment	High/Medium/Low
Local residents' capacity to adapt to climate impacts <i>Comment:</i> Enter Comment	High/Medium/Low
Local economy current capacity to adapt to climate impacts <i>Comment:</i> Enter Comment	High/Medium/Low
Local ecosystems capacity to adapt to climate impacts <i>Comment:</i> Enter Comment	High/Medium/Low
a. High = Capacity exists and is in use; Medium = Capacity may exist, but is not used or could use some improvement; Low = Capacity does not exist or could use substantial improvement; Unsure= Not enough information is known to assign a rating.	

1.5 INTEGRATION REVIEW

For hazard mitigation planning, “integration” means that hazard mitigation information is used in other relevant planning mechanisms, such as capital facilities planning, and that relevant information from those sources is used in hazard mitigation. This section identifies where such integration is already in place, and where there are opportunities for further integration in the future. Resources listed at the end of this annex were used to provide information on integration. The progress reporting process described in Volume 1 of the hazard mitigation plan will document the progress of hazard mitigation actions related to integration and identify new opportunities for integration.

1.5.1 Existing Integration

Some level of integration has already been established between local hazard mitigation planning and the following other local plans and programs:

- Plan or Program Name—Description
- Plan or Program Name—Description
- Plan or Program Name—Description
- Plan or Program Name—Description
- Plan or Program Name—Description

1.5.2 Opportunities for Future Integration

The capability assessment presented in this annex indicates opportunities to integrate this mitigation plan with other jurisdictional planning/regulatory capabilities. Capabilities were identified as integration opportunities if they can support or enhance the actions identified in this plan or be supported or enhanced by components of this plan. The capability assessment identified the following plans and programs that do not currently integrate hazard mitigation information but provide opportunities to do so in the future:

- Plan or Program Name—Description
- Plan or Program Name—Description
- Plan or Program Name—Description
- Plan or Program Name—Description
- Plan or Program Name—Description

Taking action to integrate each of these programs with the hazard mitigation plan was considered as a mitigation action to include in the action plan presented in this annex.

1.6 RISK ASSESSMENT

1.6.1 Jurisdiction-Specific Natural Hazard Event History

Table 1-9 lists past occurrences of natural hazards for which specific damage was recorded in this jurisdiction Other hazard events that broadly affected the entire planning area, including this jurisdiction, are listed in the risk assessments in Volume 1 of this hazard mitigation plan.

Table 1-9. Past Natural Hazard Events				
Type of Event	FEMA Disaster #		Date	Damage Assessment
Insert event type			Date	\$
Insert event type			Date	\$
Insert event type			Date	\$
Insert event type			Date	\$
Insert event type			Date	\$
Insert event type			Date	\$
Insert event type			Date	\$
Insert event type			Date	\$
Insert event type			Date	\$
Insert event type			Date	\$
Insert event type			Date	\$
Insert event type			Date	\$
Insert event type			Date	\$
Insert event type			Date	\$
Insert event type			Date	\$
Insert event type			Date	\$

1.6.2 Hazard Risk Ranking

Table 1-10 presents a local ranking of all hazards of concern for which this hazard mitigation plan provides complete risk assessments. As described in detail in Volume 1, the ranking process involves an assessment of the likelihood of occurrence for each hazard, along with its potential impacts on people, property and district operations. Mitigation actions target hazards with high and medium rankings.

Table 1-10. Hazard Risk Ranking					
Rank	Hazard		Risk Ranking Score		Risk Category
1					High/Medium/Low
2					High/Medium/Low
3					High/Medium/Low
4					High/Medium/Low
5					High/Medium/Low
6					High/Medium/Low
7					High/Medium/Low
8					High/Medium/Low
9					High/Medium/Low

1.6.3 Jurisdiction-Specific Vulnerabilities

Volume 1 of this hazard mitigation plan provides complete risk assessments for each identified hazard of concern. The following jurisdiction-specific issues have been identified based on a review of the results of the risk assessment, public involvement strategy, and other available resources:

- Insert as appropriate.
- Insert as appropriate.
- Insert as appropriate.

Mitigation actions addressing these issues were prioritized for consideration in the action plan presented in this annex.

1.7 STATUS OF PREVIOUS PLAN ACTIONS

If your jurisdiction has no previous hazard mitigation plan, please enter an “X” in the box at right and do not complete this section.

Table 1-11 summarizes the actions that were recommended in the previous version of the hazard mitigation plan and their implementation status at the time this update was prepared.

Table 1-11. Status of Previous Plan Actions				
Action Item from Previous Plan	Completed	Removed; No Longer Feasible	Carried Over to Plan Update	
			Check if Yes	Action # in Update
Insert Action Number & Text Comment: Enter Comment				
Insert Action Number & Text Comment: Enter Comment				
Insert Action Number & Text Comment: Enter Comment				
Insert Action Number & Text Comment: Enter Comment				

Action Item from Previous Plan	Completed	Removed; No Longer Feasible	Carried Over to Plan Update	
			Check if Yes	Action # in Update
Insert Action Number & Text				
Comment: Enter Comment				
Insert Action Number & Text				
Comment: Enter Comment				
Insert Action Number & Text				
Comment: Enter Comment				
Insert Action Number & Text				
Comment: Enter Comment				
Insert Action Number & Text				
Comment: Enter Comment				
Insert Action Number & Text				
Comment: Enter Comment				
Insert Action Number & Text				
Comment: Enter Comment				
Insert Action Number & Text				
Comment: Enter Comment				

1.8 HAZARD MITIGATION ACTION PLAN

Table 1-12 lists the actions that make up the hazard mitigation action plan for this jurisdiction. Table 1-13 identifies the priority for each action. Table 1-14 summarizes the mitigation actions by hazard of concern and mitigation type.

Table 1-12. Hazard Mitigation Action Plan Matrix

Benefits New or Existing Assets	Objectives Met	Lead Agency	Support Agency	Estimated Cost	Sources of Funding	Timeline ^a
Action xxx-1—Where appropriate, support retrofitting, purchase or relocation of structures located in hazard areas, prioritizing those that have experienced repetitive losses and/or are located in high- or medium-risk hazard areas.						
<u>Hazards Mitigated:</u> Enter Response						
Existing	Enter Response	Enter Response	Enter Response	High	Grant Funding	Short-term
Action xxx-2—Actively participate in the plan maintenance protocols outlined in Volume 1 of this hazard mitigation plan.						
<u>Hazards Mitigated:</u> All hazards						
New & Existing	Enter Response	Enter Response	Enter Response	Low	Staff Time, General Funds	Short-term
Action xxx-3— Purchase generators for critical facilities and infrastructure that lack adequate backup power, including [REDACTED].						
<u>Hazards Mitigated:</u> Dam failure, earthquake, flooding, landslide, severe weather, tsunami, wildfire						
Existing	Enter Response	Enter Response	Enter Response			

Benefits New or Existing Assets	Objectives Met	Lead Agency	Support Agency	Estimated Cost	Sources of Funding	Timeline ^a
Action xxx-4—Description						
<u>Hazards Mitigated:</u>	Enter Response					
Enter Response	Enter Response	Enter Response	Enter Response	Enter Response	Enter Response	Enter Response
Action xxx-5—Description						
<u>Hazards Mitigated:</u>	Enter Response					
Enter Response	Enter Response	Enter Response	Enter Response	Enter Response	Enter Response	Enter Response
Action xxx-6—Description						
<u>Hazards Mitigated:</u>	Enter Response					
Enter Response	Enter Response	Enter Response	Enter Response	Enter Response	Enter Response	Enter Response
Action xxx-7—Description						
<u>Hazards Mitigated:</u>	Enter Response					
Enter Response	Enter Response	Enter Response	Enter Response	Enter Response	Enter Response	Enter Response
Action xxx-8—Description						
<u>Hazards Mitigated:</u>	Enter Response					
Enter Response	Enter Response	Enter Response	Enter Response	Enter Response	Enter Response	Enter Response

a. Short-term = Completion within 5 years; Long-term = Completion within 10 years; Ongoing= Continuing new or existing program with no completion date

Acronyms used here are defined at the beginning of this volume.

Table 1-13. Mitigation Action Priority

Action #	# of Objectives Met	Benefits	Costs	Do Benefits Equal or Exceed Cost?	Is Project Grant-Eligible?	Can Project Be Funded Under Existing Programs/ Budgets?	Implementation Priority ^a	Grant Pursuit Priority ^a
1								
2								
3								
4								
5								
6								
7								
8								
9								

a. See the introduction to this volume for explanation of priorities.

Table 1-14. Analysis of Mitigation Actions									
Hazard Type	Action Addressing Hazard, by Mitigation Type ^a								
	Prevention	Property Protection	Public Education & Awareness	Natural Resource Protection	Emergency Services	Structural Projects	Climate Resilient	Community Capacity Building	
High-Risk Hazards									
Earthquake									
Wildfire									
Coastal Flooding									
Sea Level Rise									
Medium-Risk Hazards									
Severe Wind									
Flash Flooding									
Heavy Rain									
Winter Storm									
Low-Risk Hazards									
Thunderstorms									
Light Flooding									
Minor Wind									

a. See the introduction to this volume for explanation of mitigation types.

1.9 PUBLIC OUTREACH

Table 1-15 lists public outreach activities for this jurisdiction.

Table 1-15. Local Public Outreach		
Local Outreach Activity	Date	Number of People Involved

1.10 INFORMATION SOURCES USED FOR THIS ANNEX

The following technical reports, plans, and regulatory mechanisms were reviewed to provide information for this annex.

- <INSERT DOCUMENT NAME AND DESCRIPTION OF HOW IT WAS USED>
- <INSERT DOCUMENT NAME AND DESCRIPTION OF HOW IT WAS USED>
- <INSERT DOCUMENT NAME AND DESCRIPTION OF HOW IT WAS USED>

The following outside resources and references were reviewed:

- **Hazard Mitigation Plan Annex Development Toolkit**—The toolkit was used to support the identification of past hazard events and noted vulnerabilities, the risk ranking, and the development of the mitigation action plan.
- <INSERT DOCUMENT NAME AND DESCRIPTION OF HOW IT WAS USED>

1.11 FUTURE NEEDS TO BETTER UNDERSTAND RISK/VULNERABILITY

Insert text, if any; otherwise, delete section

1.12 ADDITIONAL COMMENTS

Insert text, if any; otherwise, delete section

CITY COUNCIL OF THE CITY OF OXNARD

RESOLUTION NO.

**A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF OXNARD
AUTHORIZING THE ADOPTION OF THE
VENTURA COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN**

WHEREAS, Ventura County is subject to a variety of natural hazards that increase the risk to life, property, environment, and the County's economy; and

WHEREAS, the City of Oxnard anticipates climate change will exacerbate the severity, frequency, and impacts of natural hazards; and

WHEREAS, pro-active mitigation of known hazards before a disaster event can reduce or eliminate long-term risk to life and property; and

WHEREAS, the City of Oxnard is committed to increasing the adaptive capacity and resiliency of the infrastructure, health, housing, economy, government services, education, environment, and land use systems in the City; and

WHEREAS, The federal Disaster Mitigation Act of 2000 (Public Law 106-390) requires all cities, counties, and special districts to have adopted a Hazard Mitigation Plan to be eligible for funding under multiple Federal Emergency Management Agency (FEMA) pre-and post-disaster grant programs; and

WHEREAS, in accordance with FEMA requirements at 44 C.F.R. §201.6, the County of Ventura formed a partnership with local governments and special districts to prepare the updated Ventura County Multi-Jurisdictional Hazard Mitigation Plan (HMP), which analyzes the risk of natural hazards affecting the County and specifies potential mitigation measures to address or reduce risk; and

WHEREAS, the coalition has completed a planning process that engages the public, assesses the risk and vulnerability to the impacts of natural hazards, develops a mitigation strategy consistent with a set of uniform goals and objectives, and creates a plan for implementing, evaluating, and revising this strategy; and

WHEREAS, the HMP partnership includes:

- County of Ventura
- City of Camarillo
- City of Fillmore
- City of Moorpark
- City of Ojai
- City of Oxnard
- City of Port Hueneme

- City of Santa Paula
- City of Simi Valley
- City of Thousand Oaks
- City of Ventura
- California State University, Channel Islands
- Calleguas Municipal Water District
- Casitas Municipal Water District
- Channel Islands Beach Community Services District
- Conejo Recreation and Park District
- Ojai Valley Sanitary District
- Pleasant Valley Recreation and Park District
- Saticoy Sanitary District
- Triunfo Water and Sanitation District
- United Water Conservation District
- Ventura County Fire Protection District
- Ventura County Office of Education
- Ventura County Public Works Agency-Watershed Protection
- Ventura Regional Sanitation District

WHEREAS, the HMP partnership completed a coordinated, FEMA-prescribed planning process that engaged the public, assessed the risk and vulnerability to the impacts of natural hazards, developed a mitigation strategy consistent with a set of uniform goals and objectives, and created a plan for implementing, evaluating, and revising the strategy over the plan's 5-year cycle; and

WHEREAS, the HMP partnership invited public comment, and conducted steering committee meetings and other public meetings throughout the process to inform the public and obtain countywide input on the HMP and actions in the plan; and

WHEREAS, the HMP is comprised of two volumes: Volume 1 (Area-Wide Information), and Volume 2 (Jurisdictional Annexes); and

WHEREAS, the City of Oxnard has reviewed the HMP and affirms that its actions will reduce the potential for harm to people and property from future hazard occurrences within our community; and

WHEREAS, the HMP has been reviewed by the California Office of Emergency Services (Cal OES) and the Federal Emergency Management Agency (FEMA), and has been determined to be eligible for final approval pending its adoption by the Ventura County Board of Supervisors and all of its jurisdictional partners; and

WHEREAS, the City of Oxnard, as a fully participating jurisdiction of the HMP partnership, is an eligible sub-applicant to the State of California under FEMA's hazard mitigation grant program guidance; and

WHEREAS, adoption by the City Council demonstrates the jurisdiction's commitment to fulfilling the mitigation goals and objectives outlined in the HMP as funding allows.

NOW, THEREFORE, BE IT RESOLVED that the City of Oxnard hereby adopts the Ventura County Multi-Jurisdictional Hazard Mitigation Plan, consisting of Volume 1 in its entirety; and the following parts of the Volume 2: Jurisdictional Annexes: (1) the Introduction; (2) Section 6 - the City of Oxnard annex; and (3) Appendices A and B.

BE IT FURTHER RESOLVED that the City Council directs City staff to:

1. Use the HMP to guide pre-and post-disaster hazard mitigation efforts;
2. Pursue implementation of the identified mitigation actions subject to the limitations of available funding and staff;
3. Coordinate the strategies in the HMP with other planning programs and mechanisms under its jurisdictional authority;
4. Continue support of ongoing countywide hazard mitigation efforts; and
5. Continue to participate in the regional planning partnership as described by the HMP.

PASSED AND ADOPTED on this ____ day of _____, 2022, by the following vote:

AYES:

NOES:

ABSENT:

ABSTAIN:

John C. Zaragoza, Mayor

ATTEST:

Rose Chaparro, City Clerk

APPROVED AS TO FROM:

Stephen Fischer, City Attorney

Ventura County

Multi-Jurisdictional Hazard Mitigation Plan

Update 2022

EXECUTIVE SUMMARY



June 2022



Ventura County Multi-Jurisdictional Hazard Mitigation Plan Update 2022



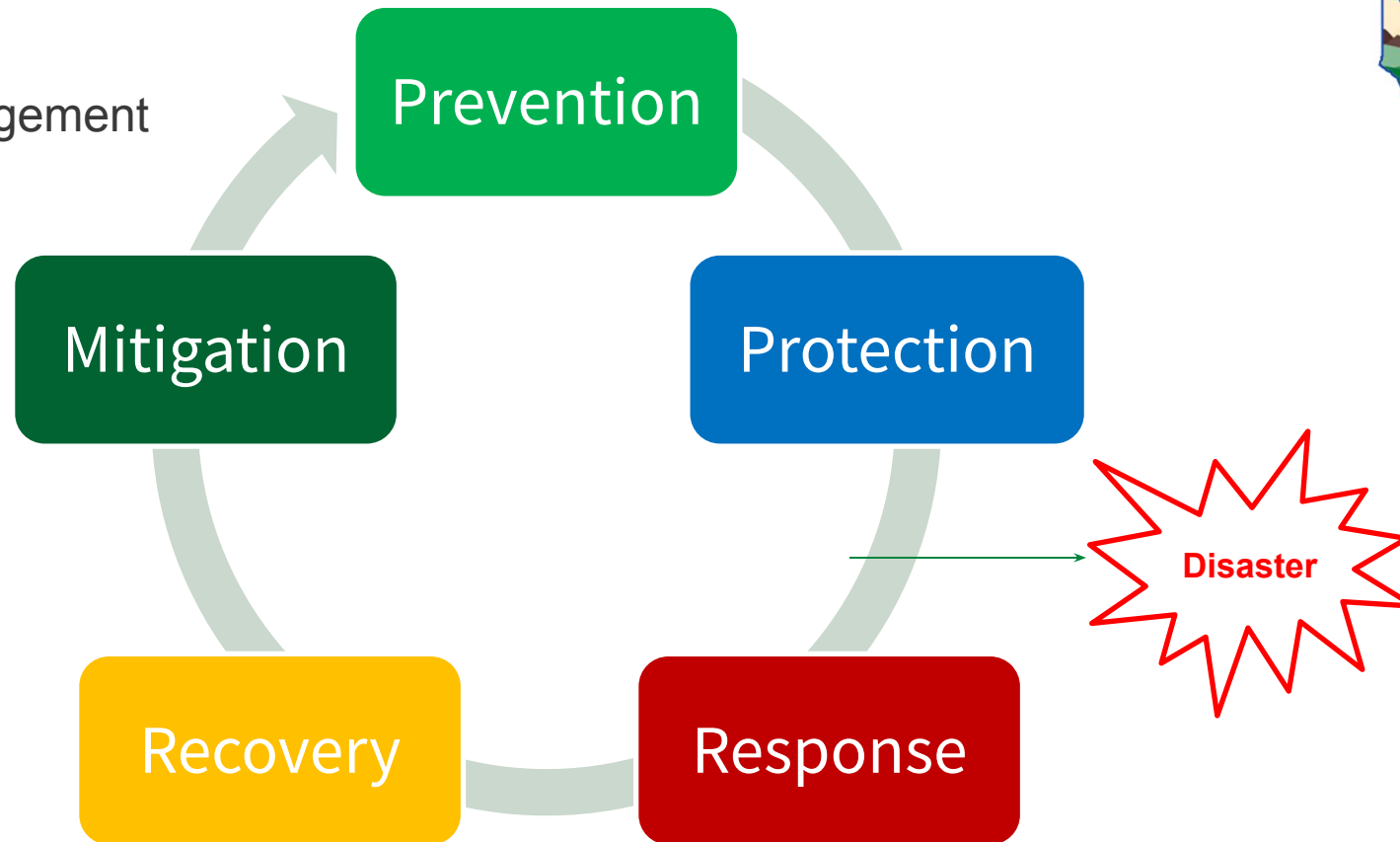
Staff Recommendation

That the Community Services, Public Safety, and Housing & Development Committee recommends that the City Council adopt the attached Resolution approving the 2022 update of the Ventura County Multi-Jurisdictional Hazard Mitigation Plan.



What is Mitigation?

Five Phases of
Emergency Management



“Sustained action taken to reduce or eliminate long-term risk to life and property”

Disaster Mitigation Act of 2000



Federal legislation that establishes a pre-disaster hazard mitigation program and requires the national post disaster Hazard Mitigation Grant Program.

- Encourages and rewards local and state pre-disaster planning
- Integrates state and local planning
- Results in faster, more efficient allocation of funding and more efficient risk reduction projects
- Specific required plan elements:
 - Risk assessment
 - Public outreach and participation
 - Process for update
 - Formal Cal OES and FEMA review

Benefits of Hazard Mitigation Plans



- Establish and maintain eligibility for grant funds (\$\$\$ for projects)
- Improve understanding of risks and vulnerabilities
- Reduce negative impact of natural hazards
 - Actions save lives, reduce displacement, and speed recovery
- Encourage sustainable actions
 - Build strong, resilient, self-sufficient communities
- Foster collaboration between local jurisdictions and residents

Ventura County Multi-Jurisdictional HMP



Volume 1 (486 pages)

- Part 1 – Planning Process & County Profile
- Part 2 – Risk Assessment
- Part 3 – Mitigation Strategy

Volume 2 (676 pages)

- Planning Partner Annexes – contains profiles and action items
 - City of Oxnard Annex: Section 6

Ventura County Planning Partners



Municipalities

- Ventura County (Unincorporated Areas)
- City of Camarillo
- City of Fillmore
- City of Moorpark
- City of Ojai
- City of Oxnard
- City of Port Hueneme
- City of Santa Paula
- City of Simi Valley
- City of Thousand Oaks
- City of Ventura

Special-Purpose Districts

- California State University, Channel Islands
- Calleguas Municipal Water District
- Casitas Municipal Water District
- Channel Islands Beach Community Services District
- Conejo Recreation and Park District
- Ojai Valley Sanitary District
- Pleasant Valley Recreation and Park District
- Saticoy Sanitary District
- Triunfo Water and Sanitation District
- United Water Conservation District
- Ventura County Fire Protection District
- Ventura County Office of Education
- Ventura County Public Works Agency-Watershed Protection
- Ventura Regional Sanitation District

Ventura County Planning Partners



City of Oxnard Planning Team

- City Manager's Office
- Police Department
- Fire Department
- Public Works
- Human Resources
- Community Development
- Finance
- Cultural and Community Services
- City Attorney's Office
- IT



Hazards Included in the Ventura County MJHMP



Hazards of Concern

- Dam failure
- Drought
- Earthquake
- Flood
- Landslide
- Sea-level rise and coastal erosion
- Severe storms
- Severe weather
- Tsunami
- Wildfire

Hazards of Interest

- Agricultural and biological hazards
- Pandemic

Climate change is profiled, describing how it could affect the hazards of concern.

Project Mission Statement and Goals



The Ventura County Multi-Jurisdictional Hazard Mitigation Plan will establish and promote a comprehensive mitigation strategy and effort to equitably reduce risk and increase the resiliency of the community and environment from natural hazards.

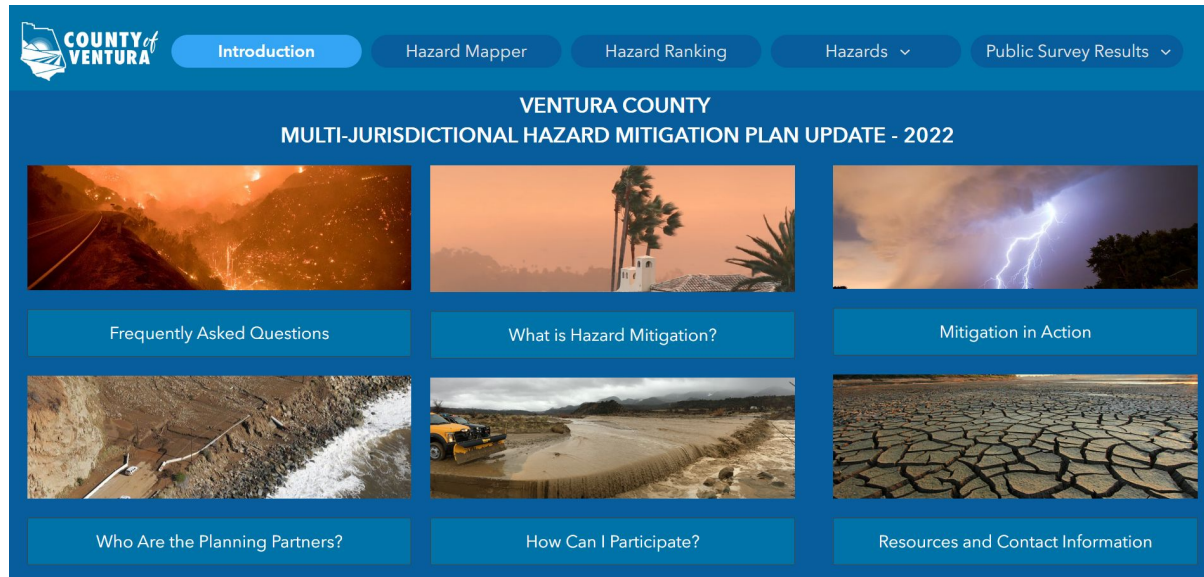
- Protect life, property, and the environment, and minimize displacement due to natural hazard events.
- Effectively communicate natural hazard risks and mitigation strategies to the whole community.
- Pursue development and implementation of feasible, cost-effective, and environmentally sound hazard mitigation measures.
- Prioritize multi-objective hazard mitigation actions and those that reduce risk to vulnerable communities.
- Coordinate with other plans and programs that can support or enhance hazard mitigation.
- Enhance the County's capability and capacity to prepare for, respond to, and recover from the impacts of natural hazards.
- Proactively anticipate the risks of future impacts from hazards.
- Increase the County's adaptive capacity to reduce risk from hazard impacts.
- Promote proactive, self-sufficient mitigation and response abilities.
- Reduce risk to and increase the resilience of critical infrastructure and community lifelines.

Public Engagement Process



- Open Steering Committee meetings
- Public meetings and presentations
- Information on County Plans - Ready Ventura County and other planning partner websites
- Public survey
- Public Service Announcement video developed by OES and VCPWA-Watershed Protection
- Draft Hazard Mitigation Plan 3-week public comment period
- Interactive StoryMap on Ventura County MJHMP Update 2021 (arcgis.com)

Public Outreach – Story Map and PSA Video



Status and What's Next



- Cal OES and FEMA approved the Ventura County Multi-Jurisdictional Hazard Mitigation Plan
- Ventura County Board of Supervisors adopts the plan (**Tuesday, July 12, 2022**)
- Each planning partner adopts Volume 1 and their annex in Volume 2
 - City of Oxnard Community Services, Public Safety, Housing & Development Committee (**Tuesday, July 26, 2022**)
 - Oxnard City Council (**September 2022**)
- Pursue grant funding opportunities made available by this plan!
 - [Grants Management \(ca.gov\)](#)
 - [FEMA Grants | FEMA.gov](#)