City of Villa Park

Local Hazard Mitigation Plan

FEMA Approval Date: XXXX

Date of City Council Approval: XXXX

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SECTION 1. INTRODUCTION

While we cannot predict or protect ourselves against every possible hazard that may strike the community, we can anticipate many of the natural hazards that can affect the City of Villa Park (City) and take steps to avoid or reduce the harm that these hazards could cause our community.

The people and property in Villa Park are at risk from a variety of natural hazards which have the potential to cause loss of life, property damage, infrastructure failure and damage to the environment. Some hazards are natural, such as earthquakes, other hazards are exacerbated by human land use, such as building along steep slopes and development within floodplains. A natural hazard can result in damages and hardships for an entire community for many years following the event. The most relevant risks to the City include flooding, drought, earthquakes have all occurred in the City within the last 50 years.

This section describes the purpose of the Local Hazard Mitigation Plan (LHMP or the Plan) and characterizes the community and service area including existing land uses and development trends. Other parts of the LHMP include a description of the planning process, hazard identification, risk assessments, community capability assessment, and development of mitigation strategies. The Plan's maintenance and implementation of mitigation strategies are also included in the following sections.

1.1 Purpose of the Plan

Emergencies and disasters can leave people injured or displaced; result in fatalities; cause significant impacts to our communities, businesses, public infrastructure and environment; and cost tremendous amounts in terms of response and recovery dollars and economic loss. Hazard mitigation actions reduce the risk of personal damage, loss of life, and property damages that include facilities and services crucial to the stability of the City's infrastructure that can be caused by emergencies and disasters.

Repairs and reconstruction after disasters are often completed quickly and simply restore infrastructure to pre-disaster conditions. Such efforts expedite a return to normalcy; however, merely replicating pre-disaster conditions results in a cycle of damage, reconstruction, and repeated damage. Hazard mitigation attempts to break this cycle by reducing hazard vulnerability of the City's infrastructure and intends to reduce and/or eliminate loss of life and property.

The purpose of preparing of City's LHMP is to assess its current state and preparedness for potential hazards, evaluate and incorporate ongoing mitigation activities and related programs, determine additional mitigation measures needed, outline a strategy for implementation of mitigation projects, and plan for continued evaluation of the natural disaster risks that can significantly affect the City. This LHMP is an integral part of the City's long-term strategy to minimize infrastructure damage from natural and other disasters.

Considering the difficulty in predicting when a hazard will occur, this LHMP is intended to assist the City of Villa Park in reducing its risk from natural hazards by identifying resources and strategies for risk reduction. Through careful planning and collaboration among public agencies, stakeholders, and citizens, it is possible to minimize losses that can occur from disasters. Hazard

mitigation is any action taken to eliminate or reduce long-term risks to human life and property from natural hazards. Along with preparedness, response, and recovery, mitigation is an essential element in emergency management. The established mitigation projects provided were identified and reviewed by members of the City's Police and Fire Safety Team.

City staff, customers, and professionals active in disaster planning, response, and mitigation provided important input in the development of the LHMP including recommended goals and objectives, mitigation measures, and priorities for actions.

This plan fulfills the requirements of the following programs:

1. **Pre-Disaster Mitigation (PDM)**
2. **Hazard Mitigation Grant Program (HMGP)**
3. **Flood Mitigation Assistance (FMA) Program**
4. **National Flood Insurance Program (NFIP)**

Section 322 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, 42 U.S.C. 5165, enacted under section 104 of the Disaster Mitigation Act of 2000, P.L. 106-390, provides new and revitalized approaches to mitigation planning. Section 322, in concert with other sections of the Act, provides a significant opportunity to reduce the Nation's disaster losses through mitigation planning and emphasizing the need for State, local and tribal entities to closely coordinate mitigation planning and implementation efforts. A major requirement of the law is the development of local hazard mitigation plans. These plans must be developed and approved by the State of California Governor's Office of Emergency Services (CalOES) and Federal Emergency Management Agency (FEMA) every five years for the local jurisdictions to be eligible for HMGP funding from State- and President-declared disasters that occurs after 2001. Local mitigation plans must be reviewed, updated and re-approved by FEMA every five years to remain eligible. This LHMP has been updated to meet the requirements of the Stafford Act and the regulations established by FEMA.

1.2 Authority

In 2000, FEMA adopted revisions to the Code of Federal Regulations. This revision is known as "Disaster Mitigation Act (DMA)." DMA 2000, Section 322 (a-d) requires that local governments, as a condition of receiving federal disaster mitigation funds, have a Hazard Mitigation Plan that describes the process for assessing hazards, risks, and vulnerabilities, identifying and prioritizing mitigation actions, and engaging/soliciting input from the community (public), key stakeholders, and adjacent jurisdictions/agencies.

Senate Bill No. 379 will, upon the next revision of a local hazard mitigation plan on or after January 1, 2023, or, if the local jurisdiction has not adopted a local hazard mitigation plan, beginning on or before January 1, 2028, require the safety element to be reviewed and updated as necessary to address climate adaptation and resiliency strategies applicable to that city or county.

The City of Villa Park was founded in 1962 and is located in central Orange County. The City has a population of 5,951 and is 2.1 square miles making it the smallest city in Orange County. The City operates with six full time employees. The City contracts for many of its services including

Building Department services (permitting and inspection), Civil Engineering, Traffic Engineering, Planning Department, Fire Protection, Law Enforcement, and legal services through an appointed City Attorney.

1.3 What's New

The 2021 Local Hazard Mitigation Plan (LHMP) for the City of Villa Park outlined the planning process, assessed the risks posed by various hazards within the service area, and presented a comprehensive strategy to reduce those risks and vulnerabilities. Since FEMA approved the plan, the City has made progress in implementing its mitigation strategy. As part of the 2025 LHMP update, the 2021 plan was thoroughly reviewed and revised to reflect current conditions and priorities, aligning the strategy with goals for the next five years. This section of the updated plan includes the following components:

What's New in the Plan Update: This portion explains the approach taken to update the plan, highlighting new analyses, data, and information that reflect the City's current conditions. It includes updated hazard and risk assessment data for the service area and discusses trends in development that impact infrastructure vulnerability and related concerns. These updates are detailed in their respective sections of the 2025 LHMP.

Summary of Significant Changes to Current Conditions and Hazard Mitigation Priorities: This section outlines major changes in existing conditions, shifts in vulnerability, and how these changes have influenced the City's hazard mitigation priorities.

2021 Mitigation Strategy Status and Achievements: This section reports on the progress of mitigation actions identified in the 2021 plan, noting which projects have been completed, are no longer applicable, or are recommended for inclusion in the updated 2025 strategy.

The "What's New" section serves to document the City's evolving risk and vulnerability profile, as well as updates to its overall mitigation efforts. Completing the 2025 LHMP update demonstrates the City's ongoing commitment and active participation in hazard mitigation planning.

1.4 New Risk Assessment

During its comprehensive review and revision of each section of the plan, the City determined that incorporating updated data—when available—would improve the quality of the risk assessment and inform the development of the revised mitigation strategy. Key updates to the data used in this plan are summarized below and are also cited throughout Section 4, *Risk Assessment*, as well as in other relevant sections of this document. These new datasets and the accompanying analysis were instrumental in shaping the mitigation strategy outlined in Section 5.

Notable updates and new analyses in this plan include:

- A revised assessment of hazards currently impacting the City's service area, with additional hazards added to the planning scope.
- A full overhaul of the risk assessment for each hazard, including revised hazard profiles, new records of hazard events, and an updated vulnerability analysis reflecting the changes listed below.
- An updated flood hazard analysis, now incorporating both 100-year and 500-year flood scenarios, using new and revised Digital Flood Insurance Rate Maps (DFIRMs).
- A more detailed and refined vulnerability assessment.

Integration of data from the 2020 U.S. Census, which was used in a spatial (intersect) analysis to estimate how much of the population is at risk from hazards such as flooding, drought, earthquakes, windstorms, and wildfires.

1.5 Successful Mitigation Implementation

The City has not implemented any hazard mitigation measures identified in the prior LHMP due lack of critical facilities under the City's control but will be pursuing more mitigation measures as listed in the subsequent sections of this updated LHMP.

1.6 Community Profile

Physical Setting

The City of Villa Park is in the center of Orange County and covers an area of approximately 2.1 square miles. It is surrounded by the City of Orange, and is close to Anaheim Hills. Villa Park's boundaries are comprised of Santiago Boulevard, which generally runs north-south, eastward to Santiago Creek and Cannon Street (Orange) or Imperial Highway (Anaheim Hills), and from Meats Avenue (north) southward to approximately Villa Park Road/Lincoln Avenue.

Figure 1. City of Villa Park - Location Within the State of California

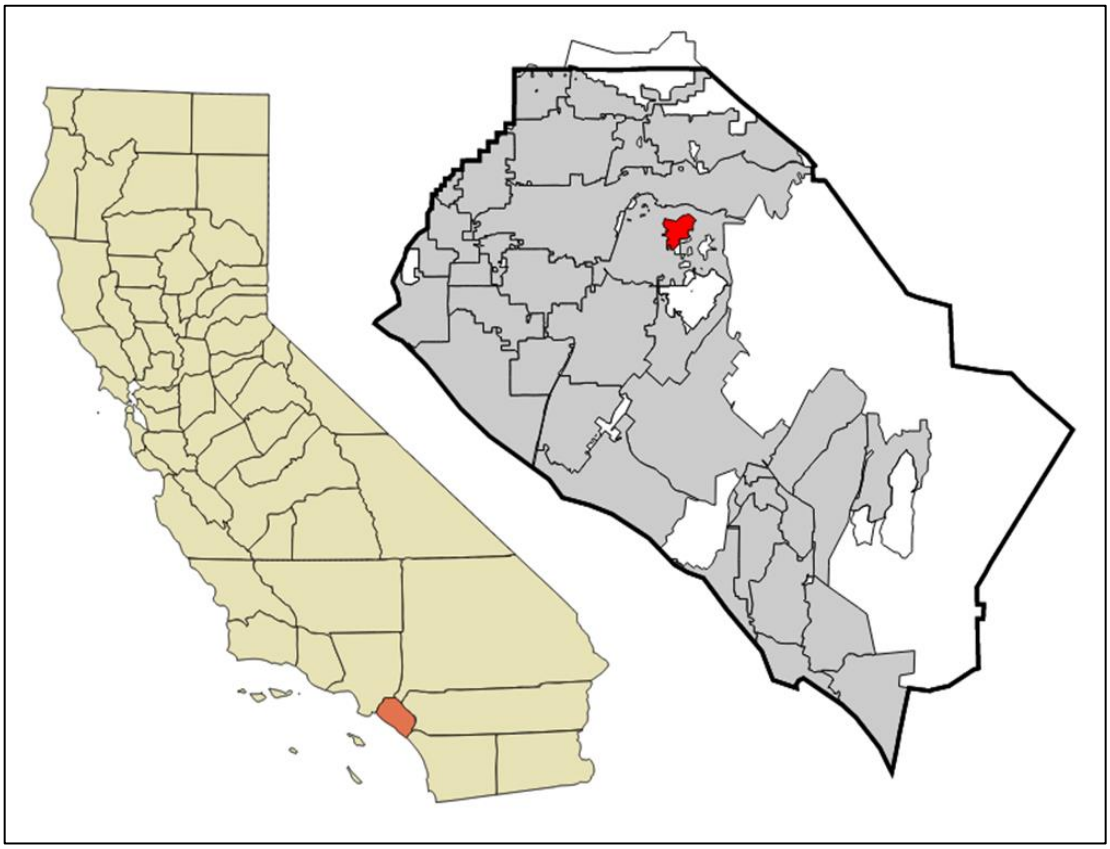
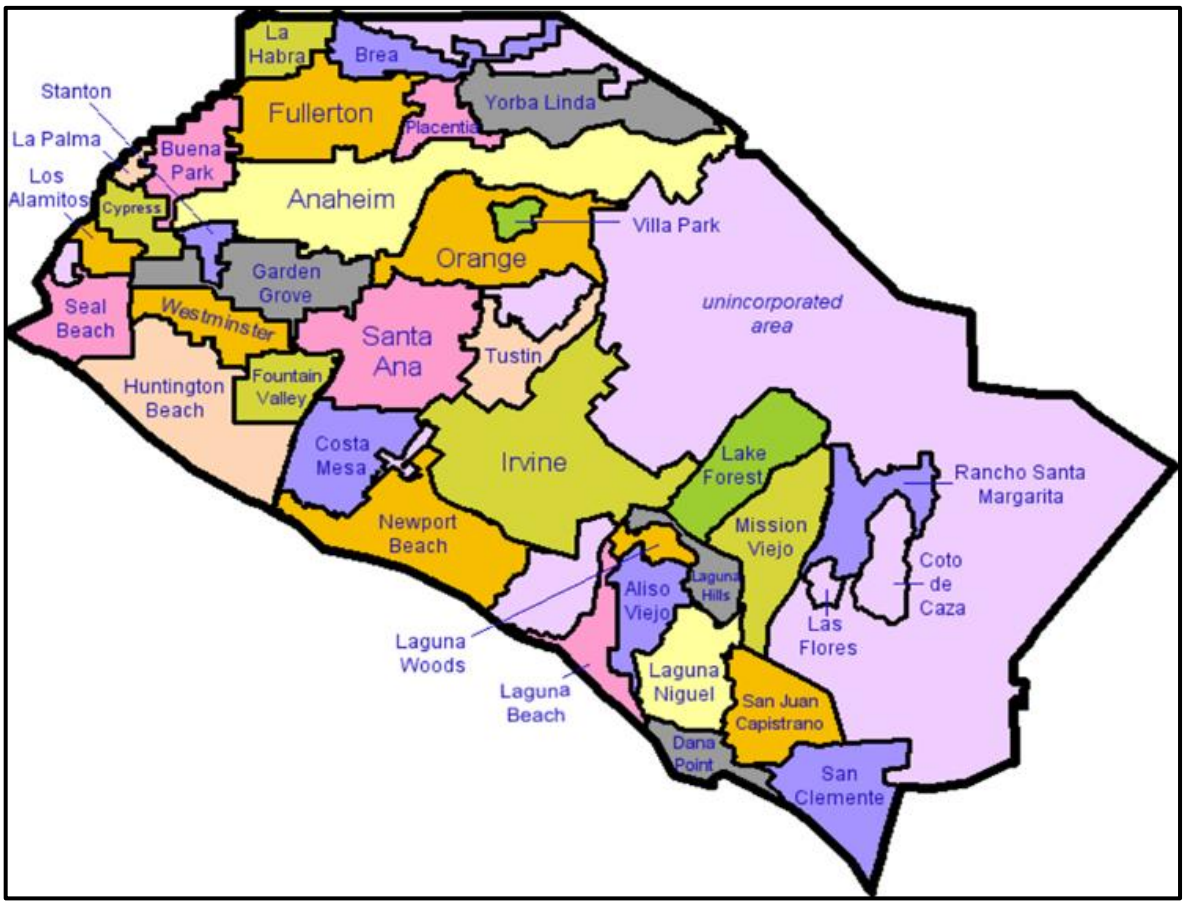


Figure 2. City of Villa Park - Location Within Orange County



History

The City of Villa Park was incorporated in 1962 and is a relatively affluent City located in the center of Orange County, California. It is surrounded by the City of Orange, and is close to Anaheim Hills. Villa Park was, for many years, an agricultural community producing grapes, walnuts, apricots, and finally, citrus, which was the major crop for about 60 years and is most closely associated with its development. It was the citrus ranchers and their families who molded Villa Park into a vital community and organized its incorporation to save it from what they felt were unwelcome zoning practices from the eastward-moving City of Orange.

1.7 Climate

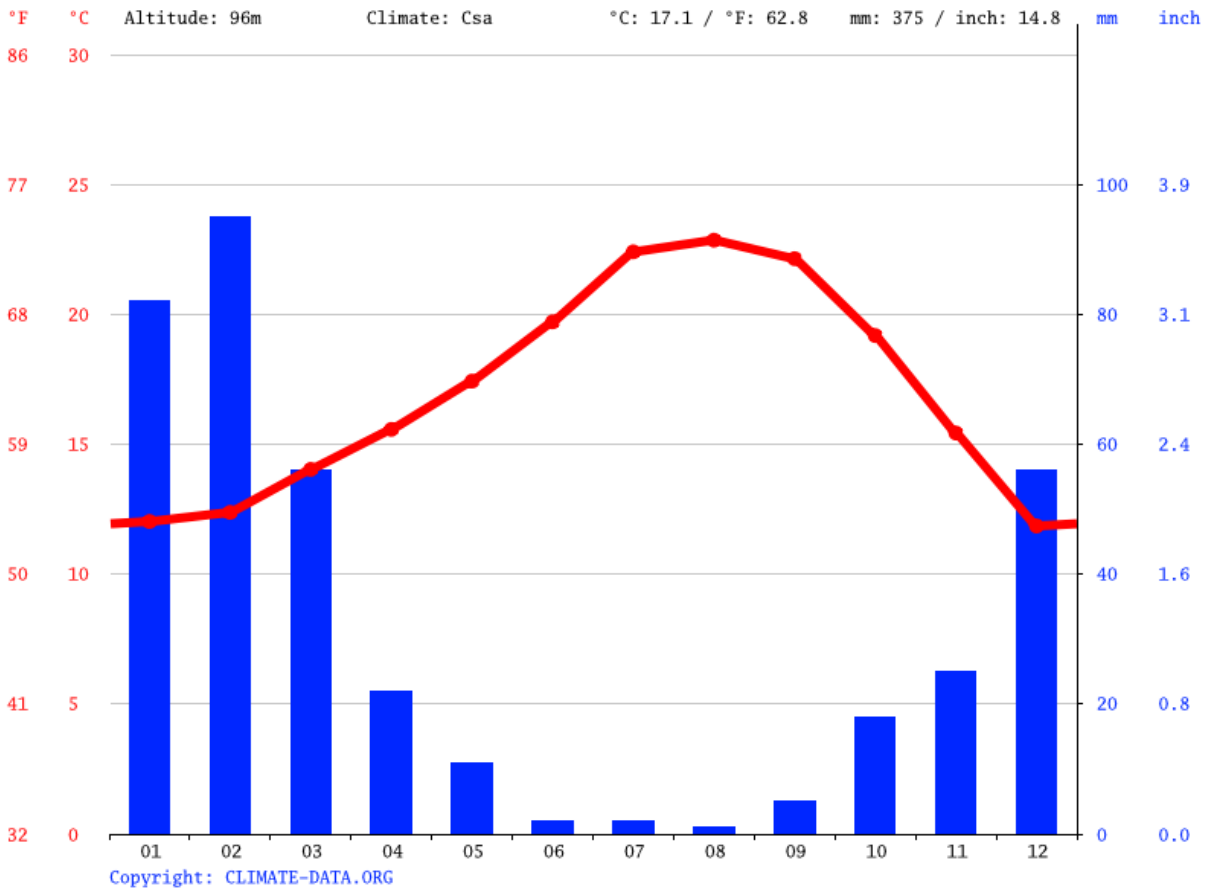
The average rainfall in the City of Villa Park is 1.23 of an inch ranging from 45 to 85 degrees Fahrenheit[1]. The region's temperate Mediterranean climate fosters moderate winters, hot summers, and generally low humidity.

[1] Villa Park, CA Climate, Climate Data, www. en.climate-data.org

Table 1. Average, Max, and Min Temp and Total Precipitation for the City of Villa Park

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Avg. Temp. (F)	53.6	54.3	57.3	60.0	63.4	67.5	72.3	73.1	71.9	66.5	59.8	53.3
Max. Temp. (F)	66.0	65.6	68.4	71.1	73.9	78.5	83.7	85.1	84.0	78.4	71.8	64.8
Min. Temp. (F)	44.5	45.6	48.7	51.5	55.4	58.9	63.5	64.2	63.0	57.7	50.6	44.6
Avg. Total Precipitation (in)	3.2	3.7	2.2	0.9	0.4	0.1	0.1	0	0.2	0.7	0.98	2.2

Figure 3. City of Villa Park Climate Graph



1.8 Demographics

The 2020 United States Census reported that Villa Park had a population of 5,951. At this time, there were 1,926 households, out of which 406 (21.1%) had children under the age of 18 living in them. The average household size was 2.98. The age of the City's population is comprised of 22% under the age of 18, 24% ages 19-49, 46% ages 50-79 and 8% 80-years or older. The median age was 51.7 years. This population is comprised of 70.6% White, 17.4% Asian, and 15% Hispanic.

Table 2. Percentage of Population at Risk from Identified Hazards in Villa Park

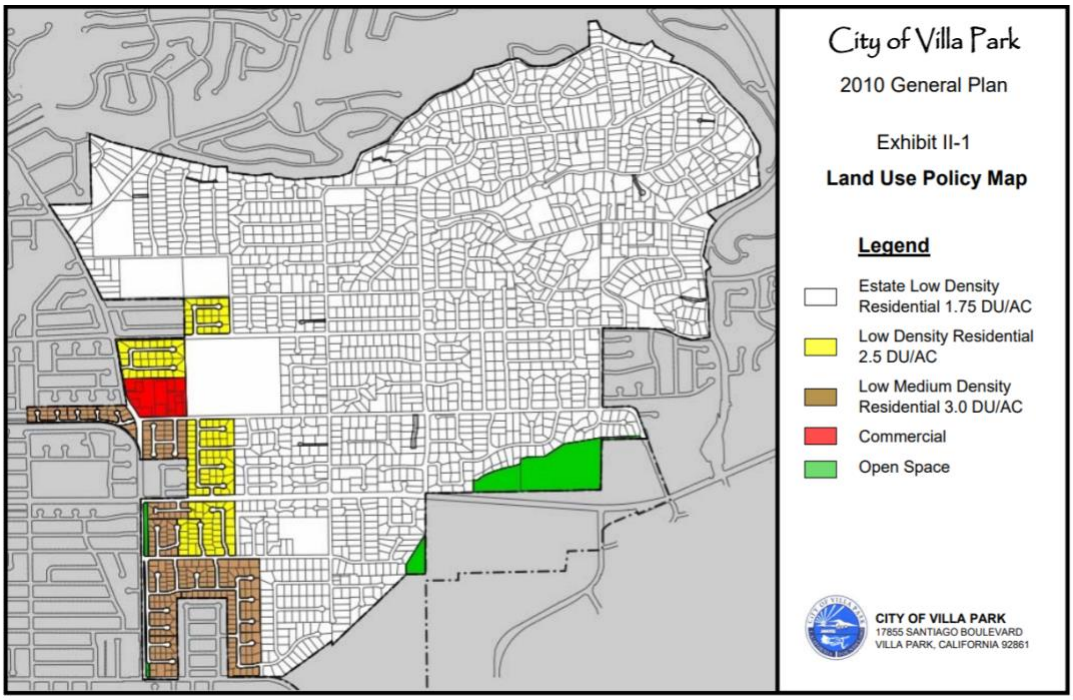
% of Population at Risk from Identified Hazards		
Total Population	5,664.00	
Hazard	**Percent Vulnerable**	**Population Vulnerable**
Earthquake	100%	5,664
Drought	100%	5,664
Flooding	100%	5,664
Windstorm	100%	5,664
Wildfire	100%	5,664

1.9 Existing Land Use

The City's land is nearly 99% built out. The city is largely zoned for single-family residences and is located on larger lots that average about 20,000 square feet (1,900 m^2) or 1/2 acre in size. Within the city limits there are four schools and one shopping center that includes a Ralph's grocery store, three banks, a pharmacy with a postal substation and a donut shop. City Hall is located inside the City's only shopping center and has a community room and one branch of the Orange County Public Library. Additionally, there are professional offices, four banks, and three restaurants, including Rockwell's Cafe & Bakery neighboring City hall.

Community facilities include the City Hall, City Yard, health centers/clinics, schools, post office, community center, fire station, and communication towers. These facilities will be vulnerable to drought, earthquakes, flood, windstorms and wildfire.

Figure 4. Land Use Policy Map



Critical facilities owned by the City include the City Hall, City Yard, Library (owned by the County), and the Council Chambers that also serves as a community center. These buildings are used for various purposes including City government administration, providing essential and emergency services, and community interest activities. The City owns and operates a sanitary sewer collection system in coordination with the Orange County Sanitation District for the benefit of the residents of the Villa Park community.

City of Villa Park-owned infrastructure includes roads, alleys, curbs, paths, sidewalks, retaining walls, storm drains, open channels and culverts, an extensive network of street trees, and the Sanitary Sewer Collection System.

Critical facilities not owned by the City but located within the City's limits are stated below:

Schools
The Orange Unified School District is independent from the City government and manages primary and secondary education and private educational facilities, including all public schools in the city. The City government has no authority over these structures but does provide police and fire services to the District.

Below is the information regarding the four schools within the City limits:

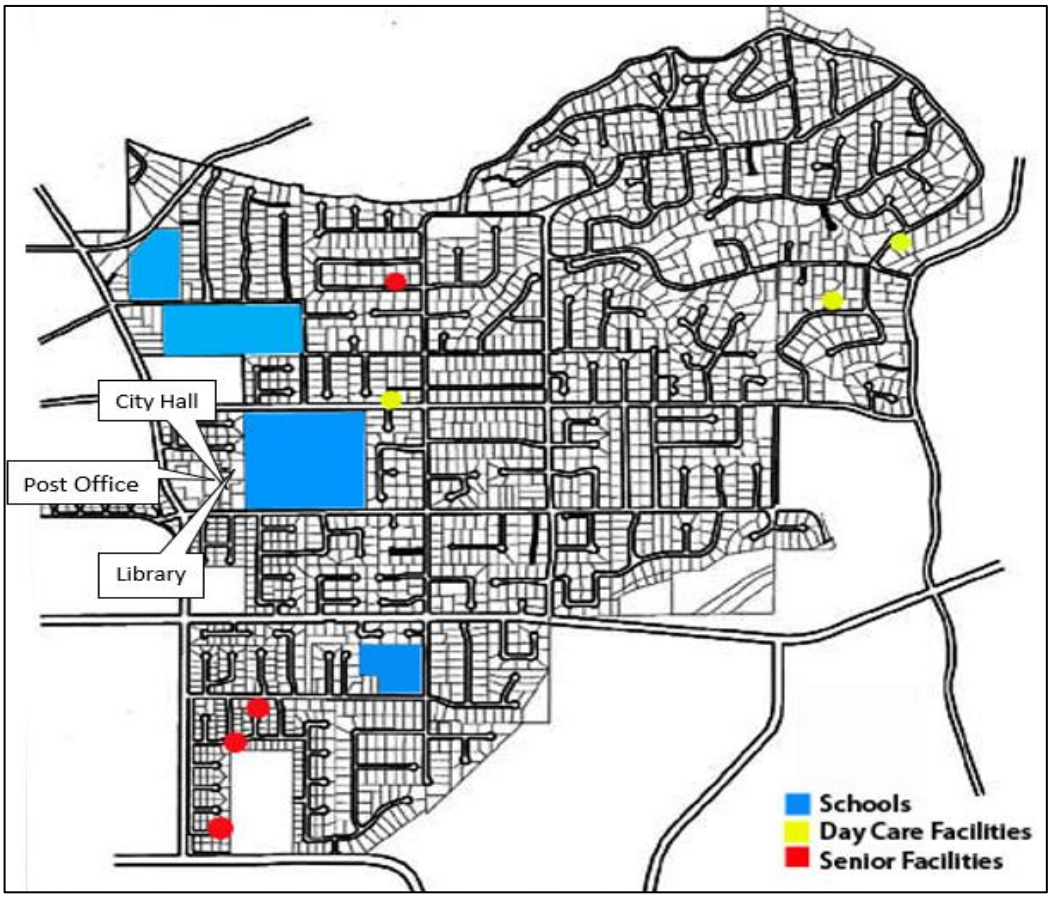
Table 3. List of Schools in Villa Park

School Name	Phone	Address
Serrano Elementary School	714-997-6275	17741 Serrano Avenue Villa Park, CA 92861
Villa Park Elementary School	714-997-6275	10551 Center Drive Villa Park, CA 92861
Cerro Villa Middle School	714-997-6251	17852 Serrano Avenue Villa Park, CA 92861
Villa Park High School	714-532-8020	18042 Taft Avenue Villa Park, CA 92861

There are also six daycare facilities in the City.

Hospitals
There are no hospitals within the City of Villa Park. However, there are seven senior-care facilities in the City.

Figure 5. Critical Structures, Public and Private Schools, Day Care and Senior Facilities



1.10 Development Trends

With 99% of the City developed and no external sphere-of-influence for expansion of City boundaries, additional development potential is extremely limited. Also, the high cost of land in Villa Park restricts the range of potential development opportunities. Development in the cities of Orange and Anaheim have and will continue to significantly affect established neighborhoods in Villa Park. Villa Park is adversely affected by heavy traffic that passes through the City on the way to and from other surrounding cities and poses potential additional accident risk with the attendant potential for use of City services.

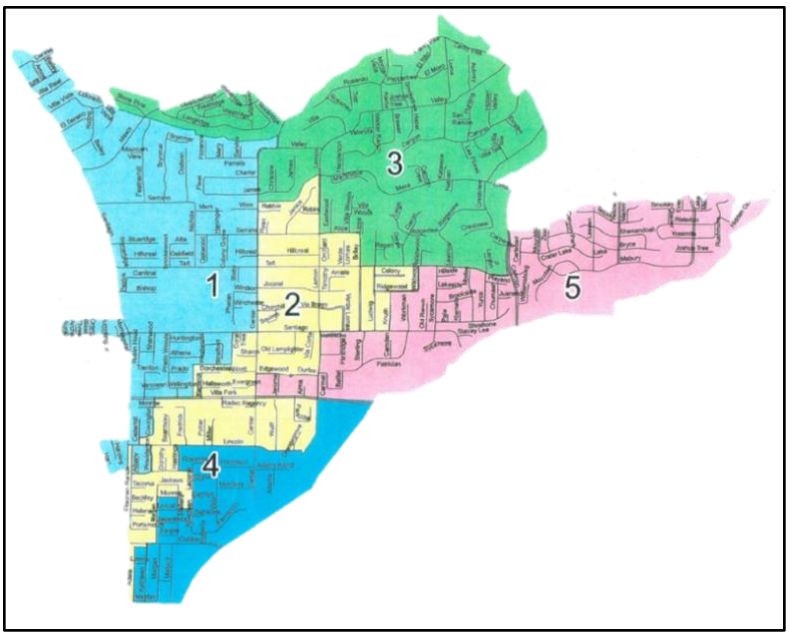
1.11 Infrastructure Overview

Water Distribution System

The Serrano Water District is an independent water district established under the California Water Code with a five-member Board of Directors. Serrano Water District provides water for the residents of Villa Park and a small portion of City of Orange. It is separate and distinct from the City of Villa Park municipal government but is an integral part of the community. The Serrano Water District is part of the Water Emergency Response Organization of Orange County (WEROC) and has completed its LHMP as part of the Orange County Regional Water and Wastewater Multi-Hazard Mitigation Plan.

The Serrano Water District has identified the following five major goals for its hazard mitigation planning purposes followed up with detailed objectives and actions as indicated in their LHMP:
Goal 1: Minimize damages to facilities /infrastructure due to natural disasters.
Goal 2: Minimize disruption of service due to hazard induced outages.
Goal 3: Reduce potential loss and injury to human life and to existing assets and facilities.
Goal 4: Protect communities from potential earthquake induced dam inundation.
Goal 5: Promote public understanding, support and demand for hazard mitigation.

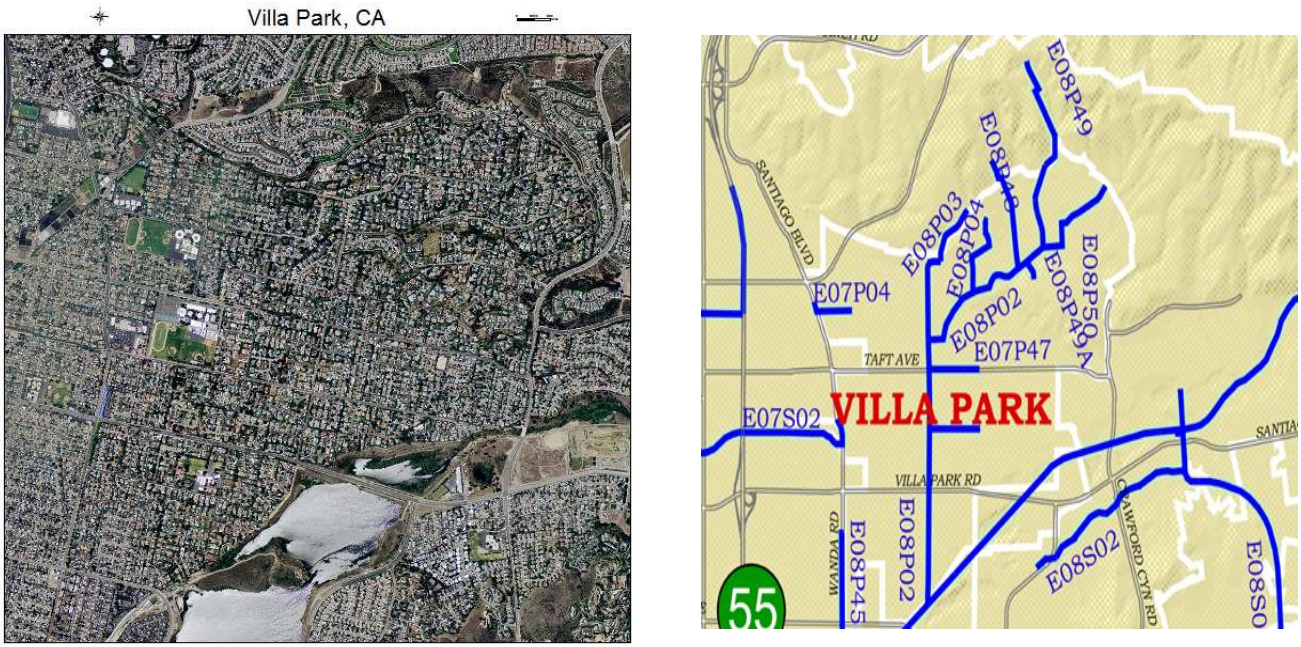
Figure 6. Serrano Water District Service Area



Flood Control

Orange County Flood Control District owns several facilities that help protect the City of Villa Park against flood events. Villa Park Dam is an embankment dam on Santiago Creek in Orange County. Along with the upstream Santiago Dam, the dam serves primarily for flood control for the cities of Villa Park, Orange, Tustin and Santa Ana, and also regulates the inflow of Santiago Creek into the Santa Ana River. Construction was completed in 1963, and the dam is owned by the County of Orange.

Figure 7. Orange County Flood Control and Dam Around Villa Park



Sewer System

The City owns and operates a sanitary sewer collection system in coordination with the Orange County Sanitation District for the benefit of the residents of the community. The system was constructed primarily in the 1960's and 70's. The system consists of approximately 153,000 linear feet (29 miles) of collector and trunk sewer mains ranging in size from 8 to 15 inches in diameter. Some of the trunk mains are joint use mains with the City of Orange. It is estimated that there are approximately 10 operating septic tank systems remaining in the City. A "Sewer Service User Charge", which is assessed on the property tax role based on land use, is for maintenance and rehabilitation of the sewer collection system within the City. The Orange County Sanitation District, of which Villa Park is a member, assesses a "sewer hook-up fee" and a "sewer acreage fee" to support the regional treatment facilities, operations, and new trunk lines.

High Pressure Gas Line

A high-pressure (1,600 pounds per square inch) petroleum pipeline (16-inch), managed by Kinder Morgan, runs under Wanda Road in the City of Villa Park. There is also, a second Kinder Morgan pipeline near this operational pipeline, however Kinder Morgan does not utilize the second pipeline. Kinder Morgan is one of the largest operators of natural gas transmission pipelines in the United States and operates in more than 34 states. They have a strong safety record and are prepared to respond to and manage any disruptions that may occur, some of which are noted below. Kinder Morgan's Public Awareness Program was developed under the guidance of federal public awareness, damage prevention and integrity management regulation and is a single administered program for all applicable business units or entities. More information about Kinder Morgan pipeline safety can be accessed here:
https://www.kindermorgan.com/Safety-Environment/Safety

Pipeline Safety Procedures & 24/7 Monitoring

Kinder Morgan monitors its transmission pipelines 24-hours a day from its System Control Centers. Kinder Morgan has a comprehensive safety program to ensure public safety and safe pipeline operations through employee training, weekly testing, aerial and right-of-way patrols and adherence to its comprehensive Integrity Management plan and procedures.

Using remote monitoring technology (GPS) within the pipeline system, Kinder Morgan can quickly detect changes in pressure or volume and can shut down and reroute sections of the pipeline. In addition, the above ground facilities, such as compressor stations, are equipped with emergency shutdown features and fire detection and suppression technology.

On an annual basis, Kinder Morgan analyzes data regarding the number of homes and businesses near the pipelines and identifies High Consequence Areas that require special communication or evacuation procedures. Following are some details on Kinder Morgan's pipeline safety program:

- Pipeline operating conditions are monitored 24 hours a day, 7 days a week by personnel in control centers using a Supervisory Control and Data Acquisition (SCADA) computer system. This electronic surveillance system gathers such data as pipeline pressures, volume and flow rates and the status of pumping equipment and valves. Whenever operating conditions change, an alarm warns the operator on duty and the condition is investigated. Both automated and manual valves are strategically placed along the pipeline system to enable the pipeline to shutdown immediately and sections to be isolated quickly, if necessary.
- Visual inspections of the pipeline right-of-way are conducted by air and/or ground on a weekly basis. The right-of-way is a narrow strip of land reserved for the pipeline. Above ground marker signs are displayed along the right-of-way to alert the public and contractors to the existence of the pipeline.
- Internal inspections are conducted periodically by passing sophisticated computerized equipment called "smart pigs" through the pipelines to detect anomalies or defects that could compromise the integrity of the line.
- Cathodic protection is a technology designed to protect pipelines from external corrosion through the use of an electrostatic current. The small electrical charge is applied to pipelines, which have an external protective coating.
- Kinder Morgan has emergency preparedness and planning measures in place in the event that a pipeline incident occurs. They also work closely with local emergency response organizations to educate them regarding our pipelines and how to respond in the unlikely event of an emergency.
- Kinder Morgan participates in the Pipeline SMS Group. This group is a partnership among the American Petroleum Institute (API), the Association of Oil Pipelines, the Interstate Natural Gas Association of America and the American Gas Association. The Pipeline SMS Group's goals are to educate shareholders and enhance safe pipeline operations through the application of API Recommended Practice 1173 (RP 1173). The group exchanges ideas, information and lessons learned following implementation of RP 1173 in an effort to advance pipeline safety for individual companies and the industry as a whole.
- Working with Public Officials and Community to Protect Pipelines & Right-of-Ways

In addition to 24-hour monitoring and on-going safety and security procedures, Kinder Morgan

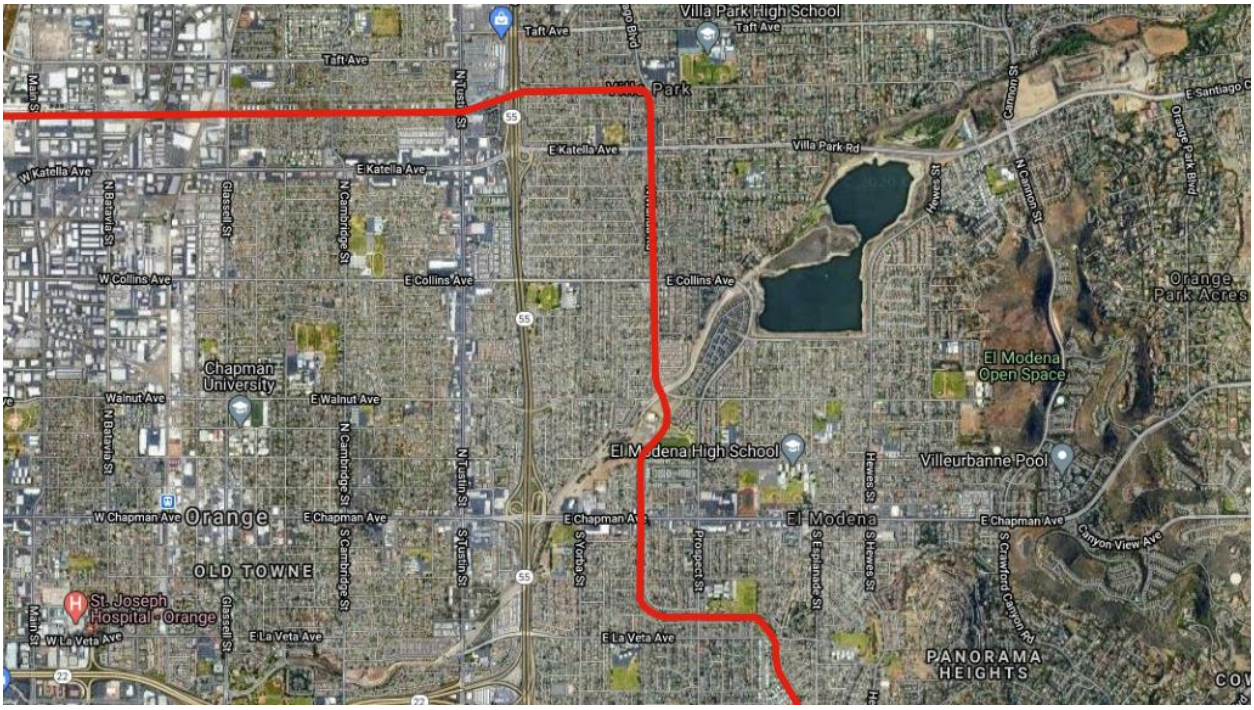
relies on public and government officials to alert the company about upcoming changes to roadways, bridges, zoning and other capital projects. Advanced notice allows Kinder Morgan to work together with community planning committees and land use personnel to address impact to the pipeline or right-of-way.

Kinder Morgan's public awareness program is designed to prevent third-party damage to its pipelines. Additionally, the company is a member of numerous "call-before-you-dig" programs or "one-call" systems across the United States, which are designed to help the public, contractors and others identify the location of pipelines before excavation or digging projects to prevent damage to pipelines and protect the public. The leading cause of pipeline accidents is third-party damage caused by various types of digging and excavation activities.

Kinder Morgan also relies on public and government officials to notify the company regarding potential damage or right-of-way issues and to enforce right-of-way restrictions and "Call Before You Dig" requirements which is enforced by the City.

Excavation activities are the most common cause of serious pipeline damage. In most states, residents, excavators and farmers are required by law to call 811 or their local one-call center, which is DigAlert in Southern California, at least two working days before starting an excavation project to have underground utilities marked. City of Villa Park requires contractors and roadway maintenance personnel to call 811 before excavating.

Figure 8. Kinder Morgan Pipeline in Villa Park



SECTION 2. PLAN ADOPTION

2.1 Adoption by Local Governing Body

Prior to submittal of the LHMP to CalOES, the City will post the final draft on its website and notify its residents to review and comment through posting on the City website and by including notice of the LHMP in the City's FEEDER E-newsletter. Pursuant to the mitigation planning regulations, the City's LHMP will be submitted to CalOES for review and approval. CalOES will conduct a review of City's LHMP in accordance with the Code of Federal Regulations. Once this review is complete and the revisions are made, CalOES will forward the plan to FEMA for further review and potential revisions. CalOES will notify the City when FEMA has approved the final LHMP. The final LHMP will then be sent to the City Council for adoption. The City Council Resolution will then be sent to CalOES and CalOES will submit the Resolution to FEMA. City of Villa Park will send a copy of the LHMP and Resolution to the Orange County Office of Emergency Services.

2.2 Promulgation Authority

This LHMP will be adopted by the City's elected Council members, following approval of the plan by CalOES and FEMA:

City Council	Title
Jordan Wu	Mayor
Robert Frackelton	Mayor Pro-Team
Crystal Miles	Council Member
Nicol Jones	Council Member
Kelly McBride	Council Member

2.3 Primary Point of Contact

Agency Primary Contact:
Mahrooz Ilkhanipour, P.E.
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(714) 998-1500
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Secondary Contact:
Sudi Shoja, P.E.
Engineering Services Solutions, Inc.
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sudi@engineeringsolutionsservices.net

SECTION 3. PLANNING PROCESS

This section documents the planning process used to review and compile information that leads to an effective LHMP. A comprehensive description of the planning process informs citizens and other readers how the LHMP was developed and provides a permanent record of how decisions were reached. These decisions can be reconsidered, replicated, or modified in future updates. Documentation of how the public was engaged throughout the process is an integral part of the planning process.

This LHMP was completed with the coordination and involvement of the City staff, representatives from the Orange County Fire Authority, Orange County Sheriff Department, Orange County Sanitation District, Southern California Edison, City of Orange, Kinder Morgan, Irvine Ranch Water District, Serrano Water District, and Salvation Army. These team members have a vested interest in the performance and resiliency of the City. The consultant contacted these agencies via email and provided a draft of final LHMP to receive comments on the document. There were no comments otherwise or on the LHMP. Orange County Sheriff Department deemed the document satisfactory.

Organizations within the service boundaries that conduct outreach and assistance for vulnerable populations. Underserved and vulnerable populations they serve include socioeconomically disadvantaged people; people with limited English proficiency; geographically isolated or educationally disenfranchised people; people of color as well as those of ethnic and national origin minorities; women and children; individuals with disabilities and others with access and functional needs; and seniors.

This section includes a list of the Planning Team Members and coordination efforts with the surrounding communities/groups, and public outreach efforts.

3.1 Plan Development Process

The draft of the document was accomplished in 8 phases:

The Planning Team reviewed FEMA's "Hazard Mitigation Plan Crosswalk", and the Orange County Hazard Mitigation Plan (HMP).

The consultant completed a FEMA Hazard Profile of the area and used the resulting Hazard Profile maps in the planning meetings to show past flood areas, earthquake hazard, fire hazard zones, dam inundation and other disasters that have or may affect the area. Other written documentation of past events were also reviewed. The team discussed the different past events that have happened in the community, such as widespread fires, earthquakes, windstorms, power outages and other events. The planning process consisted of:

- Documenting past events
- Incorporating data
- Engaging the Planning Team
- Conducting public outreach
- Posting the meeting agendas, meeting minutes and draft LHMP to the City's website and asking for public input and comments on the planning process
- Sharing information at Council meetings

During the planning process, the Planning Team used the following plans to gain information on the hazards facing the area and mitigation goals of the County of Orange.

Table 4. Plans Reviewed by the Planning Team

Existing Plans	Key Information
2023 California HMP	Goals for the State of California
County of Orange, Approved LHMP (2022)	Hazard Identification, mitigation measures
USGS Golden Guardian 2008	Earthquakes, affects, planning
FEMA Flood Insurance Study for Orange County	Flood history
Kinder Morgan	Firm's safety procedures and 24/7 monitoring
Serrano Water District LHMP that is part of Orange County Regional Water and Wastewater Multi-Hazard Mitigation Plan (2024)	Hazard Identification, mitigation measures

Table 5. Financial Resources for Future Mitigation Projects

Local	Revenues	Amount
City's Budgets and Financial Planning Documents	General funds, sewer fees, gas tax, development fees, property tax, sales tax	Varies from year to year
FEMA Grants	None	None
Prop 1 Funding	None	None
FEMA Mitigation Grants	City has not applied for FEMA funding in the past	As funding and approval are obtained

3.2 The Planning Team

The Planning Team compiled information and reviewed this LHMP under the authorization of the City Manager. The City of Villa Park has only four full time and three part time employees. Due to the size of the City and the varying work schedules of key members, the City Manager took the lead and engaged all the department directors in the plan's development.

The Planning Team members include:

Internal

Name: Steve Franks
Title: City Manager
Description of Involvement: Internal Planning Team Member

Name: Mrs. Mahrooz Ilkhanipour
Title: City Engineer for City of Villa Park
Description of Involvement: Internal Planning Team Member

Name: Sudi Shoja, PE
Title: Local Hazard Mitigation Plan Project Leader
Description of Involvement: Internal Planning Team Lead

External

Name: Chief Kevin Fetterman
Title: Division Chief at Orange County Fire Authority – Division 4
Description of Involvement: External Planning Team Member

Name: Captain Miguel Sotelo
Title: Chief of Police Services – Villa Park
Description of Involvement: External Planning Team Member

The Planning Team participated in regular meetings to coordinate efforts, provide input, and receive support for the LHMP. The support included receiving technical expertise, resource materials and tools. The City facilitated the LHMP process and provided information to follow FEMA requirements for the program. The tools, resource materials, and other project-related information are maintained on a project portal on the City's website, which allows access to the information by all participants and the public. All Draft LHMPs were posted on the City's website and residents were notified by City's E-newsletter, letting the customers know how to access the plan. Ms. Shoja's contact information was included on each document for questions and feedback.

Table 6. Meeting Schedule

LHMP Meetings	Date	Type
Initiation Meeting	1/24/2025	**Conference**
Public Works Planning Meeting	5/15/2025	**Conference**
City Assets & Critical Building Review	7/21/2025	**Conference**
GIS Mapping Meeting	12/15/2025	**Conference**
Planning Department Meeting	12/15/2025	**Conference**
Flood Plain Review Meeting	12/15/2025	**Conference**
City Council Meeting – Plan Review	TBD	**Public**
Public Comment Period (30 days)	**XXXX**	**Public**

LHMP Planning Team reviewed the document and made corrections or voiced concerns to the consultant. These comments were discussed at the next Team meeting, and corrections were then

made to the document.

3.3 Coordination with other Jurisdictions, Agencies and Organizations

The City first called representatives from the Orange County Fire Authority, Orange County Sheriff Department, Orange County Sanitation District, Southern California Edison, City of Orange, Kinder Morgan, Salvation Army, and Serrano Water District who have a vested interest in the performance and resiliency of the City to participate in development of the LHMP and asked for their help in providing constructive input for the LHMP. The City then arranged for a meeting that included the above reviewers and the consultant. The meeting matrix is included in Appendix A.

The consultant sent the draft document electronically to each reviewer and gave each a month to provide comments. The responses gathered from the the reviewers are included in Appendix B. Mr. Sudi Shoja's contact information was on each document for questions and concerns. The Planning Team reviewed the document and made corrections or voiced concerns to the consultant. These comments were discussed at the next team meeting, and corrections were then made to the document. These meetings were not publicly held.

This team's objective consisted of:

- Assisting all participating jurisdictions with the Hazard Mitigation Plan planning process
- Guiding the CalOES and FEMA requirements
- Assisting in the development of regional maps and support information regarding hazards
- Providing a forum to all jurisdictions participating in the update for questions and issues to be discussed

The City's Planning Team participated in each of the scheduled Planning Team meetings and conference calls facilitated by ESS related to the update project. Meeting agendas discussing LHMP updates are in Appendix A.

3.4 Public Involvement & Outreach

The Planning Team undertook several initiatives to inform other agencies and the public of the hazard mitigation planning effort and to solicit their input. The Planning Team discussed several alternatives to the public input process, including hosting public workshops, sending emails and making phone calls to other agencies to stimulate communications.

Residents within the City's service area were informed of the formation of the LHMP by the City. The City uses a public notification system, known as FEEDER as the City's E-newsletter that is emailed to all city residents. FEEDER asked the residents to go to the City website and click on the LHMP link to review the document as it was being developed. The residents were asked to contact Sudi Shoja. Ms. Shoja's email address and phone number were provided on the draft LHMP. All questions and feedback were directed to the ESS team, who kept the team informed of all correspondence.

All the residents' comments were accommodated in the plan. There was a total of XXX comments received from the City residents:

1. XXXX

Ms. Shoja also presented the LHMP at one Council meeting to the Council members and the public. The LHMP was put on the Council's agenda as a no action item. The public was given the opportunity to ask questions, give ideas and remark on the LHMP at this meeting.

The Draft LHMP was then posted on City's website for a 30-day comment period. Again, a message was printed on FEEDER requesting input on the LHMP. All public comments received on the draft LHMP are included in Appendix B.

At the end of the 30 days, the Draft LHMP was sent to CalOES who sends the LHMP to FEMA for final approval. Once FEMA has approved the LHMP a letter of acceptance will be received. Upon acceptance of the LHMP by FEMA, the City Council will adopt the LHMP by resolution. A copy of the resolution and a copy of the LHMP will be sent to CalOES and the Orange County Office of Emergency Services.

3.5 Assess the Hazards

A critical component of the LHMP process is to assess the likely natural hazards that may impact the City's facilities and operations. It is important to have a thorough understanding of these hazards without over-analyzing remote or highly unlikely hazards. This LHMP has been developed through an extensive review of available information on hazards the City has faced in the past and most likely will face in the future.

The City of Villa Park used an outside hazard GIS database to provide mapping of critical hazard risk areas. The team used data from this mapping to determine hazards that present the greatest risk to the City. The Planning Team reviewed and discussed items that have happened in the State of California as well as disasters that have happened in Southern California and the City's jurisdictional area. The team reviewed documents such as engineering drawings, photographs, and available geotechnical and geologic data both from the internet and USGS Hazard Mapping sources such as FEMA Hazard Mapping.

The Planning Team completed the assessment of the various hazards using in-person and digital options for conducting meetings. The team members have years of personal experience working in the local area and in similar organizations. Team members know the history of past hazards and emergency events, such as the 7.3 magnitude Northridge earthquake of 1992 and the California fire incidents in 2025.

3.6 Set Goals

The Planning Team established six overall mitigation goals to help with prioritizing specific objectives and mitigation measures for each hazard:

- Minimize loss of life and protect property from natural hazard events
- Protect public health and safety
- Enhance emergency services/response
- Provide a fire safe community
- Increase public awareness of risk from natural hazards

- Educate the public on earthquake safety and awareness

The City of Villa Park's Vision Statement led the team in establishing the above goals. The mission statement is:

We are committed to providing high quality and timely services to all residents in the community. We believe in maintaining a strong commitment to the community, the organization, and our profession. We believe in open and honest communication. We believe that the prudent management of the City's resources demonstrates our respect to the citizens who have placed their trust in us.

We are committed to using the following values and principles as a guide to accomplishing our mission:

1. *We value a personal approach to serving our residents.*
2. *We believe in participative management.*
3. *We encourage employees to enjoy their time at work.*
4. *We encourage ideas that improve the employee, the organization, and the community.*
5. *We value creativity.*
6. *We believe in taking reasonable risks.*
7. *We believe that our employees are the City's most important assets in the provision in high-quality services to the community.*
8. *We value a high ethical standard.*
9. *We strive to set the standard of excellence and be the model for neighboring communities.*

3.7 Propose Mitigation Measures

The Planning Team examined a wide variety of mitigation measures to help reduce the impact of hazards or the severity of damage from hazards. The projects were identified to help ensure the implementation of the Planning Team's goals and objectives. The team used the following categories to review of possible mitigation measures:

- Public Information and Education - Outreach projects and technical assistance.
- Preventive Activities - Zoning, building codes, storm water ordinances
- Structural Projects - Detention basins, reservoirs, road and bridge improvements
- Property Protection - Acquisition, retrofitting
- Emergency Services - Warning, sandbagging, road signs/closures, evacuation
- Natural Resource Protection - Wetlands/environmental protection, best management practices.

Throughout the discussions, the team members focused on the mitigation aspects recommended by FEMA in STAPLEE (Social, Technical, Administrative, Political, Legal, Economical, Environmental) criteria to arrive at their opinions. The Planning Team then prioritized the individual mitigation measures considered the most appropriate for the City.

Based on STAPLEE criteria, the Planning Team addressed the following questions to determine mitigation options:

Does the Action:
Solve the problem?
Address Vulnerability Assessments?
Reduce the exposure or vulnerability to the highest priority hazard?
Address multiple hazards?
Address more than one (1) goal/objective?
Benefits equal or exceed costs?

Can the Action:
Be implemented with existing funds?
Be implemented by existing state or federal grant programs?
Be completed within the 5-year life cycle of the LHMP?
Be implemented with currently available technologies?

Will the Action:
Be accepted by the community?
Be supported by community leaders?
Adversely impact segments of the population or neighborhoods?
Result in legal action such as a lawsuit?
Positively or negatively impact the environment?

Is there:
Sufficient staffing to undertake the project?
Sufficient funds to complete the project?
Existing authority to undertake the project?

3.8 Draft Local Hazard Mitigation Plan

The City's consultant led the Planning Team and prepared the draft LHMP with input from the team, City Council, representatives from other organizations and the public. The team reviewed and commented on the draft LHMP, and subsequent changes were made before the LHMP was finalized and submitted to CalOES. All draft sections of the LHMP were posted on the City's website and notices were sent out to residents on the City's E-newsletter FEEDER as the sections were posted on the website. Residents were able to contact ESS by phone or email to ask questions or to make comments on the LHMP at any time. The FEEDER E-newsletter was sent out multiple times during development of the LHMP. The consultant, ESS, received all the comments and addressed all comments and concerns.

The LHMP was reviewed in comparison to the FEMA-designed review tool. The tool links the federal requirements and identifies the sections in the LHMP where the information can be found and provides a rating as to the level of compliance with the federal regulations.

3.9 Adopt the Plan

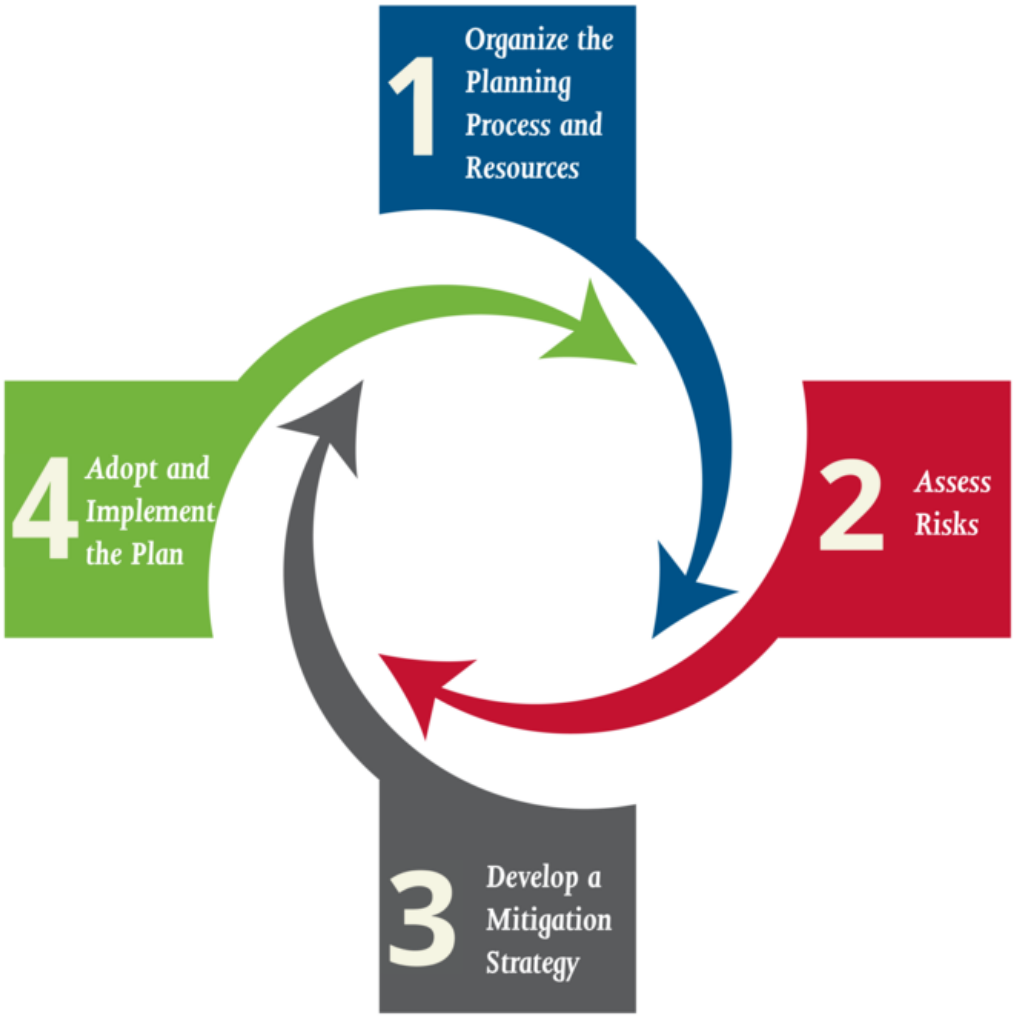
After the public review, the draft plan will be submitted to CalOES for review. Once CalOES has approved the LHMP, the document will be sent to FEMA by CalOES. FEMA will provide the

City with an "Approval Pending Adoption" letter when the Hazard Mitigation Plan meets all federal requirements. Upon receipt of this letter, the final plan will be submitted to the City Council for consideration and adoption. Once adopted, the final Resolution will be submitted to FEMA and CalOES for incorporation into the Hazard Mitigation Plan. A copy of the final LHMP and Resolution will be delivered to Orange County Office of Emergency Services.

SECTION 4. RISK ASSESSMENT

The goal of mitigation is to reduce the future impacts of a hazard, including property damage, disruption to local and regional economies, and the amount of public and private funds spent for recovery. Mitigation decisions are based on risk assessments where the probability of an event is evaluated with respect to the anticipated damages caused by such an event.

The purpose of this section is to understand the hazards and their risks in the City's service area. There are generally four steps in this process: 1) hazard identification 2) vulnerability analysis 3) risk analysis and 4) vulnerability assessment, including an estimation of potential losses. Technically, these are four different items, but the terms are sometimes used interchangeably.



4.1 Hazard Identification

The Planning Team discussed potential hazards and evaluated their probability of occurrence. The following subsections describe this process and the results.

4.2 Hazard Screening Criteria

The intent of screening the hazards is to help prioritize which hazards create the greatest concern to the City. A list of the natural hazards to consider was obtained from Federal Emergency Management Agency's State and Local Mitigation Planning How-to Guide: Understanding Your Risks (FEMA 386-1). The team used the Stafford Act, the California Emergency Service Act and STEPLEE criteria to help rank each risk. The risks were ranked with from 1 – 4: with (1) being a "Highly Likely" event, (2) being "Likely" (3) being "Somewhat Likely" event, and (4) being "Least Likely" event. The Planning Team reviewed each hazard on the list using their experience and historical data pertaining to each hazard and developed the following ranked list.

Table 7. Hazard Risk Rankings

Hazard	Risk Ranking (1-4)
Earthquake	2
Wildfire	1
Flooding	2
Climate Change/ Drought	2
Windstorm	2

The following natural hazards were considered not to affect or be a risk to the City and were given a ranking of 4 or higher and are not considered applicable to the City for mitigation.

- Volcanoes (No active volcanoes in southern California)
- Tsunami Liquidation (15 miles inland from the nearest ocean)
- Landslides (Not likely given the City's topography)
- Hurricane/Tornado (not a likely occurrence in southern California)

Hazard Assessment Matrix

The City used a qualitative ranking system for the hazard screening process consisting of generating a high/medium/low style of rating for the probability and impact of each screened hazard.

Probability Ratings: Highly Likely, Likely, or Somewhat Likely
Impact Ratings: Catastrophic, Critical, or Limited

The screening assessment matrix was used for the City hazards. The hazards have been placed in the appropriate/corresponding box/cell of the corresponding "Screening Assessment Matrix" based on the Planning Team's collective experience as shown in Table 6. Prioritization of the hazards is discussed in the following section.

Screening Assessment Matrix

The screening assessment matrix is used for the City's hazards. The hazards have been placed in the appropriate/corresponding box/cell of the corresponding "Hazard Matrix" based on the Planning Team's collective experience. A subset of this group of hazards is used for the

prioritization of the hazards in the following section.

Table 8. Screening Assessment Matrix

	Impact			
Probability	**Probability/Impact Rating**	*Catastrophic*	*Critical*	*Limited*
	Highly Likely (1) (75 – 100%)	Wildfires		
	Likely (2) (50-75%)	Earthquake		Windstorms Flooding Climate Change Induced Drought
	Somewhat Likely (3) (25– 50%)			

Vulnerability Assessment
The team reviewed USGS, FEMA HAUS maps for each of the City's hazards. The maps were overlayed with the infrastructures in place to present the potential impacts for each hazard. The Planning Team has extensive knowledge of the area and knowledge of the potential disasters and emergencies that can occur in and around the community. The team has the knowledge to assess the system and give valuable input into the assessment and vulnerabilities to the City and the infrastructure.

Methodology
The Planning Team reviewed the City's infrastructure and applied their local and operational knowledge to evaluate the vulnerability of each facility for a potential hazard. The team ranked the facilities and infrastructure by their importance to the City and the residents. The team then used this ranking to develop an estimate of potential economic impacts that could be caused by the high priority hazards. A percentage based on ranking was applied to the City's projected 2020-2021 annual revenue to assess the annual economic impact for each hazard.

4.3 Hazard Profiles

This section looks at all the hazards identified by the Planning Team. This section gives an overview of each hazard, the definition of each hazard, and a description of how each hazard is expected to affect the City service and/or service area using past examples and the hazards identified on the FEMA website and the FEMA software program known as HAZUS, which contains models of natural disasters, and the effects the disasters can have on a region.

4.3.1 Earthquakes (Risk Ranking: 2)

Probability: (50-75%) Likely – Historical earthquake data for the City and its region show that 1 earthquake occurred within the last five years. Minor daily tremors happen in southern California but generally have no effect on the City. This equals an average of one significant earthquake

roughly every 0.2 years, making future significant quakes within City limits likely. This section addresses all hazards impacting the City's boundaries as identified by the Planning Team.
Impact: Catastrophic
Priority: Likely

General Definition: An earthquake is a sudden and rapid shaking of the ground caused by the movement and fracturing of rock beneath the earth's surface. For millions of years, the shifting of tectonic plates has shaped the planet as these plates slowly move past, over, or under one another. While movement is sometimes gradual, energy can build when plates become locked. Once the stress surpasses a critical point, the plates break free, causing the ground to shake. Most earthquakes occur along plate boundaries, though some happen within plate interiors.
Ground shaking from earthquakes can bring down bridges and buildings; interrupt utilities such as gas, electricity, water, and phone services; and trigger secondary hazards such as landslides, avalanches, fires, and tsunamis. Structures built on loose or unstable soils or without proper foundation anchoring are particularly at risk, as even moderate shaking can dislodge them. In populated regions, earthquakes can lead to injuries, fatalities, and significant property loss.
Earthquakes can strike without warning at any time of the year or day. Worldwide, approximately 70 to 75 damaging earthquakes occur each year. A 7.8 magnitude earthquake along the southern San Andreas Fault near Orange County could cause damages estimated at $200 billion, according to the California Great ShakeOut© USGS scenario.

Earthquake hazards exist in every U.S. region, with 45 states and territories facing moderate to high risk. California experiences the greatest frequency of damaging earthquakes, while Alaska has the highest number of large events, most occurring in remote areas. The southern segment of the nearby San Andreas Fault is among the top five U.S. faults most likely to cause significant destruction, according to the United States Geological Survey (USGS).

The earthquake profile source is a report from the 2007 Working Group on California Earthquake Probabilities (WGCEP 2007), which developed an updated rupture forecast for California. This group, organized by the USGS, California Geological Survey (CGS), and Southern California Earthquake Center (SCEC), produced a revised National Seismic Hazard Map. The most recent quakes that affected Villa Park infrastructure were the 2019 La Habra Earthquake and the 1994 Northridge Earthquake, both causing only minor damage. The Whittier and Corona earthquakes were felt in the area but caused no infrastructure damage.

Climate Change Impacts:
The following summarizes how climate change may alter exposure and vulnerability to earthquake hazards:
Population – Climate change is not expected to significantly increase earthquake vulnerability.
Critical facilities – Exposure and vulnerability of all critical facilities are not expected to increase due to climate change. However, many nearby faults—including Loma Linda, Middle Fork, Cleghorn, Arrowhead, Mill Creek, Grass Valley, Crafton Glen Helen, Big Bear, Southern San Andreas, and San Jacinto—could negatively impact City facilities and pipelines if a magnitude 6.5 or larger rupture occurs.

Vulnerability: Individuals experiencing homelessness—including children, seniors, those with

mental health conditions, and people facing financial hardship—are particularly at risk. These populations may live in unconventional locations such as tents, under bridges, or along waterways and may lack access to basic supplies before or after a disaster. They may only be able to secure food, clothing, or shelter for a short time before falling into severe poverty. During an earthquake, they may struggle to find safe shelter if streets or emergency shelters are unavailable. Emergency housing must be established by local, county, state, or federal agencies.

Estimated Losses: The estimated economic impact of a major earthquake is about $6.0 billion, with an additional $7.8 billion in structural and pipeline damages expected.
Loss estimates assume the following:

1. Up to 50% of residents could have their homes red-tagged after a magnitude 7.0 earthquake in Villa Park.
2. Up to 80% of the City's wastewater pipelines could rupture.
3. City Hall, which houses the Fire and Police Departments, could sustain major damage during an earthquake of magnitude 7.0 or greater.

Description: Several earthquake faults lie within or near Villa Park's boundaries. The El Modano Fault runs east–west through the city, the Peralta Hills Fault follows the northern boundary, and the Elsinore Fault is roughly 20 miles north. Although numerous earthquakes have occurred in the area, no major quake has struck the City in many years.

Figure 9. Villa Park Fault Map

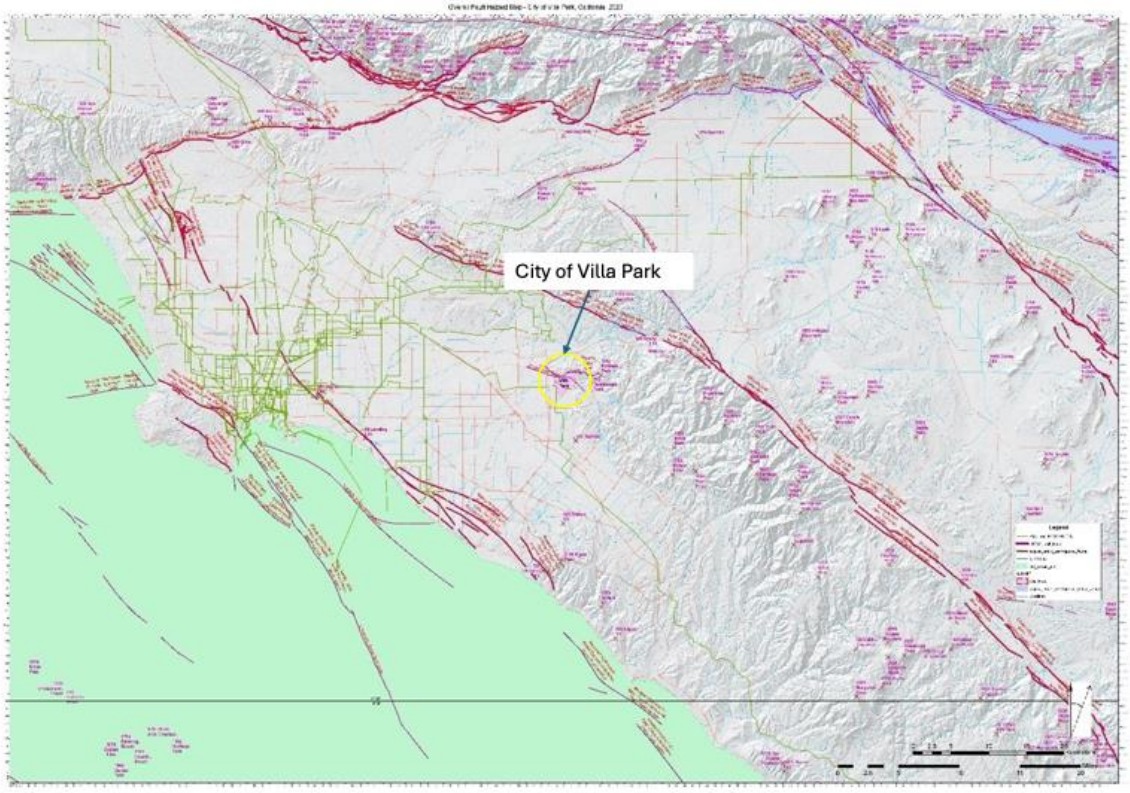


Figure 10. San Andreas Fault, USGS ShakeOut Map

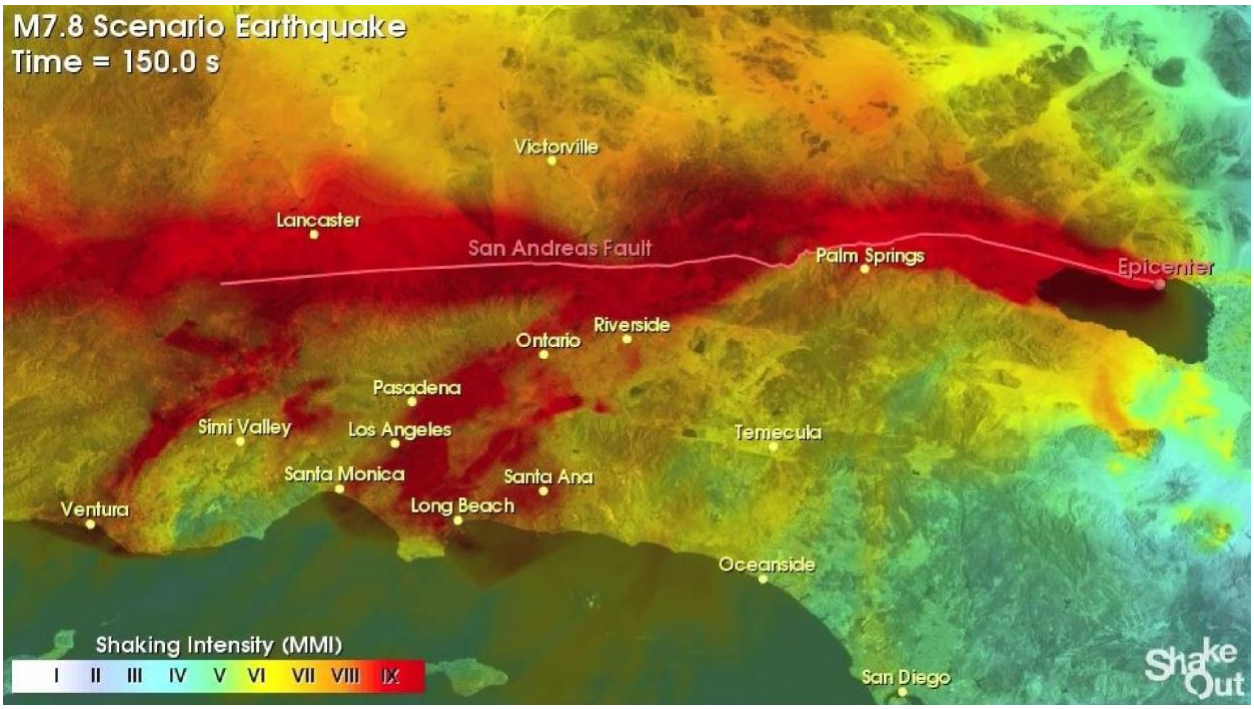


Figure 11. USGS Modified Mercalli Intensity Scale

Intensity	Shaking	Description/Damage
I	Not felt	Not felt except by a very few under especially favorable conditions.
II	Weak	Felt only by a few persons at rest,especially on upper floors of buildings.
III	Weak	Felt quite noticeably by persons indoors, especially on upper floors of buildings. Many people do not recognize it as an earthquake. Standing motor cars may rock slightly. Vibrations similar to the passing of a truck. Duration estimated.
IV	Light	Felt indoors by many, outdoors by few during the day. At night, some awakened. Dishes, windows, doors disturbed; walls make cracking sound. Sensation like heavy truck striking building. Standing motor cars rocked noticeably.
V	Moderate	Felt by nearly everyone; many awakened. Some dishes, windows broken. Unstable objects overturned. Pendulum clocks may stop.
VI	Strong	Felt by all, many frightened. Some heavy furniture moved; a few instances of fallen plaster. Damage slight.
VII	Very strong	Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable damage in poorly built or badly designed structures; some chimneys broken.
VIII	Severe	Damage slight in specially designed structures; considerable damage in ordinary substantial buildings with partial collapse. Damage great in poorly built structures. Fall of chimneys, factory stacks, columns, monuments, walls. Heavy furniture overturned.
IX	Violent	Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb. Damage great in substantial buildings, with partial collapse. Buildings shifted off foundations.
X	Extreme	Some well-built wooden structures destroyed; most masonry and frame structures destroyed with foundations. Rails bent.

The greatest earthquake threat in the United States is along tectonic plate boundaries and seismic fault lines in the central and western states; however, the Eastern United States faces a moderate risk of less frequent, less intense earthquake events.

Figure 12. United States Earthquake Hazard Map

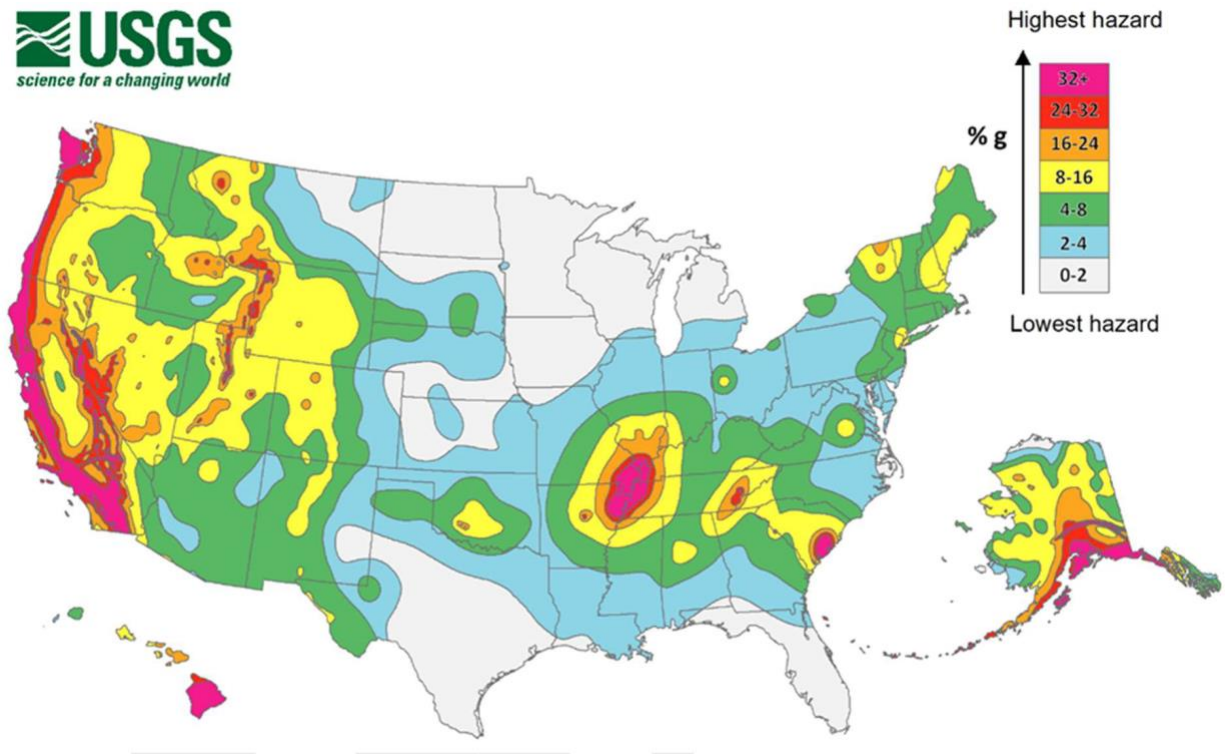


Table 9. Historic Southern California Earthquakes

Date	Area	Location	Mag	MI	Total damage / notes
7/8/2021	LA/Kern	Antelope Valley	6.0 M_w	VI	Limited
4/5/2019	Kern/SB	Ridgecrest/Trona	7.1 M_w	VI	Unknown
7/4/2019	Kern/SB	Ridgecrest	6.72M_w	VIII	Limited
7/29/2008	Los Angeles Area	Chino Hills Earthquake	5.5 M_w	VI	Limited
10/16/1999	Eastern	Hector Mine Earthquake	7.1 M_w	VII	Limited
1/17/1994	Los Angeles Area	Northridge Earthquake	6.7 M_w	IX	$13–$40 billion
6/28/1992	Inland Empire	Big Bear Earthquake	6.5 M_w	VIII	Moderate/Triggered
6/28/1992	Inland Empire	Landers Earthquake	7.3 M_w	IX	$92 million
4/22/1992	Inland Empire	Corona	6.3 M_s	VII	Light–moderate
6/28/1991	Los Angeles Area	Sierra Madre Earthquake	5.6 M_w	VII	$33.5–40 million
2/28/1990	Los Angeles Area	Upland Earthquake	5.7 M_w	VII	$12.7 million
11/24/1987	Imperial Valley		6.5 M_w	VII	Triggered
11/23/1987	Imperial Valley		6.1 M_w	VI	$3 million
10/1/1987	Los Angeles Area	Whittier Narrows Earthquake	5.9 M_w	VIII	$213–358 million
7/21/1986	Eastern	Chalfant Valley Earthquake	6.2 M_w	VI	$2.7 million / sequence
7/13/1986	South Coast		5.8 M_w	VI	$700,000
7/8/1986	Inland Empire	North Palm Springs Earthquake	6.0 M_w	VII	$4.5–6 million
4/26/1981	Imperial Valley	Calexico	5.9 M_w	VII	$1–3 million

5/25/1980	Eastern	Salton Sea	6.2 M_w	VII	$1.5 million/Swarm
10/15/1979	Imperial Valley	Imperial Valley Earthquake	6.4 M_w	IX	$30 million
2/21/1973	South Coast	Point Mugu Earthquake	5.8 M_w	VII	$1 million
2/9/1971	Los Angeles Area	San Fernando Earthquake	6.5–6.7 M_w	XI	$505–553 million
4/8/1968	Imperial Valley		6.5 M_w	VII	Damage / rockslides
12/4/1948	Inland Empire	Desert Hot Springs Earthquake	6.4 M_w	VII	Minor
11/14/1941	Los Angeles Area		5.4 M_w	VIII	$1.1 million
6/30/1941	Central Coast		5.9 M_w	VIII	$100,000
5/18/1940	Imperial Valley	El Centro Earthquake	6.9 M_w	X	$6 million
3/10/1933	South Coast	Long Beach Earthquake	6.4 M_w	VIII	$40 million
6/21/1920	Los Angeles Area		4.9 M_L	VIII	More than $100,000
4/21/1918	Inland Empire	San Jacinto Earthquake	6.7 M_w	IX	$200,000
6/22/1915	Imperial Valley		5.5 M_w	VIII	Additional damage / doublet
6/22/1915	Imperial Valley		5.5 M_w	VIII	$900,000 / doublet
4/18/1906	Imperial Valley		6.3 M_w	VIII	Damage / triggered

Within the 2020 - 2025 timeframe, there were no federal and/or state declaration for earthquakes within the City's boundaries.

Impact Statement: A significant earthquake could have devastating impacts on the City and its assets. Shaking, ground displacement, and liquefaction from an earthquake can cause structural failures, and/or infrastructure to sink, sag, float, rupture, or sever completely. Access to all assets may be restricted if the roads necessary for accessing them are in a state of disrepair and unable to be traversed. An extended loss of power or widespread damage to a system could impair the City's ability to provide services, especially if generators are compromised. Fires following earthquakes are also a significant concern and could impact operations. Direct impacts to employees are

possible, including injury, death, and an impeded ability of essential personnel to report for duty may also hinder operations.

Earthquakes can cause displacement, changing population patterns throughout their service area. The City has jurisdiction over land use, development and zoning, socially vulnerable populations, and/or land development within their service area, especially post earthquake disasters. Climate change is expected to alter the typical precipitation patterns in Southern California. Both rainy and drought periods are predicted to become more intense and frequent. As a result, more precipitation is likely to occur during rainy seasons, while droughts are expected to persist for longer durations. This shift could cause the groundwater aquifer beneath the City to rise during periods of heavy rainfall. Conversely, prolonged drought conditions may increase groundwater withdrawal, lowering groundwater levels. Consequently, climate change could increase or decrease the risk of liquefaction in the City depending on these circumstances.

Shaking, ground displacement, and liquefaction can cause structural failure in buildings, including the City's administrative and City Hall. Less catastrophic events may cause unanchored furniture and items on shelves to fall. Failure may result in employee and customer deaths and injuries if an event occurs during working hours. Further, crews out in the field may also be injured or killed.

Additionally, an adequate energy supply is critical for the City to maintain its daily processes and functions. Power failures occur when the reliable, uninterrupted supply of energy to all or part of the service area is disrupted, affecting the City's ability to provide service. In summary, the entire City, including all current and future assets (infrastructure, buildings, critical facilities, and population), is considered at risk of earthquake events.

4.3.2 Wildfires (Risk Ranking: 1)

Probability: Highly Likely (75-100%) – Historical records show 4 major wildfires in Orange County in the past five years. This represents 0.8 wildfires every year on average. Based on this data, the City concludes that future wildfires remain likely within its boundaries. This section examines hazards affecting the City as identified by the Planning Team.
Impact: Catastrophic
Priority: Highly Likely

General Definition: A wildfire is an uncontrolled fire in grasslands, forests, or brush areas, excluding prescribed burns or controlled fires conducted by land management agencies. Wildfires are natural components of forest ecosystems but can also result from human activity. They are classified as surface, ground, or crown fires. Surface fires burn along the forest floor and spread slowly, damaging or killing trees. Ground fires, which may be sparked by lightning or human carelessness, burn on or below the forest floor. Crown fires move rapidly through treetops, driven by wind. Dense smoke usually signals a wildfire from miles away.
The likelihood of wildfire is influenced by local weather conditions, human activities such as camping or debris burning, and the level of compliance with fire prevention measures. Drought and other natural hazards increase wildfire risk by creating dry fuel. Climate patterns such as El Niño and La Niña also affect wildfire activity, with El Niño bringing fewer fires due to increased rainfall, while La Niña typically brings more frequent and larger fires.
California is especially prone to wildfires, particularly in summer and fall. Southern California

experiences strong, dry Santa Ana winds during late summer and fall, which dry vegetation and can knock down power lines, sparking fires. These winds can rapidly spread fires, leading to widespread destruction, property loss, and potential loss of life.
The most recent large wildfire near Villa Park was the Canyon Fire 2 in October 2017. The fire began in Anaheim Hills and threatened Villa Park but was diverted when winds shifted southeast. Other notable fires include the Sierra Fire in 2006, the Stagecoach/Villa Park Fire in 1993 that destroyed two homes and damaged 29 others, and the Gypsum Canyon Fire in 1982 that burned 17,000 acres and destroyed 14 homes.

Climate Change Impacts: Climate change significantly increases the risk of wildfires by intensifying drought conditions and drying vegetation. Major wildfires can also lead to severe flooding by eliminating natural vegetation that normally helps absorb rainwater, as demonstrated by the Montecito landslides.
The following summarizes changes in exposure and vulnerability to the wildfire hazard resulting from climate change:

Population: Approximately 75 % of Villa Park's population is vulnerable.

Critical Facilities: Approximately 5% of the City's critical facilities are vulnerable. Most Villa Park homes lie within high fire hazard zones, which is a key concern for the City. City-owned structures such as City Hall, the Police Station, and the Library are outside these zones. Two schools are located within fire zones, although they are not City-owned; their evacuation remains a City concern. The City does not manage the water system, and its wastewater infrastructure is not threatened by wildfire.

Estimated Losses: The economic loss resulting from this hazard is approximately $120 million. The loss from damage to structures from this hazard is approximately $96 million, to homes.

Vulnerability: Wildfires can affect anyone in the City but pose greater risks to people experiencing homelessness and those working outdoors. Strong winds can spread smoke, ash, and other pollutants, creating health issues for residents, especially those with respiratory conditions.

Description: Local wildfires remain a significant threat. While City Hall lies outside FEMA's designated fire zone, many established neighborhoods fall within high-risk areas. A large, wind-driven wildfire in the hills near Orange and Anaheim Hills could easily spread into Villa Park during a Santa Ana wind event. One senior care facility is located in a high-risk fire area.

Figure 13. Fire Map

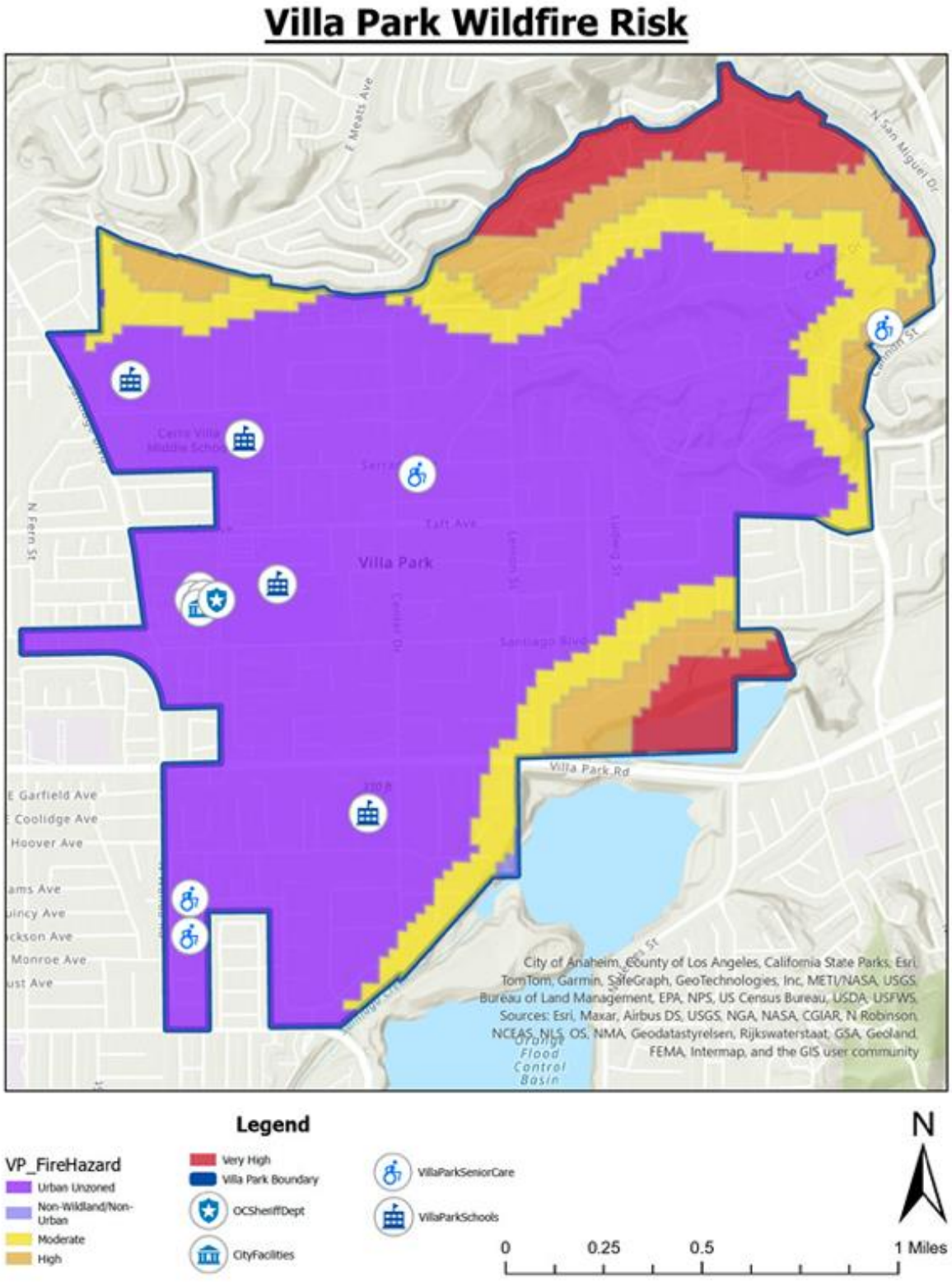


Table 10. Orange County Wildfires

Fire Name	Date	Acres Burned	In Vicinity of Villa Park (Y/N)
Airport Fire	September 2024	23,526	N
Emerald Fire	February 2022	154	N
Jim Fire	March 2022	553	N
Coastal Fire	May 2022	200	N
Bond Fire	December 2020	6,686	N
Silverado Fire	October 2020	13,390	N
Canyon Fire 2	October 2017	9,217	N
Freeway Complex Fire	November 2008	30,305	N
Santiago Fire	October 2007	28,400	Y
Sierra Fire	February 2006	10,584	Y
Stage Coach Fire	October 1993	750	Y
Gypsum Canyon	October 1982	17,000	Y

Impact Statement: Wildfire events have the potential to cause a variety of impacts to the City and its assets. Wildfires could directly damage above-ground assets that are burned or melted by fires. Wildfires may also impede access to assets that need maintenance or repair or pose life safety threats to employees. In addition, wildfires have the potential to result in indirect or cascading hazards to the City. If utility lines are damaged, wildfires can cause power outages, and burned areas are much more susceptible to landslides.

A power outage has the potential to disrupt services provided in the City's service area. Although the City doesn't provide utility services directly, the City will identify backup power supplies on many of its critical assets to minimize the impacts of power outages. However, long-term outages may exceed the fuel required to power backup generators. This could compromise nearly all the services provided by the City's utility providers. Administrative buildings also require an energy source, and disruptions could compromise operations, billing, and communications. A loss of power resulting in the inability of the City to respond essential services could have direct impacts in terms of revenue loss and reputational impacts, in addition to far-reaching community impacts.

In summary, the entire service area, including all current and future assets (infrastructure, buildings, critical facilities, and population), is considered at risk of wildfire events. All current and future above-ground assets, and populations (e.g., employees) are at most risk of wildfire.

4.3.3 Windstorms (Risk Ranking: 2)

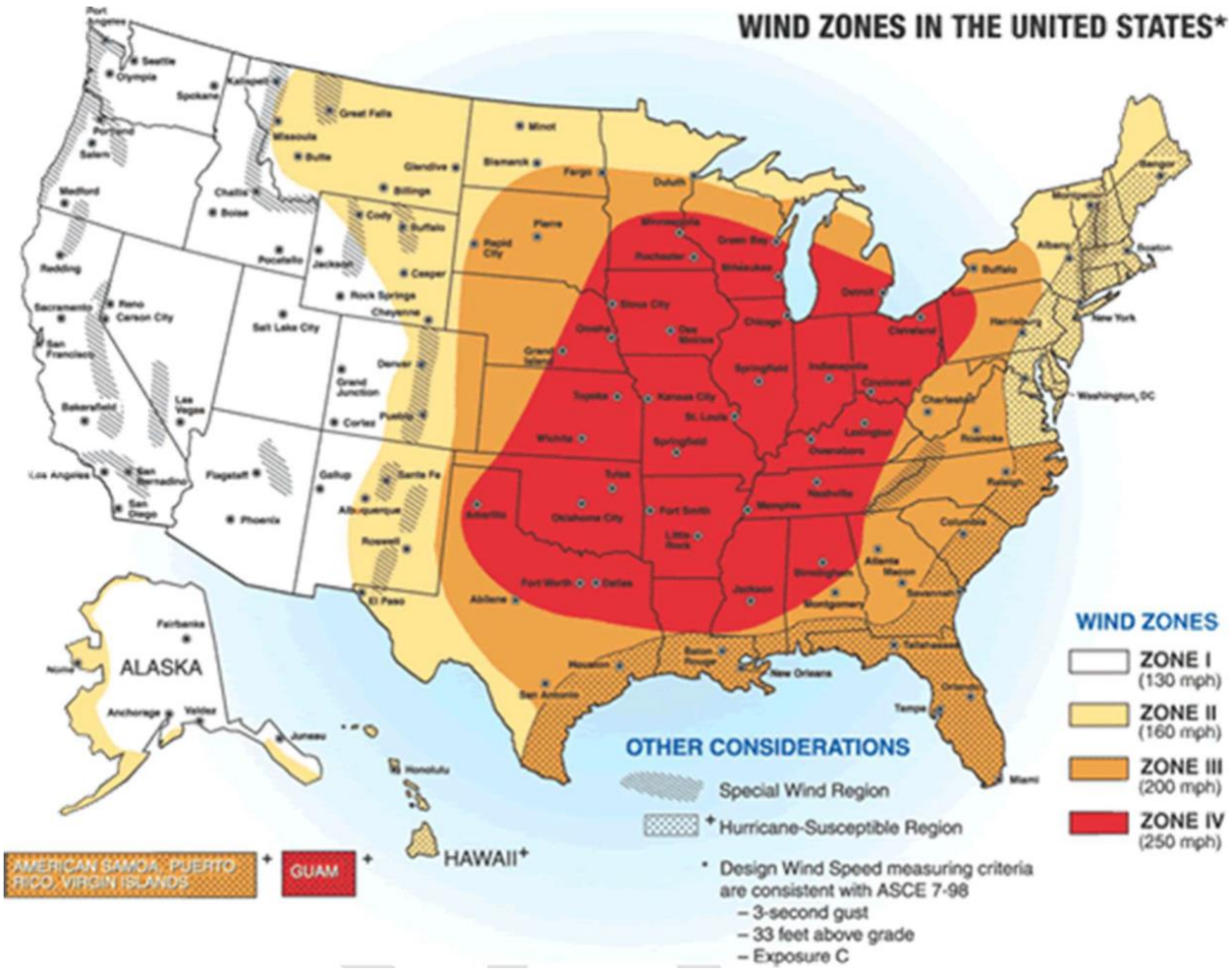
Probability: Likely (50-75%): Historical windstorm data for the City and its region indicate at least 5 significant windstorms within the last 5 years. This equates to a windstorm every year on average in any given year. Based on this data, the City determined that future windstorm occurrence within their boundaries continues to be likely.
Impact: Limited
Priority: Likely

General Definition: Santa Ana windstorms typically occur during fall and winter in Southern

California. These winds develop from a combination of low pressure over the southern coast and high pressure over the Great Basin in Nevada. When high-pressure air moves counterclockwise, warm, dry air is drawn toward the coast and out to the Pacific Ocean. Wind speeds can reach 100 mph, leading to wildfires, power outages, fallen trees, and serious property damage.
Climate change may increase the frequency of Santa Ana winds by creating more high-pressure zones over Arizona, Nevada, and Utah, and low-pressure zones in Southern Arizona and Mexico. This could raise the chances of Public Safety Power Shutoff (PSPS) events and regional outages.

Probability: If winds increase due to climate change, the probability of affecting the City is low due to the implementation of mitigation actions, such as generators and automatic transfer stations that can power the City's facilities. As climate change progresses, more high-pressure zones develop in the plains in Arizona, Nevada, and Utah, and low-pressure zones develop in Southern Arizona and Mexico, causing the Santa Ana winds to develop more frequently. This will increase the chances of PSPS events and regional power outages.

Figure 14. Wind Zones in the United States



Climate Change Impacts: The following summarized changes in exposure to the windstorm hazard resulting from climate change.

Population: Approximately 75% of Villa Park's population is vulnerable. This is unchanged from the prior LHMP because Population exposure and vulnerability to windstorms are unlikely to increase because of climate change, and significant life or health impacts are unlikely.

Critical Facilities: Approximately 100% of the City's critical facilities are vulnerable. Therefore, this is no change to these facilities from the prior LHMP. City Hall/Police Station and Library building complex could lose power, but there is backup generation to support the building and the back-up communications. Most of the damage is to City streets and sidewalks from up rooted trees and downed trees.

Vulnerability and Impact: Strong winds can threaten all City residents, especially people experiencing homelessness, those working outside, and individuals with respiratory conditions. Lower-income residents living in buildings not designed for high winds may struggle to recover from storm damage.
Santa Ana winds also worsen wildfire risks and can disrupt small aircraft operations. No current development plans are expected to increase the vulnerability of City assets to windstorms.

Estimated Losses: The economic loss resulting from this hazard is approximately $7.2 million. The loss from damage to structures from this hazard is approximately $7.2 million.

Description: Santa Ana Winds are a regional wind hazard specific to Southern California. Santa Ana Winds are known to cause large amounts of damage and increase the spread of wild and structural fires. Santa Ana winds are generally defined as warm, dry winds blowing east. The complex topography of Southern California and various atmospheric conditions create numerous scenarios that may cause widespread or isolated Santa Ana events. Winds are caused by a low-pressure system over the southern coastline and high pressure over the Great Basin in Nevada. When the high pressure turns counterclockwise, the warm, dry air is pulled to the low-pressure zone and out to the Pacific Ocean. Santa Ana Winds are quick and effective at spreading wildfires. The combination of windstorm activity with the major fires every few years creates the greatest danger to the urban/wildland interface. Santa Ana winds spread the flames at even greater speed than in times of calm wind conditions.

The National Weather Service Center normally issues a high wind advisory or warning depending on the following criteria. A wind advisory is issued when conditions are favorable for developing high winds overall or in part of the forecast area, but the occurrence is still uncertain. The criteria of a wind advisory are sustained winds of 31 to 39 mph and/or gusts of 46 to 57 mph for any duration. A high wind warning is issued when sustained winds from 40 or higher are expected for at least one hour or any wind gusts are expected to reach 58 mph or more. Forecasters at the National Weather Service in Oxnard and San Diego usually place speed minimums on these winds and reserve the use of "Santa Ana" for winds greater than 25 knots (approximately 29 miles per hour). Table 11 is a Beaufort wind scale that shows the appearance of wind effects based on the knots of wind and its classification.

Table 11. Beaufort Wind Scale

Beaufort grade	Kind of wind	Knots		km/h		Effects		Height of waves (metre)
		Min	Max	Min	Max	Earth	Sea	
0	Calm	<1		<1		Smoke rises vertical	Flat sea	-
1	Very light	1	3	1	5	The wind bends smoke	Small ripples with no white foamy crests.	0.1
2	Light breeze	4	6	6	11	It can be felt on face	Small wavelets, with unbroken crests.	0.2 - 0.3
3	Gentle breeze	7	10	12	19	It shakes leaves	Very small crests; crests begin to break.	0.6 - 1
4	Moderate breeze	11	16	20	28	It lifts dust and papers	Small waves that begin to grow longer; spuma più frequente e più evidente.	1 - 1.5
5	Fresh breeze	17	21	29	38	It shakes branches	Moderate waves that grow longer in shape; possible spray.	2 - 2.5
6	Strong breeze	22	27	39	49	It shakes big branches	Bigger waves; white foamy crests are longer everywhere.	3 - 4
7	Near gale	28	33	50	61	It impedes walking	The sea swells up; white foam forms when waves break up.	4 - 5.5
8	Gale	34	40	62	74	It shakes big trees	Medium-high, longer waves; crests start to break up in sprays.	5.5 - 7.5
9	Strong gale	41	47	75	88	Chimney pots and slated removed	High waves; tight strips of foam form in the direction of the wind.	7 - 10
10	Storm	48	55	89	102	It uproots trees	Very high waves with long crests; the sea looks completely white; waves fall down violently, visibility is reduced.	9 - 12.5
11	Violent storm	56	63	103	117	Serious devastation	Exceptionally high waves (small and medium tonnage ships disappear for a few seconds); visibility is still more reduced.	11.5 - 16
12	Hurricane	>64		>118		Very serious catastrophes	Air is filled with foam and sprays; sea is completely white because of foam; visibility is greatly reduced.	>14

Table 12. Windstorm Data from NOAA Impacting Orange County

Dates	Weather	Adverse Impacts
10.26.2020	A strong offshore wind, a "cool" Santa Ana, produced many exceeding 70 mph and a top gust of 88 mph at Fremont Canyon.	The winds toppled big rig trucks and downed mature trees in the northern Inland Empire. The dry winds also contributed to spreading two fire starts, the Blue Ridge and Silverado fires in eastern Orange County.
2.25.2021	After several offshore wind events during February, a particularly strong Santa Ana blew. Gusts of 80 to 90 mph were measured in the foothills north of San Bernardino, with gusts of 75 mph at Fremont Canyon and 72 mph in Fontana and Jurupa Valley.	A few trees in Devore were knocked down and a big rig tipped over in the Fontana area. Winds spread a fire in Bloomington.
2.28.2021	A great month for offshore winds as more Santa Anas developed.	

	Fremont Canyon had the top gust at 81 mph, with Fontana and Jurupa Valley each reporting 60-mph gusts.	
8.20.2023	Post-tropical cyclone Hilary brought strong easterly winds to the region, particularly to the mountains. Top gusts recorded were 84 mph at Big Black Mountain (San Diego County), 80 mph at Silverwood West (south of Hesperia), 79 mph at Palomar Mountain Lookout and Pisgah Peak, 78 mph at Hauser Mountain in southern San Diego County, 75 mph at Silverwood Lake, 71 mph at Burns Canyon, 71 mph at West Santa Ysabel and Hellhole Canyon in central San Diego County, and 70 mph at Sill Hill and Whitewater.	Downed trees blocked roads near Warner Springs and southeast of Big Bear City. Tree damage occurred in Orange, La Habra, La Jolla and 4S Ranch San Diego.
11.6.2024	Strong offshore (Santa Ana) winds gusted as high as 79 mph at Fremont Canyon. Many other foothill locations and the northern Inland Empire exceeded 60 mph.	Dry fire weather made conditions ripe for fires. Several small fires erupted, including the Garden Fire near Fallbrook.

Impact Statement: All the service areas within the City have windstorm events; the entire planning area is equally at risk of this hazard. Severe wind has the potential to damage structures including blown-off shingles, siding, awnings, and other features of buildings and overturning of trees. Objects picked up by the wind, including palm fronds and litter, can be hurled through the air, damaging assets and structures when contact is made. In some cases, structures may be blown off foundations, or infrastructure may be blown off their base. In addition, mobile or modular units (such as those installed for temporary uses) are considered at a higher risk of severe wind. Severe winds can cause damage to communications infrastructure, utility poles, and aboveground power lines, resulting in loss of power. Falling trees also contribute to power line disruptions. When strong winds reach a force great enough to threaten above-ground facilities, power pole lines and power outages may be experienced. These events are known as Public Safety Power Shutoffs (PSPS). PSPS are temporary and are meant to keep the community safe. PSPS events only happen during periods of high winds. There have not been any PSPS events in the last 5 years that have had a negative effect in the City's service area.

The entire service area, including all current and future assets (infrastructure, buildings, critical facilities, and population), is vulnerable to severe annual winds due to the topography and movement of weather fronts through the area. Exposed (e.g., aboveground) assets are considered most at risk of severe winds.

4.3.4 Floods (Risk Ranking: 2)

Probability: Likely (50-75%) - Historical flood data for the City indicate at least 2 significant floods within the last 5 years. This equates to an average flood every 2.5 years or a 40 percent chance of a flood in any given year. Based on this data, the City determined that future flood occurrence within its boundaries continues to be likely. This section looks at all the hazards affecting the City within its boundaries and is identified by the Planning Team.
Impact: Limited
Priority: Likely

General Definition: An unusually heavy rain in a concentrated area, over a short or long period of time that collects on the ground in low areas of the land. Flooding occurs when there are large amounts of rainfall in areas where the water runs off to lower elevations. Flooding is a very frequent, dangerous, and costly hazard. Globally, it accounts for 40 percent of all-natural disasters and results in an average of over 6,500 deaths annually. In the U.S., flooding results in an average of 86 deaths annually. Nearly 90 percent of all presidential disaster declarations result from natural events where flooding was a major component. On average, flooding causes more than $2 billion in property damage yearly in the United States (NOAA). Floods cause utility and outages, infrastructure damage, structural damage to buildings, crop loss, decreased land values, and impeded travel.
Flooding is the most common environmental hazard due to the widespread geographical distribution of valleys and coastal areas and the population density in these areas. The severity of a flooding event is typically determined by a combination of several major factors, including stream and river basin topography and physiography, precipitation and weather patterns, recent soil moisture conditions, and the degree of vegetative clearing and impervious surface. Flooding events can be brought on by severe (heavy) rain.
The City is a member of NFIP. NFIP members are Cities and County Governments that enforce building codes and permits and have authority over construction, planning, zoning, and land use. The City has no properties that are repetitive loss structures.

Dam Inundation: A failure of the Villa Park Dam, which is owned and operated by the Orange County Flood Control Agency, allows for a flood control for Villa Park, Orange, Tustin, and Santa Ana and spills from Irvine Lake. Dam failures can be triggered by various factors, including earthquakes, quickly rising floodwaters, and flaws in structural design. These incidents can happen suddenly or gradually, depending on the underlying cause. The flooding that follows such events can lead to loss of life, property damage, the emergence of other hazards, and the displacement of individuals living in the flood zone. The Lake at Villa Park is normally empty. The Villa Park Dam was constructed in 1956 after the flood of 1936, as it took 20 years to obtain the needed funding. In 1969 the Villa Park Dam reached it limits and the Army Corps of Engineers built Padre Dam, and many years later 7-Oaks Dam in San Bernardino County to ensure the safety of Orange County residents. Even, if Villa Park Lake was full and the dam failed, there is not enough water behind the dam to cause loss of life or major property damage to residents of Villa Park. The dam is in a canyon and homes are higher than the canyon walls. The failure would need to take place on four or five dams upstream to cause inundation in Villa Park. This is in accordance with the working draft of the Emergency Action Plan of the Santiago Creek Dam.

Flash Flooding: Flash floods occur within a few minutes or hours of heavy rainfall and can destroy buildings, uproot trees, and scour out new drainage channels. Heavy rains that produce flash floods can also trigger mudslides and landslides. Slow-moving thunderstorms or repeated thunderstorms cause the most flash flooding in a local area or by heavy rains from hurricanes and tropical storms. Although flash flooding often occurs in mountainous areas, it is also common in urban centers where much of the ground is covered by impervious surfaces.

Probability: Wildfires exacerbating flooding conditions are likely to increase the probability of increased flooding. Wildfires can exacerbate flooding conditions when infiltration is affected, and limited vegetation is in place. As wildfire probability increases, so will flooding; this is due to dry conditions and dried foliage, which can be linked to climate change. While the recent drought conditions have resulted in a lack of rain events, the potential for future flooding still exists.

Climate Change Impacts: The following summarizes changes in exposure and vulnerability to the flood hazard resulting from climate change:
Population: Approximately 40% of the Villa Park population is vulnerable. Climate change impacts on flood hazards may increase population vulnerability. Runoff patterns may change, resulting in flooding in areas where it has not previously occurred.
Critical Facilities: 100% of the City's critical facilities are vulnerable. Climate change impacts on flood hazards may increase the exposure and vulnerability of all critical facilities.

Vulnerability and Impact: Underserved and vulnerable populations they serve include socioeconomically disadvantaged people; people with limited English proficiency; geographically isolated or educationally disenfranchised people; people of color as well as those of ethnic and national origin minorities; women and children; individuals with disabilities and others with access and functional needs; and seniors. Those who may live under bridges, in tents, or in makeshift housing along waterways. The socially vulnerable populations are most susceptible based on many factors, including how the people respond to the lack of financial ability to purchase supplies. Food, clothing, and safe housing may be manageable for only short periods of time and then fall into extreme poverty, with a lack of resources and the ability to navigate special needs in an emergency or to manage to obtain adequate food, housing, food, clothing, or medical treatment. In flooding conditions, vulnerable populations may not be able to find adequate, safe, potable water supplies for drinking, cooking, or hygiene needs. Flooding and dangers associated with the flood hazard can lead to vulnerable populations living in waterways, flood control channels, and adjacent to creeks and waterways, losing possessions and further displacement. It can further isolate these vulnerable populations and limit access to local, state, and federal resources.

Estimated Losses: The economic loss resulting from this hazard is approximately $96 million. The loss from damage to structures from this hazard is approximately $36 million, to homes, small businesses, and roadways.

Description: Flooding is frequent within the City's service area, particularly during severe rainstorms, which have been known to inundate the surrounding areas. This has not affected operations; 100-year and 500-year flood maps show potential inundation in the central area of the City. There has been no recorded damage caused by flooding within the service area that has affected City infrastructure.

Figure 15. Flooding Map (Purple Areas)

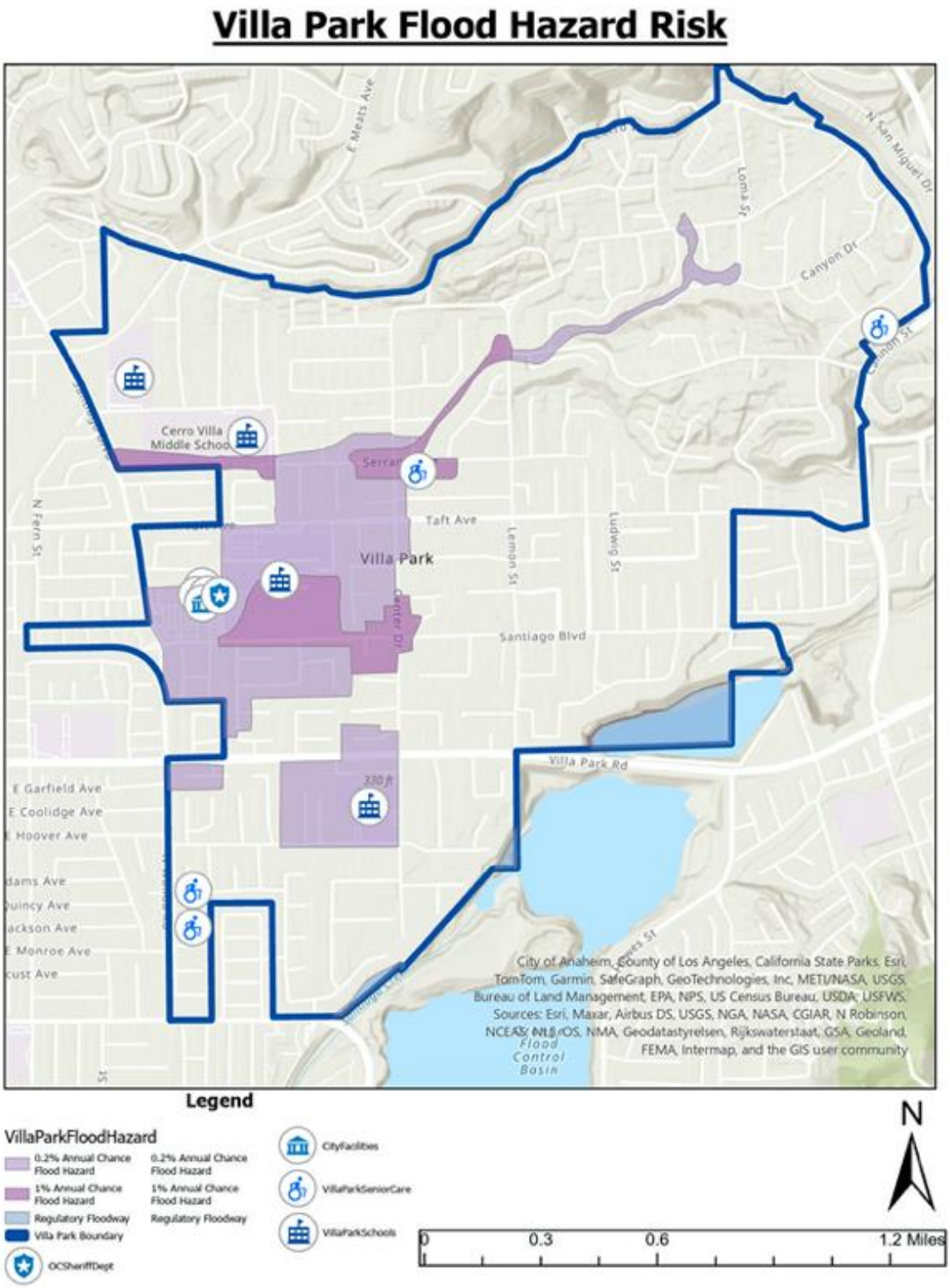


Table 13. California Flooding History (Relevant Floods USGS)

Date of event	Type of Damage	Amount of Damage	Statewide or Local
Dec-55	74 deaths	$200 M	Statewide
Apr-58	13 deaths, several injuries	$20 M, plus $4 M agricultural	Statewide
Fall 1965	Abnormally heavy and continuous rainfall.	Public- $5.8 M; private $16.0 M; Total $21.8 M	Riverside, San Bernardino, Ventura, San Diego Counties
Winter 1966	Abnormally heavy and continuous rainfall.	Public- $14.6 M; private $14 M; Total $28.7 M	Various
Winter 1969	Storms, flooding, 47 dead, 161 injured. An alluvial flood and debris flow on Deer Creek in San Bernardino County killed 11 people.	Public $185 M, Private -$115 M; Total $300 M	Various
Sep-1976	High winds, heavy rains, and flooding	Public$65.7 M; private-$54.3 M; Total $120 M	Imperial, Riverside, San Bernardino, San Diego Counties
Winter 1978	14 dead, at least 21 injured	Public $73 M; private-$44 M; Total $117 M; 2,538 homes destroyed	Various
Jul-1979	No Deaths	Public $3.0 M; private-$22.9 M; Total $25.9 M	Riverside
Feb-1980	Rain, wind, mud slides, and flooding	18M to 20M	Various
Winter 1982-1983	Heavy rains, high winds, flooding, levee breaks	Public $151 M; private $159 M; agricultural $214 M; Total $524 M	Various
Aug-1983	High winds, storms, and flooding; 3 deaths	Public $10 M, private $15 M, agricultural $10 M; TOTAL $35 M	Inyo, Riverside, San Bernardino Counties
Feb-1992	Flash Flooding, rainstorms, mud slides; 5 deaths	Public-$95 M; private-$18.5 M; business $8.5 M, agricultural $1.5 M; TOTAL $123 M	Los Angeles, Ventura, Kern, Orange, San Bernardino Counties
Dec-1992	Snow, rain, and high winds, 20 deaths, 10 injuries	Total - $600 M	Various

Date of event	Type of Damage	Amount of Damage	Statewide or Local
Jan-1995	11 deaths	Public $299.6 M; individual $128.4 M; businesses $58.4 M; highways $158 M; ag-$97 M; TOTAL $741.4 M; damage to homes: major-1,883; minor 4, 179; destroyed-370.	Various
Feb-1995	17 deaths	Public property $190.6 M; individual $122.4 M; business $46.9 M; highways $79 M; ag $651.6 M; TOTAL approximately $1.1 billion; damage to homes: major-1,322; minor-2,299; destroyed 267	57 counties (all except Del Norte)
Feb-1998	17 deaths	$550 M	Various
Dec. - 2003	15 deaths	$30 M	San Bernardino, Waterman Canyon, Lytle Creek
Jan. 2004	None	$20,000 public property	San Bernardino County High Desert
October 2010	None	$2.5 M	Flash flooding San Bernardino County High Desert
Dec. 2010 Jan. 2011	None	$18 M San Bernardino/Highland, High Desert, San Bernardino Mountains, Forest Falls	Various location in San Bernardino County
May 2012 March 2014	None	$50,000	S.B. County High Desert Various
December 31, 2022 – March 25, 2023	22 deaths	$4.6 Billion	Multistate
January 22, 2024	None	$31 million	San Diego County

Impact Statement: Below are the potential impacts flooding can have on the City and its residents.

- Flooding can result in various impacts, such as death and injury, asset damage, inability to

access facilities or assets, and road closures. Normal operations may be interrupted due to flooding.

- Floodwater often contains bacteria and chemicals. Flooding of wells or reservoirs may contaminate water, resulting in boil water advisories or reduced service.
- Floodwater can prevent normal access to assets and facilities. This presents a danger when motorists and pedestrians attempt to traverse floodwaters. Motor vehicles and pedestrians can get swept up in flood currents, increasing the risk of drowning. Even in shallow waters, fast-moving currents can carry individuals or vehicles into deeper waters, where pressure from flowing water can prevent drivers from escaping submerged vehicles. As little as six inches of floodwater can move a vehicle, and as little as two inches can move a person.
- Replenishment facilities, including percolation ponds, may be washed out by flooding, resulting in damage.
- Assets with electrical parts or motors may be damaged by flooding if these parts are submerged.
- Structures exposed to flooding, including critical facilities, can be severely damaged. Building contents can be lost, damaged, or destroyed, and structures can be compromised by floodwater. Pressure from floodwater, especially as seepage through the soil, can damage foundations.
- Buildings exposed to floodwaters may develop mold or wood rot.

4.3.5 Climate Change Induced Droughts (Risk Ranking: 2)

Probability: Likely (50-75%) - Historical drought data for the City and its region indicate at least 5 multi-year significant droughts within the last 47 years. This equates to an average drought every 9.4 years. Based on this data and given the multi-year length of droughts and future climate change effects, the City determined that future drought occurrence within their boundaries continues to be highly likely. This section looks at all the hazards affecting the City within its boundaries that the Planning Team identified.
Impact: Limited
Priority: Likely

General Definition: A drought is a period of below-average precipitation in a given region resulting in prolonged shortages in its water supply, surface water, or groundwater. Climatic factors such as high temperatures, high wind, and low relative humidity are often associated with drought. Drought occurs in virtually all climatic zones, varying significantly from one region to another. Droughts occur when there are extended periods of inadequate rainfall. The cycle of droughts and wet periods is often part of El Niño and La Niña weather cycles. The severity of a drought depends on the degree of moisture deficiency, the duration, and the size and location of the affected area. It is generally difficult to pinpoint a drought's beginning and end. In California, a few dry months do not typically constitute a drought. Because the impacts of a drought accumulate slowly at first, a drought may not be recognized until it has become well established. Even during a drought, there may be one or two months with above-average precipitation totals. These wet months do not necessarily signal the end of a drought and generally do not majorly impact moisture deficits. Droughts can persist for several years before regional climate conditions return to normal. While drought conditions can occur at any time throughout the year, the most apparent time is during the summer months.

Climate Change Probability: The probability of damage to the City caused by climate change will increase. Drought's probability will increase in the southwestern United States, creating longer and hotter days with less rain, leading to long periods of drought. Research supports that climate change will significantly impact drought frequency and intensity, varying by region. Higher temperatures increase evaporation rates, including more moisture loss through plant leaves. Even in regions where precipitation does not decrease, increases in surface evaporation will lead to more rapid drying of soil if not offset by other changing factors, such as reduced wind speed or humidity. As soil dries out, more of the sun's incoming heat will go toward heating soil and adjacent air rather than evaporating moisture, resulting in hotter temperatures and drier conditions.

Measuring Droughts: There are several quantitative methods for measuring drought in the United States. The U.S. Drought Monitor is a relatively new index that combines quantitative measures with input from experts in the field. In March 2022, California's Governor Newsom implemented an executive order (Executive Order N-7-22) to address the impacts of the drought in California. This order required urban water suppliers, to adopt more stringent water conservation efforts, including but not limited to banning irrigating "non-functional turf" and voluntarily activating a water shortage contingency planning Level 2. Along with this executive order, and in accordance with the State Water Resources Control Board (SWRCB) and California Water Code (CWC) requirements as outlined in Sections 10632 and 10644, urban water supplies in California would have to prepare Annual Water Supply and Demand Assessments (AWSDA) and submit these

assessments annually to the state to remain in compliance with water conservation efforts. The City does not supply water to its residents, Serrano Water District provides water services to the City.

Climate Change Impacts:
The following summarizes changes in exposure and vulnerability to the drought hazard resulting from climate change:

Population: 100% of Villa Park population is vulnerable to climate change induced drought. Population exposure and vulnerability to drought are unlikely to increase due to climate change.

Critical Facilities: None owned by the City.

Vulnerability & Impacts: Underserved and vulnerable populations include socioeconomically disadvantaged people; people with limited English proficiency; geographically isolated or educationally disenfranchised people; people of color as well as those of ethnic and national origin minorities; women and children; individuals with disabilities and others with access and functional needs; and seniors. Those who may live under bridges, in tents, or in makeshift housing along waterways. The socially vulnerable populations are most susceptible based on many factors, including how the people respond to financial ability to purchase supplies. Food, clothing, and safe housing may be manageable for only short periods of time and then fall into extreme poverty, with a lack of resources and the ability to navigate special needs in an emergency or to manage to obtain adequate food, housing, food, clothing, or medical treatment. In drought conditions, vulnerable populations may not be able to find adequate, safe, potable water supplies for drinking, cooking, or hygiene needs.

Estimated Losses: The economic loss resulting from this hazard is approximately zero since the City does not own and operate water facilities. The loss from damage to structures owned by the City from this hazard is approximately zero.

U.S. Drought Monitor: The U.S. Drought Monitor is designed to provide the general public, media, government officials, and others with an easily understandable overview of weekly drought conditions across a county throughout the United States. The U.S. Drought Monitor is unique because it assesses multiple numeric measures of drought, including the PDSI and three other indices, as well as experts' interpretations, to create a weekly map depicting drought conditions across the United States. The U.S. Drought Monitor uses five drought intensity categories, D0 through D4, to identify areas of drought. The maps below are taken from https://droughtmonitor.unl.edu/Maps/MapArchive.aspx and show the drought differences between January 2020 and January 2026. Note the drastic difference between the two drought maps.

Figure 16. 2020 California Drought Monitor

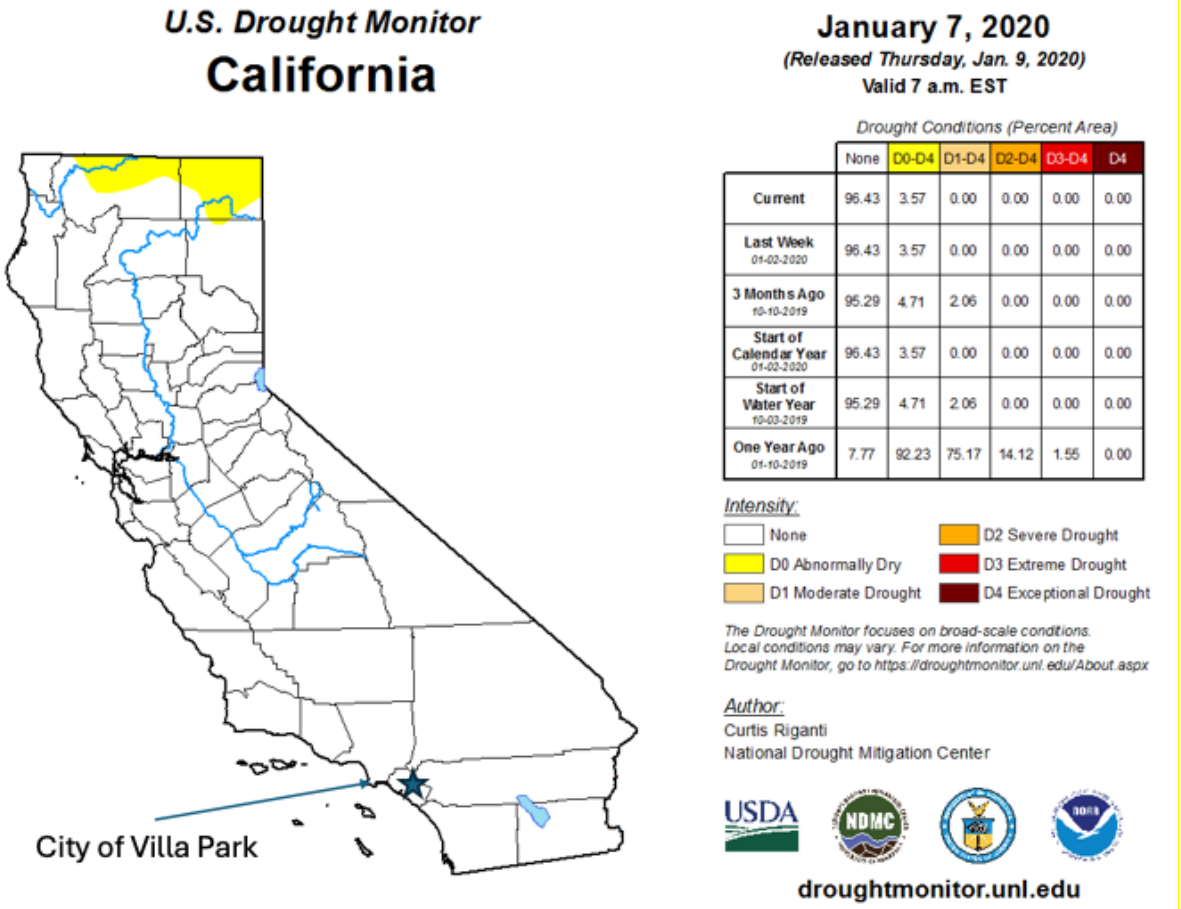


Figure 17. 2026 California Drought Monitor

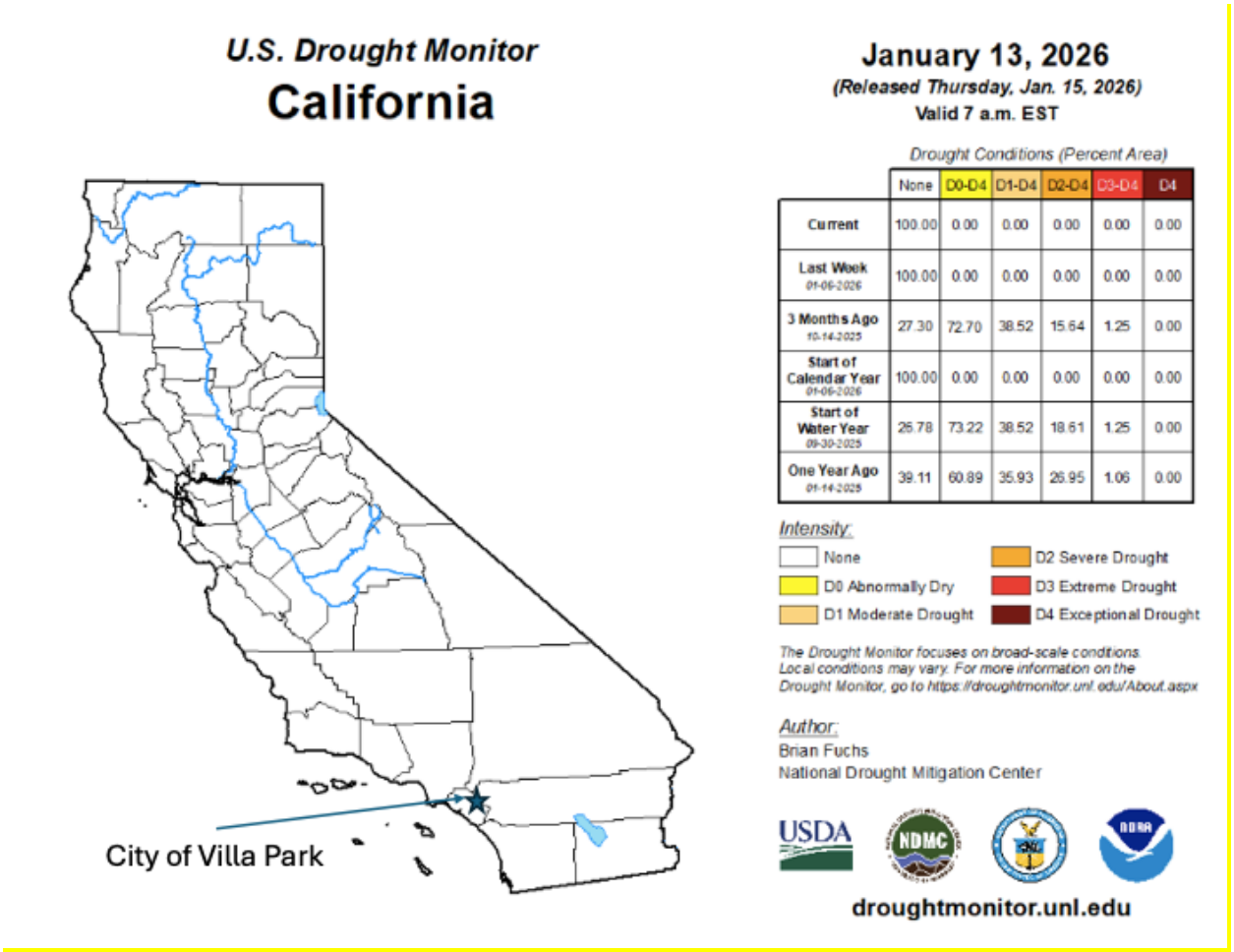
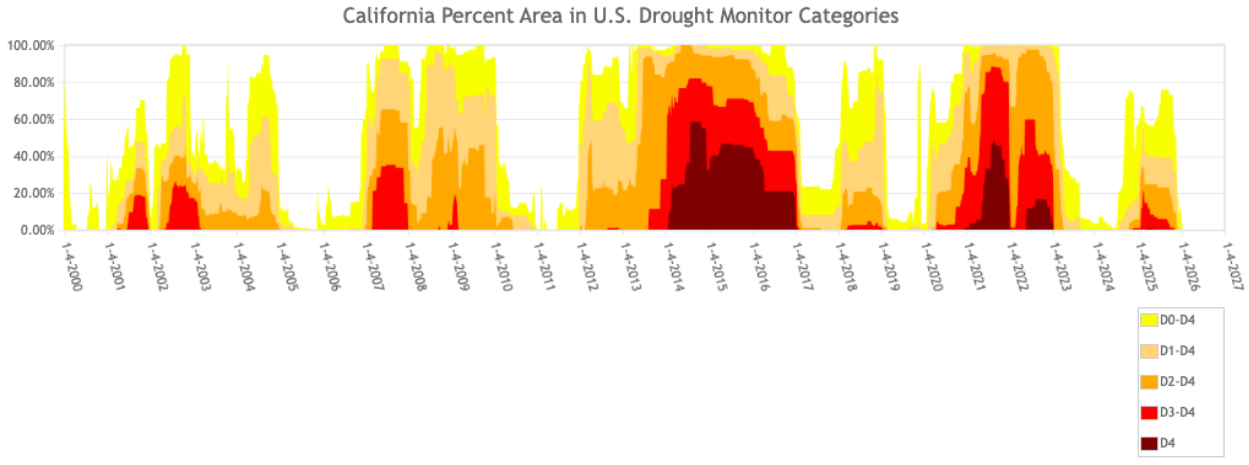


Table 14. U.S. Drought Monitor

D0	Abnormally Dry	Going into drought: short-term dryness slowing planting, growth of crops or pastures. Coming out of drought: some lingering water deficits; pastures or crops not fully recovered
D1	Moderate Drought	Some damage to crops, pastures; streams, reservoirs, or wells low, some water shortages developing or imminent; voluntary water-use restrictions requested
D2	Severe Drought	Crop or pasture losses 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 in reservoirs, streams, and wells creating water emergencies

A drought is a regional event not confined to geographic or political boundaries; it can affect several areas simultaneously. It can also range in severity across those areas. Drought is now one of the main concerns in California, as the State has been in a drought period for the last eight years. Northern California experienced some relief in the winter of 2016; however, the El Niño effect expected to relieve the statewide drought did not materialize in Southern California. The lack of rain and, most importantly, the lack of snowfall in the Sierra Nevada Mountain range severely impacted most residents of California. The City's service area is at risk of drought occurrence and impacts.

Figure 18. California Drought History (2000-2026)



Between late 2011 and 2021, the driest in California history since record-keeping began. In May 2015, a state resident poll conducted by Field Poll found that two out of three respondents agreed that water agencies should be mandated to reduce water consumption by 25%.

The 2015 prediction of El Niño to bring rain to California raised hopes of ending the drought. In the spring of 2015, the National Oceanic and Atmospheric Administration (NOAA) named the probability of the presence of El Niño conditions until the end of 2015 at 80%. Historically, sixteen winters between 1951 and 2015 had created El Niño. Six had below-average rainfall, five had average rainfall, and five had above-average rainfall. However, as of May 2015, drought conditions had worsened, and above-average ocean temperatures had not resulted in large storms. The drought led to Governor Jerry Brown's instituting mandatory 25% water restrictions in June 2015.

Approximately 102 million trees in California died from the 2011 – 2016 drought, of which 62 million died in 2016 alone. By the end of 2016, 30% of California had emerged from the drought, mainly in the northern half of the state, while 40% remained in the extreme or exceptional drought levels. Heavy rains in January 2017 were expected to significantly benefit the State's northern water reserves despite widespread power outages and erosional damage in the wake of the deluge.

Winter 2022-23 was the wettest in California, surpassing the previous record set in 1982–83. Governor Newsom declared an official end to the drought in April 2023. All 58 counties are listed in the Governor's severe drought impact. The winter of 2022 has had more rainfall and snow in California than the last 20 years alone. Currently, the entire state of California does not have any drought conditions occurring.

Within the 2020 - 2026 timeframe, no federal and/or state declarations were declared for California Climate Change-induced drought within the City's service area.

Impact Statement: Water is also needed to manage structural and wildfires. A lack of, or limited, water supply presents wildfire management vulnerability. Substantial water is needed to fight wildfires, which are more frequent in dry conditions. While water for firefighting is a priority and no restrictions are in place, a lack of availability could slow this capability.
The entire planning area is equally at risk of this hazard. Most drought impacts, however, are not structural but societal in nature. A drought's impact on society results from the interplay between a natural event and people's demand for water supply. The City is not in charge of supplying potable nor non-potable water within its service area; therefore, it is not directly impacted by drought conditions.

Table 15. California Drought History (extracted from USGS, California Drought History)

Year	Drought History
1841	The drought was so bad that "a dry Sonoma was declared entirely unsuitable for agriculture"
1864	This drought was preceded by the torrential floods of 1861-1862, showing the fluctuation in climate back in the 1800s.
1924	This drought encouraged farmers to start using irrigation more regularly because of the fluctuation in California weather the need for consistent water availability was crucial for farmers.
1929–1934	This drought was during the infamous Dust Bowl period that ripped across the plains of the United States in the 1920s and 1930s. The Central Valley Project was started in the 1930s in response to drought.
1950s	The 1950s drought contributed to the creation of the State Water Project.
1976–1977	1977 had been the driest year in state history to date. According to the *Los Angeles Times*, "Drought in the 1970s spurred efforts at urban conservation and the state's Drought Emergency Water Bank came out of drought in the 1980s."
1986–1992	California endured one of its longest droughts ever observed from late 1986 through early 1992. Drought worsened in 1988 as much of the United States also suffered from severe drought. In California, the six-year drought ended in late 1992 as a significant El Niño event in the Pacific Ocean (and the eruption of Mount Pinatubo in June 1991) most likely caused unusual persistent heavy rains.
2007–2009	2007–2009 saw three years of drought conditions, the 12th worst drought period in the state's history, and the first drought for which a statewide proclamation of emergency was issued. The drought of 2007–2009 also saw greatly reduced water diversions from the State Water Project. The summer of 2007 saw some of the worst wildfires in Southern California history.
2011-2017	From December 2011 to March 2017, the state of California experienced one of the worst droughts to occur in the region on record. The period between late 2011 and 2014 was the driest in California history since record keeping began.

Progression of the drought from December 2013 to July 2014 (extracted from USGS, California Drought History)

SECTION 5. COMMUNITY CAPABILITY ASSESSMENT

5.1 Introductions

The City is in the Northeastern section of the Orange County. The City serves approximately 5,951 people as noted, in the Profile of the City of Villa Park published by SCAG in 2019. City has a sewer collection system but doesn't treat wastewater. Wastewater is sent to the Orange County Sanitary District for Treatment.

The City has four full-time employees and three part-time employees. The City has contract services for sewer cleaning and maintenance, street cleaning and maintenance and various other city services.

5.2 Emergency Management

City of Villa Park implements the regulations, codes, policies, and ordinances adopted by its City Council. As an example, the City's General Plan defines the zoning, and city ensures that building permits issued are in accordance with the zoning code section. Most of the city is zoned residential, with only a small area of the city zoned as commercial, with only one shopping center in the city. Villa Park is more of a bedroom community, as there are no factories or industry.

The City has a CERT to help advise the public on Family Survival and Emergency Response Planning for the city in the event of disasters, parades, and other public events. The City must be prepared to respond to a variety of threats that require emergency actions, including:

- Operational incidents, such as power failure or bacteriological contamination of water associated with the water suppliers' facilities.
- Outside or inside malevolent acts, such as threatened or intentional
- Natural disasters, such as earthquakes or floods and power failures.
- Sewer backups

The City is also required to follow Standard Emergency Management System (SEMS) and the National Incident Management System (NIMS) and the Incident Command System (ICS) when responding to emergencies.

5.3 Planning and Regulatory Capacity

Planning and regulatory capability is based on implementing plans, policies, and programs that demonstrate the City's commitment to guiding and managing growth while maintaining the general welfare of the community. It includes emergency response and mitigation planning, master planning, and enforcement of design and construction standards. Although conflicts can arise, these planning initiatives present significant opportunities to integrate hazard mitigation principles into the City's decision-making process.

5.4 Existing Plans

The following emergency related plans apply as appropriate:

- The Cities Illness Injury Prevention Plan (IIPP)
- The Cities Codes and Ordinances, Code Enforcement
- City building and safety plans
- City General Plan
- Fire Master Plan
- Flood Master Plan
- Neighborhood Watch
- Community Emergency Response Team (CERT)

The City can request mutual assistance from the County of Orange Office of Emergency Services, the State of California Office of Emergency Services as well as other local cities.

5.5 Mitigation Programs

The City has completed some mitigation programs. Some landslides in the city have affected some residential properties. One such event was during a Presidential Declared event and the city was able to obtain FEMA funding to build a ½ mile long retaining wall to stabilize the hillside to prevent several homes from sliding onto the roadway below. This wall is still in place today.

5.6 Fiscal Resources

Fiscal resources for the City include the following:

- Revenue from sales taxes
- Property Taxes
- Gasoline Taxes
- Utility sales
- Sewer fees
- Business license fees
- Aid to Cities
- Traffic Safety
- Measure M sales tax

There are various other funds available to the city in grants both State and Federal.

SECTION 6. MITIGATION STRATEGIES

6.1 Overview

The City derived its mitigation strategy from the in-depth review of the existing vulnerabilities and capabilities outlined in previous sections of this plan, combined with a vision for creating a disaster resistant and sustainable system for the future. This vision is based on informed assumptions that recognize both mitigation challenges and opportunities and is demonstrated by the goals and objectives outlined below. Additionally, the mitigation measures identified under each objective include an implementation plan for each measure. The measures were individually evaluated during discussions of mitigation alternatives and the conclusions were used as inputs when priorities were decided. All priorities are based on consensus of the Planning Team.

Mitigation measures are categorized generally for all hazards and specifically for the six high-risk hazards facing cities that were extensively examined in the risk assessment section. These hazards include earthquakes, wildfires, flooding events and windstorms.

6.2 Mitigation Goals, Objectives, and Projects

The process of identifying goals began with a review and validation of the FEMA Hazard Maps for the City and surrounding cities in Orange County. The team completed an assessment and discussion of whether each of the goals was valid. These discussions led to the opportunity to identify Goals and Objectives. In reviewing the mitigation objectives and actions, it was the Planning Team's consensus that the following goals should be included in the LHMP.

6.2.1 Emergency Preparedness

Goal: Support and expand disaster response programs and initiate a program for post-disaster planning.

Objective(s):

- Establish comprehensive procedures for post-disaster planning at affected facilities. Affected facilities could include homes, city buildings, and businesses for public recovery.
- The City shall encourage involvement in the existing regional emergency preparedness programs, as well as emergency preparedness education. This will predominantly be achieved by partnering with local schools. One example of an educational program is one that is designed to teach elementary school students the importance of water conservation through the implementation of a water conservation garden located on or near their school's premises.
- The City shall implement the following actions as they pertain to emergency preparedness and play a crucial role in the protection of the public and facilities in case of disaster:
    - Coordinate with the County office of Emergency Services and the County Sheriff Department (Villa Park and Fire) to write and maintain an Emergency Operations Plan and create an Evacuation and Shelter Plan for use by City staff in order to respond to disasters effectively.
    - Coordinate with public and private agencies and initiate coordination of the recovery process.
    - The City should initiate a program for post-disaster planning because the City's

ultimate post-disaster survival will depend not only on the effectiveness of hazard mitigation and disaster response programs, but also on how quickly and efficiently the City is able to rebuild after a major disaster. The City should implement the following action:

- Establish a standing committee for disaster recovery to plan for a disaster by providing contingency planning for the rapid and effective reconstruction of affected areas. The committee should include City representatives from Engineering, Public Works, Resource Sustainability, Finance, Water and Wastewater Departments, local utilities, local business owners, members of CERT, and State and Federal agencies who are focused on redevelopment, housing and reconstruction programs.
- Coordinate an Emergency Response Plan and Evacuation Plan in conjunction with Kinder Morgan, the Contracted City Fire and Police Departments for utilization in the event of an explosion, rupture or fire involving this pipeline.

6.2.2 Earthquakes (Risk Ranking: 2)

Goal: Identify and mitigate any potential damage to City property and infrastructure.

Objective(s):

- Design all new facilities to withstand an 8.0 earthquake.
- Establish property protection measures and retrofit programs for facilities in high hazard areas.
- Continuously integrate new data on natural and manmade hazards into all projects and existing facilities.
- Establish a partnership with all levels of government and nongovernment agencies.

Earthquake Mitigation Projects

Individual mitigation projects require further analysis closer to implementation to provide a more accurate cost estimate. The identified projects and current costs estimates include:

1. **Project:** Construct seismic retrofit of critical facilities (City Hall)
   - **Priority:** High
   - **Estimated Cost:** $3.6 Million (5 years) (based on similar projects City has pursued and 2025/26 CIP)
   - **Implementing Organization:** City of Villa Park

2. **Project:** Install flex couplings on wastewater pipelines in the City
   - **Priority:** Medium
   - **Estimated Cost:** $302,000 (on-going) (based on similar projects City has pursued and 2025/26 CIP)
   - **Implementing Organization:** City of Villa Park

3. **Project:** Plan for emergency evacuation and shelter plans estimated at $604,000 (5 years)
   - **Priority:** Medium

- **Estimated Cost:** $604,000 (5-years) (based on similar projects City has pursued and 2025/26 CIP)
- **Implementing Organization:** City of Villa Park

6.2.3 Wildfires (Risk Ranking: 1)

Goal: Protect life and property in the City in the event of a wildfire.

Objective(s):

- Lower the risk of wildfires affecting the City.
- Educate the public on fire safety.

Wildfire Mitigation Projects

Further analysis will be required for each mitigation to provide a more accurate cost estimate when ready to implement. The identified projects and current costs estimates include:

1. **Project:** Develop fuel plan for generators
   - **Priority:** Medium
   - **Estimated Cost:** $6,000 (6-months) (based on similar projects City has pursued and 2025/26 CIP)
   - **Implementing Organization:** City of Villa Park

2. **Project:** Defensible space program by clearing bush around all homes
   - **Priority:** High
   - **Estimated Cost:** $60,000 (on-going) (based on similar projects City has pursued and 2025/26 CIP)
   - **Implementing Organization:** City of Villa Park

3. **Project:** Retrofit fire-resistant coatings on critical facilities
   - **Priority:** Medium
   - **Estimated Cost:** $242,000 (1-year) (based on similar projects City has pursued and 2025/26 CIP)
   - **Implementing Organization:** City of Villa Park

4. **Project:** Coordinate and foster better communications with fire and County Office of Emergency Services and have mock exercises with Police, fire, and schools
   - **Priority:** High
   - **Estimated Cost:** $30,000 (on-going) (based on similar projects City has pursued and 2025/26 CIP)
   - **Implementing Organization:** City of Villa Park

5. **Project:** Develop sound public notification system to evacuate for fire or flooding and develop evacuation routes for neighborhoods in case of fire
   - **Priority:** High

- **Estimated Cost:** $30,000 (1-year) (based on similar projects City has pursued and 2025/26 CIP)
- **Implementing Organization:** City of Villa Park

6. **Project:** Post-storm debris removal
   - **Priority:** High
   - **Estimated Cost:** $30,000 (1-year) (based on similar projects City has pursued and 2025/26 CIP)
   - **Implementing Organization:** City of Villa Park

6.2.4 Windstorms (Risk Ranking: 2)

Goal: To help protect the residents from wind damage and the effects of power outages.

Objective(s): Because there is no way to plan to reduce or stop the Santa Ana winds in Southern California, the objective is to lessen the damage the winds cause in the City.

Windstorm Mitigation Projects

Further analysis will be required for each mitigation project to provide a more accurate cost estimate when ready to implement. The identified projects and current costs estimates include:

1. **Project:** Tree Trimming program in public rights-of-way
   - **Priority:** High
   - **Estimated Cost:** $60,000 (on-going) (based on similar projects City has pursued and 2025/26 CIP)
   - **Implementing Organization:** City of Villa Park

2. **Project:** Diseased tree removal in public right-of-way
   - **Priority:** High
   - **Estimated Cost:** $30,000 (on-going) (based on similar projects City has pursued and 2025/26 CIP)
   - **Implementing Organization:** City of Villa Park

3. **Project:** Tree trimming programs for removal of hazards on private right-of-way
   - **Priority:** High
   - **Estimated Cost:** $30,000 (annually) (based on similar projects City has pursued and 2025/26 CIP)
   - **Implementing Organization:** City of Villa Park

4. **Project:** Develop plans with Southern California Edison on Public Safety Power Shut-off (PSPS) programs and hold town hall meetings to keep the public up-to-date on current measures. This program would also help inform Southern California Edison which homes must have power for emergency medical needs.
   - **Priority:** Medium
   - **Estimated Cost:** $10,000 (on-going) (based on similar projects City has pursued and

2025/26 CIP)
- **Implementing Organization:** City of Villa Park

6.2.5 Floods[2] (Risk Ranking: 2)

Goal: To mitigate the damage to public services and roadways in the City during a flooding event.

Objective(s): Replace and upgrade the storm water pipelines in the City (as-needed) to have enough capacity to remove flood waters from streets during a flood event and send the flood waters to the Orange County Flood Control System.

Flooding Mitigation Projects

Further analysis will be required for each mitigation project to provide a more accurate cost estimate when ready to implement. The identified projects and current costs estimates include:

1. **Project:** Enlarge storm drain pipelines in the City's streets to more efficiently divert flood water from the City Center to the Orange County Flood Control channel (located to the east of the City Center).
   - **Priority:** High
   - **Estimated Cost:** $4.8 million (4-years) (based on similar projects City has pursued and 2025/26 CIP)
   - **Implementing Organization:** City of Villa Park

6.2.6 Droughts

Goal: To work with outside agencies to ensure a safe and secure water supply.

Objective(s): Implement long-term actions and adjustments to current and future drought conditions, even under normal situations, as a proactive and preparatory measure. (Examples include the increase of water storage capacity, the adoption of water saving technology, the recharge of groundwater and monitoring the available water resources.)

Drought Mitigation Projects

Further analysis will be required for each mitigation project to provide a more accurate cost estimate when ready to implement. The identified projects and current costs estimates include:

1. **Project:** Increase program for drought tolerant landscape and change landscaping codes
   - **Priority:** High
   - **Estimated Cost:** No cost
   - **Implementing Organization:** City of Villa Park

[2] The City is not a member of the National Flood Insurance Program (NFIP). The City has low level flooding in the City Center, and flooding is not widespread. The NFIP is too expensive of a program for the City and does not accomplish the needed outcome. Most California cities are not members of the NFIP.

2. **Project:** Public Education programs
   - **Priority:** Medium
   - **Estimated Cost:** $30,000 (2 years) (based on similar projects City has pursued and 2025/26 CIP)
   - **Implementing Organization:** City of Villa Park

3. **Project:** Educational programs in schools
   - **Priority:** Medium
   - **Estimated Cost:** $12,000 (1 year) (based on similar projects City has pursued and 2025/26 CIP)
   - **Implementing Organization:** City of Villa Park

4. **Project:** Replace grass on roadway medians with drought tolerant landscaping
   - **Priority:** Medium
   - **Estimated Cost:** $50,000 (1 year) (based on similar projects City has pursued and 2025/26 CIP)
   - **Implementing Organization:** City of Villa Park

6.3 Mitigation Priorities

During the development of the risk assessment for the City, the Planning Team proposed and discussed alternative mitigation goals, objectives, and specific mitigation measures that the City should undertake to reduce the risk from the six high risk hazards facing the City.

The team considered multiple factors to establish the mitigation priorities included in this plan. It assigned the highest priority rankings to those mitigation measures that met three primary criteria:

- Greatest potential for protecting life and safety
- Greatest potential for maintaining critical City functions and operability following a disaster
- Achievability in terms of residents' support and cost effectiveness

All hazard rankings were determined by the consensus of the Planning Team. As described in the previous section on hazard and risk assessment, it is clear that earthquakes have the potential to affect the largest number of people, damage critical facilities and buildings, and to cause the greatest economic losses. This fact, combined with the relatively high probability of an earthquake occurrence in the next several decades, makes increasing disaster resistance and readiness to earthquakes a high priority. Given the extreme importance of maintaining critical functions in times of disaster and the large number of customers who depend and rely on City services and infrastructure, those mitigation measures that improve disaster resistance, readiness, or recovery capacity are generally given higher priority.

Drought, earthquake, flood, windstorm and wildfire mitigation actions are identified and assigned a priority according to their importance, cost, funding availability, degree that project planning has

been completed, and the anticipated time to implement the measures.

Using the above rationale for establishing mitigation priorities, each mitigation measure is assigned a priority ranking as follows:

- High – Projects that will be the primary focus of implementation over the next five years
- Medium – Projects that may be implemented over the next five years
- Low – Projects that will not be implemented over the next five years unless conditions change (new program and funding source)

6.4 Implementation Strategy

The implementation strategy is intended to successfully mitigate the hazards identified in this plan within a reasonable amount of time and within the available budget. The City is currently operating within its annual budget and capital improvement projects are and remain a high priority for the City. The City staff has been and will continue to review the Mitigation Plan each year for consideration before recommending the next year's fiscal budget. The City Council will also continue to review the LHMP for items to be included in the new fiscal budget. City staff will also look for ways to obtain Hazard Mitigation Grants each year to offset the impacts to the fiscal budget and to relieve some of the financial burden from the residents of the City. It is relevant to note that Hazard Mitigation Grants require a Benefit Cost Analysis such as the one shown below:

$$B/C = \left[\frac{B_0}{(1+i)^0} + \ldots + \frac{B_T}{(1+i)^T}\right] \div \left[\frac{C_0}{(1+i)^0} + \ldots + \frac{C_T}{(1+i)^T}\right]$$

6.5 Mitigation Projects Funding Source

The City included review and consideration of all mitigation options during its annual budget review since adoption of the initial LHMP. There is currently no mitigation funding in the City's budget. The City will continue including mitigation into the budgeting process as funding becomes available and look at what mitigation projects could be funded in future budget cycles. Also, the City will utilize the FMA, HMGP, and other grant funding programs for mitigation projects and address the shortfalls in the City's CIP as much as possible.

6.6 Timeframe

The City follows its Capital Improvement Program (CIP) for project implementation and will incorporate mitigation into all capital improvement projects that the City undertakes over the next five years. When money is available for CIP, the City will engage in replacement of undersized pipelines, building retrofits, and other measures noted above.

The City will monitor and apply for mitigation grants as the funding opportunities become available in the State of California and the County of Orange each year. The City will consider all mitigation items during the annual budget workshops that are conducted each spring.

SECTION 7. PLAN MAINTENANCE

7.1 Monitoring, Evaluating, and Updating the LHMP

City Staff will monitor and evaluate the LHMP during the year and report progress as part of the annual budget workshop each spring. Annually, staff and the City Council will review funding and determine the projects to be included in the next fiscal year's CIP budget. The City Manager or their assignee will include the LHMP in all budget workshops and grant planning meetings. This will allow open discussion, evaluation, and assessment of the LHMP to achieve goals, allowing the addition and removal of mitigated items.

A full review of the LHMP will be performed at five-year intervals by staff in the same manner as the initial LHMP and its subsequent updates. Progress in reaching mitigation goals, assessment of new and existing hazards, development of new mitigation strategies and goals will be addressed by the Planning Team that will include the City staff and the community served by the City. The residents of the City of Villa Park and City of Villa Park personnel will be asked to participate in the update process. The City's budget is public a document and it is reviewed by the public before the City Council adopts the annual budget and any updates to the LMHP.

7.2 Implementation Through Existing Programs

Once CalOES and FEMA approve the LHMP, the City will incorporate the LHMP and the detailed capital improvement projects, capital replacement programs, building design projects, and any updates or repairs to the CIP. The City will submit Notice of Intents to the State of California to help facilitate funding opportunities in obtaining Federal and State funding to mitigate hazards within the City's service area.

The City Manager or their appointee will be responsible for the implementation of the LHMP and ensuring the LHMP's recommended goals and objectives are met. The City Manager or their appointee will be responsible in adding the LHMP to the City's website and incorporating the LHMP into the annual budget workshops. The City Manager or their appointee will evaluate the LHMP yearly and verify that the LHMP is updated and rewritten on a five-year cycle. The City will start the update process one and a half years before the expiration date on LHMP. The approved LHMP will be included in all project planning stages throughout the City, which will provide information regarding the hazards and potential mitigations in the City. This will ensure that new or updated infrastructure is built to withstand the hazards at different locations in the service area. The LHMP will be reviewed each year to ensure the identified projects have been addressed and completed. The City Engineering Department and the City Manager or their assignee are responsible for maintaining the LHMP.

7.3 Continued Public Involvement

In the spring of each year at the City Council budget workshop, the City will take public comments regarding the LHMP, and projects will be considered for potential inclusion in the next year's budget. It is the responsibility of the City Manager or their designee to ensure the LHMP is included in budget workshops and City Council Budget meetings. It is also the City Manager or their designee's responsibility to ensure new facilities are added, old facilities are removed and/or if hazards have been mitigated to incorporate into the new LHMP.