



SAFE • HIGH • QUALITY • RELIABLE
HARZARD MITIGATION PLAN

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General Manager

Board of Directors

President Channing Hawkins, District 4
Vice President Kyle Crowther, District 1
Director Dr. Michael Taylor, District 2
Director Dr. Clifford O. Young, Sr., District 3
Director Greg Young, District 5

RESOLUTION NO. 2021-21

**A RESOLUTION OF THE
BOARD OF DIRECTORS OF THE
WEST VALLEY WATER DISTRICT
ADOPTING THE 2021 HAZARD MITIGATION PLAN**

BE IT RESOLVED, by the Board of Directors of the West Valley Water District that:

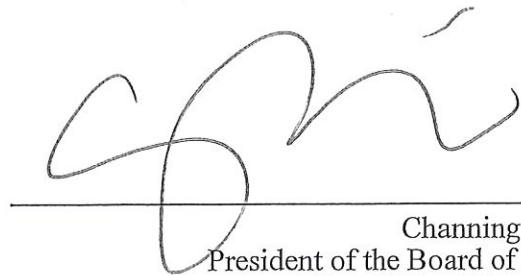
WHEREAS, the Disaster Mitigation Act of 2000 (DMA) was adopted by the Federal government and, among other things, requires local authorities to prepare a Hazards Mitigation Plan (HMP) which will be utilized to protect citizens, critical facilities, infrastructure, private property and the environment from natural hazards through varying means, including increasing public awareness and identifying resources available for risk reduction and loss prevention; and

WHEREAS, the HMP was prepared April 2021 through a process which included a planning committee and was presented for public input from April 27, 2021 to June 11, 2021; and

WHEREAS, the HMP is a five year plan subject to evaluation on an annual basis with a revision to be prepared every five years based on the continuing evaluation of the HMP.

NOW, THEREFORE, BE IT RESOLVED, that the Board of Directors of West Valley Water District adopts the 2021 HMP; and

ADOPTED, SIGNED AND APPROVED THIS 2nd DAY OF SEPTEMBER 2021.



Channing Hawkins
President of the Board of Directors
West Valley Water District

ATTEST:



Peggy Asche
Board Secretary

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Section 1: Introduction

1.1 Purpose of the Plan

Emergencies and disasters cause death or leave people injured or displaced; cause significant damage to our communities, businesses, public infrastructure, and our environment; and cost tremendous amounts in terms of response and recovery dollars and economic loss.

Hazard mitigation reduces or eliminates losses of life and property. After disasters, repairs and reconstruction are often completed in such a way as to simply restore to pre-disaster conditions. Such efforts expedite a return to normalcy; however, the replication of pre-disaster conditions results in a cycle of damage, reconstruction, and repeated damage. Hazard mitigation ensures that such cycles are broken and that post-disaster repairs and reconstruction result in a reduction in hazard vulnerability.

While no one can prevent disasters from happening, their effects can be reduced or eliminated through a well-organized public education and awareness effort, preparedness, and mitigation. For those hazards which cannot be fully mitigated, the West Valley Water District (District) must be prepared to provide efficient and effective response and recovery.

1.2 Authority

As required by the Department of Homeland Security's Federal Emergency Management Agency (DHS-FEMA), all Hazard Mitigation Plans (HMP) must be updated, adopted and approved every five (5) years; the District's current HMP expires in 2016. The purpose of the update is to validate and incorporate new information into the plan and identify progress that has been made since the last approval of the plan. It should also be noted that an approved HMP is required to receive federal assistance under the Hazard Mitigation Grant Program (HMGP) or Pre-Disaster Mitigation (PDM) programs.

1.3 Community Profile

The West Valley Water District is a County Water District, a public agency of the State of California, organized and existing under the County Water District Law (Division 12, Section 30,000 of the Water Code) of the State of California.

For 68 years, the District has faithfully served a significant portion of the City of Rialto's residents. Our current water supply services provide to approximately 51 percent of the City of Rialto residents and businesses along with portions of the City of Colton, the City of Fontana, Bloomington, Jurupa Valley, and portions of unincorporated San Bernardino and Riverside counties.

Today, the District serves 31 square miles (20,000 acres) with an additional 3,300 acres in its sphere of influence and over 21,000 service connections serving approximately 90,000 customers. The District currently retains 86 employees.

1.3.1 Physical Setting

Located about 60 miles east of the Pacific Ocean, the District is located in the San Bernardino Valley. The Valley is approximately 50 miles long from west to east; contains about 480 square miles; and is bordered on the west by the Chino, Puente and San Jose Hills, and on the north by the San Gabriel and San Bernardino Mountains. The Valley region is defined as all the area within the County that is south and west of the Forest Service boundaries. The San Bernardino range trending southeast forms the eastern limit of the Valley, along with the Yucaipa and Crafton Hills. The southern limits of the Valley are marked by alluvial highlands extending south from the San Bernardino and the Jurupa Mountains. Elevations within the Valley range from about 500 feet on the Valley floor to 1,700 feet in Live Oak Canyon, and to about 5,400 feet in the Yucaipa Hills.

As shown on Figure 1, the District is located in Southwestern San Bernardino County and Northern Riverside County, within the San Bernardino Valley. The District's service includes portions of the Cities of Rialto, Fontana, Bloomington, Jurupa Valley, Colton, and unincorporated areas in San Bernardino and Riverside Counties. The District lies adjacent to the western limits of the City of San Bernardino. The District is composed of two non-contiguous areas and is divided into almost equal northern and southern sections by the central portion of the City of Rialto.

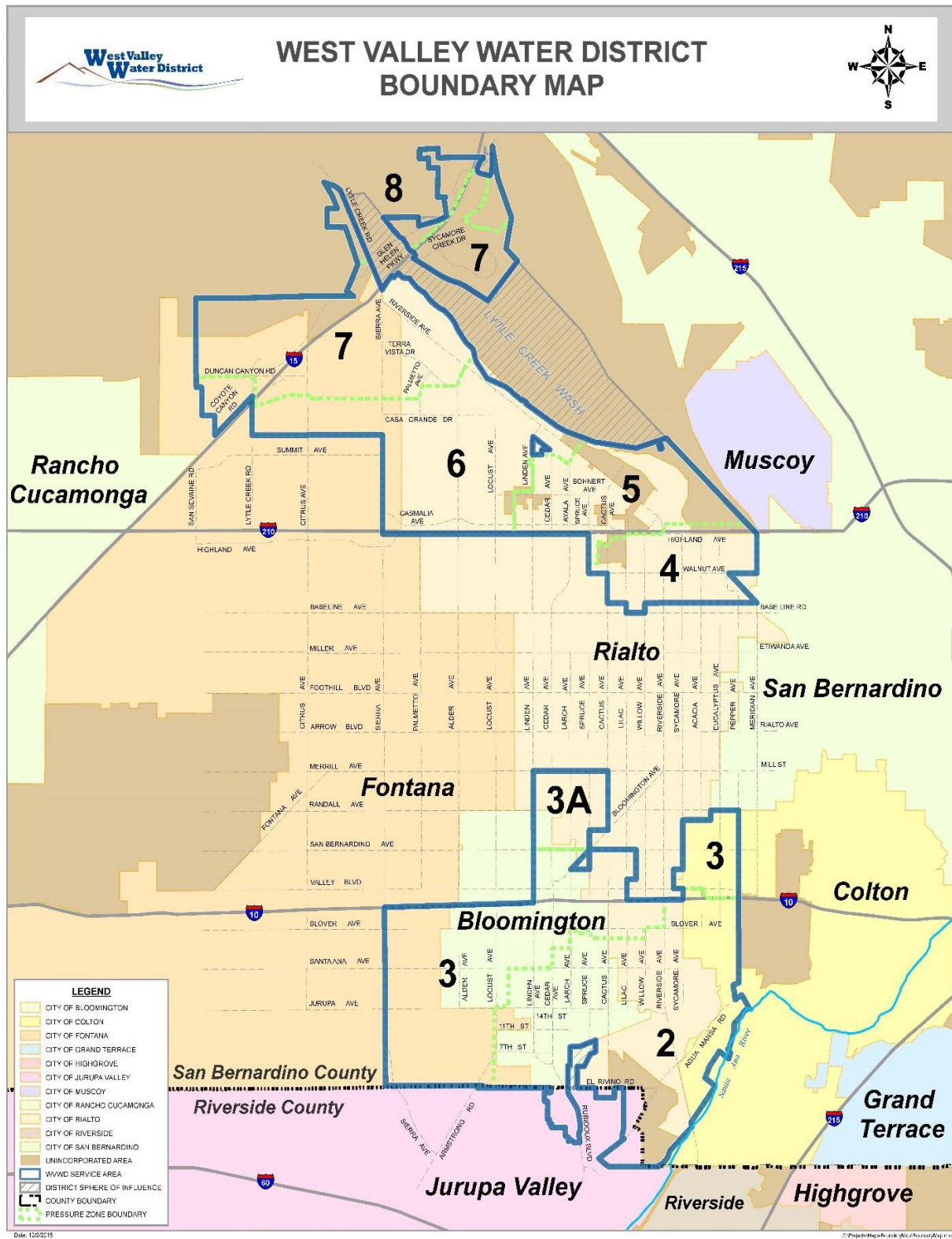
The District is situated in the San Bernardino Valley which is an arid desert region surrounded by mountains. The District experiences warm summers and mild winters. The average summer daytime high temperature is 90°F and the average winter nighttime low is 40°F. The rainy season occurs December through April, and the mean annual precipitation for the City of San Bernardino is approximately 16.37 inches.

The District receives its water supply from local surface water collected from Lytle Creek, imported water from the State Water Project (SWP), and groundwater wells. Per the District's Public Water System Statistics, of the water supplied within the distribution system, the current mix is 45% groundwater, 18% surface water and 19% purchased imported water. The District receives nearly all of its groundwater from five groundwater basins (Bunker Hill, Lytle Creek, Rialto-Colton, Chino, and North Riverside) located within the Santa Ana Basin Watershed.

1.3.2 History

The District was formed in 1952 under the name "Bloomington County Water District" which was changed to "Semi-Tropic County Water District" in 1959, then to West San Bernardino County Water District in 1961, and to its present name, West Valley Water District in 2003. The District initially covered an area of approximately one square mile and served only domestic water. During the 1960s, '70s, and '80s, the District expanded to include other smaller water companies such as Citizens Land and Water Company, Lytle Creek Water, Crestmore Village Water Company, and Fontana Ranchos Company.

Figure 1: District Service Area



During this growth period, the District engaged in several large construction projects to achieve the following goals:

- To improve existing water systems
- To expand its distribution system
- To build a pipeline from water located near San Bernardino

The District also increased the number of reservoirs, wells, and pump stations to accommodate the growth. Some of these projects were joint projects with other neighboring agencies.

1.3.3 Demographics

The District's service area contains approximately 20,000 acres (31 square miles) and currently serves approximately 90,000 people.

According to San Bernardino, CA data in 2020, the race and ethnicity makeup for the population included the following:

- Hispanic - 54%
- White – 27.8%
- Black – 7.83%
- Asian - 7%
- Multirace - 2%
- American Indian - <1%

1.3.4 Existing Land Use

The ultimate demand allocation was generated from the latest land use planning maps from the City of Rialto, the City of Fontana, the City of Colton, and the Counties of San Bernardino and Riverside and from conversations with city and county personnel. After obtaining all the land use maps, the combined land uses from the various cities and counties were combined to show only the District boundaries.

As shown on Figure 2, the existing land use for the District's planning area. The land uses consist primarily of industrial, rural residential, medium residential, and open space in the south system. For the north system, the primary land uses are medium residential, planned community residential, and special study area.

The growth in the District has primarily been in the northwestern section of the District, which contained areas of generally undeveloped land. Several residential and commercial sites were developed in that area. The growth in the northwestern section has increased hazard events in the planning area. The main source of supply in the northwestern section is one groundwater well. Due to drought, the groundwater levels have dropped significantly. The water production from the well used to be 1,000 gallons per minute back in 2015 and dropped to 750 gallons per minute in 2021. The northwestern section has been identified as high fire hazard severity zone.

Figure 2: Existing Land Use in District's Service Area

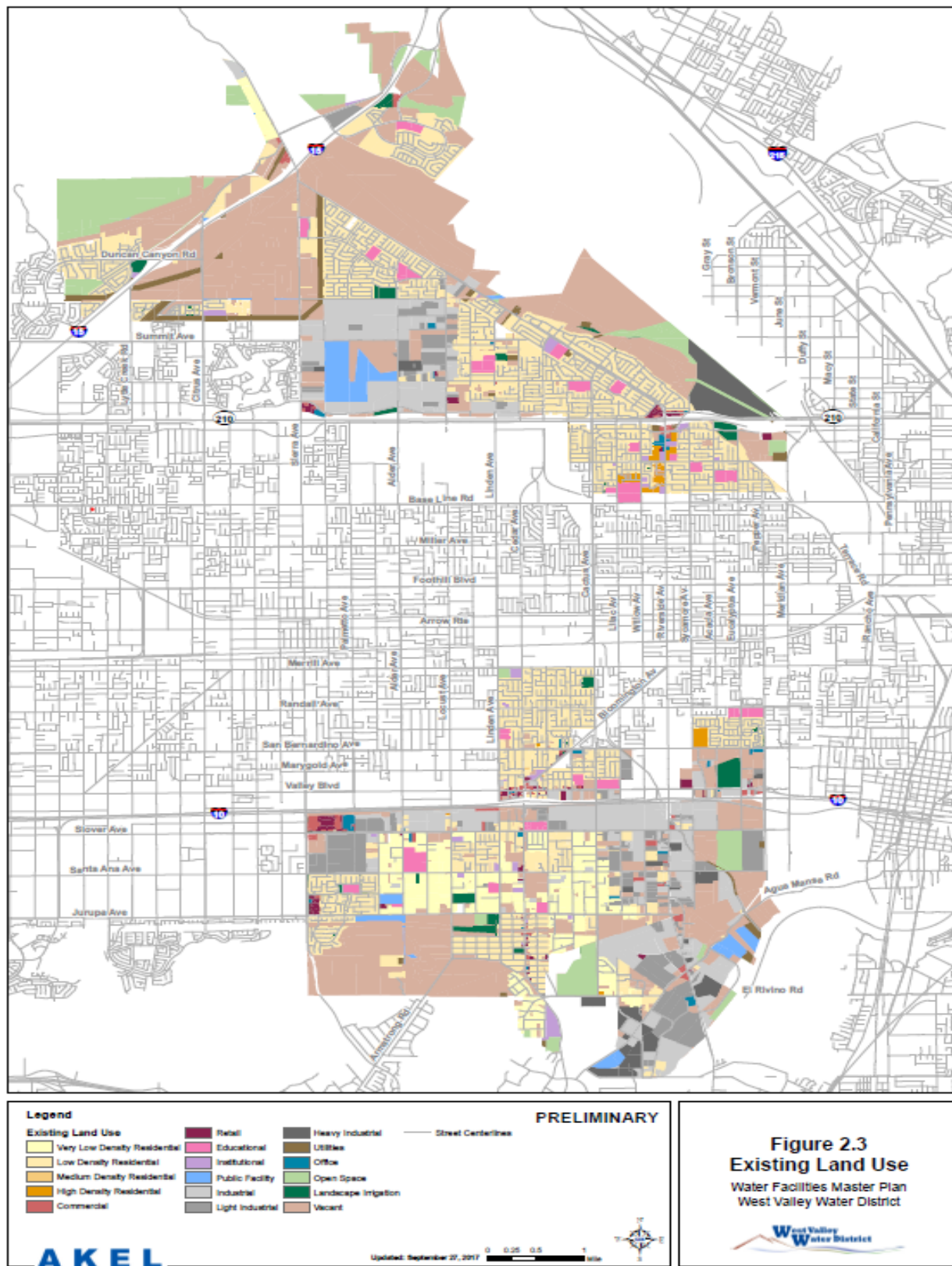
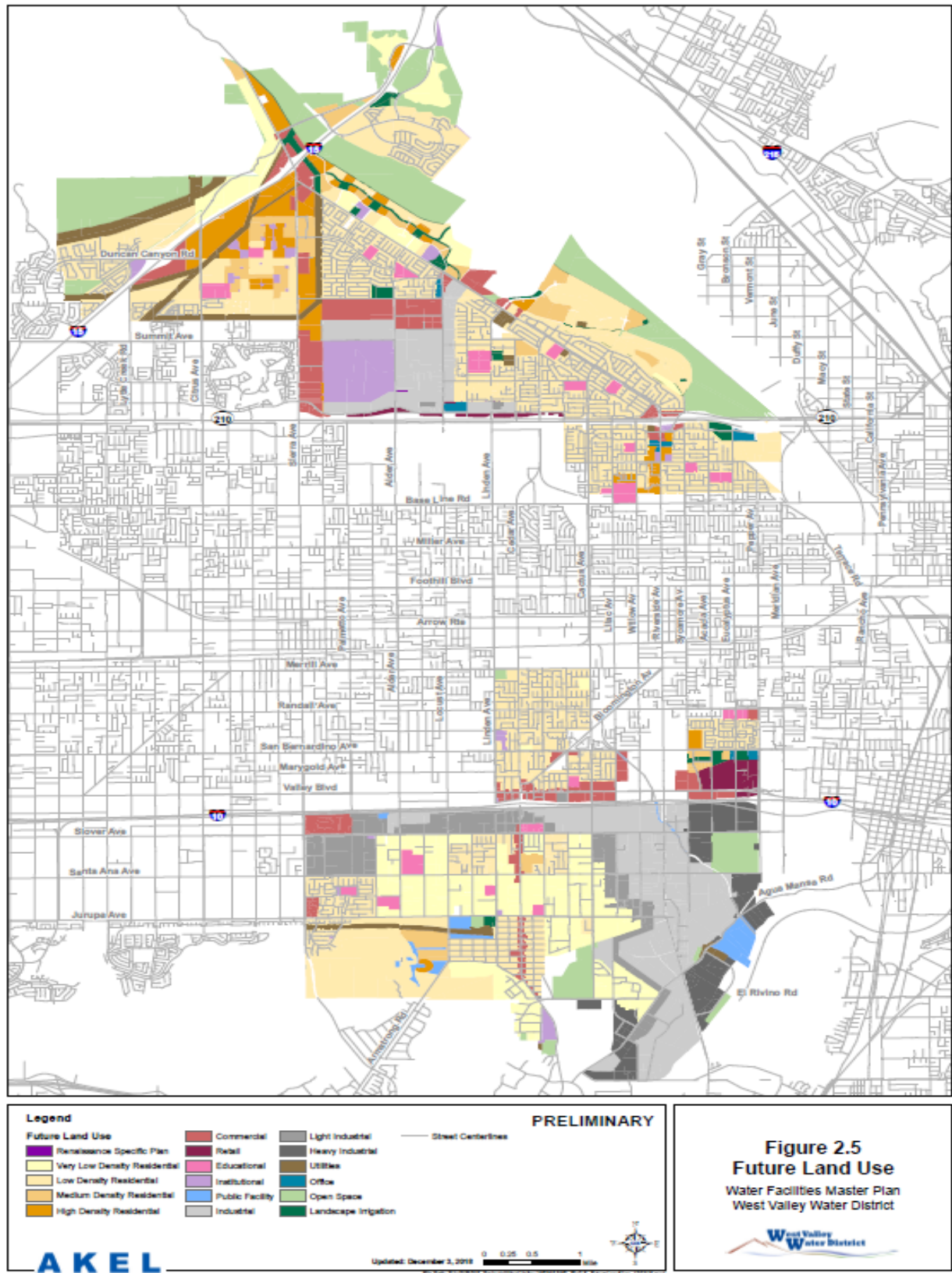


Figure 3: Future Land Use in District Service Area



1.3.5 Development Trends

Table 1: Projected Growth in Total Number of Equivalent Dwelling Units (EDUs)

Year	Percent Of Growth/Year	Total Number Of EDUs
2020	4.0%	32,094
2021	3.9%	33,377
2022	3.7%	34,679
2023	3.6%	35,927
2024	0.5%	36,107
<u>Ultimate</u>		<u>49,736</u>

Section 2: Plan Adoption

2.1 Adoption by Local Governing Body

Adoption of the HMP by the local governing body demonstrates the District's commitment to meeting mitigation goals and objectives. Governing body approval legitimizes the plan and authorizes responsible agencies to execute their responsibilities. The West Valley Water District Board of Directors must adopt the HMP before the HMP can receive final approval from FEMA.

2.2 Promulgation Authority

The five-member Board of Directors consists of members within the community. The District has five separate voting districts within its service area. The Board of Directors serves four-year terms, with terms overlapping. The Board of Directors develops the policies that govern the District. The District's General Manager is appointed by the Board of Directors and oversees the day-to-day operations of the District.

The public is invited to join the District's Board meetings, which are held at 6:00 pm on the first and third Thursdays of each month at the District office.

2.3 Primary Point of Contact

The Point of Contact for information regarding this plan is:

Joanne Chan
Director of Operations
West Valley Water District
855 W. Base Line, P.O. Box 920
Rialto, CA 92377
(909) 820-3707
jchan@wvwd.org

2.4 Record of Changes

Each revision or correction to this annex must be recorded. The record contains the date, location, and brief description of change, as well as who requested or performed such change.

Once corrections have been made and all affected parties notified of such correction, the type of correction and how it impacts the document will be forwarded to the planning team for approval at the next planning meeting. The correction will remain temporarily in effect within the annex until such time that the planning team can officially approve or deny such correction.

Table 2: Record Change

Date	Section/Page	Description of Change	Changed By

Section 3: Planning Process

The purpose of this section is to document the planning process that was taken to review. A comprehensive description of the planning process not only informs citizens and other readers about how the plan was developed, but also provides a permanent record of how decisions were reached so it can be replicated or adapted in future updates. An integral part of the planning process is documentation of how the public was engaged through the process.

This update process was done by the Planning Team consisted of members within the District who have a vested interest and were appropriate for the level of knowledge required for the HMP. The Planning Team used the four-step planning approach outlined in the FEMA publication, *Developing the Mitigation Plan: Identifying Mitigation Actions and Implementing Strategies* (FEMA 386-3) was used to develop this plan:

- **Develop mitigation goals and objectives** – The risk assessment (hazard characteristics, inventory, and findings), along with municipal policy documents, were utilized to develop mitigation goals and objectives.
- **Identify and prioritize mitigation actions** – Based on the risk assessment, goals and objectives, existing literature/resources, and input from participating entities, mitigation activities were identified for each hazard.
- **Prepare implementation strategy** – High priority activities are recommended for implementation first. However, based on community needs and goals, project costs, and available funding, some medium or low priority activities may be implemented before some high priority items.
- **Document mitigation planning process** - The mitigation planning process is documented throughout this plan.

The Planning Team, general public, and external agencies all served as stakeholders with opportunity to contribute to the plan during the Plan Writing Phase of the planning process.

3.1 Preparing for the Plan

The District's Planning Team met on March 2, 2021 to determine which sections of the plan needed to be updated. Once the Planning Team had reviewed this document and added any new hazard and mitigation program information.

The update process consisted of:

- Confirm planning goals
- Prepare timeline for HMP update
- Ensure HMP meets DMA 2000 requirements
- Organize and solicit involvement of public and external agencies
- Analyze existing data and report
- Update hazard information
- Review HAZUS loss project estimates

- Create mitigation action items
- Participate in Planning Team meetings, committee meetings and Board of Directors public meeting
- Provide existing resources including maps and data
- Documenting actions since 2011 when the HMP was first approved.

The Planning Team consisted of the District's General Manager, Assistant General Manager, Director of General Services, Director of Operations, Production Chief Water Systems Operator, and other local water district staff. This team met frequently for the duration of the plan's development.

The Planning Team decided it was appropriate to review and analyze each section of the plan (*i.e.*, Planning Process, Risk Assessment, Mitigation Strategy, and Plan Maintenance). Therefore, meeting agendas were set to complete appropriate chapters as necessary. Once the planning team reviewed each chapter along with new hazard or mitigation program information, recommendations were presented for public review and input.

Figure 4: Planning Phases Timeline

Planning Phases Timeline	
Plan Writing Phase (First & Second Draft Plan)	<ul style="list-style-type: none"> • Planning Team input – research, meetings, writing, review of First Draft Plan to CalOES. • Incorporated input from the Planning Team and Cal OES into Second Draft Plan • Conduct Stakeholder Workshop for external agencies providing hazard overview and information about the HMP planning process. • Incorporate input into the Third Draft Plan
Plan Review Phase (Third & Final Draft Plan)	<ul style="list-style-type: none"> • Send Third Draft Plan to Cal OES and FEMA for approval pending adoption. • Address any mandated revisions identified by Cal OES and FEMA into Final Draft Plan.
Plan Adoption Phase (Final Draft Plan)	<ul style="list-style-type: none"> • Incorporate input into the Board of Directors staff report. • Post public notice of Board of Directors meeting. • Final Draft Plan distributed to Board of Directors in advance of meeting. • Present Final Draft Plan to the Board of Directors for Adoption.
Plan Approval Phase (Final Plan)	<ul style="list-style-type: none"> • Submit proof of Board Adoption to FEMA along with request for final approval. • Incorporate FEMA Final Letter of Approval into the Final Plan.
Plan Implementation Phase	<ul style="list-style-type: none"> • Conduct annual Planning Team meetings. • Integrate mitigation action items into budget and other funding and strategic documents. • Implement mitigation action items.

3.1.1 Planning Team

The 2021 HMP Planning Team for the District was compiled, authored, and reviewed by the following members:

Rickey S. Manbahal, MPA, General Manager

Description of Involvement: Rickey has an excellent working knowledge of the District and assisted the planning team in identifying potential and past hazards, completing the vulnerability assessment, and suggesting specific projects for possible mitigation. As General Manager, he was also able to get tasks done efficiently for the HMP. He assembled the planning team and coordinated the team meetings. The General Manager will be instrumental in supporting the development, maintenance, and implementation of the HMP, including the mitigation actions. Support will include providing funding and staff.

Contact Information:

West Valley Water District
855 West Base Line, P.O. Box 920
Rialto, CA 92377
Office (909) 820-3706
smanbahal@wvwd.org.

Van Jew, Assistant General Manager

Description of Involvement: Van was hired as Assistant General Manager in December 2020 and brings with him a tremendous working knowledge of the region and regional planning strategies. He has been involved with the planning team and a key source of direction in the planning process since March 2021. Van oversees the management of capital improvement projects, water resource management, the District's Master Plans for water and water supplies, and all engineering and planning work. Van actively participates in regional water planning committees.

Joanne Chan, Director of Operations

Description of Involvement: Joanne has a background and extensive training in Emergency Management as well as a good working knowledge of the district's facilities and the production and storage of water, water treatment, and distribution system operations and maintenance within the district and has 18 years' experience in district operations. Joanne will be handling the collection of information and input from the planning team and the updating of the plan.

Jon Stephenson, Director of General Services

Description of involvement: Jon was brought into the planning team to assist with the information technologies (IT) and general services with the District and our planning efforts. Jon started with the District as of November 2005 and has been with the WVWD for 16 years. Jon provides comprehensive technology planning, development, integration, operation, maintenance, and support to all areas of the District to maximize efficiency.

Joe Schaack, Production Chief Water Systems Operator

Description of involvement: Joe oversees the Production Division. Joe's responsibilities include operation and maintenance of 17 groundwater wells, 12 booster stations, and 25 reservoirs. Additionally, Joe is also responsible for electrical and instrumentation. Joe started with the District as of May 2003 and has 18 years of services in the industry.

Traci Brown, Field Operations Specialist II

Description of involvement: Traci was brought into the Operations Division November 2011. Traci's duties include assisting the Operations Manager and all field Supervisor and Chiefs with administrative projects. Traci has worked at the District for 20 years and has a background in Customer Service and is the liaison with several interested parties.

3.2 Coordination with Other Jurisdictions, Agencies, and Organizations

A copy of the plan had been given to several external agencies for review and comment. The Planning Team did not receive inputs from these agencies to incorporate into the HMP. A electronic copy was sent to San Bernardino County OES for review.

3.3 Public Involvement/Outreach

A copy of the plan was posted on District's website (www.wvwd.org) for review and included instructions and a link for questions or comments. Social media posts and bill inserts were used to encourage public involvement.

3.4 Assess the Risk and Hazard

This HMP has been developed through an extensive review of available information on hazards, the District's 2020 Emergency Response Plan, the District's 2020 Water Master Plan, the District's 2015 Urban Water Management Plan, engineering drawings, and available geotechnical and geologic data both from the District and outside sources. Go to <https://wvwd.org/about/transparency/> to view District's plans. Outside sources such as UCERF- 3, and California Geological Survey for detailed fault investigation reports were used. Links to UCERF3: A New Earthquake Forecast for California's Complex Fault System <https://pubs.usgs.gov/fs/2015/3009/>; Earthquake Hazards from United States Geological Survey <https://www.usgs.gov/natural-hazards/earthquake-hazards/earthquakes>; California Earthquake Authority <https://www.earthquakeauthority.com/>; California Department of Conservation <https://www.conservation.ca.gov/cgs>; U.S. Drought Monitor https://droughtmonitor.unl.edu/data/pdf/current/current_ca_trd.pdf

The Planning Team evaluated any newly identified hazards that have been determined to pose a threat. The existing hazards were reviewed and if new occurrences of existing hazards were available, they were incorporated into this section. Certain members of the planning team were assigned various hazards to describe occurrences of the hazards not included in the previously approved plan, and research new occurrences of existing hazards. The research also included historical records, or hazard data related to profiling hazards, such as National Flood Insurance Program (NFIP) maps or studies, HAZUS studies, or reports from other Federal or State agencies that describe location, extent, probability, or previous occurrences of hazards.

3.5 Set Goals

The process of identifying mitigation goals began with a review and validation of the Goals and Objectives in the District's 2021 HMP. Using the 2011 HMP as the basis, the District's planning team completed an assessment/discussion of whether each of the mitigation goals was still valid. This discussion also led to the opportunity to identify new Goals and Objectives.

The goals for the 2021 HMP were set by the Planning Team for the District because the members of the team knew the goals of the District with respect to its mission "to economically protect, safeguard, and deliver to our customers' water at the lowest, reasonable price."

At one of our planning team meetings, the team brainstormed to determine the best mitigation goals to reduce or avoid long-term vulnerabilities to the identified hazards. First, the team reviewed the 2011 HMP goals and discussed the changes in our community since the previous plan was approved. Then the team decided whether those goals had been met or if they were still consistent with the District's current conditions.

3.6 Review and Propose Mitigation Measures

The process of identifying mitigation measures began with a review and validation of previous mitigation measures in the District's 2021 HMP. Using the 2011 HMP as the basis, the District's planning team completed an assessment/discussion of whether each of the mitigation measures was still valid. This discussion also led to the opportunity to identify new mitigation measures.

The District's Planning Team proposed and reviewed the mitigation measures because they knew the District's mission. During one of our planning team meetings, we reviewed each of the projects from the draft 2011 HMP and discussed the status of each project and the reasons for why they had or had not been implemented and if we wanted to include them on the list for the 2021 HMP.

The Planning Team identified and analyzed a range of specific mitigation actions and projects to be considered to reduce the effects of each hazard, with particular emphasis on new and existing water facilities. The Planning Team also formed an action plan describing how the mitigation projects identified should be prioritized and implemented. Special consideration was given to the costs and the cost benefits of the proposed projects.

The District's implementation strategy included identifying a set of first tier objectives. These objectives are considered the highest priority and once implemented will result in substantial improvement in the overall reliability of the system.

Meetings were held with the Planning Team to solicit their input and review sections of the HMP. Each meeting focused on specific sections from the 2021 HMP, including the Introduction, Participation Information, Planning Process and Public Involvement, Risk Assessment, Mitigation Strategy, and Plan Maintenance.

3.7 Draft the Hazard Mitigation Plan

The 2021 HMP had been reviewed by the planning team, the general public and neighboring agencies, no public comments were received. The public review period was from April 27, 2021 to June 11, 2021. Any updates to the plan related to the process are documented in Appendix A.

3.8 Adopt the Plan

September 2, 2021

Section 4: Risk Assessment

The goal of mitigation is to reduce the future impacts of a hazard including the health and safety of employees, property damage, disruption to local and regional economies, and the amount of public and private funds spent to assist with recovery. However, mitigation should be based on risk assessment.

The purpose of this section is to describe the methodology taken to understand the hazards in the District's service area. There are generally four (4) steps in this process: 1) identify and screen the hazards; 2) profile the hazards; 3) inventory the assets; and 4) estimate losses.

A risk assessment involves measuring the potential loss from a hazard event by assessing the vulnerability of buildings, infrastructure, and people. It identifies the characteristics and potential consequences of hazards, how much of the District could be affected by a hazard, and the impact on District assets. A risk assessment consists of three components: hazard identification, vulnerability analysis, and risk analysis. Technically, these are three different items, but the terms are sometimes used interchangeably.

4.1 Hazard Identification

4.1.1 Hazard Screening Criteria

The intent of screening the hazards is to help prioritize which hazard creates the greatest concern to the District. The process that was implemented is logical and can be universally applied.

For this 2021 HMP Update, the District is utilizing a numerical ranking system for the hazard screening process.

A list of the natural hazards to consider was obtained from Federal Emergency Management Agency (FEMA) Comprehensive Preparedness Guide (CPG) 201 and local history. The District's planning team reviewed each hazard on the list and using their experience with the hazards, the following conclusions were drawn.

Hazards considered by the District's planning team include the following: Drought;

Earthquake; Flooding; Wildfire; Terrorism; Windstorms; Climate Change

4.1.2 Hazard Assessment Matrix

For this 2021 HMP, the District is utilizing a numerical ranking system for the hazard screening process. This process consists of generating a numerical ranking rating for the probability and impact of each screened hazard. The first part of the risk assessment is an analysis of the overall risk for each hazard with a tool called the Calculated priority Risk Index (CPRI). The CPRI value is obtained by assigning a numerical ranking to each of four hazard characteristics, then calculating an index value based on a weighting scheme. The characteristics, definitions of rankings and weighting scheme are presented below. It is not a 100% accurate methodology; however, it offers a platform for discussion so that the planning team can make a more informed determination on the ranking of each hazard.

Table 3: Hazard Assessment Screening Matrix – Calculated Priority Risk Index

Characteristic Ranking	Definition
Probability*	
4 - Highly Likely	Event is probably within the calendar year Event has up to 1 in 1 year change of occurring (1/1=100%) History of events is greater than 33% likely per year Event is “Highly Likely” to occur
3 - Likely	Event is probable within the next three years Event has up to 1 in 3 years chance of occurring (1/3=33%) History of events is greater than 20% but less than or equal to 33% likely per year Event is “Likely” to occur
2 – Possible	Event is probable within the next five years Event has up to 1 in 5 years chance of occurring (1/5=20%) History of events is greater than 10% but less than or equal to 20% likely per year Event could “Possibly” occur.
1 - Unlikely	Event is possible within the next 10 years Event has up to 1 in 10 years chance of occurring (1/10=10%) History of events is less than or equal to 10% likely per year Event is “Unlikely”
Magnitude/Severity**	
4 – Catastrophic	Multiple deaths Complete shutdown of facilities for 30 or more days More than 50% of property is severely damaged
3 - Critical	Injuries and/or illnesses result in permanent disability Complete shutdown of critical facilities for at least two weeks 25-50% of property is severely damaged
2 - Limited	Injuries and/or illnesses do not result in permanent disability Complete shutdown of critical facilities for more than one week 10-25% of property is severely damaged
1- Negligible	Injuries and/or illnesses are treatable with first aid Minor quality of life lost Shutdown of critical facilities and services for 24 hours or less Less than 10% of property is severely
Warning Time	
4	Less than 6 Hours

3	6-12 Hours
2	12-24 Hours
1	24+ Hours
Duration	
4	More Than 1 Week
3	Less Than 1 Week
2	Less Than 1 Day
1	Less Than 6 Hours

*Based on history, using the definition given, the likelihood for future events is quantified.

**According to the severity associated with past events or the probable worst-case scenario possible in the state.

Using the rankings described in Table 3, the following formula is used to determine each hazard's CPRI.

$$(\text{Probability} \times .45) + (\text{Magnitude/Severity} \times .30) + (\text{Warning Time} \times .15) + (\text{Duration} \times .10) = \text{CPRI}$$

Based on their CPRI, the hazards were separated into three categories of planning significance: High (3.0-4.0), Moderate (2.0-2.95) and Low (1.1-1.95).

4.1.3 Hazard Prioritization

Using the hazard screening criteria and assessment matrix discussed in the previous two sections, the District's planning team discussed knowledge of natural hazards and past historical events, as well as ordinances, and recent planning decisions and determined the following two hazards were determined to be the most likely to affect the District:

1. Drought Hazard: A drought could impact 100% of the District's population because water is the business of the District. If there is less water to sell, the District receives less revenue.
2. Earthquake Hazard: There are several active faults within a few miles of the District's service area. These faults could potentially damage 100% of the District's critical facilities.

Table 4: Calculated Priority Risk Index Ranking for West Valley Water District

Hazard	Probability	Weighted 45% (x.45)	Magnitude Severity	Weighted 30% (x.3)	Warning Time	Weighted 15% (x.15)	Duration	Weighted 10% (x.1)	CPRI Total
Earthquake	3	1.35	4	1.2	4	0.6	1	0.1	3.25
Flooding	3	1.35	2	0.6	1	0.15	3	0.3	2.40
Wildfire	3	1.35	2	0.6	1	0.15	3	0.3	2.40
Windstorms	2	0.9	1	0.3	1	0.15	1	0.1	1.45
Drought	4	1.80	3	0.9	1	0.15	4	0.4	3.25
Terrorism	2	0.9	4	1.2	1	0.15	4	0.4	2.65
Climate Change (Extreme Weather Events)	2	0.9	4	1.2	1	0.15	4	0.4	2.65

The two high profile hazards for the District are drought and earthquake. While other hazards

are profiled in the following sections for completeness, the District's priority and focus for the mitigation projects will be for only the two high profile hazards.

4.2 Hazard Profiles

4.2.1 Drought Hazard

The following section describes the hazard and then details the historical events associated with this hazard for the West Valley Water District.

General Definition: A drought is a period of drier-than-normal conditions that results in water-related problems. Precipitation (rain or snow) falls in uneven patterns across the country. When no rain or only a small amount of rainfalls, soils can dry out and plants can die. When rainfall is less than normal for several weeks, months, or years as we are seeing now with climate change, the flow of streams and rivers declines, water levels in lakes and reservoirs fall, and the depth to water in wells increases. If dry weather persists and water supply problems develop, the dry period can become a drought. The first evidence of drought usually is seen in records of rainfall.

Within a short period of time, a period of below-normal rainfall does not necessarily result in drought conditions. Some areas of the United States are more likely to have droughts than other areas. In humid, or wet, regions, a drought of a few weeks is quickly reflected in a decrease in soil moisture and in declining flow in streams. In arid, or dry, regions, people rely on groundwater and water in reservoirs to supply their needs. They are protected from short-term droughts but may have severe problems during long dry periods because they may have no other water source if wells or reservoirs go dry.

Description: Because the District is in the business of selling water, drought can be a disastrous hazard to the District. A drought is defined as a series of years with less than average rainfall and typically lasts seven years. The District is currently experiencing a drought that started in 2021.

Southern California has a history of severe droughts. There have been six severe extended droughts within the last 400 years (the most severe drought lasted from approximately 1650 to 1700). The U.S. Weather Service is forecasting 20 more years of below average rainfall.

State of California is experiencing extremely dry conditions since 1998 and may continue beyond this year and more regularly into the future, based on scientific projections regarding the impact of climate change on California's snowpack. The end of 2014 marked three straight years of record-breaking dry weather throughout California, with some parts of the State receiving less than 65 percent of their normal precipitation. In 2014, State of California experienced record dry conditions becoming the driest year on record. California's water supplies have dipped to alarming levels, indicated by snowpack in California's mountains is approximately 20 percent of the normal average for this date; California's largest water reservoirs have very low water levels for this time of year; California's major river systems, including the Sacramento and San Joaquin rivers, have significantly reduced surface water flows; and groundwater levels throughout the state have dropped significantly.

The fundamental drought impact to water agencies is a reduction in available water supplies. As a result, historic occurrences of drought have encouraged water agencies to review the reliability

of their water supplies and to initiate planning programs addressing identified needs for improvement. The District took multiple groundwater wells offline due to drop in water levels. In addition, public and media interest in droughts fosters heightened awareness of water supply reliability issues in the Legislature. More than 50 drought-related legislative proposals were introduced during the severe, but brief 1976-77 drought. About one-third of these eventually became law. Similar activity on drought-related legislative proposals was observed during the 1987-92 drought. One of the most significant pieces of legislation was the 1991 amendment to the Urban Water Management and Planning Act, in effect since 1983, which requires water suppliers to estimate available water supplies at the end of one, two, and three years, and to develop contingency plans for shortages of up to 50 percent. The District's 2015 Urban Water Management Plan (UWMP) presents water supply to demand comparisons through 2035. The 2015 UWMP will require all water agencies to reduce their water demand by 20 percent by the year 2020. The plan also presents water supply to demand comparisons for single dry to multiple dry year scenarios. The comparisons show that the District has adequate supply through 2035.

In Addition, On May 6, 2015 the State Water Resources Control Board adopted new mandates per the Governor's Order that was issued on April 1, 2015 in light of the continued State of Drought Emergency. The following actions are prohibited:

- Water runoff is not allowed. This means sprinklers must be adjusted so your sidewalks and driveways do not get watered too!
- When washing a vehicle with a hose, you must use a hose nozzle that will automatically shut the water off if the hose is set down.
- Washing down hard surfaces with a hose. In other words, use a broom to clean your patio, driveway and sidewalk.
- All fountains and other water features must have a recirculating pump.
- Irrigation must be done between 8 pm and 6 am.
- Irrigation may not occur within 48 hours after measurable rain.
- All restaurants and food establishments cannot serve water to their customers unless specifically requested by the customer.
- The irrigation of ornamental turf on public street medians.
- The irrigation of landscapes outside of newly constructed homes and buildings in a manner inconsistent with regulations or other requirements established by the California Building Standards Commission.
- Operators of hotels and motels must provide guests with the option of choosing not to have towels and linens laundered daily and prominently display notice of this option.

The Governor's Executive order also directed the State Water Resources Control Board to mandate all water agencies to achieve a certain percentage reduction to help the State achieve an overall 25% reduction in urban use. With the methodology of the State Board, the District is required to achieve a 28% reduction to be in compliance.

If the current drought extends for the period that the U.S. Weather Service is currently

forecasting, the District will have difficulty in meeting its water supply demands without additional supplies. The District receives its water supply from three sources: local groundwater, local Lytle Creek surface flows, and imported water from northern California, which is purchased from the San Bernardino Valley Municipal Water District and Inland Empire Utilities Agency. The District pumps groundwater from five groundwater basins: Lytle Creek Basin, Bunker Hill Basin, Rialto Colton Basin, Chino Basin and North Riverside Basin. Lytle Creek surface flows and these groundwater basins would experience significant loss of production over and above the significant loss of production that the District is currently experiencing. The Bunker Hill groundwater basin is experiencing the lowest groundwater levels in 40 years. If the North Riverside groundwater basin is utilized extensively, it should also experience significant drops in water levels. Additionally, within the past 5 years the contaminant levels in some groundwater wells have elevated to a point above the regulated limits set by the State Water Resources Control Board, which the District has either added source treatment, applied for blending plans, or took these wells out of service.

Table 5: Drought History

Summarizes the occurrences, impact, and costs of this hazard.

Date of Event	Type of Damage	Amount of Damage	Statewide or Local
1976-1977	Annual statewide runoff dropped 21% below average.	1976-\$888.5M; 1977-\$1.775M	Various
1987-1992	Annual statewide runoff dropped 27% below average. Twenty-three counties had declared local drought emergencies by the end of 1991.	SWP terminated services to agricultural contractors and provided only 10% of requested urban deliveries. Appropriate \$34.8M from the General Fund to the Department for financial assistance to local water suppliers for emergency drought-relief water supply, technical water conservation assistance, and operation of the Department's Drought Information Center.	Various
1998-2000	San Bernardino National Forest - dead and dying trees, bark beetle infestations.	\$12,100 crop damage.	Various
2012-2016	Water supply losses and fallen agriculture; affected urban and agricultural economies	\$10 billion	Various

2021-current	NOAA expects the spring drought to hit 74 million people	To be determined	Various
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Summarizing Risk

Probability:

Event is highly likely to occur

- Event is probable within the calendar year
- Event has up to 1 in 1 year chance of occurring (1/1=100%)
- History of events is greater than 33% likely year

Impact:

Critical

- Impacts that not quantified, but can be anticipated in future events such as injury and loss of life, disruption of and damage to public infrastructure, significant economic impact (jobs, sales, tax revenue) upon the community, negative impact on commercial and residential property values, and uncontrolled fires and associated injuries and damaged.

As of April 2021,

Drought Numbers in San Bernardino County

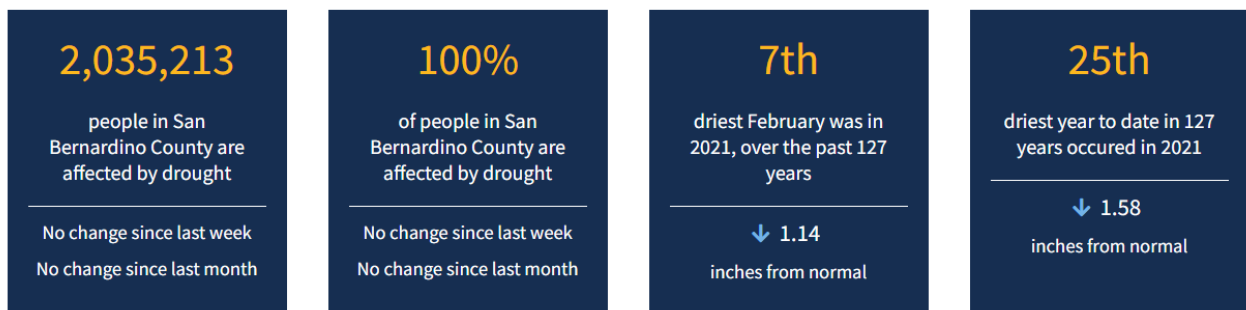


Figure 5: Drought History

Category	Description	Possible Impacts	Ranges				
			Palmer Drought Severity Index (PDSI)	CPC Soil Moisture Model (Percentiles)	USGS Weekly Streamflow (Percentiles)	Standardized Precipitation Index (SPI)	Objective Drought Indicator Blends (Percentiles)
D0	Abnormally Dry	<ul style="list-style-type: none"> Going into drought: <ul style="list-style-type: none"> short-term dryness slowing planting, growth of crops or pastures Coming out of drought: <ul style="list-style-type: none"> some lingering water deficits pastures or crops not fully recovered 	-1.0 to -1.9	21 to 30	21 to 30	-0.5 to -0.7	21 to 30
D1	Moderate Drought	<ul style="list-style-type: none"> Some damage to crops, pastures Streams, reservoirs, or wells low, some water shortages developing or imminent Voluntary water-use restrictions requested 	-2.0 to -2.9	11 to 20	11 to 20	-0.8 to -1.2	11 to 20
D2	Severe Drought	<ul style="list-style-type: none"> Crop or pasture losses likely Water shortages common Water restrictions imposed 	-3.0 to -3.9	6 to 10	6 to 10	-1.3 to -1.5	6 to 10
D3	Extreme Drought	<ul style="list-style-type: none"> Major crop/pasture losses Widespread water shortages or restrictions 	-4.0 to -4.9	3 to 5	3 to 5	-1.6 to -1.9	3 to 5
D4	Exceptional Drought	<ul style="list-style-type: none"> Exceptional and widespread crop/pasture losses Shortages of water in reservoirs, streams, and wells creating water emergencies 	-5.0 or less	0 to 2	0 to 2	-2.0 or less	0 to 2

The drought severity classification table shows the ranges for each indicator for each dryness level. Because the ranges of the various indicators often don't coincide, the final drought category tends to be based on what the majority of the indicators show and on local observations. The analysts producing the map also weigh the indices according to how well they perform in various parts of the country and at different times of the year. Additional indicators are often needed in the West, where winter snowfall in the mountains has a strong bearing on water supplies. It is this combination of the best available data, local observations and experts' best judgment that makes the U.S. Drought Monitor more versatile than other drought indicators.

U.S. Drought Monitor California

December 26, 2000
(Released Thursday, Dec. 28, 2000)
Valid 7 a.m. EST



Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	100.00	0.00	0.00	0.00	0.00	0.00
Last Week 12/19/2000	100.00	0.00	0.00	0.00	0.00	0.00
3 Months Ago 9/26/2000	87.30	12.70	0.00	0.00	0.00	0.00
Start of Calendar Year 1/4/2000	51.82	48.18	0.00	0.00	0.00	0.00
Start of Water Year 9/26/2000	87.30	12.70	0.00	0.00	0.00	0.00
One Year Ago	-	-	-	-	-	-

Intensity:

D0 Abnormally Dry	D3 Extreme Drought
D1 Moderate Drought	D4 Exceptional Drought
D2 Severe Drought	

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author:

David Miskus
NOAA/NWS/NCEP/CPC

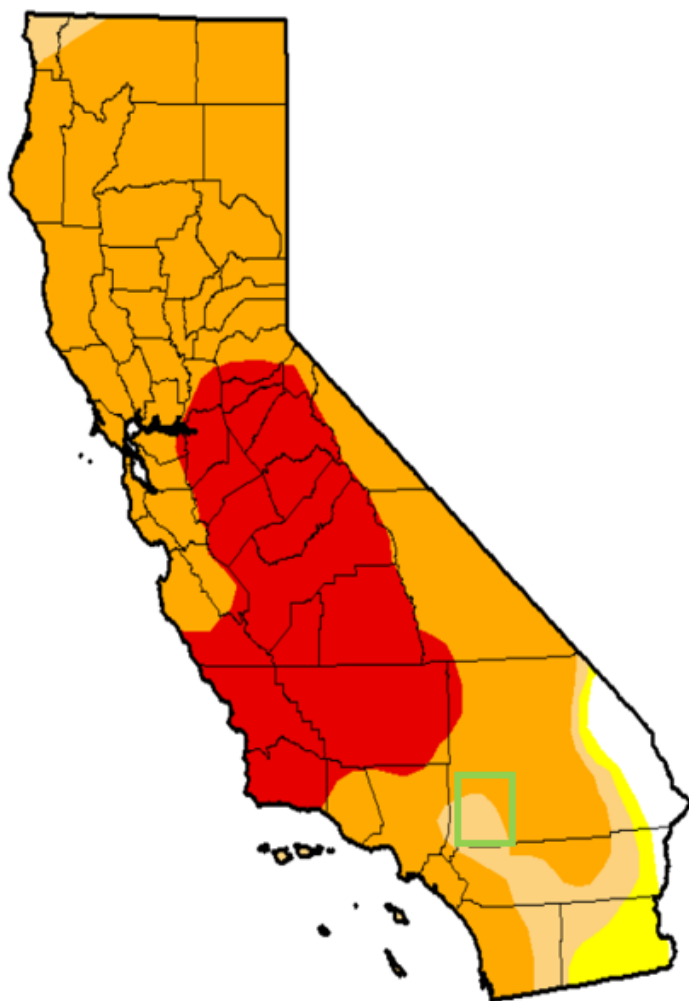


<http://droughtmonitor.unl.edu/>

The Drought Monitor map identifies areas of drought and labels them by intensity. D1 is the least intense level and D4 the most intense. Drought is defined as a moisture deficit bad enough to have social, environmental or economic effects. D0 areas are not in drought, but are experiencing abnormally dry conditions that could turn into drought or are recovering from drought but are not yet back to normal. The District's planning area located within the green boundary in December 2000 was not affected by drought.

U.S. Drought Monitor California

December 31, 2013
(Released Thursday, Jan. 2, 2014)
Valid 7 a.m. EST



Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	2.61	97.39	94.25	87.53	27.59	0.00
Last Week 12/24/2013	2.61	97.39	94.25	84.88	27.59	0.00
3 Months Ago 10/1/2013	2.63	97.37	95.95	84.12	11.36	0.00
Start of Calendar Year 1/1/2013	31.75	68.25	55.32	22.50	0.00	0.00
Start of Water Year 10/1/2013	2.63	97.37	95.95	84.12	11.36	0.00
One Year Ago 1/1/2013	31.75	68.25	55.32	22.50	0.00	0.00

Intensity:

D0 Abnormally Dry	D3 Extreme Drought
D1 Moderate Drought	D4 Exceptional Drought
D2 Severe Drought	

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author:

Matthew Rosencrans
CPC/NCEP/NWS/NOAA



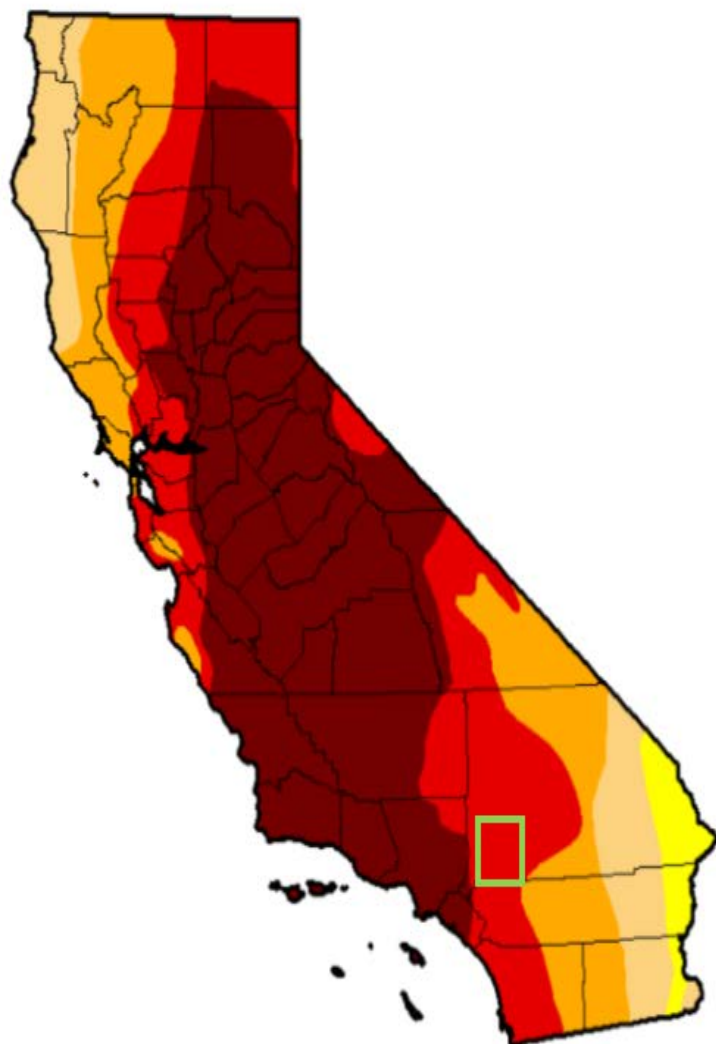
<http://droughtmonitor.unl.edu/>

1

The Drought Monitor map identifies areas of drought and labels them by intensity. D1 is the least intense level and D4 the most intense. Drought is defined as a moisture deficit bad enough to have social, environmental or economic effects. D0 areas are not in drought, but are experiencing abnormally dry conditions that could turn into drought or are recovering from drought but are not yet back to normal. The District's planning area located within the green boundary in December 2013 was listed as moderate drought and severe drought.

U.S. Drought Monitor California

December 29, 2015
(Released Thursday, Dec. 31, 2015)
Valid 7 a.m. EST



Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	0.00	100.00	97.33	87.55	69.07	44.84
Last Week 12/22/2015	0.00	100.00	97.33	90.63	69.09	44.84
3 Months Ago 9/29/2015	0.14	99.86	97.33	92.36	71.08	46.00
Start of Calendar Year 12/02/2014	0.00	100.00	98.12	94.34	77.94	32.21
Start of Water Year 9/29/2015	0.14	99.86	97.33	92.36	71.08	46.00
One Year Ago 12/02/2014	0.00	100.00	98.12	94.34	77.94	32.21

Intensity

D0 Abnormally Dry	D3 Extreme Drought
D1 Moderate Drought	D4 Exceptional Drought
D2 Severe Drought	

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author:

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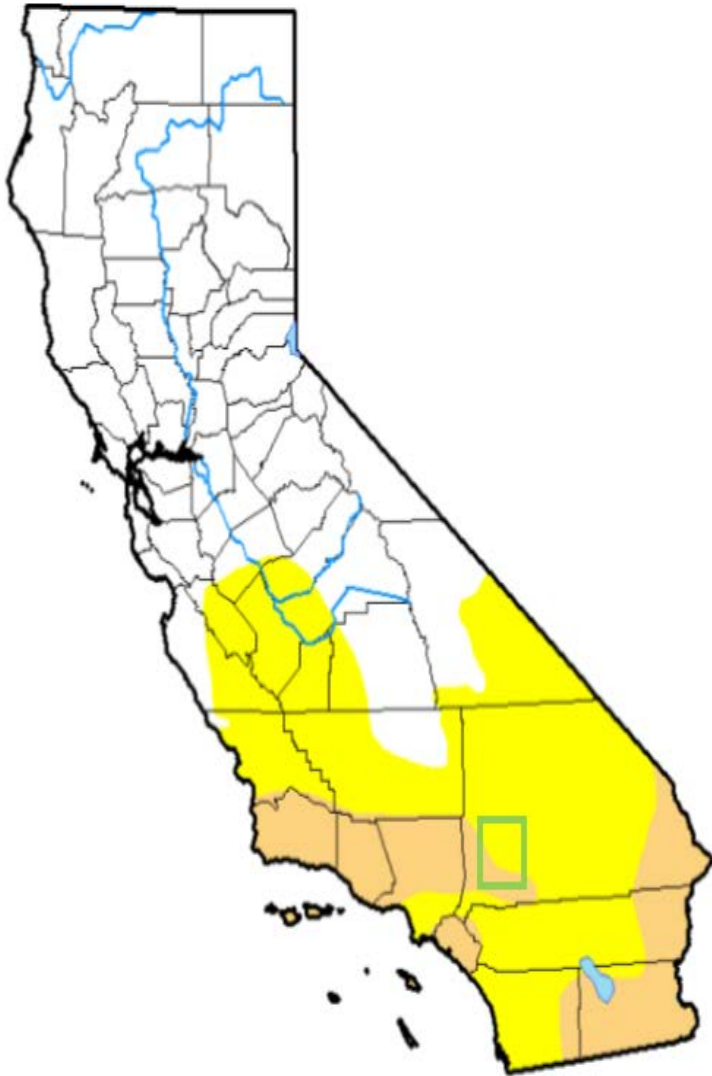


<http://droughtmonitor.unl.edu/>

The Drought Monitor map identifies areas of drought and labels them by intensity. D1 is the least intense level and D4 the most intense. Drought is defined as a moisture deficit bad enough to have social, environmental or economic effects. D0 areas are not in drought, but are experiencing abnormally dry conditions that could turn into drought or are recovering from drought but are not yet back to normal. The District's planning area located within the green boundary in December 2015 was listed as D3 extreme drought.

U.S. Drought Monitor California

December 26, 2017
(Released Thursday, Dec. 28, 2017)
Valid 7 a.m. EST



Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	55.70	44.30	12.69	0.00	0.00	0.00
Last Week 12-19-2017	55.70	44.30	12.69	0.00	0.00	0.00
3 Months Ago 09-26-2017	77.88	22.12	8.24	0.00	0.00	0.00
Start of Calendar Year 01-03-2017	18.07	81.93	67.61	54.02	38.17	18.31
Start of Water Year 09-26-2017	77.88	22.12	8.24	0.00	0.00	0.00
One Year Ago 12-27-2016	17.47	82.53	68.87	57.79	40.60	18.31

Intensity:

- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author:

David Miskus
NOAA/NWS/NCEP/CPC

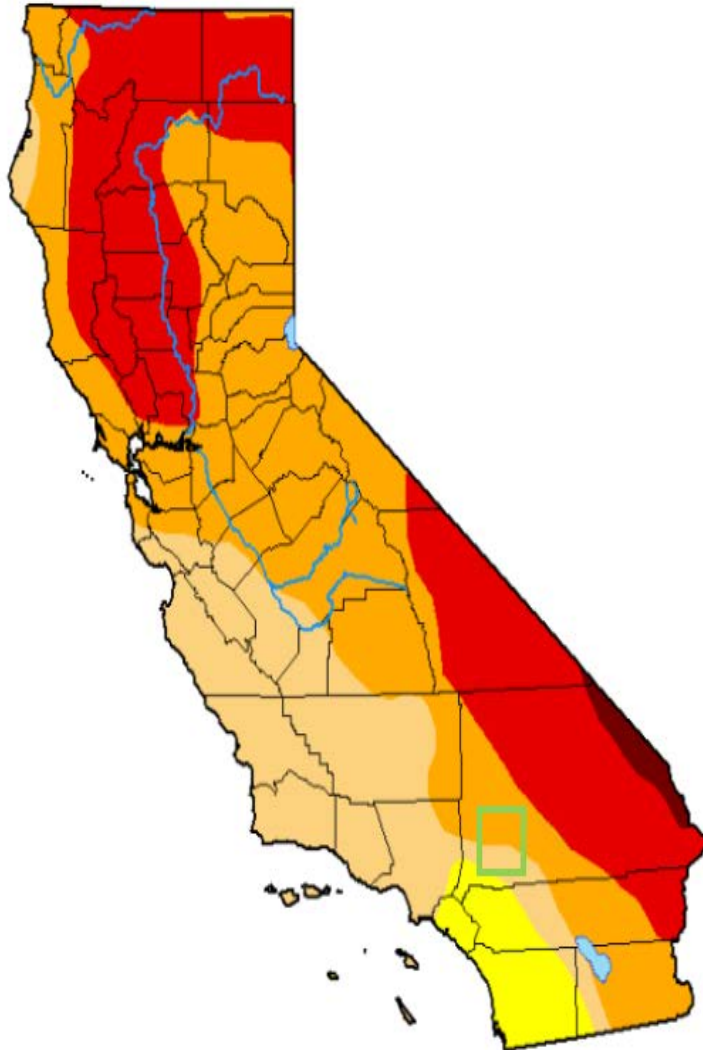


<http://droughtmonitor.unl.edu/>

The Drought Monitor map identifies areas of drought and labels them by intensity. D1 is the least intense level and D4 the most intense. Drought is defined as a moisture deficit bad enough to have social, environmental or economic effects. D0 areas are not in drought, but are experiencing abnormally dry conditions that could turn into drought or are recovering from drought but are not yet back to normal. The District's planning area located within the green boundary in December 2017 was listed abnormally dry and moderate drought.

U.S. Drought Monitor California

December 29, 2020
(Released Thursday, Dec. 31, 2020)
Valid 7 a.m. EST



Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	0.00	100.00	95.17	74.34	33.75	1.19
Last Week 12-22-2020	0.00	100.00	95.17	74.34	33.75	1.19
3 Months Ago 09-29-2020	15.35	84.65	67.65	35.62	12.74	0.00
Start of Calendar Year 12-31-2019	96.43	3.57	0.00	0.00	0.00	0.00
Start of Water Year 09-29-2020	15.35	84.65	67.65	35.62	12.74	0.00
One Year Ago 12-31-2019	96.43	3.57	0.00	0.00	0.00	0.00

Intensity:

None	D2 Severe Drought
D0 Abnormally Dry	D3 Extreme Drought
D1 Moderate Drought	D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor, go to <https://droughtmonitor.unl.edu/About.aspx>

Author:

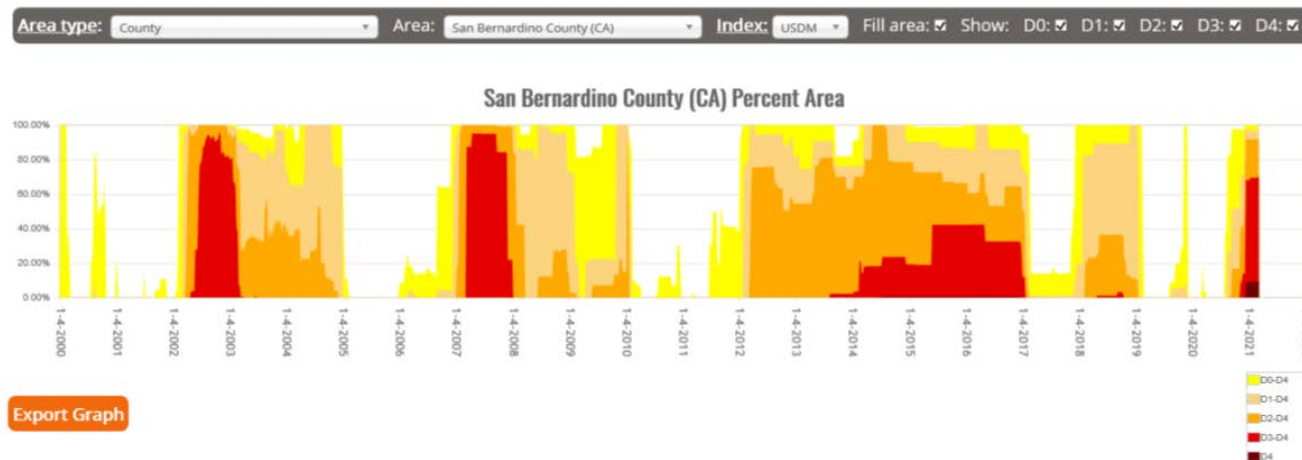
Adam Hartman
NOAA/NWS/NCEP/CPC



droughtmonitor.unl.edu

The Drought Monitor map identifies areas of drought and labels them by intensity. D1 is the least intense level and D4 the most intense. Drought is defined as a moisture deficit bad enough to have social, environmental or economic effects. D0 areas are not in drought, but are experiencing abnormally dry conditions that could turn into drought or are recovering from drought but are not yet back to normal. The District's planning area located within the green boundary in December 2020 was listed moderate drought and severe drought.

To zoom in, click and drag the cursor. To return to the full time series, double-click anywhere in the chart.



The figure above shows fluctuations in drought conditions within the San Bernardino County over the past 20 years and show that a significant drought has occurred about four times over that time span. The U.S. Drought Monitor (USDM) relies on drought experts to synthesize the best available data and work the local observes to interpret the information. The USDM also incorporates ground truthing and information about how drought is affecting people, via a network of more than 450 observes across the county, including state climatologists, National Weather Service staff, Extension agents, and hydrologists.

4.2.2 Earthquake Hazard

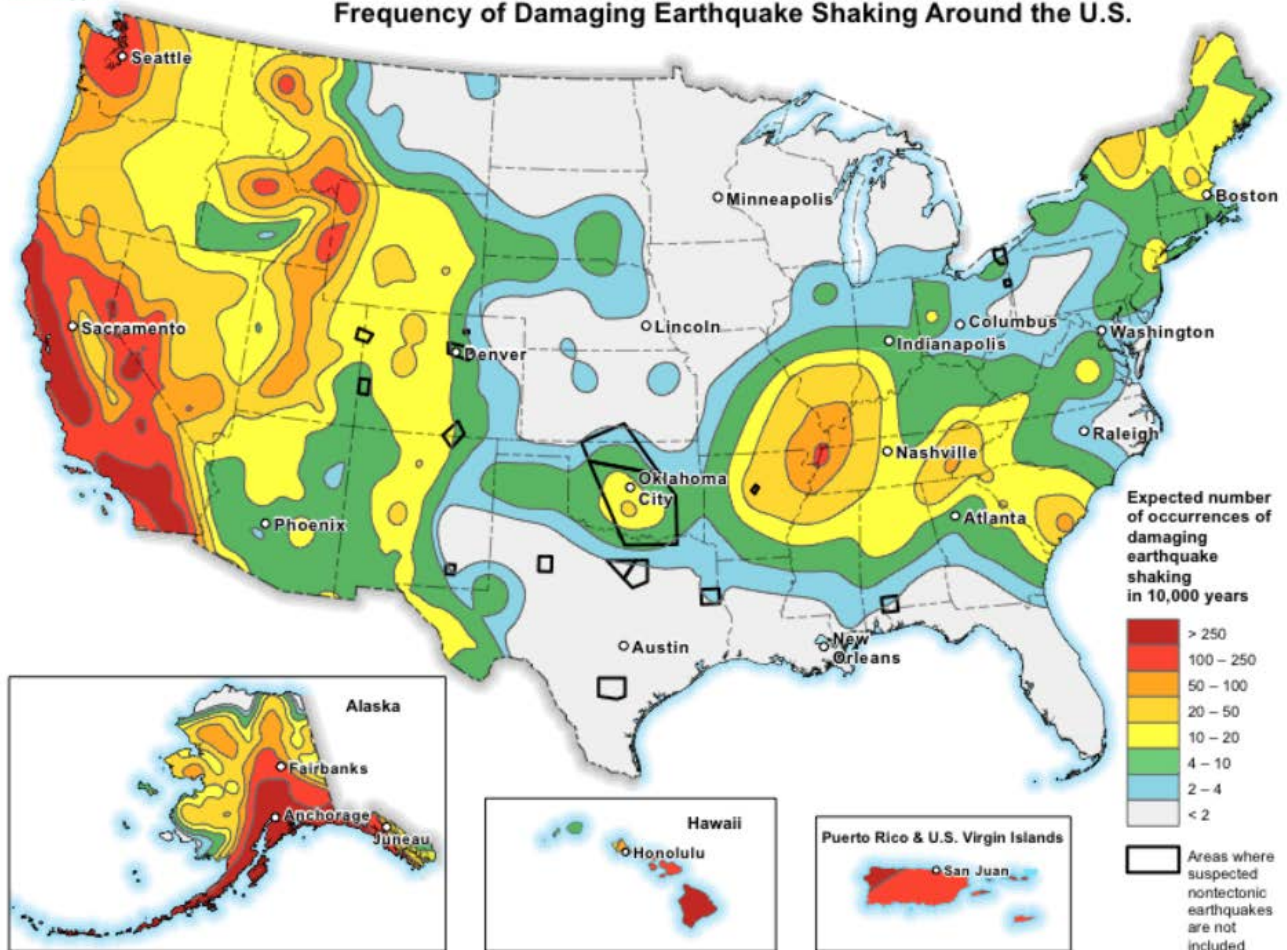
The following section describes the hazard and then details the historical events associated with this hazard for the District.

An earthquake is a sudden, rapid shaking of the Earth caused by the breaking and shifting of rock beneath the Earth's surface. For hundreds of millions of years, the forces of plate tectonics have shaped the Earth as the huge plates that form the Earth's surface move slowly over, under, and past each other. Sometimes the movement is gradual. At other times, the plates are locked together, unable to release the accumulating energy. When the accumulated energy grows strong enough, the plates break free causing the ground to shake. Most earthquakes occur at the boundaries where the plates meet; however, some earthquakes occur in the middle of plates. Ground shaking from earthquakes can collapse buildings and bridges; disrupt gas, electric, water utilities, and phone service; and sometimes trigger landslides, avalanches, flash floods, fires, and huge, destructive ocean waves (tsunamis). Buildings with foundations resting on unconsolidated landfill and other unstable soil, and trailers and homes not tied to their foundations are at risk because they can be shaken off their mountings during an earthquake. When an earthquake occurs in a populated area, it may cause deaths and injuries and extensive property damage.

Earthquakes strike suddenly, without warning. Earthquakes can occur at any time of the year and at any time of the day or night. On a yearly basis, 70 to 75 damaging earthquakes occur throughout the world. Estimates of losses from a future earthquake in the United States approach \$200 billion.



Frequency of Damaging Earthquake Shaking Around the U.S.



There are 45 states and territories in the United States at moderate to very high risk from earthquakes, and they are located in every region of the country. California experiences the most frequent damaging earthquakes; however, Alaska experiences the greatest number of large earthquakes—most located in uninhabited areas. The largest earthquakes felt in the United States were along the New Madrid Fault in Missouri, where a three-month long series of quakes from 1811 to 1812 included three quakes larger than a magnitude of 8 on the Richter Scale. These earthquakes were felt over the entire Eastern United States, with Missouri, Tennessee, Kentucky, Indiana, Illinois, Ohio, Alabama, Arkansas, and Mississippi experiencing the strongest ground shaking.

There are two large earthquake faults located within several miles of the District's service area. They are the San Andreas southern fault and the San Jacinto fault. The San Andreas fault is the primary feature of the system and the longest fault in California that can cause powerful earthquakes, as big as magnitude 8. A large part of the region's population lives within 50 miles of the San Andreas fault and could be exposed to very strong levels of ground shaking in a major earthquake. Many other faults, such as the San Jacinto fault, create smaller, yet more frequent

earthquakes. Soils in lowland areas away from major faults may be subject to liquefaction. Houses on liquefied soil may settle or even move laterally on gentle slopes. Landslides are possible on steep slopes.

While there have been many earthquakes in and around the District's service area, only one earthquake has actually caused any damages to the District's facilities. In 1992, the Big Bear Landers Earthquake damaged two of the District's groundwater wells. Wells 11 and 34 had their filter gravel packs damaged.

A source for the earthquake profile was the new earthquake rupture forecast for California developed by the Working Group on California Earthquake Probabilities WGCEP. The Working Group was organized in September, 2005, by the U.S. Geological Survey (USGS), the California Geological Survey (CGS), and the Southern California Earthquake Center (SCEC). The group produced a revised the Uniform California Earthquake Rupture Forecast 2015 (UCERF-3).

Appendix B presents the earthquake profile findings for the District's service area. The ground motion findings indicate the peak ground acceleration (PGA) within the District's service area could potentially exceed 80 percent. Typically, any acceleration over 3 percent is considered excessive. Also, a map shown in **Appendix B** illustrates that there is a 97% probability that Southern California will have a 6.7 scale earthquake over the next 30 years.

Since 2010, the District has had no damages to facilities resulting from earthquakes.

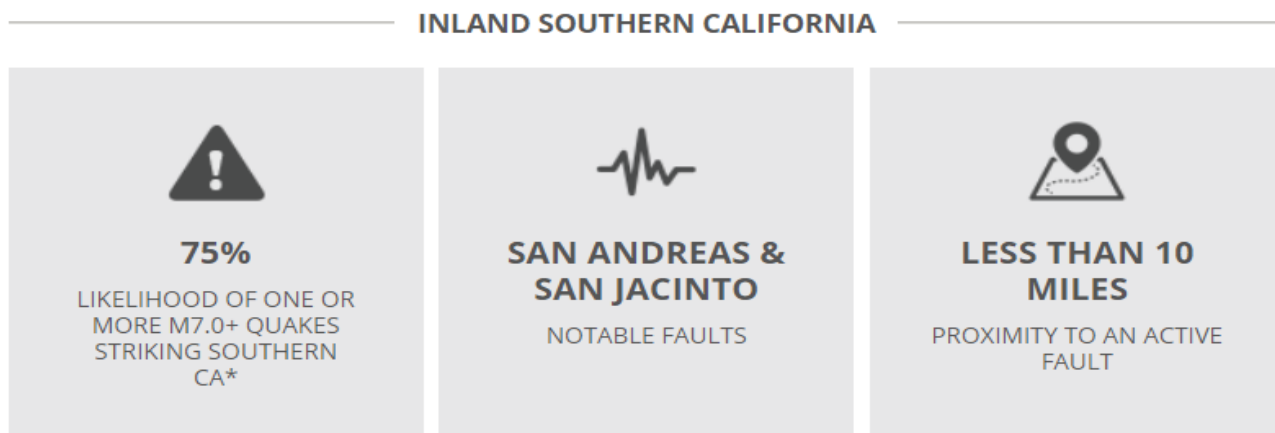


Table 6: Earthquake History

Summarizes the occurrences, impact, and costs of this hazard.

Earthquake Name	Date of Earthquake	Magnitude of Quake	Damage Description
Wrightwood Earthquake	Dec. 8, 1812	7.5	40 deaths.
Cajon Pass	July 22, 1899	5.7	Landslides, heavy damage to buildings in San Bernardino. No deaths.
San Jacinto	Dec. 25 1899	6.5	San Jacinto & Hemet had severe damage. Six deaths. Chimneys thrown down and walls cracked in Riverside.
Elsinore	May 15, 1910	6	Chimney's toppled.
San Jacinto	April 21, 1918	6.8	Most damage in San Jacinto and Hemet. Several injuries, one death. Landslides, cracks in ground, roads, and canals.
North San Jacinto	July 22, 1923	6.3	Chimney's toppled, broken windows, 2 critical injuries, no deaths, San Bernardino hospital and Hall of Records badly damaged.
San Jacinto Terwilliger	March 25, 1937	6.0	Few chimneys damaged, some plaster cracked, a few windows broken. Minimal damage mostly due to sparsely populated area.
Fish Creek Mountains	Oct 21, 1942	6.6	Little damage due to remote location, felt over a large area. Rockslides
Desert Hot Springs	Dec 4, 1948	6.0	Widespread damage. In Los Angeles, 5,800-gallon water tank split, water pipes broken in Pasadena, at UCLA, and San Diego. Walls cracked in Escondido and Corona.
1954 San Jacinto	March 19, 1954	6.4	Minor widespread damage. Parts of San Bernardino experienced a temporary blackout.
Borrego Mountain	April 8, 1968	6.5	Largest most damaging earthquake in 16 years. Damage across most of Southern California. Landslides, huge boulders thrown.
Lytle Creek	Sept. 12, 1970	5.2	Landslides, rock falls, 4 injuries, San Bernardino radio station knocked off the air.
White Wash	Feb 25, 1980	5.5	Landslides. Windows and dishes broken. Fire broke out in Rancho Mirage due to a gas line rupture in an empty home.
North Palm Springs	July 8, 1986	5.6	29 injuries. Destruction or damage of 51 homes. Landslides. Damage over \$4M.
Upland	June 26, 1988 and Feb 28, 1990	4.7 and 5.4 respectively	Landslides, damage to San Antonio Dam, 38 minor injuries. Public-\$4.87M; business-\$4.7M; private-\$2,4M; total-\$12M; 501 homes and 115 businesses damaged or destroyed.

Joshua Tree	April 22, 1992	6.1	32 minor injuries.
Big Bear	June 28, 1992	2 separate earthquakes – Big Bear - 6.4, Landers – 7.3.	Landslides in San Bernardino Mountains. Substantial damage in Big Bear. Landers was the largest earthquake in southern California in 40 years. Earthquake ruptured 5 separate faults. Total rupture length was 53 miles. One death, 402 injuries. Private-\$47.5M; business-\$17M; public-\$26.6M; total-\$91M; 77 homes destroyed, 4,369 homes damaged, 139 businesses damaged.
Hector Mine	Oct. 16, 1999	7.1	Very remote location. Ruptured in both directions from the epicenter.
Anza	June 12, 2005	5.2	No reports of significant damage.
Yucaipa	June 16, 2005	4.9	No reports of significant damage.
Chino Hills	July 29, 2008	5.4	No reports of significant damage.
Ludlow	December 6, 2008	5.1	No reports of significant damage.
San Bernardino	January 9, 2009	4.5	No reports of significant damage.
Chino Hills	March 16, 2010	4.4	No reports of significant damage.
El Mayor-Cucapah	April 4, 2010	7.2	2-4 dead; 100-233 injured; total damage estimated at \$1.15 billion.
El Centro	June 15, 2010	5.7	No reports of significant damage.
Borrego Springs	July 7, 2010	5.4	No reports of significant damage.
Calimesa	September 14, 2011	4.1	No reports of significant damage.
Fontana	January 15, 2014	4.4	No reports of significant damage.
Running Springs	July 5, 2014	4.6	No reports of significant damage.
Brea	March 29, 2014	5.1	No reports of significant damage.
South Napa	August 24, 2014	6.0	2 dead; total economic losses estimated at \$443 million to \$800 million.
Fontana	July 25, 2015	4.2	No reports of significant damage.
Big Bear Lake	September 16, 2015	4.0	No reports of significant damage.

Muscoy	December 30, 2015	4.4	No reports of significant damage.
Banning	January 6, 2016	4.4	No reports of significant damage.
Ridgecrest	July 5, 2019	7.1	1 dead; preliminary estimate of economic losses \$1 billion to \$5 billion. Preceded by M6.4 foreshock on July 4.

Summarizing Risk

Probability:

Event is likely to occur

- Event is probable within the next three years
- Event has up to 1 in 3 years chance of occurring (1/3=33%)
- History of events is greater than 20% but less than or equal to 33% likely per year

Magnitude/Severity:

Catastrophic

- Based on the risk assessment, it is evident that earthquakes will continue to have potentially devastating economic impacts to certain areas of the District. Impacts that not quantified, but can be anticipated in future events such as injury and loss of life, commercial and residential structural damage, disruption of and damage to public infrastructure, secondary health hazards (e.g. mold and mildew), damage to roads/bridges resulting in loss of mobility, significant economic impact (jobs, sales, tax revenue) upon the community, negative impact on commercial and residential property values, and significant disruption to students and teachers as temporary facilities and relocations would likely be needed.

4.2.3 Flood Hazards

The following section describes the hazard and then details the historical events associated with this hazard for the West Valley Water District.

General Definition: A flood, as defined by the National Flood Insurance Program is: "A general and temporary condition of partial or complete inundation of two or more acres of normally dry land area or of two or more properties (at least one of which is your property) from:

- Overflow of inland or tidal waters.
- Unusual and rapid accumulation or runoff of surface waters from any source, or a mudflow.

The collapse or subsidence of land along the shore of a lake or similar body of water as a result of erosion or undermining caused by waves or currents of water exceeding anticipated cyclical levels that result in a flood."

Floods can be slow, or fast rising but generally develop over a period of days. Mitigation includes any activities that prevent an emergency, reduce the chance of an emergency happening, or lessen the damaging effects of unavoidable emergencies. Flooding tends to occur in the summer and early fall because of the monsoon and is typified by increased humidity and high summer temperatures. The standard for flooding is the so-called "100-year flood," a benchmark used by the Federal Emergency Management Agency to establish a standard of flood control in communities throughout the country. Thus, the 100-year flood is also referred to as the "regulatory" or "base" flood. Actually, there is little difference between a 100-year flood and what is known as the 10-year flood. Both terms are really statements of probability that scientists and engineers use to describe how one flood compares to others that are likely to occur. In fact, the 500-year flood and the 10-year flood are only a foot apart on flood elevation-which means that the elevation of the 100-year flood falls somewhere in between. The term 100-year flood is often incorrectly used and can be misleading. It does not mean that only one flood of that size will occur every 100 years. What it actually means is that there is a one percent chance of a flood of that intensity and elevation happening in any given year. In other words, it is the flood elevation that has a one percent chance of being equaled or exceeded each year. And it could occur more than once in a relatively short period of time. (By comparison, the 10-year flood means that there is a ten percent chance for a flood of its intensity and elevation to happen in any given year.)

Figure 6 shows the flood hazard within the District's service area prepared using the 2011 Federal Emergency Management Agency (FEMA) National Flood Hazard Layer (NFHL) maps. The NFHL is a computer database that contains the flood hazard map information from FEMA's Flood Map Modernization program. These map data are from Digital Flood Insurance Rate Map (DFIRM) databases and Letters of Map Revision (LOMRs). The maps use computed or estimated water surface elevations combined with topographic mapping data to represent the flood hazard. The 100-year flood represents a compromise between minor floods and the greatest flood likely to occur in a given area. In most cases the 100-year flood is less than the flood of record and has been widely adopted as the common design and regulatory standard in the US. It was formally established as a standard for use by Federal agencies in 1977 and later confirmed by FEMA in 1982.

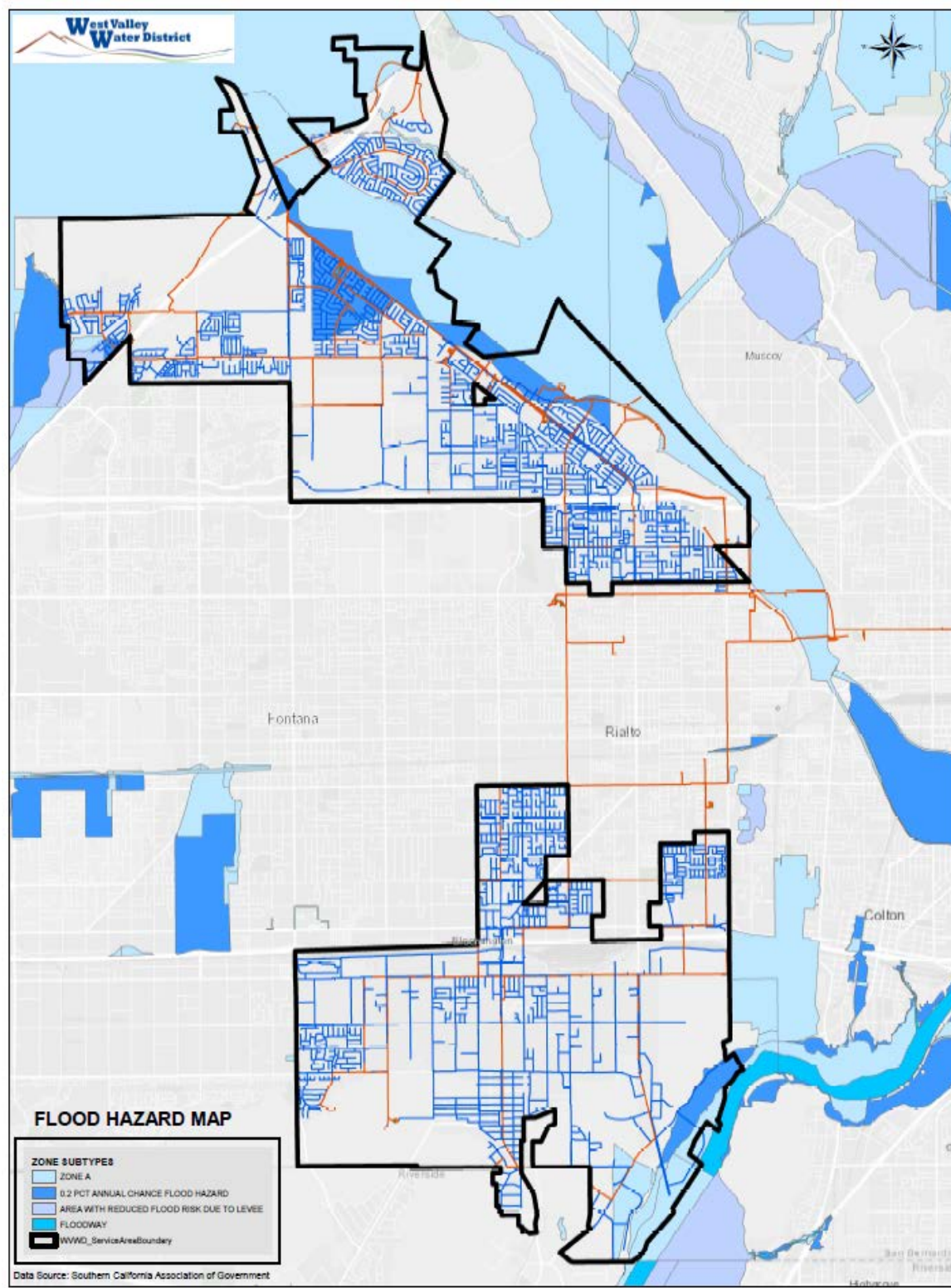
Description: Flooding occurs along the Lytle Creek Wash. Fortunately, the District only has three facilities within the 100-year floodplain, so any flooding from storms should be limited to these facilities.

Since 2010, the District has had no incidents of flooding. Prior to 2010, two previous floods have caused damage to the District's facilities. In 1992, the site for Reservoir 2-4 flooded with water from mountain drainage. The water from the reservoir site then drained onto a neighboring site. In 1969, the wellhead for Well 2 was washed out. Earthmovers were required to repair the wellhead.

Please note that the District is not a member of the National Flood Insurance Program (NFIP) and is

fortunate to not have any identified repetitive and severe repetitive loss properties.

Figure 6: 2021 Flood Map
Data Source: Southern California Association of Government



In recent history, there have been 31 floods, storms, and flash floods in the District’s general service area.

Table 7: Flooding History

Summarizes the occurrences, impact, and cost of this hazard

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-76	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-79		Public-\$3.0 M; private-\$22.9 M; Total -\$25.9 M.	Riverside
Feb-80	Rain, wind, mud slides, and flooding		Various
Winter 82-83	Heavy rains, high winds, flooding, levee breaks	Public-\$151 M; private-\$159 M; agricultural-\$214 M; Total-\$524 M.	Various
Aug-83	High winds, storms, and flooding; 3 deaths	Public \$10 M, private \$15 M, agricultural \$10 M; Total-\$35 M.	Inyo, Riverside, San Bernardino Counties

Date of Event	Type of Damage	Amount of Damage	Statewide or Local
Feb-92	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-92	Snow, rain, and high winds, 20 deaths, 10 injuries	Total - \$600 M	Various
Jan-95	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-95	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-98	17 deaths	\$550 M	Various
Dec-03	15 deaths		San Bernardino – Waterman Canyon from Lytle Creek River.
July-06	Thunderstorms and Flooding	Flooding occurred along some Mill Creek tributaries. Mud and rock debris covered parts of Valley of the Falls Drive.	San Bernardino County
Oct-06	Thunderstorms and Flooding	18 homes and businesses and two vehicles were damaged by flooding. Big sinkholes were left in a road. One swift water rescue. Mud and debris were left on roads.	San Bernardino County
Nov-07	Heavy Rains	A debris flow (including large trees) over the Poomacha Burn area buried a house in mud, caused serious damage to several vehicles and highway 76. The flow was estimated at 15 feet high, 150-200 feet wide.	San Bernardino County

Aug-08	August Thunderstorms	Flash floods up to 3' deep carried rocks and mud and covered many roads in Idyllwild-Fern Valley.	San Bernardino County
Jan-10	January 2010 Winter Storms	Widespread flooding resulted across the region. Some of the worst flash flooding occurred in the high desert on the 1.21 due to the prolonged heavy rainfall. Scores of homes and several schools sustained damage, and many roads were washed out in Hesperia, Apple Valley, Victorville and Adelanto. Numerous swift water rescues were needed, one of which likely saved four teens trapped in a storm water drain. Two deaths in Tijuana were attributed to the flooding.	San Bernardino County
Dec-10	Highland Flooding Incident	Major landslides and flash flooding impacted communities of Highland.	San Bernardino County
Aug-13	Flooding-Remnants of Tropical Storm Ivo	Debris and water came down from the Mountain Fire burn into Palm Springs. Floodwaters filled the Whitewater channel, which goes through several golf courses and crosses many roads from Palm Springs to La Quinta. Flash floods also in the Anza Borrego Desert.	San Bernardino County
Nov-13	Winter Storms	Urban and flash flooding with mud/debris flows, causing numerous road closures.	San Bernardino County
Feb-14	Winter Storms	Urban and flash flooding with mud/debris flows, causing numerous road closures and swift water rescues.	San Bernardino County
Aug-14	Thunderstorms, heavy rain, flash flooding, mudslides	Flash flooding and debris flows were common. Road closures and damage. A debris flow blocked Hwy. 78 east of Julian on the Banner Grade that was one to two feet deep. The Banner Fire burn scar contributed to this flow.	San Bernardino County

July-15	Flash flooding resulting from Lake Fire	Several debris flows resulted, including one consisting mostly of ash and mud over portions of Highway 38, up to a foot deep in some areas.	San Bernardino County
July-15	Severe Thunderstorms	A debris flow hit the burn scar of Silverado Canyon. Flash floods hit Moreno Valley, Perris, and La Mesa on 7.19. A wet microburst struck Tierrasanta on 7.18, causing wind damage. A haboob caused wind damage in the Anza Borrego Park and in Palm Desert. The rain caused the first rain-out of a Los Angeles Angels baseball game since 1995, and a rare 2-hour rain delay at the San Diego Padres baseball game. Over 2000 lightning strikes were reported on 7.18, some starting small brush fires. Near Desert Center on 7.19 eastbound lanes of Interstate 10 collapsed where they crossed a heavily flowing wash. A vehicle drove into the hole in the collapsed bridge, trapping the driver and requiring rescue. I-10 was closed in both directions causing huge traffic backups.	San Bernardino County
Jan-16	Strong rain, flooding and mudslides	A strong, low latitude jet stream brought a series of storms through Southern California with periods of moderate to heavy rain. Three-day rainfall totals were around 2-7" for the coast, valley and foothill areas, and 1-3" for the deserts. After several years of drought, this was the only precipitation event of significance during an otherwise disappointing strong El Niño season.	San Bernardino County
Aug-16	Flash flooding from storm system		San Bernardino County

Summarizing Risk

Probability:	Event is likely to occur <ul style="list-style-type: none">• Event is probable within the next three years• Event has up to 1 in 3 years chance of occurring (1/3=33%)• History of events is greater than 20% but less than or equal to 33% likely per year
Magnitude/Severity:	Limited <ul style="list-style-type: none">• Complete shutdown of critical facilities for more than one week• 10-25% of property is severely damaged• Impacts that is not quantified, but anticipated in future events such as injury and loss of life, commercial and residential structural damage, disruption of and damage to public infrastructure, secondary health hazards (e.g. mold and mildew), damage to roads/bridges resulting in loss of mobility, significant economic impact (jobs, sales, tax revenue) upon the community, negative impact on commercial and residential property values, and significant disruption to students and teachers as temporary facilities and relocations would likely be needed.

4.2.4 Wildfires Hazard

The following section describes the hazard and then details the historical events associated with this hazard for the West Valley Water District.

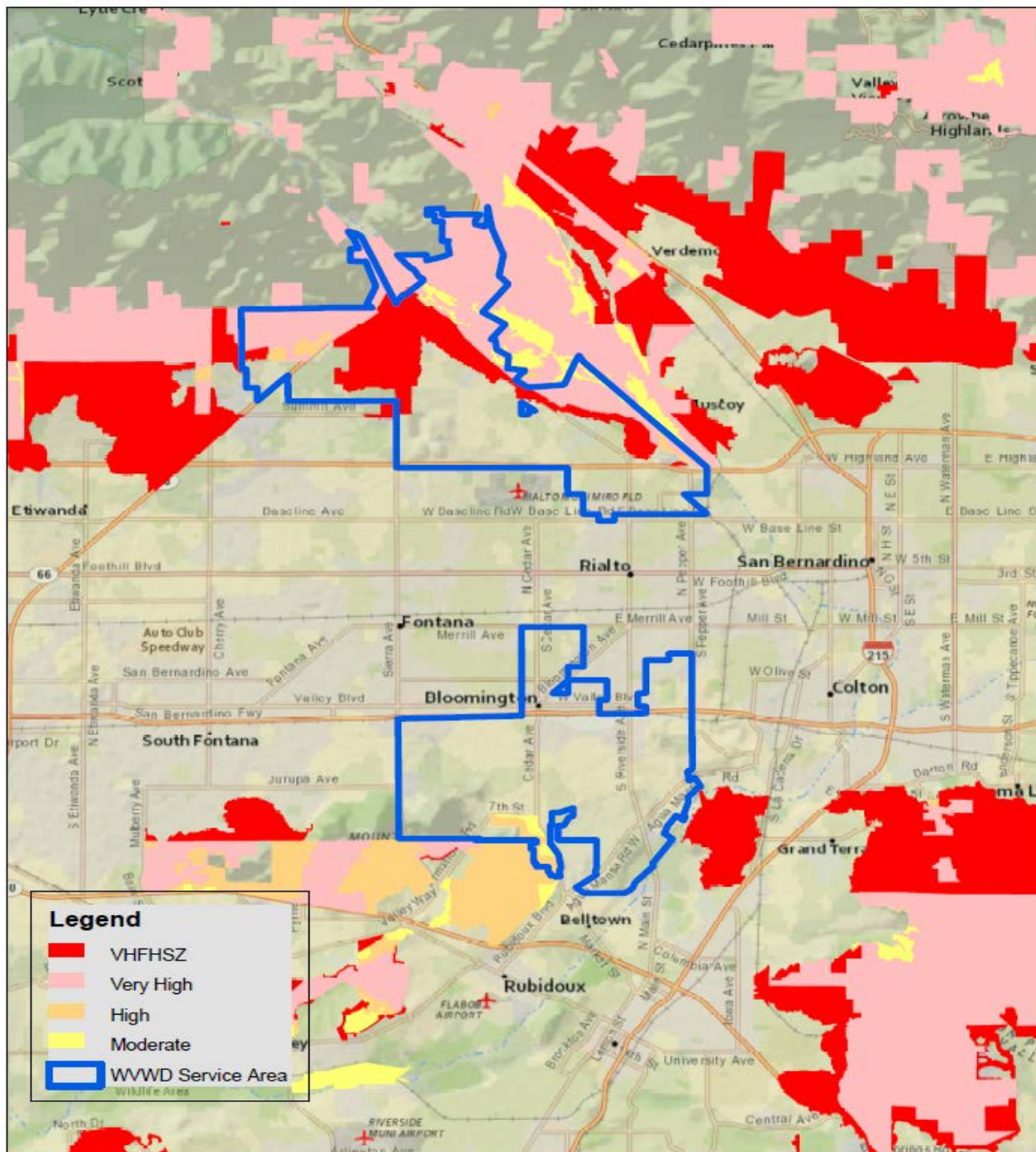
General Definition: There are three different classes of wild land or wildfires. A surface fire is the most common type and burns along the floor of a forest, moving slowly and killing or damaging trees. A ground fire is usually started by lightning and burns on or below the forest floor. Crown fires spread rapidly by wind and move quickly by jumping along the tops of trees. Wildfires are usually signaled by dense smoke that fills the area for miles around. Wildfires present a significant potential for disaster in the southwest, a region of relatively high temperatures, low humidity, and low precipitation during the summer, and during the spring, moderately strong daytime winds. Combine these severe burning conditions with people or lightning and the stage is set for the occurrence of large, destructive wildfires.

Description: Because the average annual rainfall in the District's service area is less than 17 inches per year, portions of the area are very rural, and there are forests surrounding portions of the District, wildfires are a potential hazard.

Figures 7 shows the fire threat map for the District's north and south systems, in San Bernardino County prepared by the California Fire's Fire and Resources assessment Program. The maps show four threat classes that range from no threat to extreme threat. The figures show

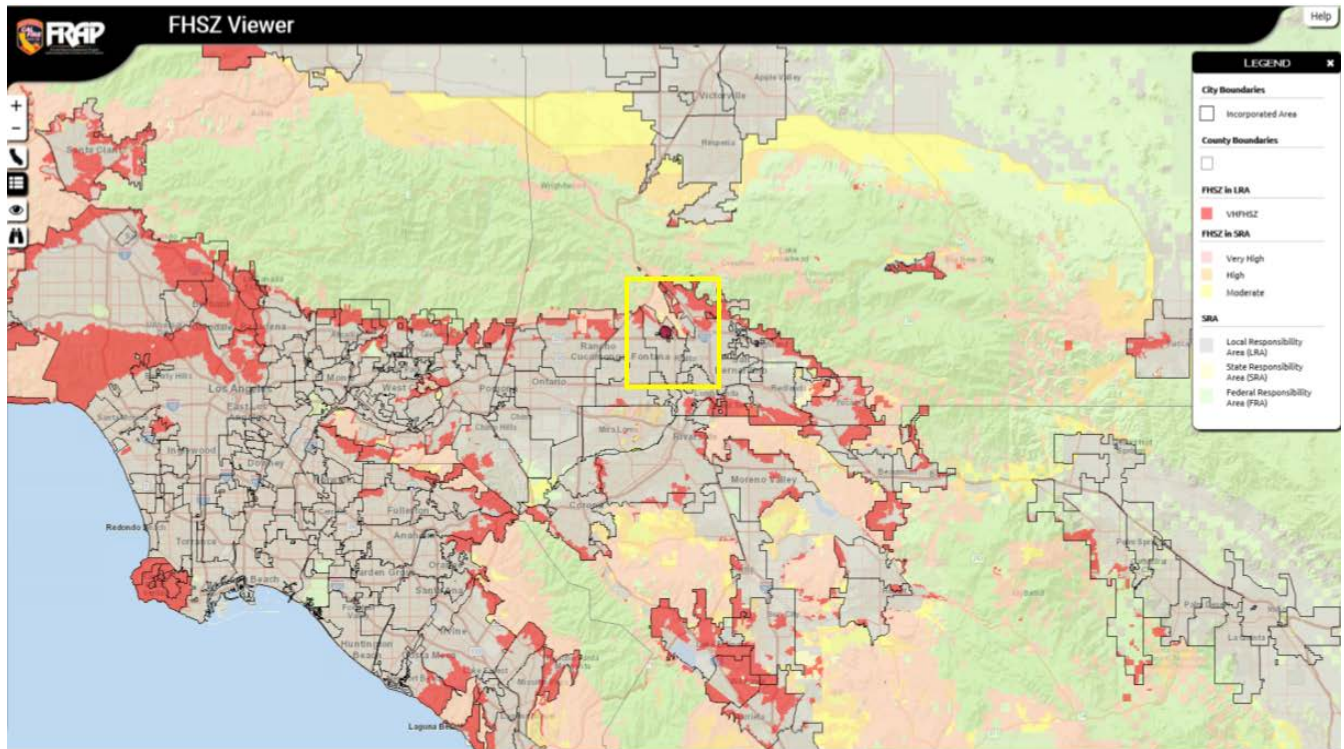
that most of the District's water system is in an area of low fire hazard except for the facilities in Pressure Zones 4 & 5 areas. However, a more detailed examination during the site reconnaissance confirmed a low fire hazard because of a clearing zone around the facilities. The District has an active maintenance program to address such issues.

Figure 7: Fire Hazard Severity Zone Maps
Cal Fire's Fire and Resources Assessment Program (FRAP) Map of District's Service Area 2021



The FRAP map identifies areas of fire hazards and labels them by severity. Yellow is the least intense level and red the most intense. The District's planning area located within the blue boundary in 2021 shows about 20% of District's planning area is in the very high fire hazard severity zone

2021 Fire Hazard Severity Zones (FHSZ) of District's Planning Area



The FHSZ map identifies areas of fire hazards and labels them by severity. Yellow is the least intense level and red the most intense. The District's planning area located within the yellow boundary in 2021 shows about 20% of District's planning area is in the very high fire hazard severity zone.

Since 2010, the District has had no incidents of wildfires that have caused damage to any facilities. In 2003, wildfires damaged the Zone 8 reservoir and pump station. The pump station roof was burned off; all electrical, switch gear, and SCADA were lost to the site. Also, the buried telephone line was lost to the site. The reservoir had paint damage. Climate change and drought will likely increase the frequency and severity of wildfires in the region going forward.

In previous years, there have been over forty wildfires that caused damage to San Bernardino County.

Table 8: Wildfire History

Summarizes the occurrences, impact, and costs of this hazard.

Date of Event	Type of Damage	Amount of Damage	Statewide or Local
July-60	No deaths, 12 injuries	\$10 M, 74,000 Acres, 33 homes destroyed.	Los Angeles, San Bernardino Counties

Fall 1970	19 deaths	Public- \$52.8 M; watershed - \$24.8 M; private - \$145.9 M; Total - \$223.6 M; 576,508 acres, 722 buildings, San Bernardino County – 53,100 acres, 54 buildings.	Various
Dec-70		\$3.2 M	Riverside
Nov-80		Public-\$14 M; private-\$50.8 M; TOTAL-\$64.8M. San Bernardino County - 65 buildings, 5482 acres destroyed. Additionally, 355 buildings, 41,472 acres destroyed.	Various
Aug-87	3 deaths, 76 injuries	\$18 M (estimated); 1,070 fires. 534,661 acres burned, 835 square miles, 38 homes destroyed.	Various
June-90	3 deaths, 89 injuries	\$300 M+; 22,500 blackened acres, 492 homes destroyed.	Los Angeles, Santa Barbara, Riverside, San Bernardino Counties
Oct-93	4 deaths, 162 injuries	Total property estimate-\$1 B; 1078 destroyed structures, 193,814 acres destroyed.	Los Angeles, Ventura, Riverside, San Bernardino, Orange, San Diego Counties
July-00	No deaths, 12 injuries	\$10 M, 74,000 Acres, 33 homes destroyed.	Los Angeles, San Bernardino Counties
Oct-03	22 deaths	\$218 M +, 750,043 acres burned.	Los Angeles, Ventura, Riverside, San Bernardino, San Diego Counties
June-05	Paradise Fire,	Burned 3,022 acres.	San Bernardino County
Jan-06	Plunge Fire	Burned 485 acres.	San Bernardino County
July-06	Sawtooth Complex	Burned 61,700 acres, destroyed 50 homes, 8 mobile homes, 13 garages, 171 outbuildings, 191 cars and pickups, 3 R.V's, 27 trailers, 2 railcars, 9 tractors. 12 residences were damaged. The cost of this fire exceeded \$16.8 million. One civilian was killed in his fire.	San Bernardino County
July-06	Millard Complex	Burned 24,210 acres.	San Bernardino County

July-06	Heart Fire	Burned 800 acres.	San Bernardino County
July-06	Whispering Pines Fire	Burned 1,050 acres.	San Bernardino County
Aug-06	Emerald Fire	Burned 2,000 acres.	San Bernardino County
Sept-06	Pinnacles Fire	Burned 2,370 acres.	San Bernardino County
Nov-06	Sierra Fire	Burned 300 acres.	San Bernardino County
Dec-06	Citrus Fire	Burned 525 acres.	San Bernardino County
March-07	Las Flores Fire	Burned 4,100 acres.	San Bernardino County
Sept-07	Butler II Fire	Burned 14,089 acres.	San Bernardino County
Sept-07	Hay Fire	Burned 75 acres.	San Bernardino County
Oct-07	Sierra/Glen Helen/Devore Fires	Burned 430 acres.	San Bernardino County
Oct-07	Grass Valley Fire, 1,247 acres	Burned 1,247 acres with 174 homes, 2 outbuildings destroyed, and damaged 22 structures. Total costs of the Grass and Slide fires including property loss and suppression costs was \$177,140,550.	San Bernardino County
Oct-07	Slide Fire, 12,789 acres	Burned 12,789 acres and destroyed 273 homes, 3 outbuildings, and damaged 45 structures. Total costs of the Grass and Slide fires including property loss and suppression costs was \$177,240,550.	San Bernardino County
Oct-08	Interstate 215 Fire	Burned 250 acres.	San Bernardino County
Oct-08	Little Mountain Fire	Burned 225 acres.	San Bernardino County
Oct-08	Foxborough Fire	Burned 250 acres.	San Bernardino County
Oct-08	San Antonio Fire	Burned 200 acres.	San Bernardino County
Nov-08	Freeway Fire	Burned 28,889 acres.	San Bernardino County

Aug-09	Oak Glen-Pendleton Fires	Burned 2,019 acres.	San Bernardino County
Oct-09	Sheep Fire	Burned 7,128 acres.	San Bernardino County
Sept-11	Hill Fire	Burned 1,158 acres.	San Bernardino County
Nov-12	Devore Fire	Burned 335 acres.	San Bernardino County
June-13	Mill Fire	Burned 534 acres.	San Bernardino County
Aug-13	Sharp Fire	Burned 243 acres.	San Bernardino County
Sept-13	Sierra Fire	Burned 200 acres.	San Bernardino County
April-14	Etiwanda Fire	Burned 2,143 acres.	San Bernardino County
May-14	Rancho Incident	Burned 1,548 acres.	San Bernardino County
March-15	River Bottom Fire	Burned 185 acres.	San Bernardino County
June-15	Lake Fire	Burned 31,359 acres and was the cause of 6 minor firefighter injuries and 1 residence and 3 outbuildings were destroyed.	San Bernardino County
July-15	North Fire/Pines Fire	Burned 4,250 acres, destroying 7 homes, 16 outbuildings and 44 vehicles in the community of Baldy Mesa. No injuries were reported.	San Bernardino County
Aug-15	Summit Fire	Burned 555 acres.	San Bernardino County
Aug-16	Pilot Fire	Burned 8,110 acres.	San Bernardino County
Aug-16	Blue Cut Fire	Burned 36,274 acres, destroying an estimated 105 single family residences and 216 outbuildings. 3 single family residences and 5 other structures were damaged.	San Bernardino County

Summarizing Risk

Probability:

Event is likely to occur

- Event is probable within the next three years
- Event has up to 1 in 3 years chance of occurring (1/3=33%)
- History of events is greater than 20% but less than or equal to 33% likely per year

Magnitude/Severity:

Limited

- Wildfires and their impact vary by location and severity of any given wildfire event, and will likely only affect certain areas of the District during specific times.
- Impact that is not quantified, but anticipated in future events such as injury and loss of life, commercial and residential structural damage, disruption of and damage to public infrastructure, secondary health hazards (e.g. mold and mildew), damage to roads/bridges resulting in loss of mobility, significant economic impact (jobs, sales, tax revenue) upon the community, negative impact on commercial and residential property values, and significant disruption to students and teachers as temporary facilities and relocations would likely be needed

4.2.5 Terrorism

General Definition: The following Section describes the hazard and then details the historical events associated with this hazard for the District.

Description: There is no single, universally accepted definition of terrorism, however, FEMA defines “terrorism” as intentional, criminal, malicious acts. FEMA document 386-7 refers to terrorism specifically as the use of Weapons of Mass Destruction (WMD), including biological, chemical, nuclear, and radiological weapons; arson, incendiary, explosive, and armed attacks; industrial sabotage and intentional hazardous materials releases; and “cyberterrorism.” FEMA developed the Integrated Emergency Management System (IEMS) using an all-hazards approach. While the IEMS was established as an “all-hazard” approach, responding to the threat of terrorism (referred to as counterterrorism) came to be viewed as the responsibility of law enforcement, defense, and intelligence agencies. Furthermore, defensive efforts to protect people and facilities from terrorism (referred to as antiterrorism) were generally limited to the government sector, the military, and some industrial interests. While the term “mitigation” refers generally to activities that reduce loss of life and property by eliminating or reducing the effects of disasters, in the terrorism context it is often interpreted to include a wide variety of preparedness and response actions. For the purposes of this document, the traditional meaning will be assumed; that mitigation refers to specific actions that can be taken to reduce loss of life and property from manmade hazards by “modifying the built environment” or antiterrorism to reduce the risk and potential consequences of these hazards.

After the Waterman Terrorism Incident on December 2nd, 2015 two full time positions with a

regional FBI-led terrorist task force (FBI's Joint Terrorism Task Force) were created. These task force officers have the clearance to conduct terrorism investigations in the County. The Task Force includes partners from Homeland Security Investigations (HSI), the San Bernardino Police Department, the San Bernardino County Sheriff's Department, the Riverside County Sheriff's Department, the Ontario Police Department, the Riverside Police Department, the Corona Police Department and the Chino Police Department.

Table 9: Terrorism History

Attack	Description	Public Health Impact
A mass shooting	On December 2, 2015 at the Inland Regional Center in San Bernardino, California,	<ul style="list-style-type: none"> 14 people were killed
A mass shooting and an attempted bombing	The perpetrators, Syed Rizwan Farook and Tashfeen Malik, a married couple living in the city of Redlands, targeted a San Bernardino County Department of Public Health training event and Christmas party of about 80 employees in a rented banquet room Farook was a U.S.-born citizen of Pakistani descent, who worked as a health department employee. Malik was a Pakistani-born green card holder.	<ul style="list-style-type: none"> 22 others were seriously injured.

Summarizing Risk:

Probability Possible:

Possible

- Event is probable within the next five years
- Event has up to 1 in 5 years chance of occurring (1/5=20%)
- History of events is greater than 10% but less than or equal to 20% likely per year

Impact:

Catastrophic

- More than 50% of property is severely damaged
- Impacts that are not quantified, but can be anticipated in future events such as injury and loss of life, disruption of and damage to District and other public infrastructure, significant economic impact (jobs, sales, tax revenue) upon the community, negative impact on property values,

uncontrolled fires and associated injuries and damage, and psychological effects on District employees and customers.

4.3 Inventory Assets

This section provides an overview of the assets in the District and the hazards to which these facilities are susceptible.

4.3.1 Population

The total population of District is currently approximately 90,000.

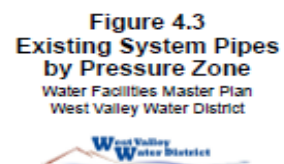
4.3.2 Buildings

As of April 2021, the District operates and maintains the following facilities:

- 8 pressure zones,
- 25 existing reservoirs with a total storage capacity of 72.8 million gallons (MG),
- 17 active wells with a total pumping capacity of 36,750 gallons per minute (gpm) or production capacity of 53.0 million gallons per day (MGD),
- 12 Booster Stations (89.0 MGD Pumping Capacity),
- Oliver P. Roemer Water Filtration Facility (14.5 MGD capacity) utilizing local surface water from Lytle Creek and water from the State Project Water (SPW),
- Fluidized Bed Reactor Perchlorate Treatment Facility (2.8 MGD capacity) to treat groundwater from wells contaminated with perchlorate,
- 5 ion exchange source treatment systems, and
- approximately 380 miles of distribution and transmission facilities (sizes 4 inches to 48 inches)

The District's water system is divided into two noncontiguous areas: the north and south systems. The north system includes Pressure Zones 4, 5, 6, 7, and 8, with Zone 8 being the highest pressure zone. Water can be transferred between zones in the north system. The south system includes Pressure Zones 2, 3, and 3A; with Zone 3A being the highest zone (but still lower than Zone 4). In general, water can be transferred from the north to the south systems, but not pumped from the south to the north system. From Zone 4, water can be supplied to both the north and the south systems. Therefore, all the groundwater supply wells, treatment facilities, reservoirs, and pump stations located in the north system are considered critical for the District.

Existing System Pipes by Pressure Zones



Existing Groundwater Wells

PRELIMINARY

Supply Well	Zone	Groundwater Basin	Location	Pump Test Capacity ¹				Production Capacity ²	Operational Controls ³			
				Flow Rate		Total Dynamic Head (ft)	Test Year		Low Demand		High Demand	
				(gpm)	(mgd)			(mgd)	On (ft)	Off (ft)	On (ft)	Off (ft)
Active Groundwater Wells												
W-2	4	Lytle Creek	19973 Country Club Drive, Rialto	1,532	2.2	519	2017	1.47	18	20	18	20
W-4A	4	Lytle Creek	5914 N. Sycamore Avenue, Rialto	2,318	3.3	512	2017	2.23	9	11	12	14
W-5A	4	Lytle Creek	5914 N. Sycamore Avenue, Rialto	1,085	1.6	532	2017	1.04	8	10	10	12
W-11 ⁴	3A	Rialto	238 W. Victoria St., Rialto	1,346	1.9	465	2017	1.29	VFD			
W-15	2,3,3A	Bunker Hill	1950 W. 9th St. San Bernardino	1,380	2.0	380	2016	1.32	24	26	24	26
W-17	2	Rialto	404 S. Acacia Avenue, Rialto	1,000	1.4		2010	0.96	10	18	10	18
W-18A	2	North Riverside	1783 S. Sycamore Avenue, Colton	2,170	3.1		2010	2.08	16	18	20	22
W-24	6	Rialto	4334 Riverside Avenue, Rialto	475	0.7	145	2017	0.46				
W-30	2,3,3A	Bunker Hill	2015 W. 9th St. San Bernardino	1,520	2.2	375	2016	1.46	22	24.5	22	24.5
W-42	3	North Riverside	295 E. San Bernardino Avenue, Rialto	1,625	2.3	578	2017	1.56	20	22	24	26
W-54	6	Rialto	Duncan Canyon Road, Fontana	920	1.3	930	2017	0.88	16	18	26	28
Rialto W-6 ⁴	3A	Rialto	204 W. Etiwanda Ave.	1,870	2.7	451	2017	1.80	VFD			
		Total Well Capacity ⁴		15,895	22.9			15.26				
		Firm Well Capacity ⁴ (largest unit out of service)		13,577	19.6			13.03				
Inactive Groundwater Wells												
W-1A	4	Lytle Creek	19523 Country Club Drive, Rialto	822	1.2	367.1	2017	0.79				
W-7	3,4	Lytle Creek	6871 Martin PMP, San Bernardino	1,100	1.6		2010	1.06				
W-8A	3,4	Lytle Creek	6871 Martin Road, San Bernardino	1,700	2.4		2010	1.63				
W-41	2	North Riverside	3353 Industrial, Rialto	2,104	3.0	376.4	2016	2.02				
W-16		Rialto	296 S. Eucalyptus Avenue, Rialto	1,550	2.2		2010	1.49				
W-33	3A	Rialto	855 W Baseline Road, Rialto	2,517	3.6	425.3	2017	2.42				
W-23A	6	Rialto	4334 Riverside Avenue, Rialto	200	0.3		2010	0.19				
W-36	3,4	Lytle Creek	20600 Walnut Avenue, San Bernardino									
W-39	3	Chino	10272 Cedar Place, San Bernardino County					0.89				

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Notes:

1. Source: Pump tests received from District staff August 2, 2017.
2. Production capacity assumes operating time of 16 hours per day.
3. Source: Operational control document received from District staff August 31, 2017.
4. Well 11 and Rialto Well 6 both feed the District's Groundwater Wellhead Treatment System (FBR); only one well operates at any given time.

1/11/2019

Existing Pressure Reducing Valves

PRELIMINARY

Valve ID	Location	Size	Pressure Zone		Settings	
		(in)	Upstream	Downstream	Upstream	Downstream
Zone 8						
V2	8-2 Pump Station	10	8	7	111	N/A
Zone 7						
V8	Riverside (By Zone 7-1 PS)	12	7	7B	120	80
V9	Live Oak & Via Bello	8	7	7B	-	-
V10	Dove Tree & Terra Vista	8	7	7B	-	-
V11	North Sierra, across from school	8	7	7B	Not in Use	
V12	Terra Vista & Tamarind	8	7	6	95	60
V13	Goldenrod & Sunrise	8	7	6	-	-
V14	Citrus 1/4 mile south of Duncan Canyon	8	7	6	-	-
V15	Six M Ranch Ln & Cloudcrest Way	8	7	6	Not in Use	
V16	Duncan Canyon & Coyote Canyon South side	8	7	6	190	80
V17	Sweet bay and Sycamore Creek	8	7	7A	140	73
V18	Kimberlite & Sycamore Creek	8	7	7A	140	80
V19	Black Cottonwood & Sycamore Creek	8	7	7A	140	92
V20	Eve Primrose Ln & Sycamore Creek	8	7	7A	140	80
Zone 6						
V23	South Sierra, Sierra & Summit	8	6	6A	-	-
V24	End of Alder (by Target warehouse)	12	6	6A	105	75
V25	Locust (by fireworks factory)	12	6	6A	115	75
V26	Maple (top near bend)	8	6	6A	114	70
V27	Linden South of Riverside	8	6	6A	-	-
V28	Riverside and Cedar	6	6	6A	140	75
V29	Locust and Bohnert	8	6A	6B	112	82
V30	Maple and Banyon	6	6A	6B	120	70
Zone 5						
V35	Riverside and Cactus	8	5	4	-	-
Zone 3						
V44	San Bernardino and Linden	16	3A	3	-	-
V45	San Bernardino and Linden	12	3A	3	-	-
V46	San Bernardino and Cedar	12	3A	3	-	-
V47	Slover near Willow	12	3	2	-	-
V48	Lilac below Slover	8	3	2	-	-
V49	Larch and Buckskin	8	3	2	-	-
V50	Santa Ana and Linden	10	3	2	-	-
V51	Locust and Jurupa	12	3	2	-	-

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Notes:

9/25/2017

1. Source: Control valve inventory received from District staff August 3, 2017.

Existing Booster Pump Stations

PRELIMINARY

Designation No.	Location	Source Pressure Zone	Destination Pressure Zone	Design Capacity ¹	Operational Capacity ²			Operational Controls ⁴			
					Total (mgd)	Hours or operation	Firm ³ (mgd)	Low Demand On	Low Demand Off	High Demand On (ft)	High Demand Off (ft)
Zone 2 to Zone 3 Transfer PS	Zone 2-1 Reservoir	2	3	1,500 gpm (1 pump)	1.4	16.0	0.0	19.0	21.0	23.0	25.0
FBR Treatment Facility		-	3A	2,000 gpm	2.9	24.0	2.9				
Zone 3A-1 PS ³	2015 9th St	3, 3A	3, 3A	3,500 gpm @ 210' (2 pumps, Z3A) 3,400 gpm @ 150' (2 pumps, Z3)	20.0	16.0	16.6	18.0	20.0	22.0	24.0
Zone 4-1 PS	6871 Martin Rd	3	4	2,000 gpm @ 240' (2 pumps) 1,100 gpm @ 240' (1 pump)	4.9	16.0	3.0	10.0	12.0	13.0	15.0
Zone 4-2 PS	855 Baseline Rd	3A	4	2,400 gpm @ 170' (3 pumps)	6.9	16.0	4.6	7.0	9.0	9.0	11.0
Zone 4 Transfer PS	Zone 4-3 Reservoir	4	4	5,000 gpm (1 pump)	As Needed						
Zone 5-1 PS ⁴	5700 Riverside Ave	4	5	3,000 gpm @ 170' (4 pumps)	11.5	16.0	8.6	9.0	11.0	13.0	15.0
Zone 5-2 PS	At Reservoir R4-3	4	5	3,200 gpm @ 181' (6 pumps)	18.4	16.0	15.4	10.0	12.0	14.0	16.0
Oliver P. Roemer WFF Effluent Pumps	3010 Cedar Ave	-	5	1,800 gpm @ 130' (4 pumps)	10.4	24.0	7.8				
Zone 6-1 PS ⁴	5210 Riverside Ave	5	6	2,200 gpm @ 230' (3 pumps) 1,850 gpm @ 235' (1 pump) 850 gpm @ 220' (1 pump)	8.9	16.0	6.8	14.0	16.0	24.0	26.0
Zone 6-2 PS	5210 Riverside Ave	5	6	2,590 gpm @ 265' (6 pumps)	14.9	16.0	12.4	15.0	17.0	25.0	27.0
Zone 7-1 PS	4334 Riverside Ave	6	7	2,200 gpm @ 280' (3 pumps) 1,300 gpm @ 280' (1 pump)	7.6	16.0	5.5	16.0	18.0	20.0	22.0
Zone 8-1 PS	3434 Lytle Creek Rd	7	8	280 gpm @ 225' (1 pump) 175 gpm @ 225' (1 pump)	As Needed						
Zone 8-2 PS	3296 Lytle Creek Rd	7	8	1,630 gpm @ 252' (4 pumps)	6.3	16.0	4.7	10.0	16.5	10.0	16.5

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Notes:

1. Source : West Valley Water District 2012 Water Master Plan
2. Excluding the Roemer WFF and FBR Treatment plant, production capacity assumes operating time of 16 hours per day.
3. Firm capacity defined as total pump capacity excluding largest pump.

9/25/2017

4.3.3 Critical Facility List

This section provides a listing of the critical facilities in the District. The primary contact for all the District facilities is the following:

Primary Contact: Shamindra Manbahal
855 W. Baseline Rialto, CA 92377
Phone: (909) 820-3701
E-mail: smanbahal@wvwd.org

Critical Facilities: The Oliver P. Roemer Water Filtration Plant (WFP) was identified as a critical facility because it supplies approximately 49 percent of the water for the District. The WFP provides water supply to Zones 5, 6, 7, and 8.

The remaining facilities in the north system include 7 groundwater well sites, 5 reservoir sites, 3 sites with reservoirs, pump stations and wells, and 2 sites with reservoirs and pump stations. Also, the 380 miles of pipelines at the District are considered critical because they are needed to transport water.

To minimize any hazard potential from earthquakes the District's newly constructed facilities, all future reservoirs will be constructed adequately for existing seismic conditions, which includes a swivel joint for the inlet/outlet to allow movement, anchoring the tank down with bolts to a large

concrete ring footing, and seismic valves. In addition, all buildings will meet the current seismic building codes.

Table 10: Critical Facilities for the District

Name	Facility Type	Description
Oliver P. Roemer WFP	Water Treatment Plant	8,600 sq ft bldg
Well 2 & 4-1 Arsenic Treatment	Well	50 sq ft bldg
Well 4A	Well	50 sq ft bldg
Well 5A	Well	50 sq ft bldg
Well 1A	Well	50 sq ft bldg
Reservoirs R6-2 to 6-4, Zone 7-1 PS, W23A, W24	Reservoirs, Pump Station and Wells	800 sq ft bldg
Reservoirs R4-1, R4-2, Zone 5-1 PS	Reservoirs, Pump Station	1,100 sq ft bldg
Zone 4 Aeration Reservoir, Zone 4-1 PS, W-7, W8A	Reservoir, Pump Station and Wells	650 sq ft bldg
Reservoir 4-3 & Zone 5-2 PS	Reservoir and Pump Station	800 sq ft bldg
Reservoirs 7-2 to 7-4, Zone 8-2 PS	Reservoirs and Pump Station	800 sq ft bldg
Reservoirs 5-1 to 5-3 & Zone 6-1 PS, Zone 6-2 PS	Reservoirs and Pump Stations	800 sq ft bldg
Reservoirs 8-1 & 8-2	Reservoirs	
Fluidized Bed Reactor Treatment Plant	Water Treatment Plant	1,700 sq ft bldg

4.4 Vulnerability Assessment

4.4.1 Methodology

The facility replacement costs were calculated using the District's accounting and insurance replacement values and/or the following engineering estimates for construction of new facilities:

1. Reservoirs – Cost is typically \$1 per gallon of capacity.
2. Pump Stations – Cost is approximately \$2000 per horsepower (HP) of capacity.
3. Pipelines – Cost is approximately \$9-10 per diameter-inch per foot of pipeline.
4. Wells – Cost is typically \$3,000,000 per well.

The annual economic impacts were estimated by ranking the facilities by their importance to the District's production of water and using this ranking to develop a percentage of importance for each facility. This percentage was applied to the projected 2020/ 2021 annual water revenue from the District of \$24,000,000 to obtain the annual economic impact for each facility.

4.4.2 Drought Vulnerability Analysis

Population: Approximately 100 percent of the District's population is vulnerable.

Critical Facilities: Approximately 50 percent of the District's critical facilities are vulnerable.

The specific critical facilities vulnerable in the District are:

All wells and surface water for the WFP are critical to drought because they supply the water for the District. During a drought, the levels in the wells become lower and limit pumping, therefore many wells are not able to produce as much water during the peak demands. Also, since there is less surface water supply to the treatment plant, more water has to be imported from Northern California, at a higher cost.

Estimated Losses: The economic loss resulting from this hazard is approximately \$28.6M. The loss from damage to structures from this hazard is approximately \$0.

On August 6, 2015, the District adopted Ordinance No. 80, Amending Article No. 24 Water Conservation, of the Service Rules and Regulations. This Ordinance established the policy and conservation measures needed during drought conditions. The Ordinance states that during Stage 1-Normal Conditions, the District's customers shall have voluntary conservation. Stage 2-Water Alert, the District's customers are asked for a minimum twenty percent (20%) reduction in water usage. Stage 3-Water Warning, the District's customers are required to reduce a minimum of twenty-five percent (25%) in water usage. Also, the adoption of this ordinance allowed the District to create a Stage III, A, B & C to be able to restrict number of irrigation days allowed by Board action instead of ordinance adoption. Stage 4-Water Emergency, the District's customers are required to reduce a minimum of thirty percent (30%) in water usage and no watering of any landscaped area. This Ordinance also updated the changes required by the State Water Resources Control on May 5, 2015.

Losses for the drought are estimated assuming the following:

1. The current drought.
2. Due to the drought, the District has limited pumping capabilities due to lower ground water levels, and a reduction in the surface water yield from Lytle Creek, resulting in an increased reliance on State Project Water (SPW) water.
3. The economic losses are lost revenue.
4. Stage 3 of the Ordinance started in 2015. For the fiscal year 2015-2016 the average annual water revenue from the District using 2015-2016 fiscal year of \$17M is assumed and multiplied by the 25 percent reduction.
5. From a drought, there is no damage to the wells, treatment facilities, or pipelines. There is just less water to sell to bring in revenue.

The estimated number of fatalities resulting from this hazard is 0. The estimated number of injuries resulting from this hazard is 0. The percent of District's population at risk: 100%

4.4.3. Earthquake Vulnerability Analysis

Population: Approximately 75 percent of the District's population is vulnerable.

Critical Facilities: Approximately 100 percent of the District's critical facilities are vulnerable.

The specific critical facilities vulnerable in West Valley Water District are:

There are two faults that affect the District facilities. The first fault (San Andreas) includes all the District's facilities in the North System, or Pressure Zones 4, 5, 6, 7, and 8. The North System includes all 15 of the District's critical facilities.

Estimated Losses: The economic loss resulting from this hazard is approximately \$12M. The loss from damage to structures from this hazard is approximately \$128.7M.

Losses are estimated assuming:

1. The projected 2020/2021 annual water revenue from the District at \$24M is used to estimate the lost annual revenue.
2. The District has 6 months of lost revenue from the earthquake.
3. All the District's critical facilities are at risk, including 30 percent of the District's pipelines.
4. Without the critical facilities no revenue can be generated for the District.

The estimated number of fatalities resulting from this hazard is 0. The estimated number of injuries resulting from this hazard is approximately 50. The estimated number of displaces resulting from this hazard is approximately 1,110. The total number of people affected is 1,160. The percent of District's population at risk: 75%

The Assumptions in the San Bernardino County Fire Office of Emergency Services Disaster Recovery Plan are based on a (M) 7.8 on the Southern San Andreas Fault. This scenario was estimated using both HAZUS-MH and expert opinion through 13 special studies and 6 expert panels, the assumptions in this scenario predict 284 Deaths, 21,244 injuries (103 serious), and 74,047 displaced households.

4.4.4 Flooding Vulnerability Analysis

Population: Approximately 10 percent of the District's population is vulnerable.

Critical Facilities: Approximately 13 percent of the District's critical facilities are vulnerable.

The specific critical facilities vulnerable in the District are:

Well 2 and the reservoir site for Reservoirs 7-2 through 7-4 are both in the floodplain. Of the 15 critical facilities, 2 are critical, generating the 13 percent.

The District is not a member of the National Flood Insurance Program (NFIP) and is fortunate to not have any identified Repetitive and Severe Repetitive Loss properties.

4.4.5 Wildfires Vulnerability Analysis

Population: Approximately 25 percent of the District's population is vulnerable.

Critical Facilities: Approximately 40 percent of the District's critical facilities are vulnerable.

The specific critical facilities vulnerable in the District are:

The critical facilities that have sites in rural areas with brush are Wells 1A, 2, 5A, 7 and 8A, Reservoir 7-1 and Zone 8-1 PS, and the site for Reservoirs 7-2 through 7-4. These total 6 out of the 15 critical facility sites, for 40 percent.

4.4.6 Terrorism Vulnerability Analysis

Population: Approximately 10 percent of the District's population is vulnerable.

Critical Facilities: Approximately 10 percent of the District's critical facilities are vulnerable.

The specific critical facilities vulnerable in the District are:

The West Valley Main District Office.

4.4.7 Potential Loss Estimation

Table 11: Summarizes the economic impacts on the critical facilities for the District

Table 11: Economic Impacts on Critical Facilities for the District

Name	Economic Impact (\$)	Replacement Cost (\$)	Description of Economic Impact
Oliver P. Roemer WFP	3702	20,055	The treatment plant supplies approximately 25 percent of the District's water to their customers. These customers would lose their water supply.
Well 2 & 4-1 Arsenic Treatment	1480	2,100	No Lytle Creek Basin groundwater available from well to supply customers with water in pressure zone. Many groundwater wells in the Basin and it supplies water to most important pressure zone for the District.
Well 4A	693	1,575	See description for Well 2.
Well 5A	693	1,575	See description for Well 2.
Well 1A	693	1,575	See description for Well 2.
Reservoirs R6-1 to 6-4, Zone 7-1 PS, W23A, W24	693	11,418	Same as above description.
Reservoirs R4-1, R4-2, Zone 5-1 PS, W-22A	550	6,195	No storage of water available for pressure zone to meet peak demands. No groundwater available from well to supply customers in pressure zone.
Zone 4 Aeration Reservoir, Zone 4-1 PS, W-7, W8A	559	5,607	See description for Well 2.
Reservoir 4-3 & Zone 5-2 PS	490	6,825	No storage of water available for pressure zone to meet peak demands.
Reservoirs 7-2 to 7-4, Zone 8-2 PS	526	7,875	Same as above description.
Reservoirs 5-1, 5-3 & Zone 6-1 PS, Zone 6-2 PS	518	9,765	Same as above description.
Reservoirs 8-1 & 8-2	518	308	Same as above description.
Reservoir 5-2	488	2940	Same as above description.

Pipelines	414	167,185	There would be no way to transport water to customers.
TOTAL COSTS:	\$12,017	\$244,998	

Note: Dollar amounts in thousands

Section 5: Community Capability Assessment

This section describes the resources (staffing, agencies, departments, equipment) and tools (existing plans, policies, regulations, and ordinances), the District has in place that can assist promote and implement mitigation actions in the service area. These capabilities generally fall into the following broad categories:

- Agencies and People
- Existing Plans
- Regulations, Codes, Policies, and Ordinances
- Mitigation Programs and Projects
- Fiscal Resources

5.1 Agencies and People

The District is located in Southwestern San Bernardino County (95 percent) and Northern Riverside County (5 percent), within the San Bernardino Valley. The District's service area includes portions of the Cities of Rialto, Fontana, Bloomington, Jurupa Valley, Colton, and unincorporated areas in San Bernardino and Riverside Counties. Because the District's service area covers three cities and two counties, the District uses five general plans in its land use planning.

The District will incorporate mitigation planning as an integral component of daily operations. This will be accomplished by the Planning Team members working with their respective departments to integrate mitigation strategies into existing local agencies, public policies, funding sources, individuals, and other resources that can support hazard mitigation activities in the District. The hazard mitigation actions build off of the existing success of these resources and leverage their capabilities to support improved resiliency in the project area. The capabilities assessment looked at the following types of resources.

Resource Type	Resource Name	Description and Capacity to Support Mitigation
District Staff	General Manager	The General Manager is the liaison to the Board of Directors and oversees the day-to-day operations of the District. The General Manager provides leadership and initiates strategic planning to implement the goals and the vision of the Board of Directors. The Foundational Principles provide guidance in establishing long-time organizational goals, and the General Manager utilizes the talent and skills of the entire staff to fulfill the organizational objectives.
District Staff	Human Resources & Risk Management	Human Resources (HR) Department ensures the District is compliant with all legal and regulatory requirements of the workplace. In addition to

	Department	<p>workforce development, the division is responsible for overseeing employee benefits, classification and compensation, policies and procedures, employee relations, administrative support, and employee development.</p> <p>The HR Department is identified as the coordinating agency for several mitigation action items.</p>
District Staff	Public Affairs Department	<p>The District created a new position called the Director of Government and Legislative Affairs, who also serves as the grant manager, to solicit and manage grants. Another new position also created: Government and Legislative Affairs Analyst. These positions work closely with the Federal and State Government Relations Firms to identify funding sources for mitigation projects.</p> <p>Public Affairs Department oversees the strategic communications, community outreach, water conservation outreach, special events, school education programs, and media relations for the District. Several communication methods are used to disseminate information to internal and external customers and strengthen the District brand within the community and throughout the water industry. These include the customer and staff newsletter, website management, social media outreach, community workshops and tours, community marketing, educational videos and signage on vehicles. Additionally, the District participates in local safety fairs, and hosts water conservation workshops. Each of these elements plays a critical role in promoting the District's strategic vision, mission, and values.</p> <p>This department is also responsible for working with lobbyists to solicit and write grants.</p> <p>The Public Affairs Department is identified as the coordinating agency for several mitigation action items.</p>
Federal Government Relations Firm	David Turch and Associates	<p>The District hired David Turch and Associates, a Federal Lobbyist, to represent the District to convey District's needs to decision-makers in Washington, which cover a wide range of issues from drought, water sources, source treatment,</p>

		aging infrastructure, homeland security, wildfire, flooding, to hazard mitigation and grant opportunities.
State Government Relations Firm	Tres ES Inc	The District hired Tres ES Inc, a State Lobbyist, to represent the District to convey District's needs to decision-makers in Sacramento, which cover a wide range of issues from drought, water sources, source treatment, aging infrastructure, cybersecurity, wildfire, flooding, to hazard mitigation and grant opportunities.
District Staff	Engineering – New Development Division	<p>This division is responsible for new development projects, water resource management, and the District's Water Facilities Master Plans for water and water supplies. This division also enforces compliance of applicable District, local, regional, state and federal rules and best practices related to water from residential, commercial and industrial developers. This is done by an application and plan check process for all new development projects and tenant improvements of existing developments. The Assistant General Manager and Engineering Manager actively participate in regional water planning committees such as the Groundwater Council and Basin Technical Advisory Committee with member agencies: Bear Valley Mutual Water Company, City of Colton, East Valley Water District, City of Loma Linda, City of Redlands, City of Rialto, City of Riverside, San Bernardino County Flood Control District, San Bernardino Municipal Water District, San Bernardino Valley Municipal Water District, San Bernardino Valley Water Conservation District, Western Municipal Water District, and Yucaipa Valley Water District.</p> <p>The Engineering-New Development Division will actively support numerous mitigation action items that identify the Engineering Department as the coordinating agency.</p>
District Staff	Engineering-Capital Improvement Project	This division prioritizes and establishes schedules and methods for design and construction of District capital improvement projects. This division monitors and oversees engineering design activities, including those prepared by consultants, prepares or reviews engineering plans, cost estimates, request for

		<p>proposals, agreements, public works contracts, and project specifications. This division implements construction management methods to manage contractors that are building the District's capital improvements projects in the field.</p> <p>The Engineering-Capital Improvement Project will actively support numerous mitigation action items that identify the Engineering Department as the coordinating agency.</p>
District Staff	Engineering - Geographic Information Systems Division	<p>This division is responsible for coordination and participation in database management for the Geographic Information System (GIS). This division updates and maintains GIS and databases for water facilities from construction drawings to as-built information, performs data capturing and conversion, data entry, and graphic editing activities, develops user friendly file management systems and completes geographic data analyses. This division utilizes professional Global Positioning System (GPS) equipment to collect geographical information in the field, locates District assets, resolves accuracy issues using GPS and integrates GPS data into GIS database. GIS viewing application provides accurate, accessible, and functional data.</p> <p>The Engineering-Geographic Information Systems Division is identified as the coordinating agency for several mitigation action items.</p>
District Staff	Finance-Purchasing Department	<p>This department is responsible for logistical set-up for all District events and maintain and repair District's vehicles and heavy equipment. This department maintains an updated list of prequalified contractors for emergencies and as-needed basis.</p> <p>The Finance-Purchasing Department is identified as the coordinating agency for several mitigation action items.</p>
District Staff	Finance Department	<p>Finance is responsible for transparently managing the use of the District's funds and provides a wide variety of external and internal</p>

		<p>services.</p> <p>The Finance Department is identified as the coordinating agency for several mitigation action items.</p>
District Staff	Operations-Treatment Division	<p>This division is responsible for the operation and maintenance of a 14.5-million-gallon-per-day surface water treatment plant, a 3-million-gallon-per day Fluidized Bed Reactor water treatment plant, and a 2-million-gallon-per-day ion exchange arsenic treatment plant.</p> <p>The Operations-Treatment Division is identified as the coordinating agency for several mitigation action items.</p>
District Staff	Operations-Water Quality Division	<p>This division is responsible for District-wide water quality monitoring, state and federal drinking water regulatory compliance and the business plan.</p> <p>The Operations-Water Quality Division is identified as the coordinating agency for several mitigation action items.</p>
District Staff	Operations-Distribution Division	<p>Distribution's responsibilities include the maintenance and repair of the district's water system infrastructure which includes mains, hydrants, valves, services, and implementation for preventative maintenance programs. This division is also responsible for the maintenance, repair, and general upkeep of the District's buildings and building equipment.</p> <p>The Operations-Distribution Division is identified as the coordinating agency for several mitigation action items.</p>
District Staff	Operations-Production Division	<p>This division is responsible for the operation of 17 groundwater wells, 12 pump stations, 25 reservoirs, and 8 pressure zones. Other responsibilities include the operation and maintenance of the District's fleet of emergency standby power generators to provide emergency power to our facilities, in the event of loss of</p>

		<p>utility power; and construction, installation, testing, calibration, maintenance and repair of electrical systems and process control instrumentation systems.</p> <p>The Operations-Production Division is identified as the coordinating agency for several mitigation action items.</p>
District Staff	Hazard Mitigation Planning Team	<p>Hazard Mitigation Planning Team is made up of representatives from various departments and divisions that are assigned mitigation action items in the Hazard Mitigation Plan. In addition to responsibility to prepare each of the 5-year plan updates as required by Federal Emergency Management Agency (FEMA), the Planning Team is responsible for implementing, monitoring, and evaluating the plan during its routine meetings.</p> <p>The Planning Team is assigned several mitigation action items and plays a pivotal role in implementing and funding the overall Hazard Mitigation Plan.</p>
Agencies	Emergency Response Network of the Inland Empire	<p>The District is part of the Emergency Response Network of the Inland Empire (ERNIE) group, which facilitates public agency preparedness for, response to, and recovery from local and regional disasters to ensure delivery of critical public services through mutual aid, communications, and compliance with state and federal emergency standards.</p> <p>ERNIE is made up of a group of volunteer agencies who enter into an agreement to provide mutual aid and assistance to help jurisdictions respond to incidents that require resources beyond the capability of the local agency. ERNIE assists agencies with training's, communication, documentation for reimbursement, concept of emergency operations, and after-action reports and corrective action plan writing. Nearby member agencies include the City of Corona, City of Redlands, City of Riverside, City of San</p>

		<p>Bernardino Water Department, East Valley Water District, Eastern Municipal Water District, Jurupa Community Services District, Elsinore Valley Municipal Water District, Monte Vista Water District, Riverside Highland Water Company, Rubidoux Community Services District, San Antonio Water Company, San Bernardino Valley Municipal Water District, Santa Ana Watershed Project Authority, Western Municipal Water District, etc.</p> <p>The ERNIE is identified as the coordinating agency for several mitigation action items.</p>
Agencies	California Water/Wastewater Agency Response Network (WARN)	<p>The District is part of the California WARN, which is to support and promote statewide emergency preparedness, disaster response, and mutual assistance processes for public and private water and wastewater utilities. Through the Mutual Aid and Assistance Program, members coordinate response activities and share resources during emergencies. Nearby member agencies include the San Gabriel Valley Water Company, City of San Bernardino Water Department, Riverside Highland Water Company, City of Redland, Western Municipal Water District, Yucaipa Valley Water District, Jurupa Community Services District, etc.</p> <p>The California WARN is identified as the coordinating agency for several mitigation action items.</p>
Agencies	Regional Wholesale Water Agencies	Imported water can be purchased from Inland Empire Utilities Agency and San Bernardino Valley Municipal Water District.
Agencies	Regional Water Agencies	The District has interconnections with neighboring water systems (Fontana Water Company, City of Rialto, San Bernardino Municipal Water District, Marygold Mutual Water Company, and Special County Water District) to either deliver or/and take water in case of emergencies.
San Bernardino County	Flood Control District	San Bernardino County is a StormReady County. The District operates and maintains Cactus Basin 2, a flood control basin located at 855 Base Line Road in the City of Rialto. During rain seasons, the District assists in diverting runoff from Cactus Basin 2 to Cactus Basin 1.

City of Rialto	Police Department	The District coordinates with Rialto Police Department for training District staff in terrorism (active shooter) and offers District facilities as sobriety checkpoints.
City of Rialto	Rialto Fire Department	The District conducts tours of District facilities for Rialto Fire Department, i.e., hydroelectric generation plant and water treatment plants, in assisting the fire department to prepare its pre-fire plan.
Plan	Urban Water Management Plan	The Urban Water Management Plan was last updated in 2020. This plan outlines the water infrastructure needs until the District reaches build-out.
San Bernardino County	San Bernardino County Fire OES	District staff worked with San Bernardino County Fire OES and Eastern Municipal Water District to complete the Disaster Recovery Plan in 2015.
Plan	Water Master Plan	The Water Master Plan was last updated in 2020. This plan determines the future water demands and supply requirements for the District. The plan identifies the water facilities needed to produce, deliver, store, and transport this supply to our customers.
Plan	Lytle Creek Watershed Sanitary Survey	The Lytle Creek Watershed Sanitary Survey was last updated in 2018. This plan assesses the source water quality of Lytle Creek to ensure the ability of the District's surface water treatment plant to continue to provide the customers with drinking water that meets all current drinking water standards.

The District created multiple new positions in Fiscal Year 2021/22. They are the Director of Government and Legislative Affairs and the Government and Legislative Affairs Analyst. Additionally, the District hired a State Government Relations Firm, Tres ES Inc., in 2021. The goals and desires of the District are that once the new positions are filled, these key staff would work cohesively with both the Federal and State Government Relations Firms to identify and pursue funding opportunities for mitigation projects.

The District works collaboratively with neighboring water systems, mutual aid groups, cities, fire departments, police departments, and the Flood Control District of San Bernardino County to prepare for and mitigate impacts of emergencies.

Other information regarding the District is as follows:

Type of Building Codes: Municipal

Local Electric Utilities: Southern California Edison and Colton Electric

Local Water Utilities: West Valley Water District

Local Sewage Treatment Utilities: City of Rialto Utility

Local Natural Gas Utilities: Southern California Gas Company

Local Telephone Utilities: AT&T

Fire Insurance Rating: The District has facilities within the Cities of Rialto, Colton, and Fontana, which all have their own fire insurance ratings as well as the Counties of Riverside and San Bernardino

Flood Insurance Claims: In the 1990s, the District had a lawsuit over flooding caused from Reservoir 2-4 site. The site was flooded with water from mountain drainage and the water then drained onto a neighboring site. A retention basin was constructed below the site to prevent flooding.

5.2 Existing Plans and Data

This section describes the existing plans for the District.

Legislation provides the District a safeguard against water supply and some drought hazard protection. In 1991, the amendment to the Urban Water Management and Planning Act, in effect since 1983, requires water suppliers to estimate available water supplies at the end of one, two, and three years, and to develop contingency plans for shortages of up to 50 percent. The District's 2015 Urban Water Management Plan presents water supply to demand comparisons through 2035. The 2015 UWMP was adopted by in 2016 and will update any demand and supplies documented in the 2010 UWMP and will also require all water agencies to reduce their water demand by 25 percent by the year 2020. The plan also presents water supply to demand comparisons for single dry to multiple dry year scenarios.

Another planning document the District updates every 5-10 years is their Water Facilities Master Plan. The District developed a Water Master Plan that was last updated 2020. The master plan develops a Capital Improvement Plan (CIP) for the next 5 to 10 years. In the plan, the land use is based on the current General Plans of the City of Rialto, Fontana, Colton, Bloomington, Jurupa Valley, and Counties of San Bernardino and Riverside. The District uses its Master Plan CIP to fund and construct some of the mitigation projects that are identified.

The District has an Emergency Plan (last updated May 2020) that is a written response plan detailing how the District will respond in the event of an emergency or disaster. The District must be prepared to respond to a variety of threats that require emergency actions by its employees. Potential threats include:

- Operational incidents, such as fire or bacteriological contamination of water associated with District facilities.

- Outsider malevolent acts, such as threatened or intentional contamination of water, intentional damage/destruction of facilities, detection of an intruder or intruder alarm, bomb threat, or suspicious mail.

Natural disasters, such as earthquakes, floods, or wildfires.

On February 28, 2003, the President issued Homeland Security Presidential Directive (HSPD) - 5, which directs the Secretary of Homeland Security to develop and administer a National Incident Management System (NIMS). HSPD-5 requires all federal departments and agencies to adopt and implement the NIMS, and requires state and local jurisdictions to implement the NIMS to receive federal preparedness funding.

The District performed the risk and resilience assessment on April 1, 2021 using the U.S. Environmental Protection Agency's (EPA) Vulnerability Self-Assessment Tool. Specifically, EPA designed the tool to assist community water systems with meeting the requirements for risk and resilience assessments in America's Water Infrastructure Act of 2018. The tool helps water sector owners and operators with identifying the threats that present the highest risks to their facilities and with evaluating the costs and benefits of countermeasures to reduce those risks.

The Planning Team gathered and reviewed existing data and plans during plan writing process. Numerous electronic and hard copy documents were used to support the planning process:

- **West Valley Water District Annual Operating & Capital Improvement Budget**
<https://wwwd.org/about/transparency/#annualoperatingandcapitalimprovementbudget>
Applicable Incorporation: Mitigation projects and funding sources.
- **West Valley Water District Comprehensive Annual Financial Reports**
https://secureservercdn.net/50.62.195.83/n1s.6f9.myftpupload.com/wp-content/uploads/2020/04/2019_West-Valley-Water-District_CAFR.pdf
Applicable Incorporation: Economic condition and outlook and District's major initiatives.
- **West Valley Water District Reserve Policy**
https://secureservercdn.net/50.62.195.83/n1s.6f9.myftpupload.com/wp-content/uploads/2018/02/Reserve-Policy_Exhibit-A-Reso2015-10_7-16-15.pdf
Applicable Incorporation: Information about reserve for operating, equipment replacement, capital projects and debt service payments.
- **San Bernardino Valley Regional Urban Water Management Plan**
<https://wwwd.org/about/transparency/#sanbernardinovalleysregionalurbanwatermanagementplan>
Applicable Incorporation: District Profile section – history, geography, environmental, population, and demographic data.
- **West Valley Water District Water Facilities Master Plan and 5-Year Capital Improvement Program**
<https://wwwd.org/about/transparency/#watermasterplanand5yearcapitalimprovementprogram>
Applicable Incorporation: New development projections and 5-year capital improvement program.
- **Map of the District**

<https://secureservercdn.net/50.62.195.83/n1s.6f9.myftpupload.com/wp-content/uploads/2017/11/District-Service-Area.pdf>

Applicable Incorporation: District boundary

- **District Standards and Drawings**

https://secureservercdn.net/50.62.195.83/n1s.6f9.myftpupload.com/wp-content/uploads/2018/04/District-Standards-6_8_2016_1WVWD.pdf

Applicable Incorporation: Used to identify hazards and critical facilities.

- **Service Rules and Regulations**

https://secureservercdn.net/50.62.195.83/n1s.6f9.myftpupload.com/wp-content/uploads/2018/02/WATER-SERVICE-RULES-AND-REGULATIONS-ADOPTED-MAY-17-2018_WEB.pdf

Applicable Incorporation: District rules and regulations.

- **Water Valley Water District Water Use Efficiency Programs**

<https://wwwd.org/conservation/>

Applicable Incorporation: Mitigation measures, conservation and rebate programs, outreach programs and drought update.

- **FEMA Local Mitigation Planning Handbook**

https://www.fema.gov/sites/default/files/2020-06/fema-local-mitigation-planning-handbook_03-2013.pdf

Applicable Incorporation: FEMA hazard mitigation planning resources the Planning Team used as references.

- **Plan Integration: Linking Local Planning Efforts**

https://www.fema.gov/sites/default/files/2020-06/fema-plan-integration_7-1-2015.pdf

Applicable incorporation: FEMA hazard mitigation planning resources the Planning Team used as references.

- **California Department of Conservation**

<https://www.conservation.ca.gov/cgs>

Applicable Incorporation: Data and maps have been included for earthquake scenarios.

- **California Earthquake Authority**

<https://www.earthquakeauthority.com/>

Applicable Incorporation: Data have been incorporated in the plan.

- **U.S. Geological Survey**

<https://pubs.usgs.gov/fs/2015/3009/>

Applicable Incorporation: Earthquake records and statistics.

- **National Weather Service**

<https://www.weather.gov/media/sgx/documents/weatherhistory.pdf>

Applicable Incorporation: A history of significant weather events in Southern California organized by weather type.

- **Southern California Earthquake Center**

<https://www.scec.org/>

Applicable Incorporation: Data have been incorporated in the plan.

5.3 Regulations, Codes, Policies, and Ordinances

The District adopted Amended Ordinance No. 80 Water Conservation Plan on August 6, 2015 which established the policy and conservation measures needed during drought conditions.

5.4 Mitigation Programs

This section serves to identify the Previous Mitigation Plans, Projects and Actions:

The District offers financial incentives to improve landscape water use efficiency. The District currently reviews the intended water usage of all new large water customers. They also provide non-potable industrial process water at a reduced rate. When non-potable sources are available, the District will use this source for development construction water such as imported water.

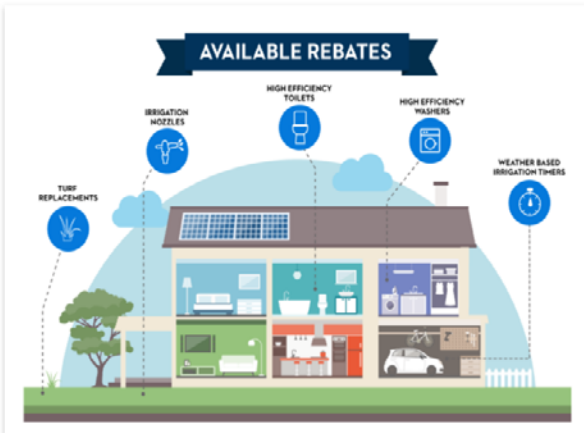
As a condition of water service, all new structures shall be equipped with ultra-low-flush toilets (1.6 gallons per flush max) as per Section 17921.3 of the California Health and Safety Code.

To promote voluntary conservation, the District has initiated a public awareness and education plan consisting of the following:

- The District sponsors an annual poster coloring contest at local elementary schools where the students are required to draw a poster with a water conservation theme.
- The District provide household water audit. It is a water efficiency survey to assist customers access how much water is used and how much water can be saved in the home.
- The District provides rebates to promote water conservation such as high efficiency toilet (\$50), high efficiency washing machine (\$100), weather-based irrigation controllers (\$100), turf replacement (\$1/sq. ft.) and high efficiency nozzle (\$4).
- Tours of the Oliver P. Roemer WFF are conducted with the local schools to educate today's youths on water conservation and awareness.
- The District distributes outreach materials including annual consumer confidence reports, triennial public health goal reports, newsletters, bill inserts, and social media posts to expand public awareness on water conservation, and drought update.
- Pamphlets, brochures, and stickers are distributed stressing the reasonable utilization of resources and explain that the quality of life need not suffer from the use of conservation techniques.
- The District provides each service customer with data on water use during the similar period from the previous year. Customers will use the data to informally evaluate the results of their conservation efforts taking into consideration climatic difference, exact billing period length, and any changes they have made to their households which could affect water consumption.

For a full list of conservation programs or external links to get latest update on drought and related information, go to link <https://wwwd.org/conservation/>

Rebates



As part of West Valley Water District's commitment to Water Use Efficiency and Conservation, the District is pleased to help our customers with saving water. Customers may receive rebates by replacing or purchasing qualified water-saving products. Rebates are offered on a first-come, first-serve basis and will be available for as long as funds are available. For more information, please read and download the applications below:

[Rebate Application](#)

[Solicitud para Reembolso](#)

[Turf Replacement Rebate Program Application](#)

[Solicitud para Reembolso del Reemplazo de Césped](#)

Water Audits

Water Audits

- Our Customer Service Team is here to help and will come to your home to identify areas indoor and outdoor that can help you save water. For more information, contact us at (909) 875-1804.

To receive your FREE Water Conservation Kit please fill out the form below and take to District Office and pick up your kit.

[Water Efficiency Kit Form](#)

[Formulario del Programa de Conservación del Agua](#)

Classes & Presentations

Classroom Presentations

We've partnered with the Inland Empire Resource Conservation District to bring FREE water conservation education programs to schools within our shared service area. With current drought conditions and water use restrictions in place throughout the state, agencies are working together to increase community awareness and the importance of water and conservation.

Our Presentations Are:

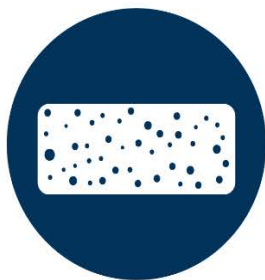
- Completely FREE to any requesting classroom or community group.
- Tailored to students in K-12th grades, providing interactive, hands-on activities.
- Available in your classroom with our educators who supply all program materials.
- In compliance with the State Standards for Science, and last 45-60 minutes, depending on grade level.

To schedule a classroom or community presentation, contact us at info@wwwd.org or (909) 875-1804.

Water-Saving Tips

Whether you're a resident or a business owner (or both), there are many easy ways to use water more responsibly—and lower your monthly water bill in the process. Read on to learn more.

[View More Tips](#)



Mulch

Add mulch whenever possible, 2 to 4 inches deep. Mulch helps conserve moisture by reducing water evaporation from the soil. It also improves the health of the soil, reduces weed growth, and makes your area look more appealing.



Waterwise Demonstration Garden

View a complete list of plants in the Waterwise Demonstration Garden.

[Download Brochure](#)



Turf and Efficient Irrigation

If the only person stepping on an area of grass is the person mowing it, that's called non-functional turf. Consider replacing it. As for your functional turf, make sure you have a sprinkler system with high-efficiency nozzles. You also might want to invest in a weather-based smart irrigation timer controller.

MISSION STATEMENT

"The mission of the West Valley Water District is to economically protect, safeguard and deliver to our customers water at the lowest, reasonable price."

GENERAL INFORMATION

The West Valley Water District serves approximately 65,000 customers in the Southwestern San Bernardino County and Northern Riverside County. The District is situated in an interior valley of Southern California known as the San Bernardino Valley and within the Santa Ana River Basin Watershed. Lands within the District have a gentle upward slope to the north with the foothills of Mount Baldy of the San Gabriel Mountains providing its northern most boundaries.



The West Valley Water District presently contains approximately 23,500 acres. The majority of the District's service area lies within the boundaries of the San Bernardino Valley Municipal Water District. The San Bernardino Valley and the Chino Basin Municipal Water Districts are two of many agencies contracting with the State of California to receive Northern California water as a part of the California Water Plan.

West Valley Water District Headquarters Waterwise Demonstration Garden

GUIDED TOURS

To schedule a guided tour at the Waterwise Demonstration Garden, contact Amanda Kasten at (909) 875-1804 ext. 704 email amanda@wwvd.org.

SELF GUIDED TOURS

For self guided tours please visit West Valley Water District's website at www.wwvd.org



855 W. Baseline, Rialto, California 92377
(909) 875-1804

From I-210
Exit onto Ayala Drive, go South
Turn left on N. Fitzgerald Ave.
Turn left at W. Baseline Rd.

From I-10
Exit Riverside Drive, go North
Turn left at W. Baseline Rd.



West Valley Water District Headquarters Waterwise Demonstration Garden



West Valley Water District Headquarters Waterwise Demonstration Garden

The West Valley Water District's 'Waterwise Demonstration Garden' offers creative ideas and cost effective methods of landscaping your garden utilizing 'California Friendly' drought tolerant plants that provide opportunities for water conservation.

Today's homeowner is more aware of the importance of conservation and protection of the environment. The 'Waterwise Demonstration Garden' allows for making great strides toward water and energy conservation through the use of creative landscaping. This approach provides for a financial benefit in savings of up to 40% in water costs when compared to that of a traditional ornamental landscape. Waterwise gardens help reduce overall maintenance costs, improve the environment, and create colorful and sustainable landscapes that are truly unique! The garden provides a unique display of plants that are rich in color and texture, while proving to be efficient and practical as well. It is denoted in various settings depicted as the 'Dry Shade Garden', the 'Bird and Butterfly Garden', and the 'Sensory Garden'. Each is comprised of drought tolerant trees, shrubs, groundcovers and ornamental grasses.

A. DRY SHADE GARDEN



This area of the garden demonstrates the use of plants for the side of a north facing building or otherwise shady location. Plants such as Coral Bells, Pink-Flowering Currant, and Bush Anemone will thrive in shade to part shade on low water and provide a spectacular color show to brighten shady areas of the garden from spring to summer. Other plants that tolerate shade, like Mahonia species, are very drought tolerant, and with its berries, provide a food source for birds.

B. BIRD AND BUTTERFLY BUSH

This garden showcases a variety of flowering shrubs and perennials that birds and butterflies love. Plants such as Achillea, Autumn Sage and Mexican Sage are irresistible to butterflies. Hummingbirds equally enjoy the spring and summer flower sprays from Pink Gaura, Jerusalem Sage, Kangaroo Paw, and Hesperaloe.



C. ORNAMENTAL GRASSES



Grasses provide a dynamic element to a garden. In slight breezes they sway back and forth, providing movement to a garden. They lend a lush green look to drought tolerant landscapes in the spring and summer, while in the fall, turn shades of cream, orange, and pink. There are a variety of sizes to choose from that provide dramatic effects as solo specimens or in mass drifts.

D. SENSORY GARDEN

This area of the garden demonstrates the use of a variety of plants that not only appeal to the visual senses, but to senses of touch, smell and taste. Herbs used in food such as Sage, Lavender, Rosemary and Thyme put on shows of purple flowers, but if their leaves are rubbed in your fingers, will release their fragrant scents. Thyme is a great low growing groundcover, especially along a pathway where its fragrance is released as your feet brush by. Jerusalem Sage and Santolina provide their own scents and fragrances and compliment the Lavender and Purple Sages.



E. DROUGHT TOLERANT SHRUBS AND GROUND COVER

Drought tolerant gardens consist of limited turf areas or lawn substitutes. With fuel costs on the rise, reducing the use of lawnmowers is just one advantage of the drought tolerant garden. Utilizing the latest irrigation technology, the drought tolerant / 'California Friendly' garden provides effective methods for delivering water directly to the plant root zone, thus eliminating excess water consumption.



Incorporating these plants into your garden is easy. Each can be readily found at local nurseries and botanical gardens. When used in combination with one another, year round color in the garden can be readily achieved. Many bloom throughout the year with only minimal water. They provide vibrant blooms of lavenders, pink, red, orange and yellow.

DECORATIVE HARDSCAPE / INERT MATERIALS

The garden also incorporates the use of inert materials such as decomposed granite, boulders, and decorative hardscape such as permeable pavers to allow for infiltration of water. Mulch also provides a natural protective layer allowing the soil to remain cool and moist. The use of inert materials and mulch also reduces the likelihood of weeds.

These nearly 'self sufficient' landscapes provide the homeowner with significant advantages which benefit everyone. Creating a 'waterwise' garden simply 'makes sense'. Reducing water costs and caring for the environment never looked so good!



West Valley Water District Distribution System "Fun Facts"

- 19,350 Water Connections
- 21,300 Acre-Feet of Annual Water Production
- 19 Million Gallons Average Daily Water Demand
- 38 Million Gallons Peak Daily Water Demand
- 25 Domestic Water Production Wells
- 40 Million Gallons per Day Pumping Capacity
- 1 Water Treatment Plant
- 14.4 Million Gallons per Day Treatment Capacity

Waterwise Demonstration Garden designed and constructed by:



DAVID EVANS
AND ASSOCIATES INC.
4200 Concourse Suite 200
Ontario, California 91764
TELEPHONE: 909-481-5750
WEBSITE: www.deainc.com



LANDSCAPE CONSTRUCTION

West Valley Water District Headquarters



DAVID EVANS
AND ASSOCIATES INC.
4200 Concourse Suite 200
Ontario, California 91764
TELEPHONE: 909.481.5750
WEBSITE: www.deainc.com



A. DRY SHADE GARDEN



Carpenteria californica / Bush Anemone
Heuchera maxima 'Rosada' / Coral Bells
Mahonia aquifolium 'Compacta' / Oregon Grape Holly
Phormium 'Maori Queen' / New Zealand Flax
Polystichum munitum / Western Sword Fern
Ribes sanguineum 'Spring Showers' / Pink Flowering Currant

B. BIRD AND BUTTERFLY BUSH



Achillea millefolium 'Paprika' / Yarrow
Agave desmettiana / Smooth Agave
Anigozanthos flavidus 'Orange' / Orange Kangaroo Paw
Gaura lindheimeri / Wand Flower
Hesperaloe parviflora / Red Yucca
Lagerstroemia 'Natchez' / Crape Myrtle
Opuntia santa-rita 'Tubac' / Purple Prickly Pear
Penstemon parryi / Parry's Penstemon
Penstemon 'Margarita Bop' / Beardtongue
Phlomis fruticosa / Jerusalem Sage
Salvia greggii 'Sierra Linda' / Autumn Sage
Salvia leucantha 'Santa Barbara' / Mexican Sage

C. ORNAMENTAL GRASSES



Calamagrostis 'Karl Foerster' / Feather Reed Grass
Festuca ovina 'Glaucia' / Blue Fescue
Miscanthus 'Morning Light' / Silver Grass
Muhlenbergia capillaris / Pink Muhly
Muhlenbergia rigens / Deer Grass
Nassella tenuissima / Mexican Feather Grass

D. SENSORY GARDEN



Cercidium 'Desert Museum' / Palo Verde Hybrid
Hymenoxys acaulis / Angelite Daisy
Lavandula 'Munstead' / Lavender
Rosmarinus 'Majorca Pink' / Rosemary
Salvia clevelandii 'Winifred Gilman' / Cleveland Sage
Santolina virens / Green Santolina
Stachys byzantina 'Helene Von Stein' / Lamb's Ears
Opuntia basilaris / Beavertail
Thymus vulgaris / Common Thyme
Thymus serpyllum / Creeping Thyme

E. DROUGHT TOLERANT TREES, SHRUBS, AND GROUNDCOVER



Cercis occidentalis / Western Redbud
Prosopis chilensis / Mesquite
Quercus agrifolia / Coast Live Oak
Baccharis pilularis 'Pigeon Point' / Dwarf Coyote Brush
Cistus salviifolius / Sageleaf Rockrose
Encella farinosa / Brittlebrush
Fragaria chiloensis / Beach Strawberry
Mimulus 'Pumpkin' / Monkey Flower
Perovskia atriplicifolia / Russian Sage
Prunus caroliniana / Carolina Laurel Cherry
Rosmarinus officinalis 'Prostratus' / Rosemary
Sedum spurium 'Dragon's Blood' / Sedum
Verbena peruviana / Verbena
Echinacea purpurea / Coneflower
Senecio mandraliscae / Blue Chalk Sticks

Other Water Resources

Water Saving Garden Friendly

This Inland Empire program will help you find the resources you need to be water efficient in your landscape.

[Learn More](#)

Save Our Water

A statewide public education program, Save Our Water is designed to educate Californians on the state's water challenges and encourage them to reduce the amount of water they use every day.

[Learn More](#)

Be Water Wise

Get interesting water facts and tips about conservation from the Family of Southern California Water Agencies.

[Learn More](#)

Department of Water Resources

Responsible for managing and protecting California's water resources, the DWR works with other agencies to benefit the state's people and to protect, restore and enhance the natural and human environments.

[Learn More](#)

WaterSense

Save water and help protect the environment by choosing WaterSense-labeled products in your home, yard and business.

[Learn More](#)

Defend the Drop

When it comes to water, every drop matters. But each time you leave the faucet running or run your lawn sprinkler an extra day, gallons of water go to waste. So, what can you do to help protect the precious supply we all share? Defend the Drop. If we each work in small ways to save a little H2O every day, our water supply will continue to flow tomorrow.

[Learn More](#)

National Integrated Drought Information System

The National Integrated Drought Information System is a multi-agency partnership that coordinates drought monitoring, forecasting, planning, and information at national, tribal, state and local levels.

[Learn More](#)

Contact Information

855 W. Base Line Road
Rialto, CA 92376

Phone: (909) 875-1804
General Fax: (909) 875-1849
HR/Personnel Fax: (909) 875-1243

Office Hours

8:00 am – 5:30 pm Monday
9:00 am – 5:30 pm Tuesday
8:00 am – 5:30 pm Wednesday
8:00 am – 5:30 pm Thursday
8:00 am – 5:30 pm Friday
Closed Saturday & Sunday

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https://www.facebook.com/westvalleywaterdistrict/




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Yesterday at 10:00 AM · 🌐

WVWD will host a free virtual conservation workshop on May 15, 2021, from 10:00am – 12:00pm. This webinar will help you learn the basics of designing a water-efficient landscape and ways to make minor adjustments for big savings! To join us, log-in at <https://www.wvwdlandscape.eventbrite.com>




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April 26 at 8:34 AM · 🌐



SAT, MAY 15 AT 10:00 AM PDT
Designing a Water Efficient Landscape
Online Event
👤 1 person going

2

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https://www.facebook.com/westvalleywaterdistrict/

Like Share ...

West Valley Water District ✓
April 26 at 8:30 AM · 🌐

In partnership with the Inland Empire Resource Conservation District, West Valley Water District will host a free virtual conservation workshop on May 15, 2021, from 10:00 am – 12:00 pm. This webinar will help you learn the basics of designing a water-efficient landscape and ways to make minor adjustments for big savings! To participate, login wwwdlandscape@eventbrite.com

Designing a Water Efficient Landscape

Join us virtually for this **FREE Workshop!**

When:
Saturday, May 15th
Time:
10:00 AM - 12:00 PM

INLAND EMPIRE RESOURCE CONSERVATION DISTRICT **West Valley Water District**

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West Valley Water District ✓
April 22 at 2:35 PM · 🌐

Happy Earth Day! Did you know that water is the single most critical resource for all life as we know it? We invite you to celebrate Earth Day with us by clicking on the link below to join us for a virtual tour of one of our water treatment facilities so you can understand how the world's most important resource is treated, tested, and processed for your safe and sustainable consumption! <https://vimeo.com/539526059> #EarthDay

EARTH DAY 2021

VIRTUAL TOUR


West Valley Water District ✓
@westvalleywaterdistrict

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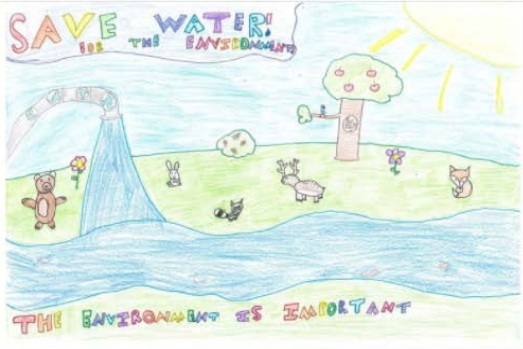
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West Valley Water District ✓
April 20 at 7:50 AM · 🌐


EARTH DAY TIP: Install water-saving devices. Use low-flow showerheads and faucet aerators to reduce your water use. For more Earth Day tips and conservation kits, visit WVWD.org. <https://secureservercdn.net/.../Water-Conservation-Kit-Form-E...>



Leah Gustafson, grade 4

West Valley Water District - Home x +

→ ↻ 🏠 📁 https://www.facebook.com/westvalleywaterdistrict/



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@westvalleywaterdistrict

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Like Comment Share

West Valley Water District ✓
April 9 at 4:08 PM · 🌐


April 22 is Earth Day, and WVWD is dedicating the entire month of April to promoting conservation and care for our planet and its limited resources! Stay tuned to WVWD's emails and social media for water-saving tips and more information on our upcoming Earth Day virtual event. This month, we invite you to learn more about how you can save water and take advantage of our generous rebates on water-saving equipment by visiting www.wvwd.org/conservation



Christopher Pastrana, grade 3

West Valley Water District - Home x +

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@westvalleywaterdistrict

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March 24 · 🌐

This week we celebrated World Water Day. In commemoration of this event, members of the United Nations Water taskforce asked people worldwide, what does water mean to you? Here are some of the most common answers:
 Water is life. A message repeated and affirmed that safe water is essential to human life and a prerequisite for life.
 Water is a human right. People in wealthier countries and developing countries all agreed that water is a human right.
 Without water, there woul... [See More](#)



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West Valley Water District ✓
March 19 · 🌐

Did you know that household leaks waste nearly 1 trillion gallons of water each year in the United States? Watch this video from the EPA on how to identify leaks and save money and water during this Fix a Leak Week! For more tips, please visit www.wwd.org.
https://youtu.be/JFUr_IDERo



YOUTUBE.COM
Fix a Leak with WaterSense!
 NOTE: This video only contains music. There are no captions. Every Marc...

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The District has an on-going Weed Abatement Program to manage weeds and brush and provided a defensible space for areas prone to fire due to high vegetation area. Also, the District stores an earthquake supply bin at the Operations Yard for employees and families during an emergency. The supply bin is complete with cooking stove, pots, first aid kits, lanterns, blankets, propane, food, cameras, cots, etc.

In the event of a catastrophic disaster, the District has mutual aid agreements with the Emergency Response Network of the Inland Empire group and the California Water/Wastewater Agency Response Network 2007 Omnibus Mutual Assistance group to provide mutual aid and assistance to help jurisdictions respond to incidents that require resources beyond the capability of the local agency.

5.5 Fiscal Resources

Fiscal resources for the District include the following:

- Revenue from water sales
- Fees for new facilities from local developers
- Metering availability charge
- A percentage of local property taxes
- If necessary, local bond measures

Through the California Department of Water Resources, local grants and/or loans are available for water conservation, groundwater management, and studies and activities to enhance local water supply reliability. Project eligibility depends on the type of organization(s) applying and participating in the project and the specific type of study or project. More than one grant or loan may be appropriate for a proposed activity. The following website lists the index of potential grants for the District: www.grantsloans.water.ca.gov/index.cfm.

Federal Emergency Management Agency's (FEMA) Hazard Mitigation Grant Program (HMGP) provides funding to state, local, tribal and territorial governments so they can rebuild in a way that reduces, or mitigates, future disaster losses in their communities. This grant funding is available after a presidentially declared disaster. Developing and adopting hazard mitigation plans, which are required for state, local, tribal and territorial governments to receive funding for the hazard mitigation projects. The HMGP can fund a wide variety of mitigation projects which include elevating structures above known flood levels to prevent and reduce losses, reconstructing a damaged dwelling on an elevated foundation to prevent and reduce future flood losses, structural retrofits to make a building more resistant to floods, earthquakes, wind, wildfire and other natural hazards, retrofits to utilities and other infrastructure to enhance resistance to natural hazards, slope stabilization projects to prevent and reduce losses to structures, drainage improvement projects to reduce flooding. The following website lists eligible HMGP's: <https://www.fema.gov/grants/mitigation/hazard-mitigation>

Section 6: Mitigation Strategies

6.1 Overview

The purpose of this analysis was to identify projects (actions) that helped the District to meet the Goals and Objective for each priority hazard. By going through this process, the District has identified hazards in our community, assessed which hazards pose the most significant risk, and identified projects to help reduce and/or eliminate the risk.

6.2 Mitigation 5-Year Progress Report

The District's Planning Team reviewed each of the projects from the 2011 HMP and discussed the status of each project and the reasons for why they had or had not been implemented. This updated 2021 HMP identifies the completed, deleted, or deferred actions or activities from the 2011 HMP approved plan as a benchmark for progress.

The plan update provides an opportunity for the District to reconsider the range of specific actions.

Further, the updated plan includes in its prioritization, any new mitigation actions identified since the previous plan was approved or through the plan update process.

6.3 Mitigation Goals, Objectives, and Projects

The process of identifying goals began with a review and validation of the Goals and Objectives in the District's 2021 HMP. Using the 2011 HMP as the basis, the District's planning team completed an assessment/discussion of whether each of the goals was still valid. This discussion also led to the opportunity to identify new goals and objectives. Also, the 2020 Water Master Plan was used as a guide for mitigation objectives and projects.

The two high profile hazards for the District are drought and earthquake. While other hazards were profiled in previous sections, the District's priority and focus for the mitigation projects will be for only the two high profile hazards.

6.3.1 All Hazards

Description: *Goal is to save lives and reduce injuries.* Many local laws have public safety of citizens as their primary concern. Protecting lives is also the basis for emergency planning, response, and mitigation activities.

Objectives:

- Establish a basis for coordination and collaboration among agencies and the public within the District's service area.
- Construct facilities to increase operational readiness to reduce impacts of natural hazards.
- Install generators at critical facilities as backup power to utility power, including wells, treatment plants, and booster stations.
- Develop a Water Systems Repair Plan for speeding the repair of and functional restoration of water system through stockpiling of shoring materials, temporary pumps, surface pipelines, portable hydrants, and other supplies.
- Utilize smart water meters and supervisory control and data acquisition (SCADA) to get real time data on problems with the system and reduce drive time emissions as a result of traditional meter reading.
- Provide District staff with emergency supplies at office and field locations.
- Continually improve the understanding of the location and potential impacts of natural hazards, the vulnerability of building types, and community development patterns and the measures needed to protect life safety.
- Continually provide state and local agencies with updated information about hazards, vulnerabilities, and mitigation measures.
- Ensure that all local codes and standards ensure the protection of life.
- Ensure that all structures in the District meet minimum standards for life safety.
- Ensure that all development in high-risk areas is protected by mitigation measures that provide for life safety.
- Identify and mitigate all imminent threats to life safety.

6.3.2 Earthquakes

Description: *Goal is to avoid damages to property.* The District agreed that the strengthening of building, mechanical, and fire codes is critical to the protection of property and life and the reduction of seismic risk, fire and flood hazards. These codes help water utilities design and construct reservoirs, pump stations, groundwater wells, and pipelines that resist the forces of nature and ensure safety.

Objectives:

- Discourage development in high hazard areas.
- Encourage property protection measures for all communities and structures located in hazard areas.
- Reduce or eliminate all repetitive property losses due to flood, fire and earthquake.
- Research, develop, and adopt cost-effective codes and standards to protect properties beyond the minimum of protecting life safety.
- Establish a partnership among all levels of government and the business community to

improve and implement methods to protect property.

Mitigation Projects:

- **Reservoir Seismic Valves with Actuators** – In case of an earthquake, the electric valve operating units triggered by a seismic instrument to close or partially close isolation valves on reservoirs to prevent the total loss of the water and to prevent the damage that could be caused by the release of that water.
- **Retrofit Steel Reservoir Inlet Seismic Retrofit** – Retrofit the inlet/outlet with a swivel joint to allow movement during an earthquake. This will limit the damage from the reservoirs bursting/twisting and flooding property downstream of them.
- **Concrete Footing Reservoir Seismic Retrofit** – Construct a concrete ring around the outside of the tank that would be bolted and anchored to the tank, similar to a large concrete footing. This would protect the tank from a lateral earthquake and the properties downstream of the tank from being flooded if the tank were to rip open during an earthquake.
- **Pipeline Material Seismic Retrofit** – Asbestos cement (AC) pipeline is known to be the most susceptible to earthquake damage. Since the District has approximately 140 miles of AC pipeline (approximately 48 percent of the total District's pipelines are AC material) to mitigate potential pipeline failure due to earthquake. This project would replace sections of a large transmission pipeline that is already known to be in poor condition. The initial project would replace the Cactus/Riverside Transmission main (approximately 5 miles in length), which is currently AC pipe, with steel pipe to minimize the effects of an earthquake on the pipeline. The transmission main starts at Cedar Street, continues along Riverside Avenue southeasterly until Cactus Avenue, where the pipeline turns south and continues in Cactus Avenue until Merrill Avenue. The implementation strategy is to complete the replacement in phases, by diameter size, starting with the largest diameter (30-inch) pipeline first, located at Cactus Street and Merrill Street. Work upstream toward the treatment plant along Cactus Street and then Riverside Avenue. The transmission main contains 18, 24, and 30-inch diameter pipe.
- **Emergency Generators for the Fluidized Bed Reactor Treatment Plant and its' associated Rialto Well 6** – This project allows a critical treatment facility and the groundwater source that this facility receives water from (Rialto Well 6) to remain online during power outages from earthquakes, weather related outages, or any other power system failures. The project will include the purchase and installation of a 400kW fixed diesel generator and an automatic transfer switch at each of the two facilities in this project.

6.3.3 Drought

Description: *Goal is to improve drought preparedness.* The goal is to address the drought hazard through mitigation over the long-term and the objectives listed below have been taken from the recently updated California Water Plan (2018).

Objectives:

- Increase water supply by creating innovative ways to generate new supplies.
- Improve operational efficiency & transfers by moving water from where it occurs to where it will be used.
- Reduce Water Demand. Water conservation has become a viable long-term supply option because it saves considerable capital and operating cost for the District.
- Improve Water Quality.

Mitigation Projects:

- **Expand Water Treatment Plant** – Expand the water treatment plant from treating 14.5 million gallons a day of State Water Project (SWP) water to treating 20.5 million gallons a day.
- **Complete the Fluidized Bed Bioreactor (FBR) Project** – Add additional water supply by installing groundwater source treatment system to an out-of-service groundwater well with a capacity of producing 2,000 gallons a minute and to clean up the perchlorate plume in the region.
- **Lytle Creek Basin Artificial Recharge** – Construct Lytle Creek Basin Recharge facilities that would enable the spreading of State Water Project water for recharge of the Lytle Creek Basin. The project would consist of a pipeline connected to the State Project Water pipeline that feeds the District’s Oliver P. Roemer Water Filtration Facility, downstream of the District’s Hydroelectric Generation Facility, to detention basins for surface water spreading.
- **Rialto Basin Artificial Recharge** - The District and other members of the Rialto Basin Groundwater Council’s Basin Technical Advisory Committee are working on a Groundwater Management Plan that will facilitate the spreading of State Water Project water for recharge of the Rialto Basin. The San Bernardino Valley Municipal Water District (Valley District) is constructing a pipeline to the Cactus Basins to allow State Project Water to be recharged into the Rialto Basin by surface water spreading. Valley District is working with the San Bernardino County Flood Control District to enhance the Cactus Basins.
- **Construct new Groundwater Well 36** – Well 36 was drilled, not equipped. High nitrate and arsenic levels have been detected and endangered species were presented. Drill a new well to replace Well 36.
- **Construct new Groundwater Well in the City of Fontana** – The District’s service area in the City of Fontana has only one groundwater well serving about 1,400 service connections. As the area is being developed, water demands will increase. The District is looking into drilling a new well in the City of Fontana to meet future water demands and add redundancy.
- **Smart Water Meters and Supervisory Control and Data Acquisition (SCADA)**

Utilization- SCADA and Smart Water Meters give real time data on problems with the system and they reduce drive time emissions as a result of traditional meter reading. SCADA improvement is included as part of the Water Treatment Plant Expansion project. The District implemented an Automatic Meter Reading System (AMR). AMR allows for collection of data using a radio receiver in a truck as staff drive up and down each street. With Advanced Metering Infrastructure Systems, (AMI), reads are sent to receiver that is mounted on a tower, (there would be several throughout the District's service area). Those reads can be sent at regular intervals, (for example every 15 minutes), or staff can send a signal to collect it on demand. This is even more time efficient than AMR. It also provides staff with the ability to collect much more reading data that can be used to identified possible leaks, to generate more customized reports for customers regarding their usage, and the data will be valuable for the District as the State of California continues conservation efforts. The time savings associated with not having to drive up and down each street to collect reads will allow the staff to focus on maintaining the meters and providing better service to our customer.

6.3.4 Flood

Description: Provide adequate flood protection to minimize hazards and structural damage.

Objectives:

- Future Flood Mitigation Projects – Improve existing facilities and construct new facilities to mitigate flooding within District's service area.

Mitigation Projects:

- **Construct New Wells with Flush-to-Waste Pipe** - Many existing wells flush to waste into the street, flooding the street, then the water travels approximately a mile to a nearby storm drain. This project will eliminate flooding local streets.
- **Purchase a Hydro Excavator Vacuum Truck** – This equipment would improve efficiency in repairing service leaks and main breaks and more preventive maintenance tasks could be completed.

The District is not a member of the National Flood Insurance Program (NFIP) and is fortunate to not have any identified Repetitive and Severe Repetitive Loss properties.

6.4 Mitigation Priorities

The District's implementation strategy included identifying a set of first tier objectives. These objectives are considered the highest priority and once implemented will result in substantial improvement in the overall reliability of the system. The remaining objectives, not included in the first-tier objectives, are considered desirable and will further enhance the system reliability once the first-tier objectives are achieved.

The District's objectives have then been prioritized based on the following:

- Impact to the District's system from the identified vulnerability. This was the planning team's decision and they included cost in the decision.
- Overall cost/benefit of the mitigation strategy. For example, the Seismic Retrofits to the District's facilities is considered a high priority because of very high benefit to cost ratio.

6.5 Implementation Strategy

For the successful mitigation of hazards identified in this plan and to meet the District's goals within a reasonable time frame, an implementation strategy has been developed.

The District developed a matrix for the mitigation implementation strategy as a useful tool that consolidated and tracked mitigation actions. The implementation strategy focuses on the high priority mitigation projects that can be implemented during the five-year plan cycle thru the District's Capital Improvement Program. The HMP provides a series of recommendations, many of which are closely related to the goals and objectives of existing planning programs. The District will continue to implement recommended mitigation action items through existing programs and procedures.

For each project, the benefits and costs were identified by the Planning Team and then each project was prioritized. The benefits included the estimated risk reduction, District's goals, available funding and ease of implementation.

The District Engineering Department is responsible for adhering to the State of California's Building and Safety Codes. The Planning Team will work with other agencies at the state level to review, develop and ensure Building and Safety Codes are adequate to mitigate or present damage by hazards.

Since the approval of the 2011 HMP, there were mitigation action items that were funded and completed. The Planning Team is committed to meet on a regular basis to seize funding opportunities and integration with other planning mechanisms that can bring the mitigation plan to life. During those regular meetings, the Planning Team department representatives will identify areas that the HMP action items are consistent with the Capital Improvement Program or annual budget goals and integrate them where appropriate. Other opportunities for integration including public awareness publications and staff training relating to hazard information.

Table 12: Mitigation Actions Matrix

Summarizes past mitigation projects from the 2011 HMP, and existing and future mitigation projects developed by the Planning Team for the 2021 HMP.

Table 12: Mitigation Actions Matrix

Mitigation Action Item	Coordinating Agency	Timeline	Goal: Save Lives and Reduce Injuries	Goal: Avoid Damages to Property	Goal: Improve drought preparedness	Buildings & Infrastructure: Does the action item involve new/or existing buildings or infrastructure? Yes/No	Funding Source: General Fund, Grant, CIP	Benefit: Low (L), Medium (M), High (H)	Cost: Low (L), Medium (M), High (H)	Priority: Low (L), Medium (M), High (H)	Comments: Completed, Deferred, Deleted, new, Revised, Cost estimates from Engineering, Operations
2011 Mitigation Projects											
Seismic retrofitting the inlet/outlet of steel reservoirs with swivel joints to allow movement during earthquakes	Operations-Production; Engineering; Public Affairs; Government Relations	3-5 Years	X	X	X	Yes	Grant; CIP	H	M	H	Deferred; \$950K
	Comments: This project has not been completed. The District worked on the draft 2016 HMP Update, but did not finish. Without a 2016 HMP, the District missed opportunities for potential grants that could fund this project. Due to other priorities, this project was not funded by general and CIP funds in previous years.										
Seismic retrofitting the reservoir footing	Operations-Production; Engineering; Public Affairs; Government Relations	3-5 Years	X	X	X	Yes	Grant; CIP	H	H	H	Deferred; \$4.5M
	Comments: This project has not been completed. The District worked on the draft 2016 HMP Update, but did not finish. Without a 2016 HMP, the District missed opportunities for potential grants that could fund this project. Due to other priorities, this project was not funded by general and CIP funds in previous years.										
Pipeline Material Seismic Retrofit	Operations-Production; Engineering; public Affairs; Government Relations	3-5 Years	X	X	X	Yes	Grant; CIP	M	H	M	Deferred; \$5M
	Comments: This project has not started. Will be budgeted in Fiscal Year 2022/23 CIP budget.										
Expand the Oliver P. Roemer Water Filtration Plant	Engineering-New Development; Operations-	2-3 Years			X	Yes	Grant; Bonds; CIP	H	H	H	Ongoing; \$45M; project initiated in

	Water Treatment										2020
	Comments: The project has initiated in 2020. The District has applied for an over \$24 million Water Infrastructure Finance and Innovation Act (WIFIA) loan for this project.										
Construct New Groundwater Wells: Wells 55, 49, & 50	Engineering; Public Affairs; Operations-Production	3-5 Years			X	Yes	Grant; CIP	M	M	M	Deleted
	Comments: These new well projects had been deleted. The District was not able to purchase property to drill Well 55. Well 49 has high nitrate levels; the District seeks other wells without the need for source treatment. The District was not able to purchase property to drill Well 50.										
Construct New Groundwater well: 36	Engineering; Public Affairs; Operations-Production	3-5 Years			X	Yes	Grant; CIP	M	M	M	Ongoing; \$3.5M
	Comments: Well 36 was drilled, detected high nitrate and arsenic levels, and endangered species were presented. Drill a new well to replace Well 36. Budgeted \$300K in Fiscal Year 2021/22 CIP budget to perform initial study.										
Construct a Fluidized Bed Bioreactor (FBR) Water Treatment Plant	Engineering-Capital Improvement Project; Operations-Water Treatment	Completed			X	Yes	Grant; Gen. Fund	H	H	H	Completed; \$22.7M
	Comments: The FBR Water Treatment has been online treating water since 2016.										
Lytle Creek Basin Artificial	Engineering-New Development; Operations-Production;	2-4 Years			X	No	Grant; Gen. Fund; CIP	M	M	M	Ongoing; \$1M
	Comments: The District is currently working on a project with the San Bernardino Valley Municipal Water District (Valley District) and the City of Rialto to construct Lytle Creek Basin Recharge facilities that would enable the spreading of State Water Project (SWP) water for recharge of the Lytle Creek Basin. Valley District has modified the Lytle Creek Turnout connection on the San Gabriel Feeder Pipeline. The project would consist of a pipeline connected to the State Project Water pipeline that feeds the District’s Oliver P. Roemer Water Filtration Facility, downstream of the District’s Hydroelectric Generation Facility, to detention basins for surface water spreading.										
Rialto Basin Artificial Recharge	Engineering-New Development; Operations-Production	2-4 Years			X	No	Gen. Fund; CIP	M	M	M	Ongoing; \$1.5M
	Comments: The District and other members of the Rialto Basin Groundwater Council’s Basin Technical Advisory Committee are working on a Groundwater Management Plan that will facilitate the spreading of State Water Project water for recharge of the Rialto Basin. The San Bernardino Valley Municipal Water District (Valley District) is constructing a pipeline to the Cactus Basins to allow State Project Water to be recharged into the Rialto Basin by surface water spreading. Valley District is working with the San Bernardino County Flood Control District to enhance the Cactus Basins.										
2021 HMP Mitigation Projects											
Construct New Groundwater Well	Engineering; Public Affairs; Operations-Production	3-5 Years			X	Yes	Grant; CIP	M	M	M	Ongoing; \$3M

	Comments: The District's service area in the City of Fontana has only one groundwater well serving about 1,400 service connections. As the area is being developed, and to add redundancy to the existing groundwater well, the District is looking to drill a new well in the City of Fontana.										
Seismic Retrofitting Reservoir Valves with Actuators	Operations-Production; Operations-Distribution; Public Affairs	3-5 Years	X	X	X	Yes	Grant; CIP	H	M	H	Ongoing; \$300K
	Comments: This project was identified and added in 2016. A Notice of Intent (NOI) was submitted to the Cal OES office in 2016. The District did not have an approved HMP in 2016. The Public Affairs team is looking for grant opportunities to fund this project.										
Purchase a Hydro Excavator Vacuum Truck	Operations; Purchasing	1 Year	X	X	X	No	CIP	H	M	H	Ongoing; Received bids; \$415K
	Comments: This project was identified and added in 2020. The District received 3 bids for the purchase of a hydro excavator vacuum truck. This item was budgeted in the Fiscal Year 2021/22 CIP budget. Pending Board approval.										
Construct new well(s) with flush-to-waste pipe connects to the City's sewage system or storm drain system.	Engineering; Operations	3-5 Years	X	X	X	Yes	CIP	H	M	H	Ongoing
	Comments: This project was identified and added in 2020. The District has established standards to have new wells constructed with a flush-to-waste pipe that connects to the City's sewage system or storm drain system.										
Emergency Generators for the Fluidized Bed Reactor Treatment Plant and its associated Rialto Well 6	Engineering; Operations-Production; Public Affairs	3-5 Years			X	Yes	Grant	M	M	M	Ongoing; \$480K
	Comments: This project was identified and added in 2019. A Notice of Intent (NOI) was submitted to the Cal OES office in 2019. The District did not have an approved HMP in 2019. The Public Affairs team is looking for grant opportunities to fund this project.										
Utilize Smart Water meters, advanced metering infrastructure (AMI)	General Services; Meter Dept.	15 Years	X	X	X	Yes	Grant; CIP	M	H	M	Ongoing; Phase I \$200K
	Comments: Phase I costs about \$200K, which covers the cost of infrastructure (towers) and software. The cost for the radio transmitters is to be determined. The District currently has about 23,000 meters. Of the 23,000 meters, about 4,000 are compatible using AMI.										

Section 7: Plan Maintenance

7.1 Monitoring, Evaluating and Updating the Plan

Plan Last Updated On: March 2011.

Description of Plan Maintenance Procedures: Because the Plan is a living document that reflects the District's ongoing hazard mitigation activities, the process of monitoring, evaluating, and updating it will be critical to the effectiveness of hazard mitigation in the District's area.

The high priority mitigation actions are being included in the District's CIP. Because of the

involvement of the District's General Manager in the development of the Plan, the entire executive management of the District is committed to implement the goals and objectives of the plan.

The District will incorporate the hazard mitigation plan in its annual CIP planning process to monitor progress towards the goals of the hazard mitigation plan. To further facilitate this process, the District's General Manager has been identified as the person responsible for monitoring and updating the hazard mitigation plan. This plan will be updated every five years. The District will also update the plan if there is a significant change in the basic assumptions, for example a major hazard event that highlights vulnerabilities in the system not anticipated at the present time. The District's Board of Director's will review and recommend for approval any plan updates proposed by the planning team.

The Planning Team will meet on an annually basis to review the status of the mitigation action items. These meetings will provide an opportunity to discuss the progress of the action items and maintain the partnerships that are essential for the sustainability of the mitigation plan. The Annual Implementation Report is used to track status of mitigation projects.

The Annual Implementation Report is the same as the Mitigation Action Matrix but with a column added to track the quarterly status of each action item. Upon formal approval and adoption of the plan, the Annual Implementation Report will be added to the Appendix of the Plan. Following is a sample of the Annual Implementation Report.

Annual Implementation Report												
Mitigation Action Item	Coordinating Agency	Timeline	Goal: Save Lives and Reduce Injuries	Goal: Avoid Damages to Property	Goal: Improve drought preparedness	Buildings & Infrastructure: Does the action item involve new/or existing buildings or infrastructure? Yes/No	Funding Source: General Fund, Grant, CIP	Benefit: Low (L), Medium (M), High (H)	Cost: Low (L), Medium (M), High (H)	Priority: Low (L), Medium (M), High (H)	Comments: Completed, Deferred, Deleted, new, Revised, Cost estimates from Engineering,	Annual Status Comments
Seismic retrofitting the inlet/outlet of steel reservoirs with swivel joints to allow movement during earthquakes	Operations- Production; Engineering; Public Affairs; Government Relations	3-5 Years	X	X	X	Yes	Grant; CIP	H	M	H	Deferred; \$950K	

7.2 Implementation through Existing Programs

The District currently documents the comprehensive land use planning and capital improvements planning using a Water Master Plan, which was last updated by the District in 2020. In general, the District's Water Master Plan is updated every 5-10 years, along with the updated land use plans and recommended capital improvement programs.

After the District officially adopts the HMP, the District will use the Water Master Plan mechanism to have the mitigation strategies integrated into it. Specifically, the capital improvement planning that occurs in the future will contribute to the goals in the Hazard Mitigation Plan. The planning team for the HMP will work with the capital improvement planners to implement high benefit/low-cost mitigation projects.

Table 13: Capital Improvement Program

**Capital Improvement Plan Budget
Fiscal Year 2020-21**

Project Number	Project Manager	Funding Source	Project Description	FY 2019-20 Carryover Budget	FY 2020-21 Approved Budget	Total Current Budget
REPLACEMENT / REHABILITATION OF SYSTEM ASSETS						
WELLS AND PUMPING EQUIPMENT REHABILITATION						
W19002	Rosa	RR	Well 41 - Ion Exchange Treatment	38,084		38,084
W19038	Linda	RR	Lower Well 36 to meet summer demand Perform CEQA	45,050		45,050
W21001	Joanne	RR	Annual R/R - Wells and Pumping Equipment FY21		50,000	50,000
WATER MAIN REPLACEMENT						
W17011	Rosa	RR	Water Main Replacements - Casmalia	323,954		323,954
W17012	Rosa	RR	Bloomington Alley Way Main Replacement Phase 3, 4 and 5 & Zone 2 24" Transmission Main	72,850		72,850
W17034	Rosa	RR	Zone 3 Distribution Pipeline Replacement - 8" in Valley/Pomona	5,321		5,321
W19055	Rosa	RR	I-10 Cedar Avenue Interchange improvement project	47,929		47,929
SYSTEM APPURTENANCES REHABILITATION & REPLACEMENT						
W20009	Joanne	RR	Purchase Two (2) Interior Mixing/Blending Units to install in Reservoirs 8-1 and 8-2 to maintain water quality	20,000	40,000	60,000
W20010	Joanne	RR	Connect Flush-to-Waste Pipe from Well 54 to Storm Drain or Sewage Line in Fontana	100,000		100,000
W20011	Bill	RR	Meter Vault Lid Retro Fits (QTY 6) FY2020	29,500		29,500
W20012	Bill	RR	Meters and MXU's (QTY 1,700) FY2020	96,256		96,256
W21002	Joanne	RR	Annual R/R - System Valve Replacement FY2021		150,000	150,000
W21003	Bill	RR	Annual R/R - Meter Vault Lid Retro Fits (QTY 6) FY2021		40,100	40,100
W21004	Bill	RR	Annual R/R - Meters and MXU's (QTY 1,700) FY2021		250,000	250,000
W21005	Joanne	RR	Annual R/R - Analyzer(s) and/or Flow Meter(s) FY2021		50,000	50,000
FACILITIES AND PLANTS REHABILITATION & REPLACEMENT						
W20025	Joanne	RA	FBR Filters Rehab	327,552		327,552
W21006	Sergio	RR	GAC Vessel Media replacement - Roemer		360,000	360,000
SUBTOTAL FOR REPLACEMENT / REHABILITATION OF SYSTEM ASSETS				1,106,495	940,100	2,046,596

**Capital Improvement Plan Budget
Fiscal Year 2020-21**

Project Number	Project Manager	Funding Source	Project Description	FY 2019-20 Carryover Budget	FY 2020-21 Approved Budget	Total Current Budget
NEW SYSTEM ASSETS						
SOURCE OF SUPPLY						
W19041	Linda	CC	OPR WFF - 16 mgd Treatment Plant Expansion	3,080,347		3,080,347
W20001	Linda	CC	Property Investigation for Bunker Hill Wells and Pump Station	188,428		188,428
PUMPS AND BOOSTER PLANTS						
W15004	Rosa	CC	Lord Ranch 4-3 Pump Station	2,846,192		2,846,192
W18021	Rosa	CC	Pump Station 7-2 - Design & Construction	88,747		88,747
W18022	Rosa	RR	Emergency Generators Zone 6	494,007		494,007
PRESSURE REDUCING VALVES						
W19003	Linda	CC	Zone 6 PRV - New PRV on Sierra Avenue	104,000		104,000
W19006	Linda	CC	Zone 7 PRV - New PRV on Lytle Creek Road	32,600	170,000	202,600
RESERVOIRS						
W15003	Rosa	CC	Lord Ranch 1.0 MG Aeration Tank	1,905,000		1,905,000
W19008	Rosa	CC	Zone 8 - Reservoir 8-3	60,000	4,000,000	4,060,000
WATER MAINS						
W15008	Rosa	CC	Pepper Avenue @ I-10 Freeway Zone 2 - 24" Transmission Main Railway - Design & Construction	17,647		17,647
W17035	Rosa	CC	Zone 2 & 3 Transmission Main - 12", 16" and 20" in Santa Ana Avenue	9,503	1,474,333	1,483,836
W20024	Linda	CC	Zone #4 30" Transmission Line @ El Rancho Verde	-	2,600,000	2,600,000
W21007	Rosa	CC	Zone 7 - 18" Transmission main within future ROW from Citrus Ave to Lytle Creek Rd		100,000	100,000
FACILITIES AND PLANTS						
W15006	Rosa	CC	Lord Ranch facility - Grading and Site Work - Design & Construction	201,120		201,120
CAPITAL OUTLAY - FLEET/EQUIPMENT						
W19017	Telat	RR	Water System Geographical Information Systems (GIS) Application Upgrades - Phase III	55,424		55,424
W17039	Jon S.	RR	Wireless Upgrade Replace 5 Access Points	5,365		5,365
W18035	Jon S.	RR	New enterprise system software Tyler Incode 10	51,632		51,632
W19043	Joanne	RR	3 New Work Trucks for Proposed new positions for Operations, \$30,000/each	300,000		300,000
W19047	Joanne	RR	1 New 2-Yard Dump Truck for the Maintenance Department	50,000		50,000
W20019	Telat	RR	GIS and Tyler Integration	25,000		25,000
SUBTOTAL FOR NEW SYSTEM ASSETS				9,515,011	8,344,333	17,859,345
GRAND TOTAL				10,621,506	9,284,433	19,905,941
CONT			CONTINGENCY OF 5%		464,222	

**Capital Improvement Plan Budget
Fiscal Year 2020-21**

Project Number	Project Manager	Funding Source	Project Description	FY 2019-20 Carryover Budget	FY 2020-21 Approved Budget	Total Current Budget
CIP Budget Summary						
Subtotal Replacement Assets:				1,106,495	940,100	2,046,596
Subtotal New Assets:				9,515,011	8,344,333	17,859,345
Totals:				10,621,506	9,284,433	19,905,941
CIP District Funding Source Summary						
Operating Revenue (Transfer from O&M Surplus)				-	-	-
Replacement Reserves				1,760,371	940,100	2,700,472
Capacity Charges				8,533,583	8,344,333	16,877,917
Reimbursement Agreement				327,552	-	327,552
Revenue Bonds/Loans				-	-	-
Totals:				10,621,506	9,284,433	19,905,941

7.3 Continued Public Involvement

As discussed in Section 3.3, the District will continue to involve the public during the plan maintenance process over the next five years. The District, with its decision to incorporate the hazard mitigation plan in its yearly CIP planning process, has ensured continued public involvement in this plan. The CIP approval is an open public process. As part of the approval process the CIP is presented to the District's Board of Directors in an open public meeting and by virtue of this, progress towards achieving the District's goals and objectives identified in the hazard mitigation plan will also be open for public review and comment.

The District will continue to provide educational information to the public on our website to aid in conserving water to keep people informed of the drought hazard. All of our energy saving and conservation saving device suggestions such as ultra-low-flush toilets will continue to be announced and explained on our website and in our newsletters, so the public is kept updated on the drought and other hazards. The District is dedicated to involving the public directly in the continual review and updates to the Mitigation Plan. Copies of the plan will be catalogued and made available at District Headquarters. The existence and location of these copies will be publicized in the District newsletter and on the District's website. This site will also contain an email address and phone number where people can direct their comments and concerns. The primary point of contact for information regarding this plan is Joanne Chan.

Joanne Chan

Director of Operations
West Valley Water District
855 W. Base Line, P.O. Box 920
Rialto, CA 92377
(909) 820-3707 (Office)
jchan@wvwd.org

Appendix A

Planning Process & Public Involvement

Appendix A: Planning Process & Public Involvement

A.1 Planning Process

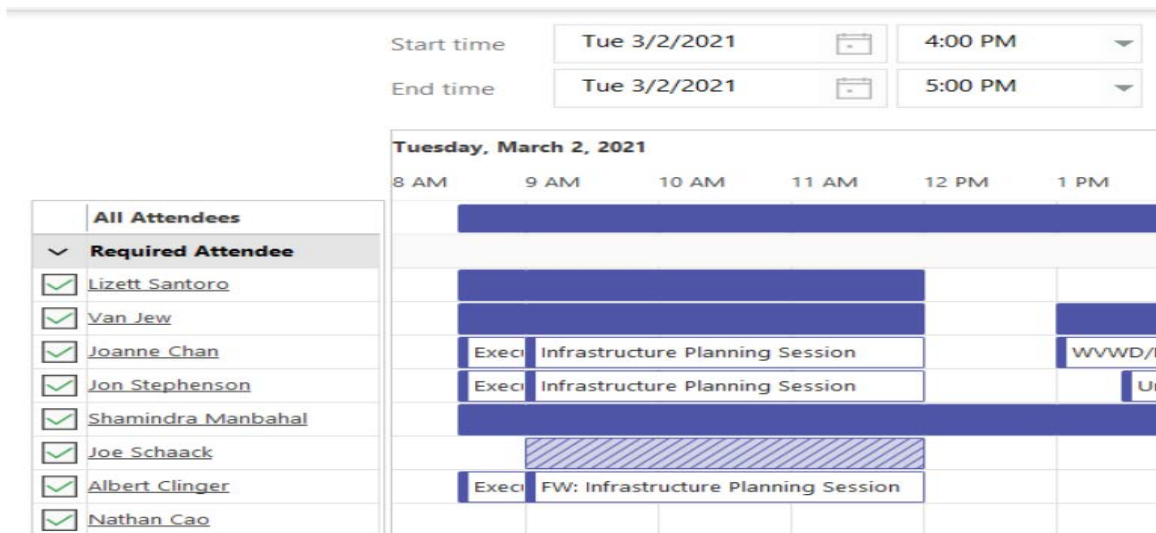
The District's planning team meetings and coordination with other jurisdictions meetings consisted of the following:

Date	Activity
3-2-2021	Meeting - Local Hazard Mitigation Plan Kick-Off Meeting with the Planning Team
3-15-2021	Meeting - Local Mitigation Plan Technical Workshop with the Planning Team and Cal OES Division
3-29-2021	Meeting – Local Mitigation Plan Planning Meeting
4-2-2021	Meeting – Local Mitigation Plan Planning Meeting
4-22-2021	Meeting - Planning Team Comment on First Draft
	Meeting -
	Meeting -
	Meeting
	Meeting
	Meeting –

Planning Team Attendance Sheets

3-2-21 Local Hazard Mitigation Plan Kick-Off Meeting

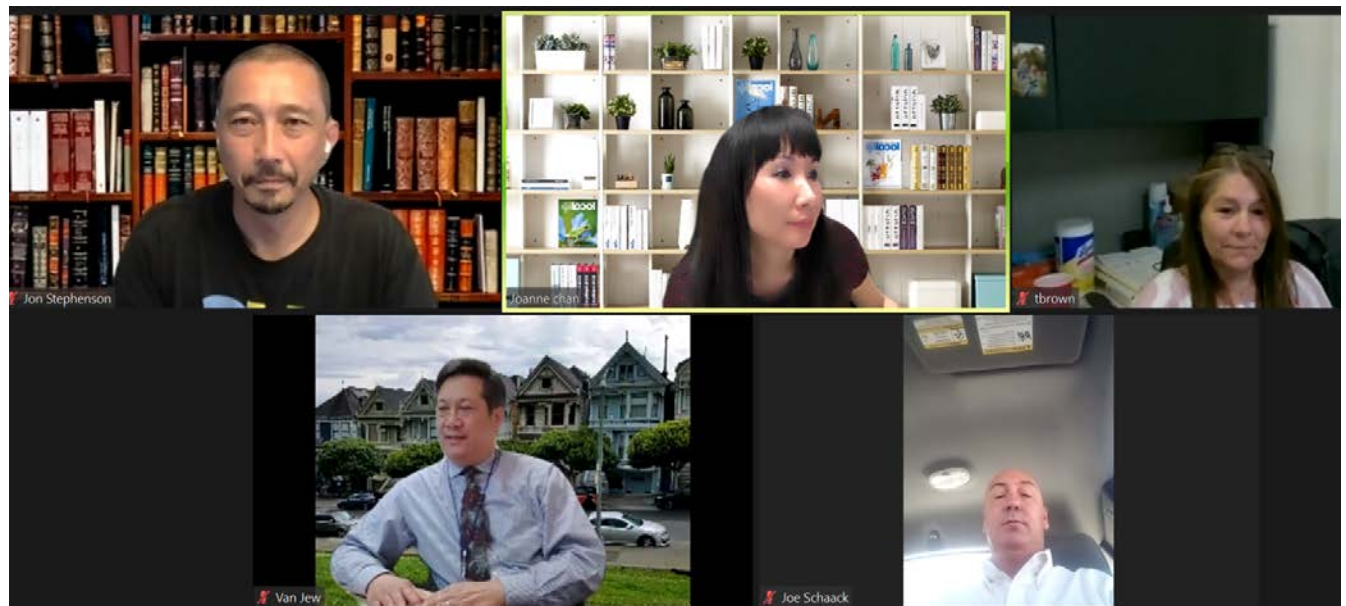
The kick-off meeting with the Planning Team was made up of key departmental representatives. The purpose of the kickoff meeting was to review project expectations and timeline, gather pertinent documents, role and membership of Planning Team, review updates to DMA 2000 regulations, discuss availability of resources, and discuss opportunities for public involvement.



3-15-21 Local Mitigation Plan Technical Workshop with the Planning Team and Cal OES Division
The Planning Team reviewed key sections of the HMP and comments received from the office of Cal OES with the Emergency Services Coordinator of Cal OES. The Planning Team received guidance and from the Coordinator.

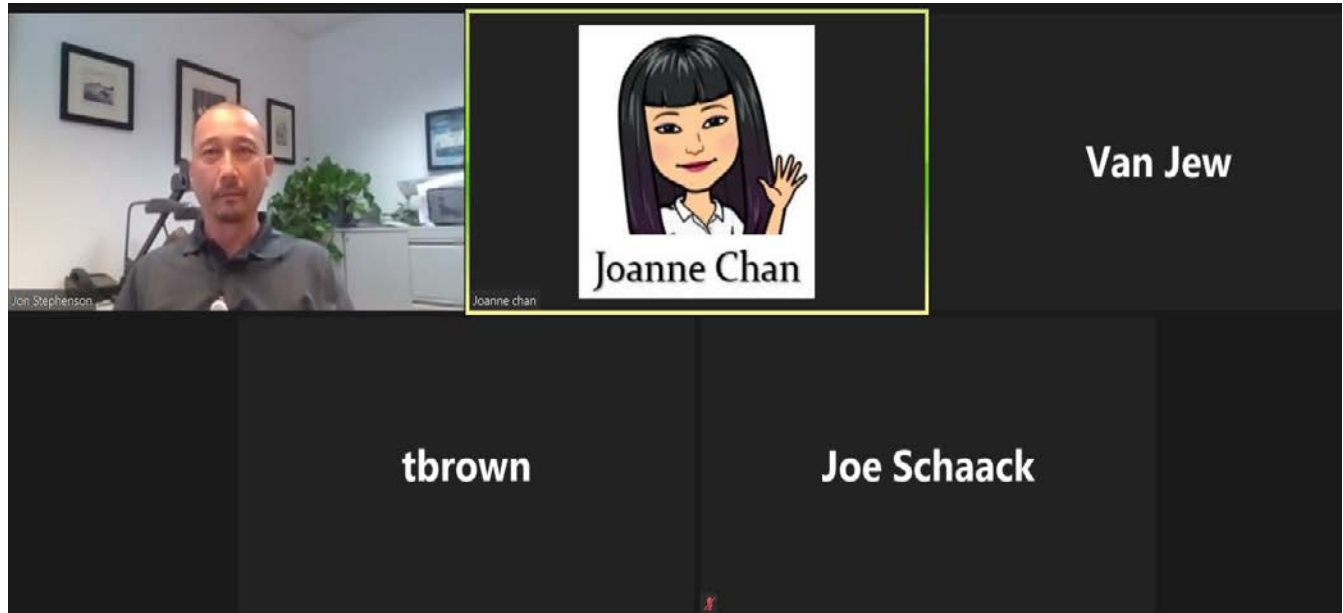


3-29-21 Local Hazard Mitigation Plan Planning Meeting
Continued to develop mitigation action items. Contributed considerable time and research to gathering all on-going and budgeted items and maps relating to hazard mitigation activities. Reviewed and revised mitigation projects from the 2011 HMP.



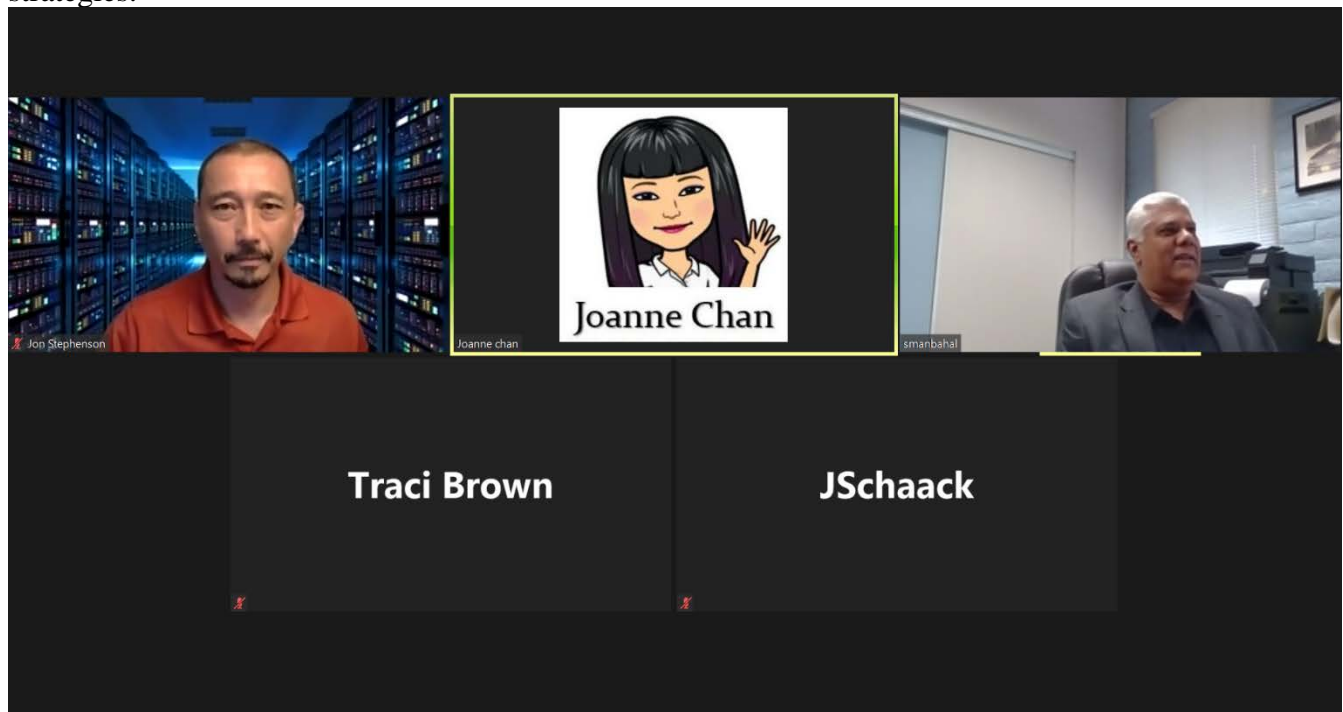
4-5-2021 Local Hazard Mitigation Plan Planning Meeting

Continued to discuss and develop mitigation action items and potential mitigation projects. Added information about District Water Use Efficiency programs to the HMP and added external links on water and drought updates on District's website.



4-22-2021 Review First Draft Plan

In advance of the meeting, the Draft HMP was sent to the Planning Team for review. The Planning Team discussed questions, corrections, and comments in need of attention and discussed outreach strategies.



A.2 Public Involvement/Outreach

In addition to the planning team, District staff, the secondary stakeholders also provided information, expertise, and other resources during plan writing phase. The secondary stakeholders included: general public (rate payers) and external agencies (special districts and neighboring water systems and cities). The public comment period went from April 27, 2021 to June 11, 2021. No public comments received.

Other public involvement consisted of the following meetings:

Date	Activity
5-11-2021	Meeting – May 2021 Safety and Technology Committee
5-12-2021	Meeting – May 2021 Engineering, Planning & Operations Committee
	Meeting –
	Meeting -
	Meeting -
	Meeting -
	Meeting -
	Meeting -
	Meeting -

External agencies were sent the second draft HMP in April 2021 and encouraged to provide input. See attachment for the letter template sent along with solicitation for input. No public comments received.

External Agency	Name	Position Title
San Bernardino Valley Municipal Water District	Wen Huang	Chief Engineer/AGM
San Bernardino Valley Municipal Water District	Cindy Saks	CFO/AGM
Jurupa Community Service District	Chander Letulle	Director of Engineering and Operations
Rialto Water Services	Stephanee Valencia	Operations Supervisor
Veolia	Chipper R. Greene	Industrial Pretreatment Program Coordinator
Marygold Mutual Water Company	Justin Brokaw	General Manager
Rubidoux Community Services District	Jeff Sims	General Manager
San Bernardino County	James McKenzie, Jr.	Groundwater Recharge Coordinator
Riverside Highland Water Company	Don Hough	General Manager

BOARD OF DIRECTORS

Channing Hawkins
President, Board of Directors
Kyle Crowther
Vice President, Board of Directors
Dr. Michael Taylor
Director
Dr. Clifford O. Young, Sr.
Director
Greg Young
Director



ESTABLISHED AS A PUBLIC AGENCY IN 1952
WEST VALLEY WATER DISTRICT'S MISSION IS TO PROVIDE A RELIABLE,
SAFE-DRINKING WATER SUPPLY TO MEET OUR CUSTOMERS' PRESENT
AND FUTURE NEEDS AT A REASONABLE COST AND TO PROMOTE
WATER-USE EFFICIENCY AND CONSERVATION.

ADMINISTRATIVE STAFF

Clarence C. Mansell, Jr.
General Manager
Shamindra K. Manbahal
Chief Financial Officer
Peggy Asche
Acting Board Secretary

April 26, 2021

[Name], [Title]
[Company]
[Address]

Dear [Name],

The West Valley Water District (District) is cordially inviting public review and comment on its Draft Mitigation Plan. See enclosed. Your input is valuable to the District as our community partner.

Disasters can result in loss of life, property, and infrastructure. In order to prevent or lessen the loss caused by disaster, the Hazard Mitigation Plan helps communities by assessing vulnerabilities and identifying actions to reduce those risks.

Please provide input by May 31, 2021. If you have any questions about the Hazard Mitigation Plan, please contact Joanne Chan via email at jchan@wvwd.org.

Sincerely,

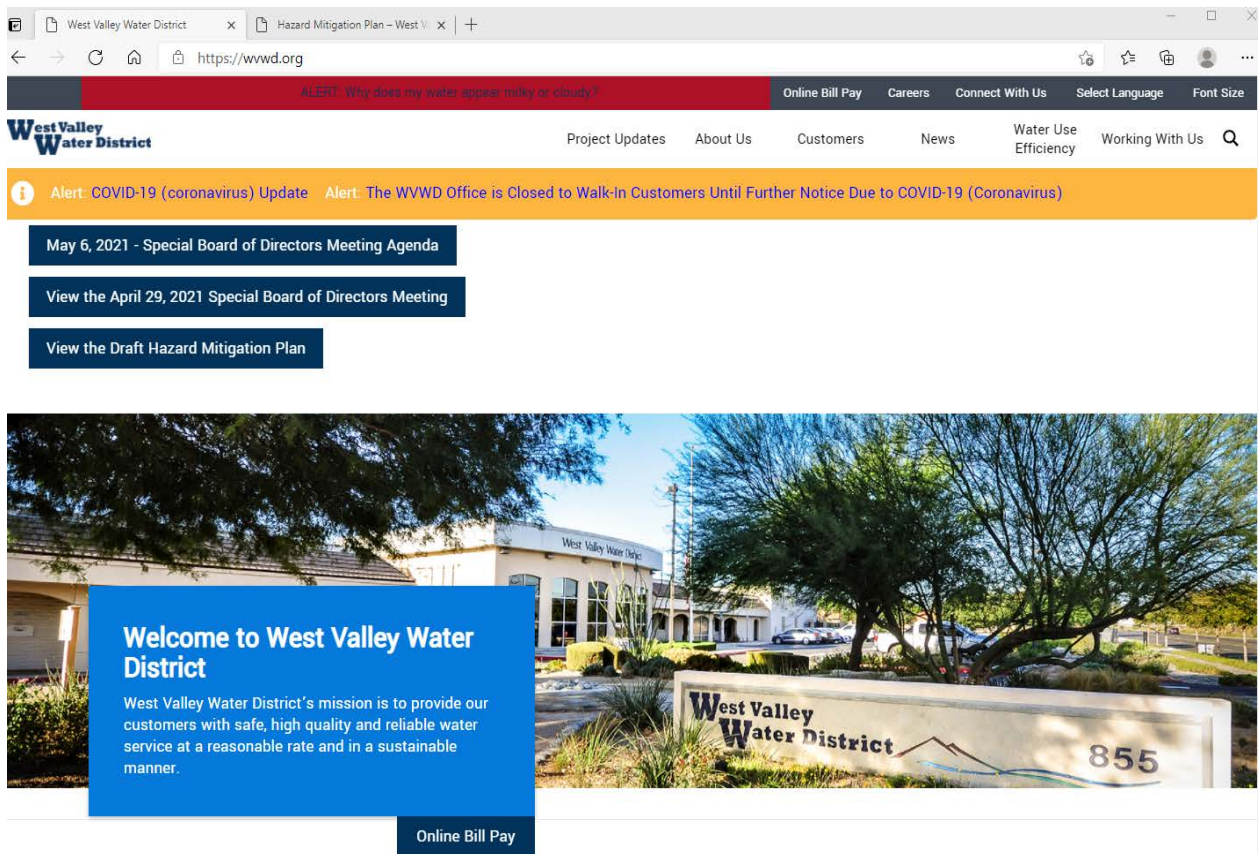
WEST VALLEY WATER DISTRICT

Planning Team

855 W. Base Line Rd., P.O. Box 920 | Rialto, CA 92377-0920
Ph: (909) 875-1804 | Fax: (909) 875-1849
www.wvwd.org

FAX (909) 875-7284 Administration
FAX (909) 875-1361 Engineering
FAX (909) 875-1849 Customer Service

Web Postings and Notices for Public Input – 4/27/2021 – 6/11/2021





Hazard Mitigation Plan

The Disaster Mitigation Act of 2000 (DMA) was adopted by the Federal government and, among other things, requires local authorities to prepare a Hazards Mitigation Plan (HMP) which will be utilized to protect citizens, critical facilities, infrastructure, private property and the environment from natural hazards through varying means, including increasing public awareness and identifying resources available for risk reduction and loss prevention.

The West Valley Water District (WVWD) is inviting public review and comment on its Draft Hazard Mitigation Plan (HMP) through Friday, June 11, 2021. The HMP helps communities by assessing vulnerabilities and identifying actions to reduce those risks. Public feedback is the final step. WVWD with an adopted and a FEMA-approved HMP is eligible for available mitigation funds before and after the next disaster strikes.

Comments and questions can be submitted to WVWD's Operations Manager, Joanne Chan, via email at jchan@wvwd.org.

[View the Plan](#)

[Send Feedback](#)

West Valley Water District - Home | +

https://www.facebook.com/westvalleywaterdistrict/

Like | Share | ...

Like | Comment | Share

West Valley Water District
 April 30 at 1:56 PM · 🌐

The West Valley Water District is inviting the public to review and comment on its Hazard Mitigation Plan (HMP) from April 27th, 2021, through June 11, 2021. The HMP helps communities by assessing potential natural disaster vulnerabilities and identifying actions to take to mitigate those risks. WVWD staff worked hard to ensure that our HMP meets federal requirements and community needs. Public feedback is the final step in moving forward with our plan. Once our plan passes p... [See More](#)

HAZARD MITIGATION PLAN

Mailing for Public Input – 4/27/2021 to 6/11/2021

21,976 billing letters were sent out to customers between 4/28/2021 and 5/25/2021.
See summary below:

REVISED BILLING MESSEAGE		
FROM 4/28/2021 TO 5/25/2021 ROUTE 8 - 7		
DATE	ROUTE	# BILLS
4/28/2021	8	2021
4/29/2021	9 & FB	1810
5/4/2021	10	1924
5/5/2021	11	2051
5/6/2021	12 & FB	2305
5/11/2021	1 & FB	1320
5/12/2021	2	1213
5/13/2021	3	2224
5/18/2021	4 ,13 & FB	2365
5/19/2021	5	2025
5/20/2021	6 & FB	1209
5/25/2021	7 & FB	1509
	total	21976



855 West Base Line Road • PO BOX 920
Rialto CA 92377-0920
www.wvd.org

WEST VALLEY WATER DISTRICT • OFFICE HOURS

Mon • Wed • Thu • Fri 8:00 am - 5:30 pm
Tue 9:00 am - 5:30 pm

Customer Service/After Hours (909) 875-1804 • customerservice@wvwd.org

ACCOUNT INFORMATION

CUSTOMER NAME:

SERVICE ADDRESS:

CITY:

ACCOUNT NUMBER:

BILLING INFORMATION

SERVICE PERIOD: 03/03/21 to 04/07/21

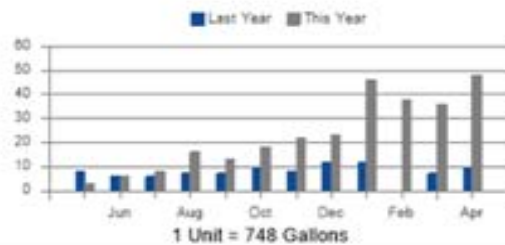
BILL DATE: 04/14/21

CURRENT BILL DUE DATE: 05/05/21

YOUR ACCOUNT SUMMARY

PREVIOUS BALANCE	132.71
PAYMENTS	(132.71)
LATE FEE/ADJUSTMENTS	0.00
PRIOR BALANCE -	DUE IMMEDIATELY: 0.00

BILLING INFORMATION



CURRENT ACCOUNT DETAIL

CURRENT CHARGES	UNITS	RATE	TOTAL
MONTHLY SERVICE CHG			48.77
TIER 1 CONSUMPTION	10	\$2.13	21.30
TIER 2 CONSUMPTION	38	\$2.30	87.40
BACKFLOW			2.84
TOTAL CURRENT CHARGES			160.31

SPECIAL MESSAGE FROM WVWD

Our Customer Service Center is closed due to Covid 19. To pay online please visit our new payment portal below:
<https://account.municipalonlinepayments.com/Account/Login>

The District is inviting public review and comment on its Draft Hazard Mitigation Plan (HMP) through Friday, June 11, 2021.

Review the draft HMP at <https://wvwd.org/hazard-mitigation>

TOTAL BALANCE DUE

160.31



June 24, 2021

Alison Kearns
Risk Analysis Branch Chief
Mitigation Division
Federal Emergency Management Agency, Region IX
1111 Broadway Street, Suite 1200
Oakland, California 94607

Subject: West Valley Water District Local Hazard Mitigation Plan

Dear Ms. Kearns:

The California Governor's Office of Emergency Services (Cal OES) is forwarding the Local Hazard Mitigation Plan for the West Valley Water District for formal review. The documents were transmitted to FEMA electronically

If you have any questions, please contact me at (916) 845-8531 or Karen McCready-Hoover Emergency Services Coordinator, Local Mitigation Planning Unit, at (916) 845-8177.

Sincerely,

A handwritten signature in blue ink that reads 'Victoria Lamar-Haas'.

VICTORIA LAMAR-HAAS, Chief
Local Mitigation Planning Unit

Enclosures

c: Joanne Chan, Operations Manager, West Valley Water District



U.S. Department of Homeland Security
FEMA Region 9
1111 Broadway, Suite 1200
Oakland, CA 94607-4052

FEMA

August 20, 2021

Joanne Chan
Operations Manager
West Valley Water District
855 W. Base Line Road
Rialto, CA 92377

Dear Ms. Chan:

The Federal Emergency Management Agency (FEMA) has completed its review of the *West Valley Water District 2021 Local Hazard Mitigation Plan* and has determined that this plan is eligible for final approval pending its adoption by the West Valley Water District.

Formal adoption documentation must be submitted to FEMA Region 9 within one calendar year of the date of this letter, or the entire plan must be updated and resubmitted for review. FEMA will approve the plan upon receipt of the documentation of formal adoption.

If you have any questions regarding the planning or review processes, please contact the FEMA Region 9 Hazard Mitigation Planning Team at fema-r9-mitigation-planning@fema.dhs.gov.

Sincerely,

Alison Kearns
Risk Analysis Branch Chief
Mitigation Division
FEMA Region 9

Enclosure (1)

West Valley Water District Plan Review Tool, dated August 20, 2021

cc: Victoria LaMar-Haas, Hazard Mitigation Planning Chief, California Governor's Office of
Emergency Services
Jennifer Hogan, State Hazard Mitigation Officer, California Governor's Office of
Emergency Services



U.S. Department of Homeland Security
Region 9
1111 Broadway, Suite 1200
Oakland, CA 94607-4052

FEMA

September 27, 2021

Joanne Chan
Operations Manager
West Valley Water District
855 W. Base Line Road
Rialto, CA 92377

Dear Ms. Chan:

The *West Valley Water District 2021 Local Hazard Mitigation Plan* was officially adopted by the West Valley Water District on September 2, 2021 and submitted for review and approval to the Federal Emergency Management Agency (FEMA). The review is complete, and FEMA finds the plan to be in conformance with the Code of Federal Regulations, Title 44, Part 201, Section 6 (44 C.F.R. 201.6).

This plan approval ensures the West Valley Water District continued eligibility for funding under FEMA's Hazard Mitigation Assistance programs, including the Hazard Mitigation Grant Program (HMGP) and the Building Resilient Infrastructure and Communities program (BRIC). All requests for funding are evaluated individually according to eligibility and other program requirements.

FEMA's approval is for a period of five years, effective starting the date of this letter. Prior to **September 27, 2026**, the West Valley Water District must review, revise, and submit their plan to FEMA for approval to maintain eligibility for grant funding. The enclosed plan review tool provides additional recommendations to incorporate into future plan updates.

If you have any questions regarding the planning or review processes, please contact the FEMA Region 9 Hazard Mitigation Planning Team at fema-r9-mitigation-planning@fema.dhs.gov.

Sincerely,

Kathryn Lipiecki
Director, Mitigation Division
FEMA Region 9

Enclosure (1)

West Valley Water District Plan Review Tool, dated September 27, 2021

Ms. Chan
September 27, 2021
Page 2 of 2

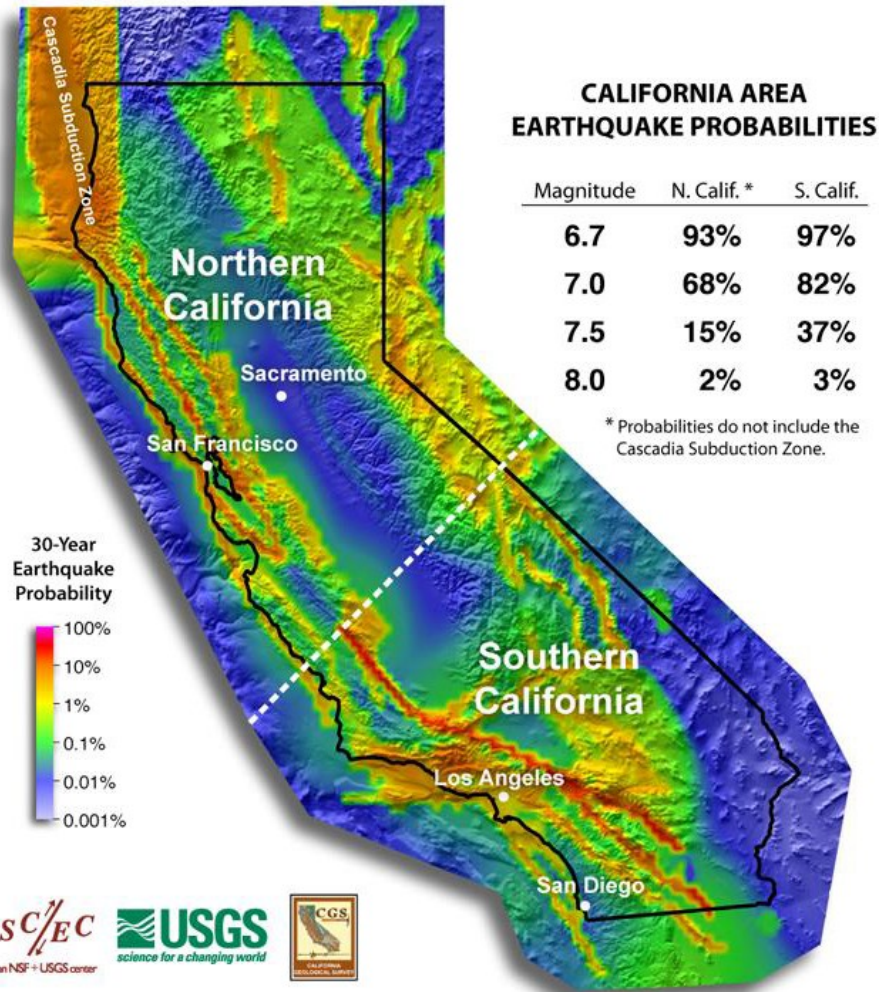
cc: Victoria LaMar-Haas, Hazard Mitigation Planning Chief, California Governor's Office of
Emergency Services
Jennifer Hogan, State Hazard Mitigation Officer, California Governor's Office of Emergency
Services
Alison Kearns, Risk Analysis Branch Chief, FEMA Region 9

Appendix B

Earthquake Profile

Appendix B: Earthquake Profile

B.1 Probability of Earthquakes



B.2 Probabilistic Seismic Hazards Mapping Ground Motion

The following information was obtained from the California Department of Conservation Geological Survey website at www.consrv.ca.gov/CGS.

User Selected Site

Longitude	-117.387
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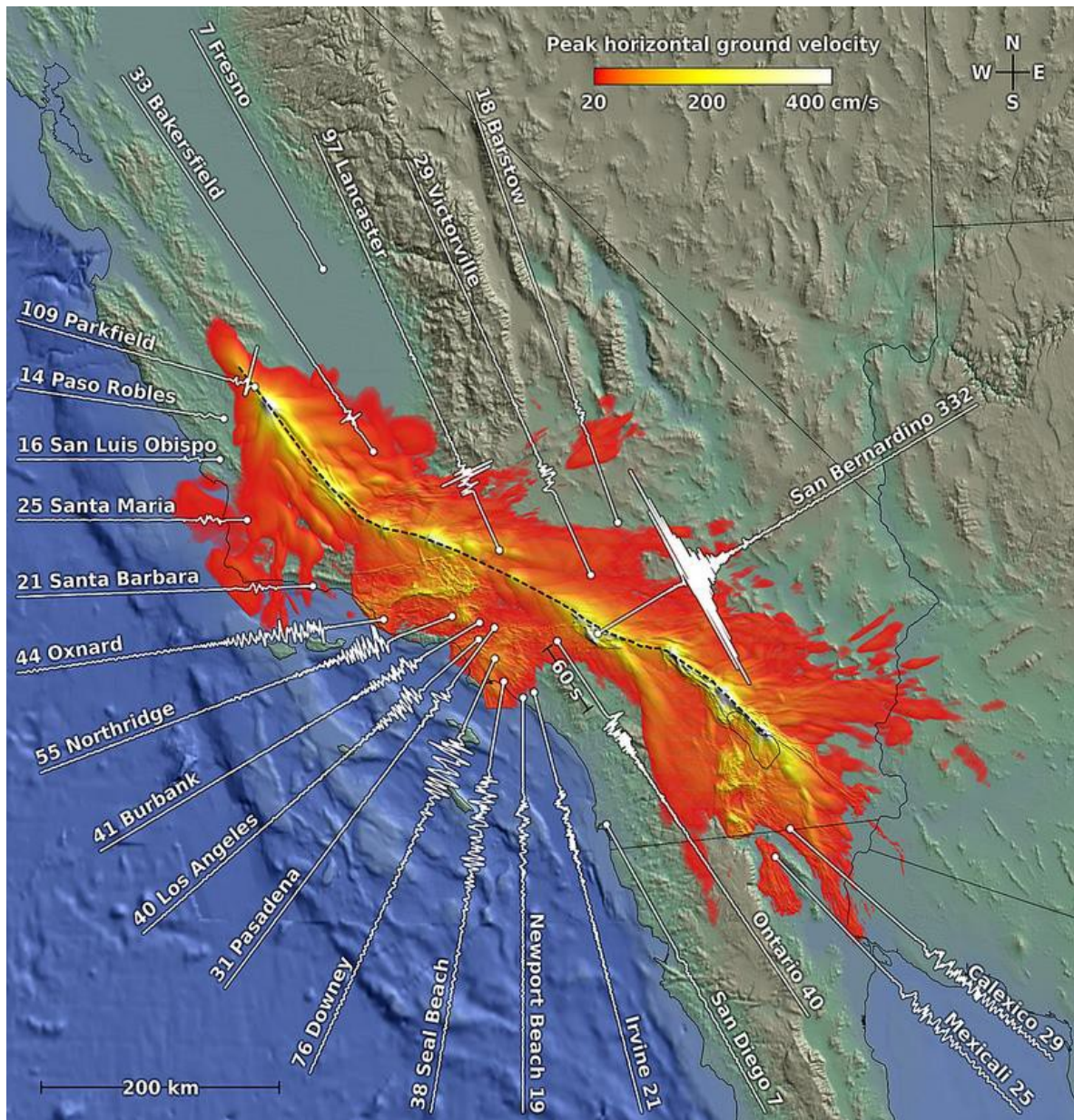
Latitude	34.1136
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Ground Motions for West Valley Water District Service Area Site

Ground motions (10% probability of being exceeded in 50 years) are expressed as a fraction of the acceleration due to gravity (G). Three values of ground motion are shown, peak ground acceleration (PGA), spectral acceleration (SA) at short (0.2 second) and moderately long (1.0 second) periods. Ground motion values are also modified by the local site soil conditions. Each ground motion value is shown for 3 different site conditions: firm rock (conditions on the boundary between site categories B and C as defined by the building code), soft rock (site category C) and alluvium (site category D).

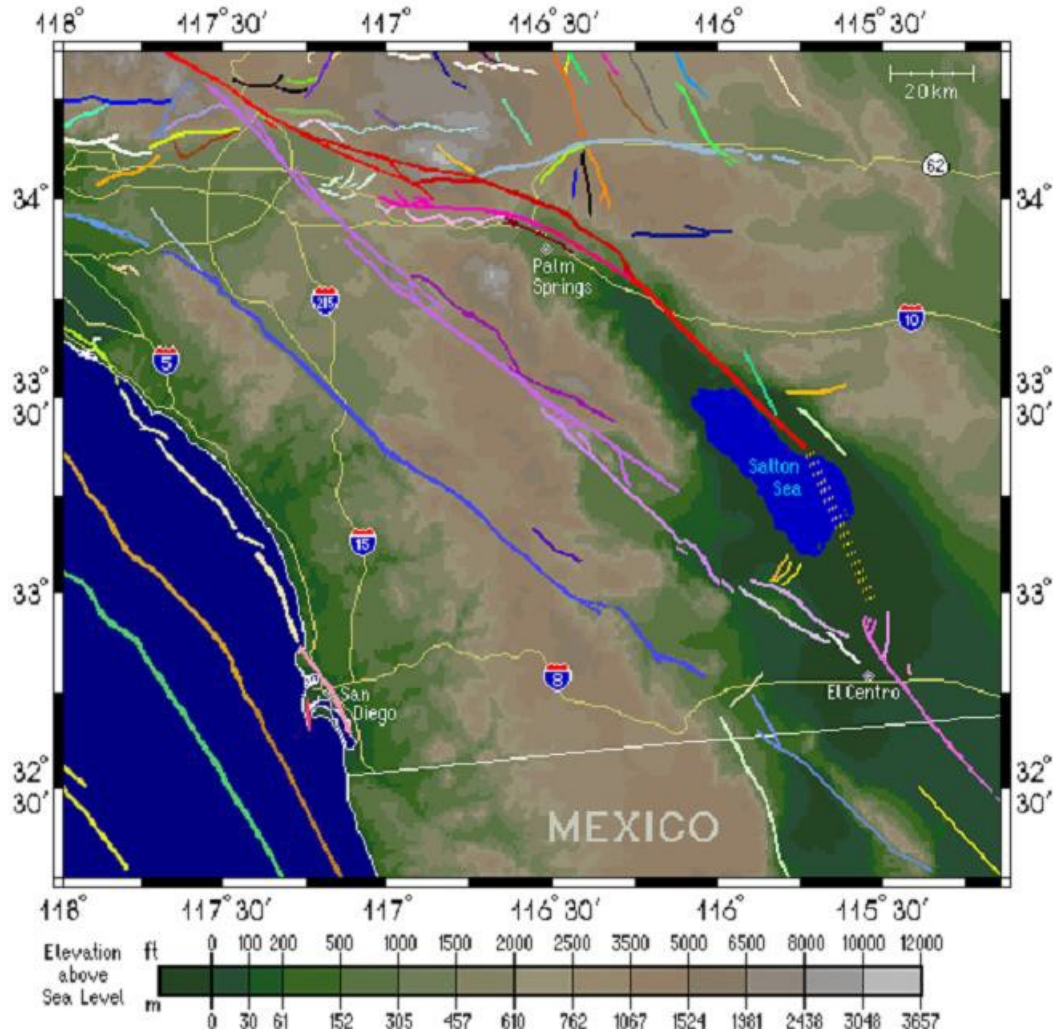
Ground Motion	Firm Rock	Soft Rock	Alluvium
PGA	0.856	0.856	0.856
Sa 0.2 sec	2.036	2.036	2.036
Sa 1.0 sec	0.81	0.916	1.057

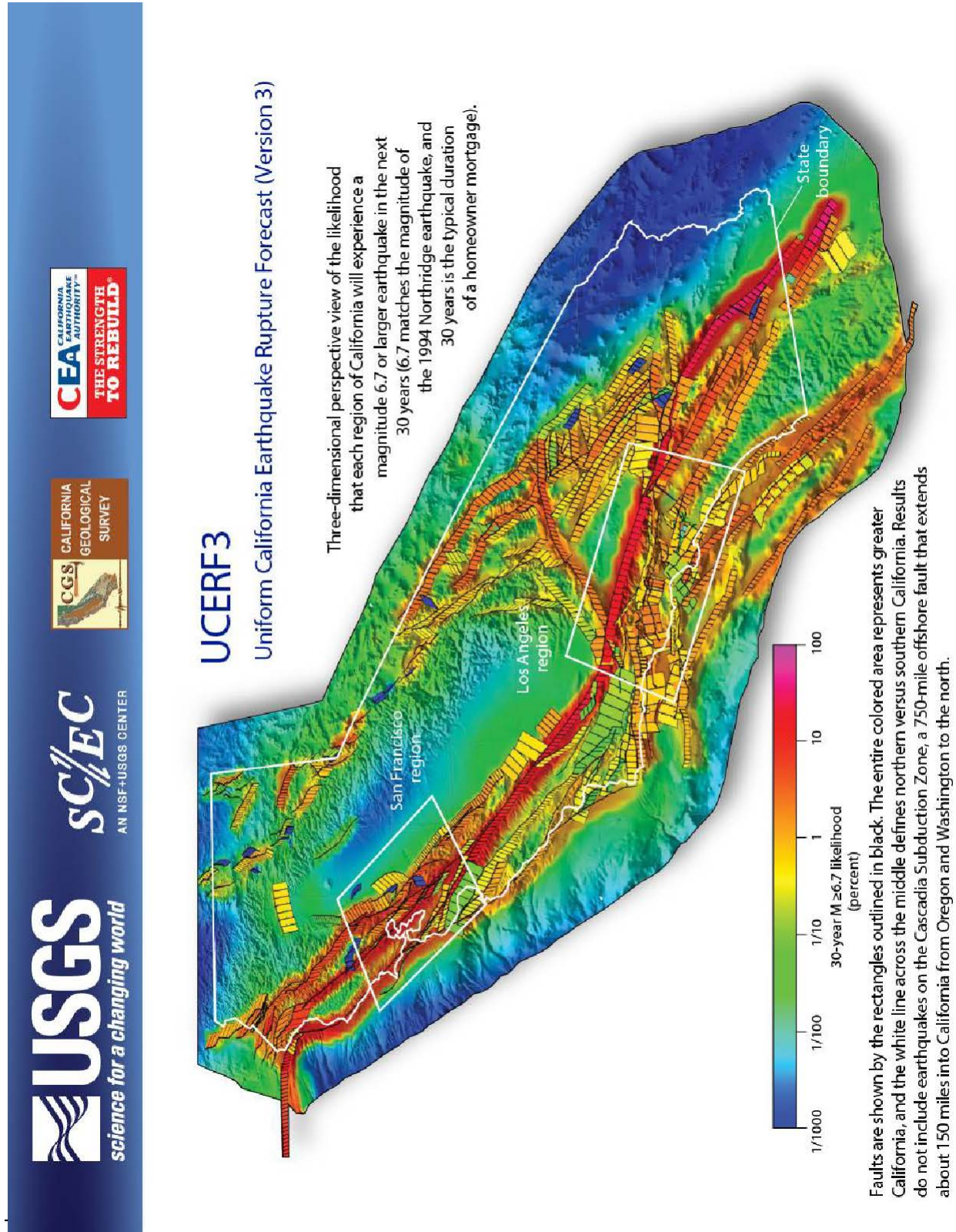
NEHRP Soil Corrections were used to calculate Soft Rock and Alluvium. Ground Motion values were interpolated from a grid (0.05 degree spacing) of calculated values. Interpolated ground motion may not equal values calculated for a specific site, therefore these values are not intended for design or analysis.



B.3 Map of Southern California Faults

The following information was obtained from the Southern California Earthquake Data Center. Website at www.data.scec.org/faults/sofault.html. On the website, each fault can be clicked on and a description of the fault is then shown.





B.5 Map of Previous Earthquakes in Southern California

The following information was obtained from the Southern California Earthquake Data Center.

Below is a map of Southern California, with epicenters of historic earthquakes, dating as far back as 1812). Major highways (in tan) and the surface traces of major faults (in greenish-blue).

This map does not show the epicenters of all earthquakes greater than magnitude 4.5 recorded in the southern California area since the 19th century. It is meant as an overview of large and destructive, fairly recent, or unusual earthquakes. The magnitudes given by the scale are generally moment magnitudes (denoted M_w), for earthquakes above magnitude 6, and local magnitudes (denoted M_L), for most earthquakes below magnitude 6 and for earthquakes which occurred before accurate instrumental measurements of magnitude were possible (i.e. before 1933).

