La Habra Heights County Water District

Water Emergencies: 562-697-6769

Local Hazard Mitigation Plan Update

La Habra Heights County Water District

January 29, 2026

Table of Contents

SECTION 1. INTRODUCTION

The Local Hazard Mitigation Plan (LHMP) update is a *living document* that is reviewed, monitored, and updated to reflect changing conditions, new data, and evolving risks. As defined by Federal Emergency Management Agency (FEMA), an LHMP is a long-term planning document that identifies hazards, assesses risks and vulnerabilities, and establishes strategies to reduce or eliminate the long-term impacts of natural hazards on people, property, and critical infrastructure.

In accordance with federal requirements, the LHMP must be updated every five (5) years to remain compliant with FEMA regulations and maintain eligibility for federal hazard mitigation grant programs. Consistent with these requirements, this LHMP represents an update to the La Habra Heights County Water District's previously adopted Hazard Mitigation Plan and is currently under review by FEMA.

1.1 Purpose of the Plan

Hazard mitigation intends to reduce and/or eliminate loss of life and property. FEMA defines hazard mitigation as "any action taken to reduce or eliminate the long-term risk to human life and property from natural hazards." A "hazard" is defined by FEMA as "any event or condition with the potential to cause fatalities, injuries, property damage, infrastructure damage, agricultural loss, environmental damage, business interruption, or other loss."

The Local Hazard Mitigation Plan aims to establish a plan for reducing and/or eliminating risk within the La Habra Heights County Water District service area. The LHMP process encourages communities to develop goals and projects to reduce risk and build a more disaster-resilient community by analyzing potential hazards.

After disasters, repairs and reconstruction are often completed to restore to pre-disaster conditions. While this approach expedites recovery, it can perpetuate the disaster cycle—damage, reconstruction, and repeated damage. Mitigation efforts aim to break this cycle by making infrastructure and the natural environment more resilient. Such efforts expedite a return to normalcy; however, restoring things to pre-disaster conditions sometimes results in feeding the disaster cycle: damage, reconstruction, and repeated damage. Mitigation is one of the primary phases of emergency management, specifically dedicated to breaking the cycle of damage. Hazard mitigation is distinguished from other disaster management functions by measures that make LHHCWD infrastructure development and the natural environment safer and more disaster resilient. Mitigation generally involves altering physical environments, significantly reducing risks and vulnerability to hazards by

altering the built environment to avoid or reduce life and property losses. Mitigation also makes responding to and recovering disasters easier and less expensive.

With an approved (and adopted) LHMP, the La Habra Heights County Water District is eligible for federal disaster mitigation funds/grants (Hazard Mitigation Grant Program, Pre-Disaster Mitigation, and Flood Management Assistance) aimed to reduce and/or eliminate risk.

1.2 Authority

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

Senate Bill No. 379 requires local jurisdictions to review and update their Safety Element to address climate adaptation and resiliency strategies. This must occur upon the next revision of the Local Hazard Mitigation Plan after January 1, 2023, or, if no LHMP has been adopted, by January 1, 2028.

La Habra Heights County Water District was established in 1976 and succeeded La Habra Heights Mutual Water Company. The Mutual Company was formed in 1919. LHHCWD serves water to 2,002 metered connections covering 6 square miles of land. Approximately 5,682 people are served by LHHCWD’s water system. LHHCWD occupies approximately 3,904 acres (about half the area of Chicago O'Hare airport), which includes much of the City of La Habra Heights, small portions of the City of Whittier, and unincorporated Los Angeles County in Southern California.

LHHCWD is governed by a five (5) member Board of Directors, elected at large, from the residents living within the LHHCWD service area boundaries. LHHCWD does not have legal authority for zoning, land use, new construction, planning, building inspections, or codes. LHHCWD will have to issue a “Will Serve” letter for any new development requested. The County of Los Angeles and the City of La Habra Heights have authority over building codes.

1.3 What’s New

The 2022 La Habra Heights County Water District Local Hazard Mitigation Plan included a detailed planning process, hazard risk assessment, and mitigation strategy. Since FEMA’s approval, LHHCWD has made progress implementing mitigation actions. This 2025 update reviews and realigns those strategies for the next five-year period. As part

of this 2025 LHMP update, a thorough review and update of the 2022 plan was conducted to ensure that this update reflects current conditions and priorities to realign the overall mitigation strategy for the next five-year planning period. This section of the LHMP includes the following:

What's New in the LHMP Update. This section provides an overview of the approach to updating the LHMP and identifies new analyses, data, and information included in this Plan update to reflect current service area conditions. This includes a summary of new hazard and risk assessment data related to the service area and information on current and future development trends affecting infrastructure vulnerability and related issues. The updated data and analyses are in their respective sections within this 2025 LHMP update.

Summary of Significant Changes to Current Conditions and Hazard Mitigation Program Priorities. This section summarizes significant changes in current conditions, changes in vulnerability, and any resulting modifications to the community's mitigation program priorities.

2022 Mitigation Strategy Status and Successes. This section describes the status of mitigation actions from the 2022 plan and indicates whether a project is no longer relevant or is recommended for inclusion in the updated 2025 mitigation strategy.

This *What's New* section provides documentation of the LHHCWD service area's progress or changes in their risk and vulnerability to hazards and their overall hazard mitigation program. Completing this 2025 LHMP update further provides documentation of the continued commitment and engagement in the mitigation planning process.

1.4 New Risk Assessment

As part of its comprehensive review and update of each plan section, LHHCWD recognized that updated data, if available, would enhance the analysis presented in the risk assessment and be utilized in developing the updated mitigation strategy. Highlights of new data used for this plan update are identified below in this section and are also sourced in context within *Section 4, Risk Assessment*. Specific data used is sourced throughout this plan document. This new data and associated analysis provided valuable input for developing the mitigation strategy presented in *Section 5* of this plan. A highlight of new information and analyses contained in this update plan includes the following:

- A new assessment of updated hazards affecting the LHHCWD service area was completed, adding additional hazards to planning documents. The new hazards include cyber security.

- An entire rework of the risk assessment for each identified hazard. This included reworking the hazard profile and adding new hazard event occurrences, rebuilding vulnerability as the whole analysis to add items identified below, and updating the vulnerability assessment based on more recent hazard data.
- An update of the flood hazard analysis will include an updated analysis of the 100-year flood and an analysis of the 500-year flood, including the new and updated Digital Flood Insurance Rate Maps (DFIRMs).
- An enhanced vulnerability assessment.

Incorporation and analysis of the new 2020 Census data were utilized for this LHMP update. Census data was used in an intersect analysis to determine how much of the population is exposed to earthquakes, wildfire, drought, landslides, and windstorm hazards.

1.5 Successful Mitigation Implementation

LHHCWD has completed a review of past seismic retrofit studies and has applied studies to current and future projects.

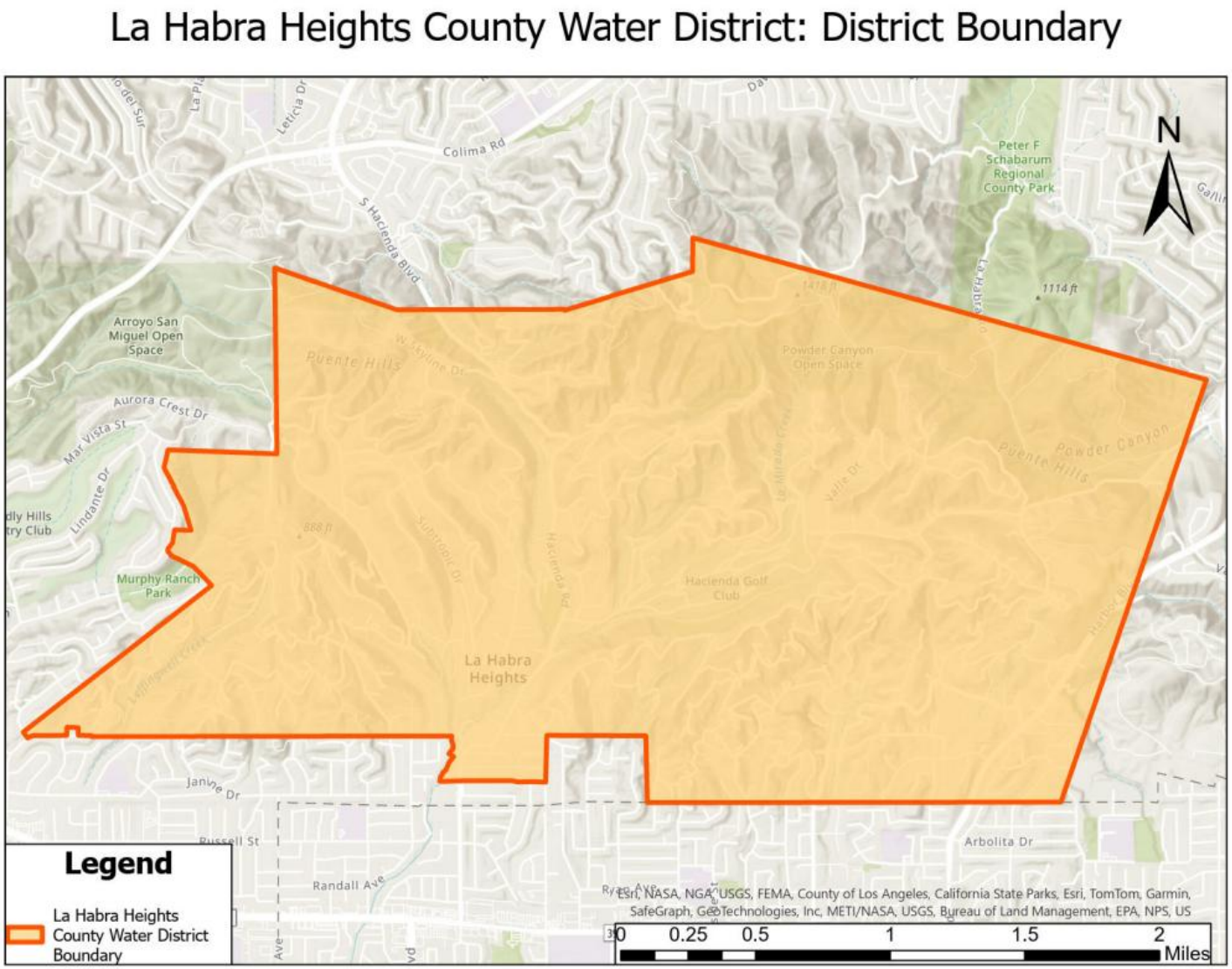
- One steel reservoir has been strategically retrofitted since 2020, and one more is planned for the next five years, 2025-2030.

1.6 Community Profile

Physical Setting

LHHCWD is located within the City of La Habra Heights and the County of Los Angeles. The service area is mostly open space with rolling hills, with very little flat land. The service area is also home to small horse properties and small avocado groves. The neighboring cities are Hacienda Heights, Whittier, La Habra, and Rowland Heights. The average rainfall for the area is approximately 14 inches per year. This area has a mild climate with average temperatures of a low 40 degrees in the winter and a high of 88 degrees in the summer months.

Figure 1. La Habra Heights County Water District Service Area Map



History

La Habra Heights County Water District is located approximately 15 miles east of the Pacific Ocean and is bordered by Whittier, La Habra, Hacienda Heights, and Rowland Heights. Most of the lots in the jurisdictional area are 1-acre (4,046 m2 (about 2.51 mi)) including a variety of homes and ranches with no sidewalks, curbs, or gutters. Most lots feature open space, and encouragement of animal husbandry. La Habra Heights County Water District has no commercial activity (stores, gas stations) except for a small real estate office, a plant nursery, a private golf course, oil and gas well operations, churches, the city offices, and long-term care facilities. The only park in LHHCWD is called "The Park," which runs along Hacienda Road.

LHHCWD is located in the southwest section of Los Angeles County, CA which is bordered by San Bernardino, Ventura, Kern and Orange Counties, and the Pacific Ocean on the west. Los Angeles County has a population of more than 10 million residents; it is the most populated County in the United States, with 88 incorporated cities and many unincorporated areas. The County covers 4,083 square miles. It is home to more than one-quarter of California's residents and the most ethnically diverse County in the United States.

The water service area covers part of the City of La Habra Heights as well as a small area in the County of Los Angeles and the City of Whittier. When physical operations began in 1919, the Mutual Company served mostly avocado farmers and a small number of residents.

Currently, LHHCWD pumps water from the underground aquifer and distributes water to the customers. Besides the underground aquifer, the only other source is a connection to the Metropolitan Water District. LHHCWD serves a population of approximately 5,682 residents within a 6-square mile area and maintains approximately 2,002-meter services, 60 miles of pipeline, and 13.88 million gallons of water storage capacity.

Table 1. LHHCWD Critical Facilities

Critical Facilities	Hazard Vulnerability
Well 8	Earthquake, Wildfire, Windstorms, Climate Change Induced Drought
Well 10 & 11	Earthquake, Wildfire, Windstorms, Climate Change Induced Drought
La Mirada Conduit under 605 freeway	Earthquake, Wildfire, Windstorms

Gualtieri Reservoir	Earthquake Wildfire, Windstorms
Plant 1	Earthquake, Wildfire, Windstorms
Plant 2	Earthquake Wildfire, Windstorms, Climate Change Induced Drought
Reservoir 5A	Earthquake Wildfire, Landslides, Windstorms
Plant 5/Reservoir 2	Earthquake Wildfire, Landslides, Windstorms
Plant 6/Lyons Reservoir	Earthquake Wildfire, Landslides, Windstorms
Snooks Reservoir	Earthquake Wildfire, Landslides, Windstorms
Vigil Reservoir	Earthquake Wildfire, Landslides, Windstorms
Reservoir 10A	Earthquake Wildfire, Landslides, Windstorms
District Office	Earthquake, Wildfire, Landslides, Windstorms

1.7 Climate

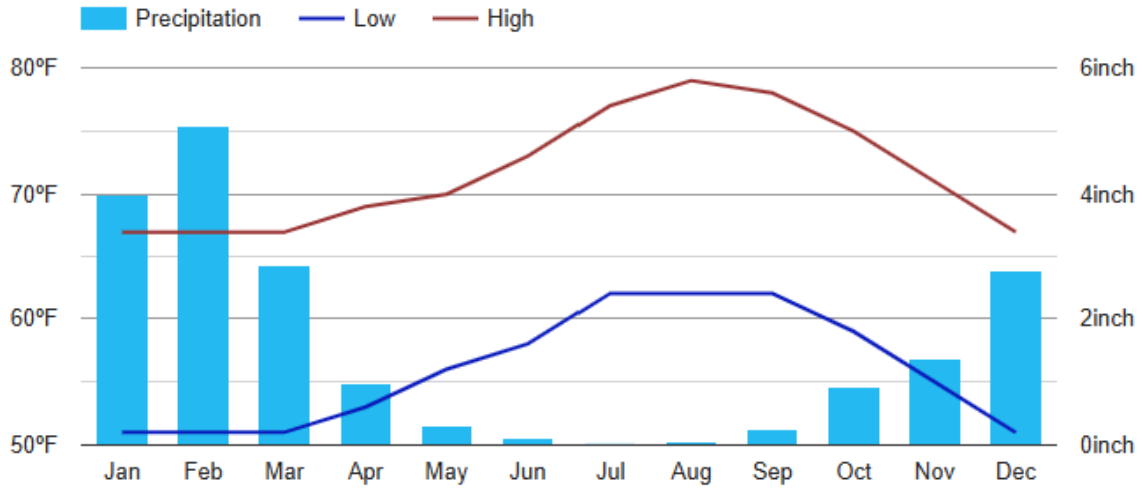
La Habra Heights experiences a relatively dry climate compared to national averages. The community receives approximately 14 inches of rainfall annually, well below the U.S. average of 38.1 inches. Snowfall is negligible, averaging 0.0 inches per year, compared to the national average of 27.8 inches. The area enjoys abundant sunshine, with an average of 285 sunny days per year, exceeding the U.S. average of 205 days. Overall, La Habra Heights experiences measurable precipitation—defined as rain, snow, sleet, or hail—on approximately 33 days per year.

The region's temperate Mediterranean climate fosters moderate winters and warm summers. In the winter, the average daytime high temperatures range from the upper 60s to lower 70s. Summer high temperatures are typically in the mid-80s to lower 90s. Overnight low temperatures average in the mid-50s to lower 60s throughout the year. **Table 2** below shows the average maximum and minimum temperatures and average precipitation for the La Habra Heights region.

Table 2. Average Max and Min Temp and Total Precipitation for La Habra Heights

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Avg. Max. Temp (F)	66.7	66.4	69.3	72.1	74.3	78.8	83.8	86	84.2	78.6	72	64.6	74.7
Avg. Min. Temp (F)	50.5	49.8	51.4	54	56.3	58.8	64.6	65.8	64.9	60.8	55.9	50.2	56.9
Avg. Total Rainfall	1.06	1.26	0.87	0.47	0.12	0.04	0.16	0.12	0.12	0.2	0.59	1.5	6.5

Figure 2. Average max and min climate graph



1.8 Demographics

Demographics for the service area are based on Census 2020. The City of La Habra Heights has a population of approximately 5,682 people, with a density of 330.5 people per square mile. There are approximately 1,805 households in the community. Ninety-three percent of residents live in owner-occupied homes and 7 percent in rented properties. The median household income is $118,000, and approximately 3.4 percent of residents live below the federal poverty line.

Emergency services within the city are provided by the La Habra Heights Fire Department, while Los Angeles County provides fire and emergency response services in surrounding unincorporated areas. Based on Census 2020 income data, the LHHCWD service area does not qualify as a state-defined “severely disadvantaged community.” However, some vulnerable populations exist, including older adults, individuals with disabilities, and residents with limited financial resources.

Table 3. Percentage of the Population at Risk from Identified Hazards within

% of Population at Risk from Identified Hazards	LHHCWD	Population Total
Population within Service Area	5,682	5,682
Earthquake	100%	5,682
Drought	100%	5,682
Landslides	50%	2,841
Windstorm	20%	1,136
Wildfire	100%	5,682

1.9 Existing Land Use

The existing land use is housing, government (including a Park), light commercial, a golf club, and oil well sites. The City of La Habra Heights is responsible for land use. LHHCWD does not have the authority to regulate land use in the area. Incorporated areas are regulated by the City of La Habra Heights and the unincorporated areas by Los Angeles County.

1.10 Development Trends

The LHHCWD service area consists primarily of rural residential properties, equestrian properties, and avocado and citrus groves. The community is largely built out, with very limited vacant land available for new development. As a result, most future growth is expected to occur through redevelopment or improvements to existing properties rather than new construction.

Development in the area is constrained by steep topography, wildfire hazard zones, and limited access routes. These geographic and environmental conditions reduce potential for large-scale development but heighten the importance of hazard mitigation and emergency planning.

No major commercial or industrial development is anticipated due to zoning restrictions and long-standing community priorities focused on maintaining rural character and preserving open space. Additionally, all developments will comply with County and State Fire, Flood, and Seismic codes, including grading requirements for hillside developments.

SECTION 2. PLAN ADOPTION

2.1 Adoption by Local Governing Body

After public review, the draft LHMP will be submitted to the LHHCWD Board of Directors for adoption by resolution. The adopted LHMP and resolution will be forwarded to the California Office of Emergency Services (CalOES) for review. Upon CalOES approval, the LHMP will be sent to the Federal Emergency Management Agency (FEMA). The Board's resolution will incorporate any changes required by CalOES or FEMA. FEMA will issue an "Approval Letter" when the LHMP meets all federal requirements. A copy of the final LHMP will be delivered to the Los Angeles County Office of Emergency Management and retained by LHHCWD.

2.2 Promulgation Authority

The Local Hazard Mitigation Plan was reviewed and approved by the elected members of the La Habra Height County Water District's Board of Directors:

Brad Cooke - President

Pam McVicar - Vice President

Karen Baroldi - Board of Directors Member

Mark Perumean - Board of Directors Member

James Crabb - Board of Directors Member

2.3 Primary Point of Contact

The Point of Contact for information regarding this LHMP is:

Joe Matthews - General Manager
1271 N. Hacienda Road
La Habra Heights, CA 90631
562-697-6769

Consultant Primary Contact:
Gary Sturdivan, Project Lead
Sturdivan Emergency Management Consulting, LLC.
(909) 658-5974
GSturdivan@semcllc.com

SECTION 3. PLANNING PROCESS

3.1 Preparing for the Plan

LHHCWD developed a broad approach in preparation for updating the hazard mitigation plan. As an active participant in the County of Los Angeles's Multi-Hazard Multi-Jurisdictional Mitigation Plan, LHHCWD used county-provided resources to assist in developing and evaluating data to start the LHMP update.

Internally, LHHCWD has a wealth of experienced and resourceful employees who benefit from the program. The LHHCWD team participated in regular discussions and staff meetings supporting the LHMP update. The internal planning team was invited to the meeting through email and Zoom Meetings and Microsoft Outlook calendar invites.

In addition, the General Manager contacted the following by phone and email. All the following were invited to take part in planning or review the LHMP. Additionally, members from local government agencies who were asked to be a part of the LHHCWD LHMP Update Planning team to assist in document review included staff from La Habra Heights Fire Department who was able to attend. Los Angeles County Fire Department, Los Angeles County OES, the Los Angeles County Office of Emergency Management, and the Los Angeles County Sheriff Department were unable to join at this time. This team also participated in community outreach with local businesses, including community-based organizations, that work directly with and/or provide support to underserved communities and socially vulnerable populations and members of the public. The Neuro Restorative care facility in La Habra Heights is an organization within the service boundaries that conduct outreach and assistance for vulnerable populations was asked and agreed to involvement of reading and comments of the LHMP. Other Organizations include the American Red Cross, churches in the area, The Heights Inn assisted living home, and the Partnership for Inclusive Disaster Strategies. Unfortunately, these organizations were unable to join at this time. La Habra Heights Fire Department attended meetings and was contacted by the Geneal Manager of LHHCWD.

LHHCWD is a member of local mutual aid groups such as CalWARN (California Water/Wastewater Agency Response Network) and PWAG (Public Agencies Water Group).

LHHCWD's approach in updating the LHMP consisted of:

- Establishing the internal planning team
- Coordination with outside agencies, organizations, jurisdictions, and the public
- Documenting past events

- Posting of the draft LHMP onto LHHCWD website and asking for public input and comments on the planning process
- Conducting public outreach
- Reviewing and updating the hazards
- Reviewing and updating mitigation measures
- Plan Adoption

During the planning process, the Planning Team utilized the following plans, shown in **Table 4** to gain information on the service area hazards and mitigation goals for LHHCWD. Relevant information from each of the following plans, including local and County Government priorities, was included when aligned with LHHCWD strategies and projects and incorporated into this update. There have not been any changes in priorities since the approval of the 2022 LHMP.

LHHCWD is not required to have an Urban Water Master Plan as LHHCWD is under 3,300 service connections. LHHCWD does have a Water Master Plan, in which it includes community water systems, water storage, water shortage, and climate change within LHHCWD.

Table 4. Plans Used

Study Plan	Key Information
2022 Water Master Plan	Water Systems
2022 LHHCWD LHMP	Hazard Identification, Mitigation Measures
2020 Los Angeles County LHMP	Hazard Identification, Mitigation Measures
2025 California HMP	Land Use for Area, Future Projects
Los Angeles County Flood Control	Goals For the State of California

The planning process consisted of:

3.2 Planning Team

As identified in **Section 3.1**, several planning teams were associated with preparing the update. The Hazard Mitigation Plan was compiled and authored by members of the following Planning Team:

Internal Team:

- **Joe Matthews** – General Manager
- **Ivan Ramirez** – Superintendent
- **Karen Baroldi** – Director, Board of Directors

External Team Reviewers:

- **Ryan Jorgensen** – La Habra Heights Fire Department Fire Marshall, Battalion Chief
- **Frank Salazar** – City of San Bernardino Municipal Water Department
- **Ed Casteneda** – Orchard Dale Water District

3.3 Coordination with Other External Jurisdictions, Agencies, and Organizations

The Internal and External Planning Teams include three people from the La Habra Heights County Water District and four people from the following local agencies: The City of La Habra Heights Fire Department, City of San Bernardino Municipal Water Department, and Orchard Dale Water District. The Neuro Restorative care facility in La

Habra Heights is an organization within the service boundaries that provide assistance for vulnerable populations. This organization was asked and agreed to involvement with the LHMP. Los Angeles County Fire Department, Los Angeles County OES, Los Angeles County Office of Emergency Management, Los Angeles County Sheriff, local churches, The American Red Cross, The Heights Inn assisted living home, and the Partnership for Inclusive Disaster Strategies were invited to be on the Planning Team, but no one attended. Orchard Dale Water District and City of San Bernardino Municipal Water Department chose to only review the final document for content. The meeting matrix outlining the subjects covered and the attendees is in Appendix A.

The Planning Team participated in monthly meetings to coordinate efforts, provide input, and receive support for the LHMP. The support included receiving technical expertise, resource materials, and tools. LHHCWD facilitated the LHMP process and provided information that follows FEMA requirements for the program. The tools, resource materials, and other project-related information were provided to the Planning Team by LHHCWD's LHMP consultant, Gary Sturdivan who allowed access to all participants; screenshots are located under Appendix B.

Mr. Gary Sturdivan's contact information was on each document for questions and concerns. The Planning Team reviewed the document and made corrections or voiced concerns to the consultant. These comments were discussed at the next team meeting, and corrections were then made to the document. These meetings were not publicly held.

Accomplishing a shared goal for emergency preparedness and hazard mitigation requires the coordinated efforts of various jurisdictions, agencies, and organizations.

This team's objective consisted of:

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

The La Habra Heights County Water District Planning Team participated in each of the scheduled Planning Team meetings and conference calls facilitated by SEMC related to the update project. The meeting matrix outlining the subjects covered and the attendees is in Appendix A.

3.4 Public Involvement/Outreach

In support of the La Habra Height County Water District LHMP update, LHHCWD solicited information from members of the public through various methods. LHHCWD conducted their outreach through email, phone calls, and bill inserts. The General Manager attended face to face meetings with members of the planning team and posted the final draft LHMP onto the La Habra Height County Water District website to allow public feedback.

Outreach to nonprofit organizations, including community-based organizations and the agencies listed in **Section 3.1**, was conducted to allow those representing vulnerable populations to be involved in the planning process. LHHCWD outreach included a solicitation for comments through phone calls and emails to the organizations in Section 3.1 on numerous occasions but could not elicit feedback.

Any information and public feedback collected from the public outreach phase and meetings will be documented in **Appendix B**, including outreach to representatives of the underserved and vulnerable populations who were provided the opportunity to be involved.

3.5 Assess the Hazard

A critical component of the LHMP process is assessing the likely hazards that may impact LHHCWD facilities and operations. It is important to have a thorough understanding of these hazards without overanalyzing remote or highly unlikely hazards.

This LHMP has been developed through an extensive review of available information on hazards LHHCWD has faced in the past and most likely will face in the future. The Planning Team reviewed and discussed items that have happened in the State of California and disasters that have happened in the service area and Southern California. The Team reviewed documents such as engineering drawings, photographs, and available geotechnical and geologic data from the Internet and outside sources such as FEMA Hazard Mapping, Los Angeles County hazard maps, and documents.

Additionally, for each profiled hazard, the Planning Team then analyzed the community's exposure to each hazard (inventory of assets) and the potential impact under scenario events. The Planning Team used HAZUS, and hazards intersect analyses recently completed within Los Angeles County to produce this information. See Section 4 for more information.

3.6 Set Goals

The goal-setting process for the 2025 Local Hazard Mitigation Plan update consisted of the Planning Team reviewing the hazard exposure and scenario impacts developed

during the Risk Assessment portion of the process. With an understanding of the potential risk the community is facing, the Planning Team then re-evaluated the 2022 Hazard Mitigation Plan Goals and Objectives, assessed their status and effectiveness in meeting the 2022 Mitigation Measures, and identified new Goals and Objectives.

3.7 Review and Propose Mitigation Measures

Identifying mitigation measures began with reviewing and validating the previous mitigation measures in the La Habra Heights County Water District 2022 Local Hazard Mitigation Plan. Using the existing plan as a starting point, the planning team assessed whether the measures were valid. Through this discussion, the development of new mitigation measures was determined.

The planning team identified and analyzed mitigation measures for the hazards that influence LHHCWD. This analysis assisted in developing an implementation strategy for prioritizing mitigation measures. Meetings (in-person and virtual) were held with the planning team as a group and through meetings within their departments to solicit input on the LHMP updates.

A wide variety of mitigation measures that can be identified to help reduce the impact or the severity of damage from hazards was examined. The projects were identified to help implement the Planning Team's goals and objectives. The following categories were used in the review of possible mitigation measures:

1. Public Information and Education - Outreach projects and technical assistance.
2. Structural Projects - Detention basins, reservoirs, road, and bridge improvements
3. Property Protection - Acquisition, retrofitting
4. Emergency Services - Warning, sandbagging, road signs/closures, evacuation
5. Natural Resource Protection - Wetlands, protection, best management practices.

In addition to the STAPLEE methodology (Social, Technical, Administrative, Political, Legal, Economic, and Environmental feasibility), each Planning Team incorporated other criteria/factor questions into the process to help engage and solicit input from members. The STAPLEE method was applied to prioritize the chosen mitigation actions.

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

Does the Action:

1. Solve the problem?
2. Address Vulnerability Assessment?
3. Reduce the exposure or vulnerability to the highest priority hazard?
4. Address multiple hazards?
5. Address more than one (1) Goal/Objective?
6. Benefits equal or exceed costs?

Can the Action:

1. Be implemented with existing funds?
2. Be implemented by existing state or federal grant programs?
3. Be completed within the 5-year life cycle of the LHMP?
4. Be implemented with currently available technologies?

Will the Action:

1. Be accepted by the community?
2. Be supported by community leaders?
3. Adversely impact segments of the population or neighborhoods.
4. Result in legal action such as a lawsuit?
5. Positively or negatively impacts the environment?

Is there:

1. Sufficient staffing to undertake the project?
2. Sufficient funds to complete the project?
3. Existing authority to undertake the project?

After going through this process for each project, the Planning Team had the ability to identify the higher priority projects.

3.8 Draft the Hazard Mitigation Plan

The LHMP update was drafted by SEMC, the Project Lead, based on input and comments from the Planning Team. As indicated previously, the Planning Team used the 2022 LHMP as a starting point but revised it to reflect updated information.

The LHHCWD consultant led the Planning Team and prepared the draft LHMP with input from the Planning Team, local agencies in the area, and the public. The Planning Team reviewed and commented on the draft LHMP, and subsequent changes were made

before the LHMP was finalized and adopted by the Board of Directors. A working draft was posted on the La Habra Heights County Water District's website for public review and comment period. Notices were sent to all water customers in the service area on billing statements. The LHMP was reviewed in comparison to the FEMA designed Review Tool. Once public comments were addressed, A final draft was placed on the La Habra Heights County Water District's website.

Once the LHMP update was drafted, the Planning Team finalized the plan and forwarded it to Cal/OES and FEMA for approval.

3.9 Adopt the Plan

Following public review, the draft LHMP will be submitted to the La Habra Heights County Water District Board of Directors for adoption by resolution. After adoption, the LHMP will be forwarded to Cal OES for review and then to FEMA for final approval. The Board's resolution will incorporate any changes required by CalOES or FEMA. FEMA will issue an "Approval Letter" when the LHMP meets all federal requirements. A copy of the final LHMP will be delivered to the Los Angeles County Office of Emergency Management and retained by LHHCWD.

SECTION 4. RISK ASSESSMENT

The goal of mitigation is to minimize future hazard impacts by reducing property damage, economic disruption, and recovery costs. Mitigation decisions are guided by risk assessments that evaluate event probability and potential damage.

This section aims to understand the hazards and their risks in the La Habra Heights County Water District service area. This process generally has four steps: 1) Hazard Identification, 2) Vulnerability Analysis, 3) Risk Analysis, and 4) Vulnerability Assessment, including an estimation of potential losses. These are four items; however, the terms can be used interchangeably.

4.1 Hazard Identification

The Planning Team identified potential hazards and evaluated their likelihood of occurrence. The following sections summarize this process and its results.

4.2 Hazard Screening Criteria

Screening the hazards aims to help prioritize which hazards create the greatest concern for LHHCWD. A list of natural hazards to consider was obtained from the FEMA's State and Local Mitigation Planning How-to Guide: Understanding Your Risks (FEMA 386-1).

The Planning Team applied criteria from the Stafford Act, California Emergency Services Act, and the STAPLEE framework to prioritize risks.

Hazards were then ranked using a probability scale of **1–4**, consistent with FEMA's recommended methodology:

- **(1) Highly Likely (75–100%)** – Expected to occur within the next 5 years
- **(2) Likely (50–75%)** – Has occurred frequently in the past; probable within 5 years
- **(3) Somewhat Likely (25–50%)** – Occurs occasionally; possible within 5 years
- **(4) Least Likely (<25%)** – Rare occurrence; unlikely within 5 years

Impact severity was categorized as:

- **Catastrophic** – Large-scale system failure, major operational disruption, long-term environmental or public health consequences
- **Critical** – Facility damage or functional impairment requiring significant repair

- **Limited** – Minor or moderate operational disruption; manageable with routine response

Using experience and historical data, the Planning Team developed the ranked list shown in **Table 5**.

Table 5. Hazard Risk Rankings

Hazard	Risk Ranking (1-4)
Wildfire	1
Earthquake	1
Landslides	2
Windstorms	3
Climate Change Induced Drought	3

The natural hazards considered not to affect or be a risk to LHHCWD were ranked 4, "Least Likely," and not considered applicable to LHHCWD for mitigation. The hazards not considered are tsunami, as LHHCWD is 20 miles inland from the nearest Ocean. Hurricanes and tornadoes are unlikely events in Southern California. Additionally, there are no active volcanoes in the region.

Screening Assessment Matrix

The screening assessment matrix was used to assess LHHCWD's hazards. The hazards have been placed in the appropriate cell of the corresponding "Screening Assessment Matrix" based on the Planning Team's collective experience. The hazard screening assessment is shown in **Table 6**. Prioritization of hazards is discussed in the following section. The Probability/Impact rating is based on a 5-year occurrence. The percentages represent the likelihood within the 5-year occurrence.

Table 6. Screening Assessment Matrix

	Impact			
Probability	**Probability/Impact Rating**	**Catastrophic**	**Critical**	**Limited**
	Highly Likely (1) (75-100%)	Wildfire Earthquake		
	Likely (2) (50-75%)			Landslides
	Somewhat Likely (3) (25-50%)			Windstorms Drought

4.3 Hazard Profiles

This section looks at all the hazards identified by the Planning Team that may impact LHHCWD within its boundaries. This section gives an overview of each hazard, the definition of each hazard, the location of each hazard, and a description of how each hazard is expected to affect LHHCWD's service and/or service area using observed hazards in LHHCWD's service area, the hazards identified in the FEMA website, and the FEMA software program known as HAZUS (Hazards United States). HAZUS contains models of natural disasters and the effects the disasters can have on a region.

4.3.1 Wildfire

Probability: (75–100%) Highly Likely — Historical wildfire data for LHHCWD indicate four major fires (≥ 10,000 acres) between 2020–2025. This equates to wildfire near their service area every 1.5 years or a 66.67 percent chance of wildfire in any given year. Given the service area's vegetation, topography, and exposure to Santa Ana winds, future wildfire events remain highly likely.

Impact: Catastrophic

General Definition: A wildfire is any fire occurring in a wildland area (i.e., grassland, forest, brushland) except for fire under prescription or control fire undertaken by land management agencies is the process of igniting fires under selected conditions, in accordance with strict parameters. Wildfires are part of the natural management of forest ecosystems but may also be caused by human factors.

Nationally, over 80 percent of wildfires are started by negligent human behavior, such as smoking in wooded areas or improperly extinguishing campfires. The second most common cause of wildfires is lightning. Downed utility poles or power lines are also a common cause of wildfires.

A *wildland fire* is an uncontrolled fire that occurs in natural or vegetated areas such as forests, grasslands, shrublands, or open space. There are three classes of wildland fires: surface fire, ground fire, and crown fire. A surface fire is the most common of these three classes and burns along the floor of a forest, moving slowly and killing or damaging trees. A ground fire (muck fire) is usually started by lightning or human carelessness and burns on or below the forest floor. Crown fires spread rapidly by wind and move quickly by jumping along the tops of trees. Wildland fires are usually signaled by dense smoke that fills the area for miles around.

Wildfire probability depends on local weather conditions, outdoor activities such as camping, debris burning, and construction, and the degree of public cooperation with fire prevention measures. Drought conditions and other natural hazards (such as tornadoes, severe winds, etc.) increase the probability of wildfires by producing fuel in urban and rural settings.

Cyclical climate events, such as El Niño-La Niña, can also have a dramatic effect on the risk of wildfires. Fewer fires are typically seen during El Niño (when more rain is present), and larger, more frequent fires are typical during La Nina events.

California is highly susceptible to wildfires, especially during the fall and summer. Southern California experiences Santa Ana winds that develop primarily in the late summer and fall seasons. These winds are known for their high speeds and drying effect,

which turn the natural grasses brown and dry. These winds are also capable of blowing down power lines that can start fires in the mountains and hills. The high winds drive the fires and can become large events that destroy large areas, including towns and cities, and cause loss of life and millions of dollars in property damage. In the jurisdictional boundaries, brush fires are known to jump from place to place due to patches of vegetation and winds. The Santa Ana winds are known to cause or spread wildfires.

Climate Change Probability: The probability of heightened wildfire activity resulting from climate change is significant, as drought conditions intensify dryness in the service area. Consequently, there is a higher risk of flooding as wildfires become more prevalent, with dry vegetation exacerbating the situation. It is well-documented that large wildfires can lead to substantial flooding, as the burning of vegetation removes natural barriers related to waterflow.

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

Population — Climate change impacts on wildfire hazard may increase population vulnerability. Evacuations and displacement may occur due to wildfire risks and the safety of the public.

Critical facilities — Climate change impacts on the wildfire hazard may increase the exposure and vulnerability of all critical facilities.

Vulnerability & Impact: Wildfire events can harm people throughout the LHHCWD service area but have a greater effect on the safety of people experiencing homelessness and those working outdoors. Severe wind events may impact populations that work outside or have respiratory illnesses as they can spread smoke, ash, and other contaminants that can affect the health of residents and workers. Lower-income residents, who may not have the financial resources to purchase homes (or are renting homes) that are not built or retrofitted to withstand powerful winds, could also have difficulty protecting themselves from polluted air quality.

Description: Local facility fires are a significant concern. LHHCWD's office facilities, computer systems, SCADA system, and operating pump stations and reservoirs are susceptible to fire damage. The consequences include loss of life, buildings, equipment, and property damage.

Wildfires affect LHHCWD in various ways. During large wildfires, firefighting personnel may draw large amounts of water and strain the water supply system. The fires also burn through electrical power lines, and LHHCWD can lose power in critical areas. Without

power, LHHCWD cannot pump groundwater from the aquifer or pump additional water to required areas.

Figure 3. Wildfire Map with LHHCWD Boundaries

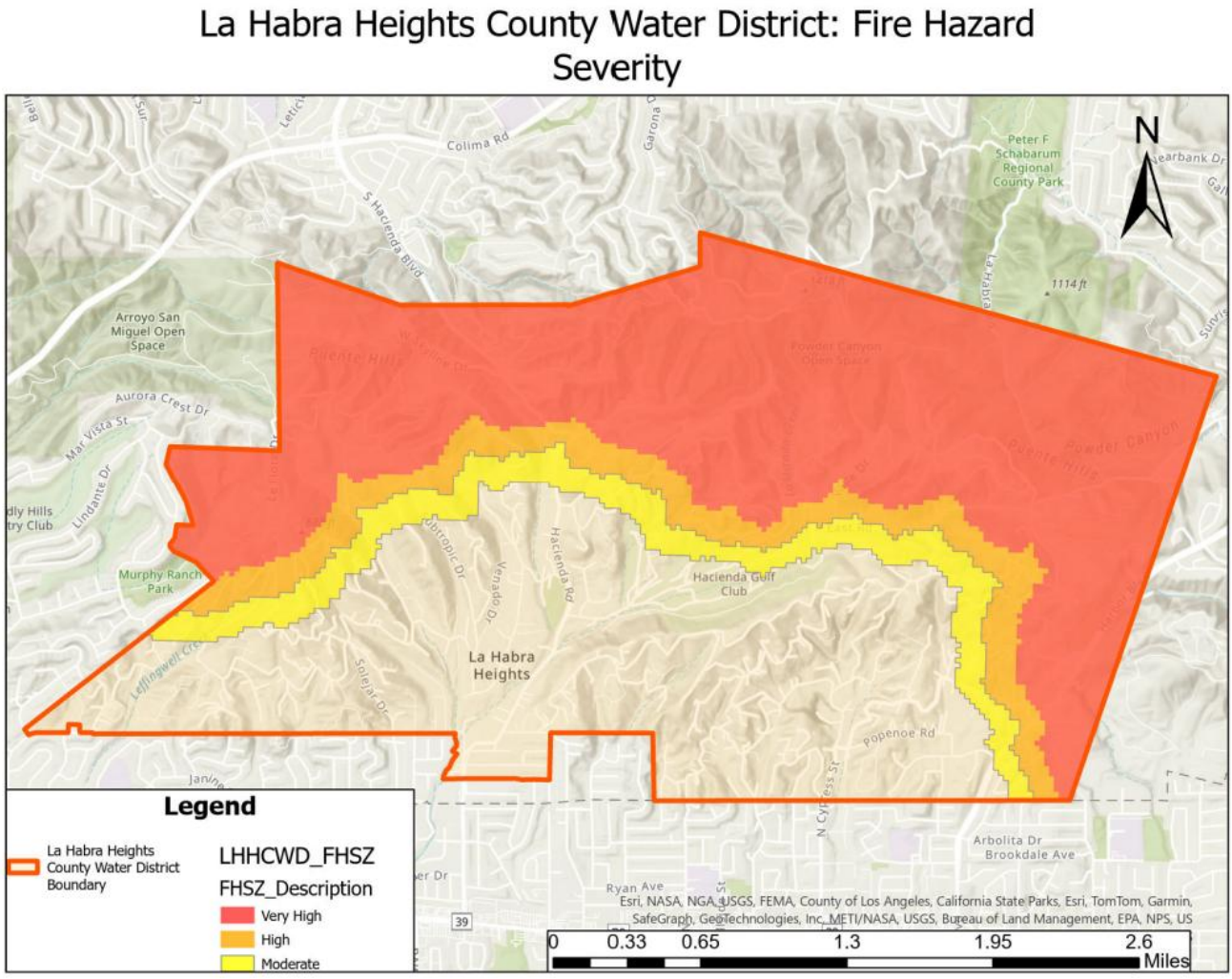


Table 7. 2020-2025 Significant Wildfires History in Los Angeles County

Fire Name	Date	Acres Burned
Bobcat Fire	2020	115,796
El Dorado Fire	2020	22,744
Palisades Fire	2025	23,713
Eaton Fire	2025	14,117

*Wildfires burning ≥10,000 acres or destroying ≥1,000 structures, based on Cal Fire's criteria for major incidents

Within the 2020 - 2025 timeframe, there were two federal and/or state declarations for California wildfires near the LHHCWD service area. Notice is hereby given that, in a letter dated October 16, 2020 (DR-4569-CA), and January 8, 2025 (DR-4856-CA) the President issued a major disaster declaration under the authority of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, 42 U.S.C. 5121 *et seq*. (the "Stafford Act"), as follows:

> *"I have determined that the damage in certain areas of the State of California resulting from wildfires beginning on [September 4, 2020 (DR-4568-CA) / January 7,2025 (DR-4856-CA)], and continuing, is of sufficient severity and magnitude to warrant a major disaster declaration under the Robert T. Stafford Disaster Relief and Emergency Assistance Act, 42 U.S.C. 5121 et seq. (the "Stafford Act"). Therefore, I declare that such a major disaster exists in the State of California."*

Impact Statement: Wildfire events have the potential to cause a variety of impacts on LHHCWD and its assets. Wildfires could directly damage above-ground assets that are burned or melted by fires. In addition, wildfires have the potential to cause damage to underground pipes in domestic water systems, as demonstrated in Santa Rosa, where heat from a wildfire melts underground pipes, causing benzene to leech into the water supply. Wildfires may also impede access to assets that need maintenance or repair or pose life safety threats to employees. LHHCWD will also need to supply water to fight fires, which could impact the available supply.

In addition, wildfires have the potential to result in indirect or cascading hazards to LHHCWD. If utility lines are damaged, wildfires can cause power outages, and burned areas are much more susceptible to landslides.

A power outage has the potential to disrupt services provided in the service area. LHHCWD relies on an adequate energy source to power many of its assets, including booster stations, water treatment plants, and any other asset that requires an electrical component. LHHCWD has portable backup power supplies for many of its critical assets to minimize the impacts of power outages. However, long-term outages may exceed the fuel required to power backup generators. This could compromise nearly all the services, including domestic water delivery, water treatment, and irrigation. Administrative buildings also require an energy source, and disruptions could compromise operations, billing, and communications. A loss of power resulting in the inability of LHHCWD to provide essential services could have direct impacts in terms of revenue loss and reputational impacts, in addition to far-reaching community impacts.

In summary, the entire service area, including all current and future assets (infrastructure, buildings, critical facilities, and population), is considered at risk of wildfire events. All current and future above-ground assets, drinking water systems, and populations (e.g., employees) are at most risk of wildfire. LHHCWD has no jurisdiction over land use, development and zoning, socially vulnerable populations, and/or land development within their service area. Water districts nationwide follow the standards set by the American Water Works Association and USEPA governing public water systems.

4.3.2 Earthquake

Probability: (75–100%) Highly Likely — Historical earthquake data for LHHCWD and the surrounding region show six significant earthquakes (magnitude 4.0 or greater) in the past five years. Based on this frequency, future earthquakes within the service area are considered highly likely. This equates to a significant earthquake every year on average or a 100 percent chance of a significant earthquake in any given year. Based on this data, LHHCWD determined that future earthquake occurrences within their boundaries continue to be highly likely.

Impact: Catastrophic

**This section examines all the hazards affecting LHHCWD within its boundaries, which the Planning Team identified.*

General Definition: 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's surface. The plates move slowly over, under, and past each other to create mountains, valleys, and all other geological formations. Usually, the movement is gradual; however, increased movement occurs when the plates become 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 plates meet; however, some earthquakes occur in the middle of plates.

Ground shaking from earthquakes can collapse buildings and bridges and disrupt gas, electricity, water utilities, and phone service. Additionally, earthquakes can trigger landslides, avalanches, fires, and destructive ocean waves such as tsunamis. Buildings with foundations resting on unconsolidated fill material and other unstable soil, as well as homes not tied to their foundations, are at risk because they can be shaken off their mountings even during a mild earthquake. An earthquake in a populated area may cause deaths, injuries, and/or extensive property damage.

Earthquakes strike suddenly and without warning at any time of year. On a yearly basis, 70 to 75 damaging earthquakes occur worldwide. Estimates of losses from a 7.8-magnitude earthquake in the southern section of the San Andreas Fault System (located in the regional area near Los Angeles County) could easily reach $200 billion in damages. This information was pulled from the California Great ShakeOut© USGS scenario.

Earthquakes pose a moderate to very high risk for 45 states and territories in the United States of America, and earthquakes occur in every region of the Country. California experiences the most frequent damaging earthquakes of the 45 states and territories of the United States; however, Alaska experiences the greatest number of large

earthquakes, most located in uninhabited areas. The nearby southern section of the San Andreas Fault is ranked in the top five (5) most likely faults to cause major damage in the United States by the United States Geological Survey (USGS).

The source for the earthquake profile is a report that describes a new earthquake rupture forecast for California developed by the 2007 Working Group on California Earthquake Probabilities (WGCEP 2007). The Earthquake Working Group was organized in September 2005 by the USGS, the California Geological Survey (CGS), and the Southern California Earthquake Center (SCEC) to understand the locations of faults in California better. The group produced a revised, time-independent forecast for California for the National Seismic Hazard Map.

Climate Change Impacts: The following summarizes changes in exposure to earthquake hazards resulting from climate change.

Population – Vulnerability to earthquakes is unlikely to increase due to climate change.

Critical facilities – All critical facility's exposure and vulnerability are unlikely to increase due to climate change.

Vulnerability: The socially vulnerable population comprises individuals such as children, the elderly, individuals with mental health challenges, and those facing financial hardship. These individuals may reside in unconventional living situations, such as under bridges, tents, or makeshift shelters along waterways or freeway bridges. The socially vulnerable populations are most susceptible based on many factors, including how the people respond to their financial ability to purchase supplies. Food, clothing, and safe housing may be manageable for only short periods and then fall into extreme poverty, with a lack of resources and the ability to navigate special needs in an emergency or to manage to obtain adequate food, housing, clothing, or medical treatment.

In an earthquake, vulnerable populations may not be able to find adequate shelter as the landscape streets and shelters are not available in the short term. Shelter must be developed and put in place by the affected cities, counties, States, or FEMA.

Table 8 below is a replacement cost estimate for all LHHCWD critical facilities.

Table 8. Earthquake Replacement Costs

LHHCWD / Earthquake Magnitude	Replacement Value
Magnitude 7.0 or Above (Very High Impact)	
LHHCWD – All Critical Assets	$67,300,000
Magnitude 5.0 or 6.9 (Moderate Impact)	
LHHCWD – All Critical Assets	$53,840,000
Magnitude 1.0 or 4.9 (Low Impact)	
LHHCWD – All Critical Assets	$0

Description: The area around LHHCWD facilities is seismically active since it has the Whittier fault line through it. There have been many earthquakes in and around LHHCWD's service area.

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

Figure 4. Earthquake Liquefication and Landslide Map with LHHCWD Boundaries

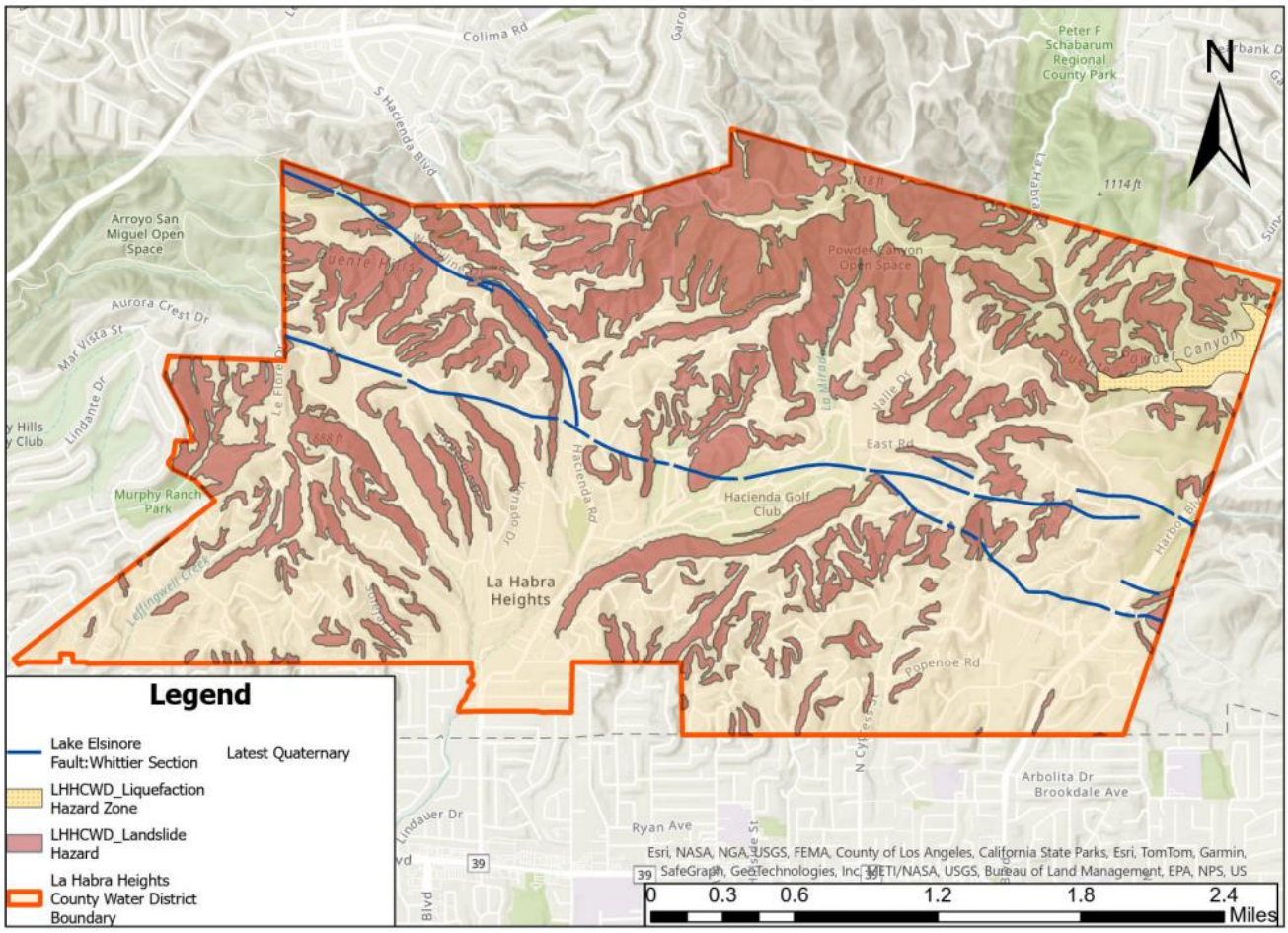


Table 9. Significant Earthquakes (4.0+ Mw) within Los Angeles County in the last 5 years

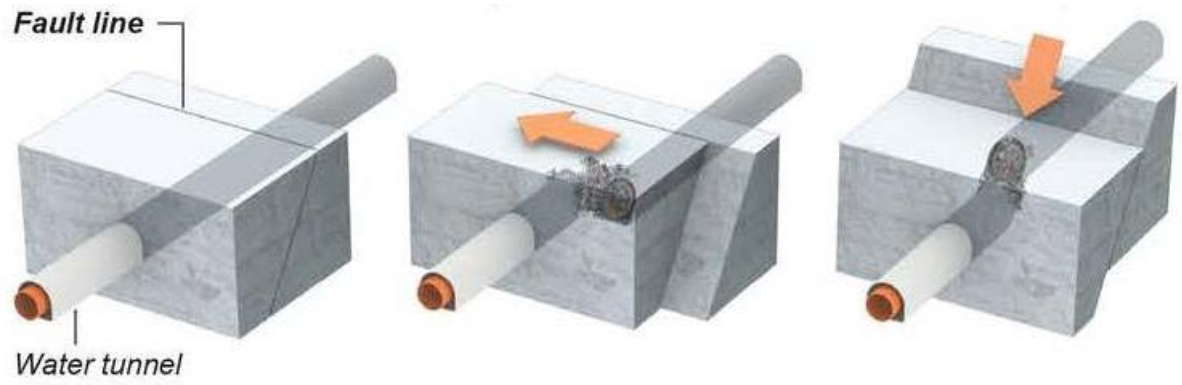
Date	Area	Mag (M_w)	Total Damage to LHHCWD
April 4, 2020	Inglewood	4.0	None
June 3, 2020	Hollywood Hills	4.0	None
July 30,2020	San Pedro	4.2	None
August 12, 2024	El Sereno	4.4	None
September 12, 2024	Malibu	4.7	None
March 9, 2025	Malibu	4.1	None

Within the 2020 - 2025 timeframe, there were no federal and/or state declarations declared for earthquakes within the LHHCWD service area.

Impact Statement: A significant earthquake could have devastating impacts on LHHCWD and its assets. Shaking during earthquakes can cause structural failures, while ground displacement and liquefaction can cause infrastructure to sink, sag, float, rupture, or sever completely. Access to all assets may be restricted if the roads necessary for accessing them are in a state of disrepair and unable to be traversed. An extended loss of power or widespread damage to a system could impair LHHCWD's ability to provide service, especially if generators are compromised. This could, in turn, lead to a loss of service and revenue for a time while costly repairs are being made. Fires following earthquakes are also a significant concern and could impact operations. Direct impacts to employees are possible, including injury, death, and an impeded ability of essential personnel to report for duty may also hinder operations.

Earthquakes can cause displacement, changing population patterns throughout their service area. LHHCWD has no jurisdiction over land use, development and zoning, socially vulnerable populations, and/or land development within their service area, especially post-earthquake disasters. Water districts nationwide follow the standards set by the American Water Works Association and USEPA governing public water systems.

Figure 5. How Ground Displacement Can Severe Pipes



Liquefaction and related ground failure can damage buried domestic water pipelines, causing pipes to sink or shift and disrupting gravity-fed systems. Once liquefied soils re-solidify following an earthquake, damaged pipelines often require excavation and repair. Lateral spreading associated with liquefaction may also damage wells and percolation

ponds, potentially resulting in water loss and service disruptions within the LHHCWD service area. In addition, State Water Project infrastructure, including water pipelines, canals, and laterals, may be vulnerable to ground shaking, displacement, and liquefaction-related cracking or structural failure.

Climate change may further influence liquefaction risk by altering groundwater and soil moisture conditions that affect subsurface stability. In Southern California, climate projections indicate more intense and variable precipitation patterns, with heavier rainfall during wet periods and longer-lasting droughts. Extended drought conditions may lead to increased groundwater pumping, lowering groundwater levels and potentially reducing liquefaction susceptibility in some areas. Conversely, intense rainfall events or prolonged wet conditions can raise groundwater levels and increase soil saturation, which may heighten liquefaction potential during seismic events. As a result, climate change may either increase or decrease liquefaction risk in the LHHCWD service area, depending on localized hydrologic and groundwater conditions.

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

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

4.3.3 Landslides

Probability: (50-75%) Likely – The probability of future landslides in the LHHCWD service area is rated as **Likely (2)** based on a qualitative assessment using FEMA's hazard screening criteria. This ranking reflects the area's steep topography, erodible soils in the Puente Formation, and proximity to the seismically active Whittier Fault, which increases the likelihood of earthquake-induced landslides. The Mediterranean climate, with wet winters often delivering 15-20 inches of rainfall annually, frequently saturates soils, particularly during El Niño years is also a factor. Historical data indicates a 15-25% annual probability of minor landslides in susceptible areas, with a 5-8% chance of a major event every decade, according to USGS Landslide Hazard Program estimates. Human activities, such as hillside development and vegetation removal, further elevate the risk by destabilizing slopes.

Impact: Limited

**This section examines all the hazards affecting LHHCWD within its boundaries, which the Planning Team identified.*

General Definition: A landslide is the downslope movement of rock, debris, or earth triggered by gravity, often initiated by heavy rainfall, earthquakes, or human activities such as grading or vegetation removal. Landslides range from slow-moving slumps to rapid debris flows, posing risks to water infrastructure, including pipelines, reservoirs, and pump stations, as well as to human life and property. For the La Habra Heights County Water District, landslides threaten the reliability of water services due to LHHCWD's hilly terrain and geologically unstable soils.

Location: LHHCWD serves the City of La Habra Heights, located in the Puente Hills of Los Angeles County, approximately 20 miles southeast of downtown Los Angeles. The service area features rolling hills and steep slopes, with elevations ranging from 300 to 1,100 feet above sea level. Landslide-prone areas are primarily in the northern and eastern parts, particularly along Hacienda Road, East Road, and near Powder Canyon, where slopes exceed 15-25 degrees. The region's geology, dominated by the Puente Formation's sedimentary rocks (sandstone and shale), is prone to erosion and instability. Proximity to the Whittier Fault increases the risk of earthquake-triggered landslides.

Figure 6. Landslide Map with LHHCWD Boundaries

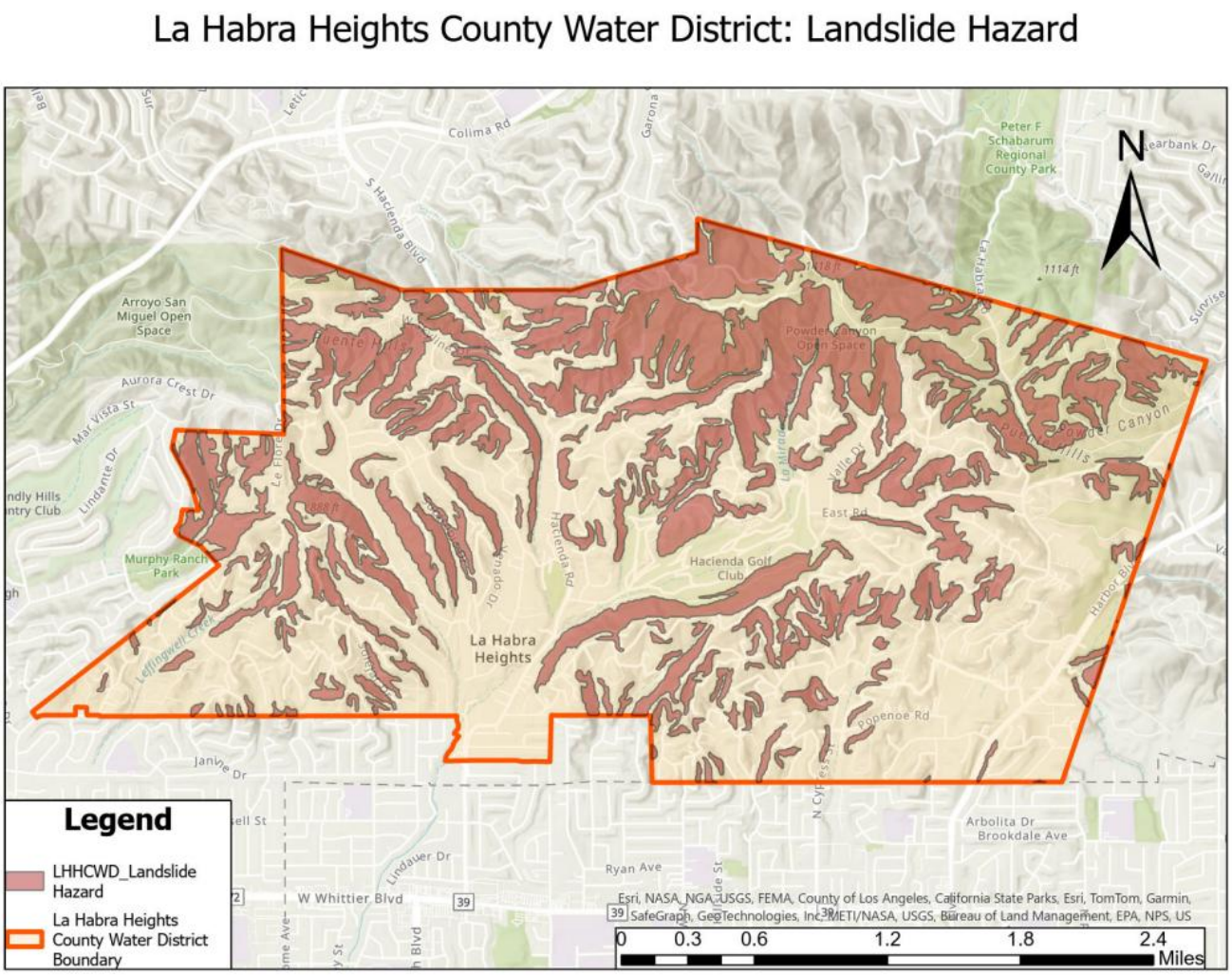


Table 10. 2020-2025 Significant Landslides in Los Angeles County

Name	Year	Details
Hacienda Heights Debris Flows	2023	Heavy rainfall triggered damaging debris and mudflows in hillside neighborhoods, including Hacienda Heights (near La Habra Heights), affecting homes and roads.
Palos Verdes Peninsula Landslide Expansion	2023	A decades-old landslide complex on the Palos Verdes Peninsula expanded due to heavy rainfall in 2023, affecting hundreds of buildings and infrastructure.

Palos Verdes Peninsula Landslide Acceleration	2024	Continued movement of the Palos Verdes landslide complex, accelerated by heavy precipitation in early 2024, further damaging buildings and roads.
Mudslide on Hacienda Rd after severe rain event #3	February 2024	Severe mudslide within LHHCWD service area
Post-Palisades/Eaton Fire Debris Flows	2025	Following the 2025 Palisades (23,713 acres) and Eaton (14,117 acres) wildfires, rainfall on January 27, 2025, triggered debris flows along Palisades Drive, requiring crews to clear mud and debris

The extent of landslides is assessed using the USGS Landslide Susceptibility Map, which classifies parts of La Habra Heights as having **moderate to high landslide susceptibility** due to steep slopes and erodible soils. Landslides may range from localized slumps (100-1,000 square feet) to debris flows impacting multiple acres, especially in canyons or post-wildfire conditions. Earthquake-triggered landslides are linked to the Modified Mercalli Intensity (MMI) Scale, where intensities of VI or higher can initiate slope failures. Impacts include damage to water pipelines, restricted access to reservoirs, and sedimentation affecting water treatment facilities.

History

Historical landslide events in La Habra Heights and nearby Los Angeles County highlight the hazard's impact:

- **1995 Winter Storms**: Heavy rainfall caused mudflows along Hacienda Road, damaging water pipelines and requiring emergency repairs
- **2005 Blue Jay Way Landslide**: Prolonged rainfall triggered a significant landslide, disrupting utilities and costing an estimated $250,000 in repairs in Los Angeles County
- **2014 La Habra Earthquake (M5.1)**: Minor slope failures in the Puente Hills impacted access to pump stations, necessitating debris clearance

Los Angeles County records indicate 3-5 minor landslides annually during wet seasons, with major events occurring approximately every 5-7 years during extreme rainfall or seismic activity.

Climate Change Impacts

Climate change is likely to increase landslide risks in the LHHCWD service area through:

- **Intensified Precipitation**: The California Climate Assessment (2024) projects more extreme winter storms, increasing soil saturation and triggering debris flows in the Puente Hills.
- **Post-Wildfire Debris Flows**: More frequent wildfires, driven by higher temperatures and prolonged droughts, remove vegetation, heightening landslide risk during subsequent rains.
- **Population Exposure**: Approximately 20% of the population (1,000 out of 5,682 residents, per 2020 Census data) lives in areas with moderate to high landslide risk. Intensified events may increase vulnerability for seniors and socioeconomically disadvantaged groups.
- **Critical Facilities**: Facilities like the Reservoir 10A, located northeast of Hacienda Rd., Vigil Reservoir, located in the northeast portion of LHHCWD's service area, and Plant 6 Pump Station, located near slopes, face increased risks from debris flows disrupting access or damaging infrastructure.

Vulnerability

The vulnerability of LHHCWD to landslides is assessed as follows:

- **Population**: About 20% of the service area population (1,000 residents) resides in hilly zones with moderate to high landslide risk, based on 2020 Census intersect analysis. Vulnerable groups, such as seniors and those with limited English proficiency, may face evacuation challenges or service disruptions.
- **Critical Facilities**: Facilities including the Reservoir 10A, Vigil Reservoir, Plant 6Pump Station, and multiple cross country water transmission mains are at risk due to their proximity to steep slopes or canyons. Landslides could restrict access or damage critical infrastructure.
- **Infrastructure**: Pipelines crossing drainages (e.g., Powder Canyon) are susceptible to being severed or buried by debris flows. Reservoirs on elevated sites may experience foundation instability.

Within the 2020-2025 timeframe, five federal and/or state declarations were made for California's severe winter storms, straight-line winds, flooding, landslides, and mudslides within the LHHCWD service area. Notice is hereby given that, in a letter dated January 14, 2023 (DR-4683-CA), April 3, 2023 (DR-4699-CA), April 13,2024 (DR-4769-CA), (EM-3591-CA), and (EM-3592-CA) dated March 16, 2023, the President issued a major

disaster declaration under the authority of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, 42 U.S.C. 5121 et seq. (the "Stafford Act"), as follows:

> *"I have determined that the damage in certain areas of the State of California resulting from severe winter storms, straight-line winds, flooding, landslides, and mudslides beginning on [December 27, 2022, January 8, 2023, February 21, 2023, and January 31, 2024] and continuing is of sufficient severity and magnitude to warrant a major disaster declaration under the Robert T. Stafford Disaster Relief and Emergency Assistance Act, 42 U.S.C. 5121 et seq. (the "Stafford Act"). Therefore, I declare that such a major disaster exists in California…."*

Impact Statement

Landslides pose a significant threat to LHHCWD's ability to deliver reliable water services. A major event could:

- Water pipelines, disrupting water supply to customers.
- Contaminate water sources with sediment, requiring costly treatment.
- Block access to critical facilities, delaying maintenance or emergency response.
- Require coordination with Los Angeles County Public Works and the City of La Habra Heights for debris removal and infrastructure repairs.

The following table is a replacement cost estimate for all LHHCWD-owned critical facilities.

Table 11. Landslides Replacement Costs

LHHCWD / Landslide Volume/Size Classification	Replacement Value
Very Large: >100,000 m³ (e.g., catastrophic landslides) 100%	
LHHCWD – All Critical Assets	$15,000,000
Large: 10,000–100,000 m³ (e.g., significant debris flows or slides) 80%	
LHHCWD – All Critical Assets	$12,00,000
Moderate: 1,000–10,000 m³ (e.g., small debris flows) 0%	
LHHCWD – All Critical Assets	$0
Small: <1,000 m³ (e.g., localized slumps) 0%	
LHHCWD – All Critical Assets	$0

Most landslides in La Habra Heights are expected to be small to moderate (100-10,000 m^3), such as those triggered by winter storms or earthquakes (e.g., 2014 La Habra Earthquake). Large events (>10,000 m^3) are less common but possible in post-wildfire scenarios, potentially burying pipelines or blocking access to pump stations.

Mitigation Considerations

To mitigate landslide risks, LHHCWD can:

- Install slope stabilization measures (e.g., retaining walls, gabions) near critical facilities.
- Enhance drainage systems to reduce soil saturation in high-risk areas.
- Conduct annual geotechnical assessments of infrastructure in landslide-prone zones.
- Develop post-wildfire debris flow response plans with Los Angeles County Fire Department and the City of La Habra Heights.
- Promote public outreach on landslide preparedness and vegetation management to stabilize slopes.

4.3.4 Windstorms

Probability: (25-50%) Somewhat Likely – Historical windstorm data for LHHCWD and its region indicate at least 195 significant windstorm events were recorded within LA county within the last 5 years. This equates to a significant windstorm every month on average in any given year. Based on this data, LHHCWD determined that future windstorm occurrence within their boundaries continues to be likely.

Impact: Limited

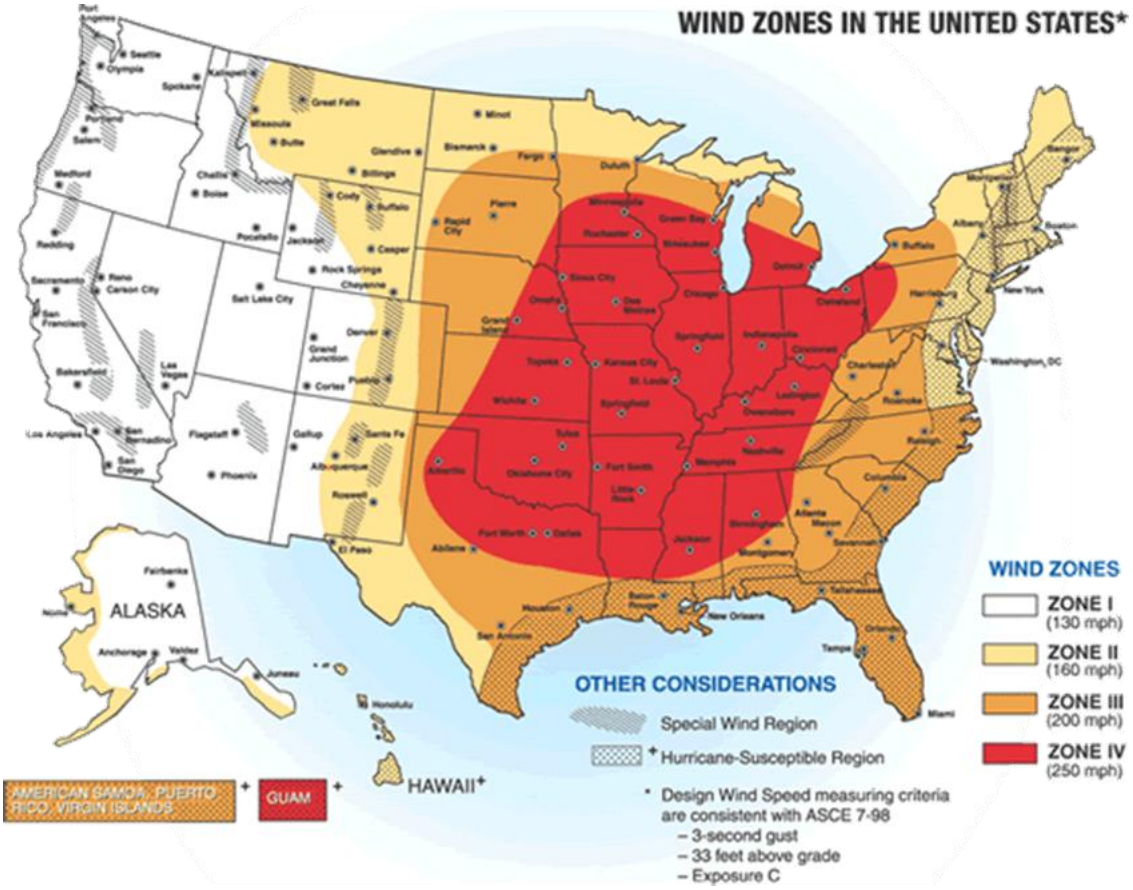
**This section examines all the hazards affecting LHHCWD within its boundaries, which the Planning Team identified.*

General Definition: Several types of wind hazards affect the planning area. These include high or strong wind events, typically associated with Santa Ana winds, and thunderstorm wind events (including straight-line winds and microbursts). High Wind definitions can vary by region. In general, high wind events are those events greater than normal averages and have damage potential. Wind events are common throughout the United States. However, the severity varies depending on location. Santa Ana Winds occur throughout September through November of each year.

Probability: If winds increase due to climate change, the probability of affecting LHHCWD is low due to the implementation of mitigation actions, such as generators that can power the water distribution system.

As climate change progresses, high-pressure systems in inland regions and low-pressure zones along Southern California can increase the frequency of Santa Ana winds, raising the likelihood of public safety power shutoffs (PSPS) and regional power outages.

Figure 7. Wind Zones in the United States



Climate Change Impacts

The following summarizes changes in exposure and vulnerability to the windstorm hazard resulting from climate change:

Population—Population exposure and vulnerability to windstorms are unlikely to increase because of climate change, and significant life or health impacts are unlikely.

Critical facilities – All critical facilities' exposure and vulnerability will likely increase due to climate change.

Vulnerability & Impact: Severe wind events can harm people throughout the LHHCWD service area but have a greater effect on the safety of people experiencing homelessness and those working outdoors. Severe wind events may impact populations that work outside or have respiratory illnesses as they can generate dust and other contaminants that can affect the health of residents and workers. Lower-income residents, who may not have the financial resources to purchase homes (or are renting homes) that are not built

or retrofitted to withstand powerful winds, could also have difficulty recovering from wind events.

Southern California and LHHCWD service area all suffer from seasonal Santa Ana Winds and will for the foreseeable future. Extreme wind events can worsen other risks, such as wildfires. It could affect the take-off and landing of small aircraft at nearby airports, leading to an increased risk of possible aircraft incidents. There are no direct planned development updates or land use changes occurring within the LHHCWD service area that would directly increase the vulnerability of the LHHCWD-identified assets to windstorms.

The following table is a replacement cost estimate for all LHHCWD-owned critical facilities.

Table 12. Windstorm Replacement Costs

LHHCWD / Wind Severity based on Beaufort scale	Replacement Value
Very High Wind Speeds (Scale 12-10)	
LHHCWD – All Critical Assets	$3,750,000
High Wind Speeds (Scale 9-7)	
LHHCWD – All Critical Assets	$1,200,000
Moderate Wind Speeds (Scale 6-4)	
LHHCWD – All Critical Assets	$0
Low Wind Speeds (3-0)	
LHHCWD – All Critical Assets	$0

Description: Santa Ana Winds are a regional wind hazard specific to Southern California. Santa Ana Winds are known to cause large amounts of damage and increase the spread of wild and structural fires. Santa Ana winds are generally defined as warm, dry winds blowing east. The complex topography of Southern California and various atmospheric conditions create numerous scenarios that may cause widespread or isolated Santa Ana events. Winds are caused by a low-pressure system over the southern coastline and high pressure over the Great Basin in Nevada. When the high pressure turns counterclockwise, the warm, dry air is pulled to the low-pressure zone and out to the Pacific Ocean. Santa Ana Winds are quick and effective at spreading wildfires. The

combination of windstorm activity with the major fires every few years creates the greatest danger to the urban/wildland interface. Santa Ana winds spread the flames at even greater speed than in times of calm wind conditions.

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

Table 13. Beaufort Wind Scale

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

Table 14. Windstorm History From NOAA 2020-2025 Los Angeles County

Location Within Los Angeles County	Begin Date	End Date
LOS ANGELES COUNTY MOUNTAINS EXCLUDING THE SANTA MONICA RANGE (ZONE)	1/5/2020	1/5/2020
LOS ANGELES COUNTY MOUNTAINS EXCLUDING THE SANTA MONICA RANGE (ZONE)	2/4/2020	2/4/2020
LOS ANGELES COUNTY MOUNTAINS EXCLUDING THE SANTA MONICA RANGE (ZONE)	4/22/2020	4/23/2020
LOS ANGELES COUNTY MOUNTAINS EXCLUDING THE SANTA MONICA RANGE (ZONE)	6/8/2020	6/8/2020
LOS ANGELES COUNTY MOUNTAINS EXCLUDING THE SANTA MONICA RANGE (ZONE)	10/26/2020	10/26/2020
LOS ANGELES COUNTY SAN FERNANDO VALLEY (ZONE)	10/26/2020	10/26/2020
SANTA MONICA MOUNTAINS RECREATION AREA (ZONE)	10/26/2020	10/26/2020
LOS ANGELES COUNTY MOUNTAINS EXCLUDING THE SANTA MONICA RANGE (ZONE)	11/26/2020	11/26/2020
LOS ANGELES COUNTY MOUNTAINS EXCLUDING THE SANTA MONICA RANGE (ZONE)	12/2/2020	12/3/2020
SANTA MONICA MOUNTAINS RECREATION AREA (ZONE)	12/3/2020	12/3/2020
LOS ANGELES COUNTY MOUNTAINS EXCLUDING THE SANTA MONICA RANGE (ZONE)	12/7/2020	12/8/2020
LOS ANGELES COUNTY MOUNTAINS EXCLUDING THE SANTA MONICA RANGE (ZONE)	1/19/2021	1/19/2021
SANTA CLARITA VALLEY (ZONE)	1/19/2021	1/19/2021
LOS ANGELES COUNTY SAN FERNANDO VALLEY (ZONE)	1/19/2021	1/19/2021
LOS ANGELES COUNTY MOUNTAINS EXCLUDING THE SANTA MONICA RANGE (ZONE)	2/13/2021	2/14/2021

LOS ANGELES COUNTY MOUNTAINS EXCLUDING THE SANTA MONICA RANGE (ZONE)	2/16/2021	2/16/2021
LOS ANGELES COUNTY MOUNTAINS EXCLUDING THE SANTA MONICA RANGE (ZONE)	2/25/2021	2/25/2021
SANTA MONICA MOUNTAINS RECREATION AREA (ZONE)	2/25/2021	2/25/2021
LOS ANGELES COUNTY SAN FERNANDO VALLEY (ZONE)	2/25/2021	2/25/2021
LOS ANGELES COUNTY MOUNTAINS EXCLUDING THE SANTA MONICA RANGE (ZONE)	2/28/2021	2/28/2021
LOS ANGELES COUNTY SAN FERNANDO VALLEY (ZONE)	2/28/2021	2/28/2021
LOS ANGELES COUNTY MOUNTAINS EXCLUDING THE SANTA MONICA RANGE (ZONE)	10/11/2021	10/11/2021
LOS ANGELES COUNTY MOUNTAINS EXCLUDING THE SANTA MONICA RANGE (ZONE)	11/21/2021	11/21/2021
LOS ANGELES COUNTY MOUNTAINS EXCLUDING THE SANTA MONICA RANGE (ZONE)	11/24/2021	11/25/2021
LOS ANGELES COUNTY SAN FERNANDO VALLEY (ZONE)	11/24/2021	11/25/2021
SANTA MONICA MOUNTAINS RECREATION AREA (ZONE)	11/24/2021	11/25/2021
LOS ANGELES COUNTY COASTS INCLUDING DOWNTOWN LOS ANGELES (ZONE)	11/25/2021	11/25/2021
LOS ANGELES COUNTY MOUNTAINS EXCLUDING THE SANTA MONICA RANGE (ZONE)	1/14/2022	1/14/2022
LOS ANGELES COUNTY MOUNTAINS EXCLUDING THE SANTA MONICA RANGE (ZONE)	1/21/2022	1/22/2022
SANTA CLARITA VALLEY (ZONE)	1/21/2022	1/21/2022
SANTA MONICA MOUNTAINS RECREATION AREA (ZONE)	1/21/2022	1/22/2022

LOS ANGELES COUNTY SAN GABRIEL VALLEY (ZONE)	1/21/2022	1/22/2022
LOS ANGELES COUNTY MOUNTAINS EXCLUDING THE SANTA MONICA RANGE (ZONE)	1/28/2022	1/28/2022
LOS ANGELES COUNTY MOUNTAINS EXCLUDING THE SANTA MONICA RANGE (ZONE)	2/10/2022	2/10/2022
LOS ANGELES COUNTY MOUNTAINS EXCLUDING THE SANTA MONICA RANGE (ZONE)	2/17/2022	2/17/2022
LOS ANGELES COUNTY MOUNTAINS EXCLUDING THE SANTA MONICA RANGE (ZONE)	3/10/2022	3/11/2022
LOS ANGELES COUNTY MOUNTAINS EXCLUDING THE SANTA MONICA RANGE (ZONE)	3/13/2022	3/13/2022
LOS ANGELES COUNTY MOUNTAINS EXCLUDING THE SANTA MONICA RANGE (ZONE)	3/16/2022	3/16/2022
LOS ANGELES COUNTY MOUNTAINS EXCLUDING THE SANTA MONICA RANGE (ZONE)	3/20/2022	3/20/2022
LOS ANGELES COUNTY MOUNTAINS EXCLUDING THE SANTA MONICA RANGE (ZONE)	3/27/2022	3/28/2022
LOS ANGELES COUNTY MOUNTAINS (ZONE)	6/13/2022	6/14/2022
ANTELOPE VALLEY (ZONE)	11/8/2022	11/8/2022
LOS ANGELES COUNTY MOUNTAINS (ZONE)	11/15/2022	11/16/2022
LOS ANGELES COUNTY SAN FERNANDO VALLEY (ZONE)	11/15/2022	11/16/2022
SANTA MONICA MOUNTAINS (ZONE)	11/16/2022	11/16/2022
LOS ANGELES COUNTY MOUNTAINS (ZONE)	11/19/2022	11/19/2022
LOS ANGELES COUNTY MOUNTAINS (ZONE)	11/24/2022	11/24/2022
SANTA MONICA MOUNTAINS (ZONE)	11/24/2022	11/24/2022
LOS ANGELES COUNTY SAN FERNANDO VALLEY (ZONE)	11/24/2022	11/24/2022
LOS ANGELES COUNTY MOUNTAINS (ZONE)	12/10/2022	12/11/2022
ANTELOPE VALLEY (ZONE)	12/10/2022	12/11/2022

LOS ANGELES COUNTY MOUNTAINS (ZONE)	1/9/2023	1/10/2023
LOS ANGELES COUNTY MOUNTAINS (ZONE)	1/22/2023	1/23/2023
SANTA MONICA MOUNTAINS (ZONE)	1/26/2023	1/26/2023
LOS ANGELES COUNTY MOUNTAINS (ZONE)	1/26/2023	1/26/2023
LOS ANGELES COUNTY MOUNTAINS (ZONE)	1/30/2023	1/31/2023
CATALINA AND SANTA BARBARA ISLANDS (ZONE)	2/21/2023	2/22/2023
SANTA MONICA MOUNTAINS (ZONE)	2/24/2023	2/24/2023
WESTERN SAN GABRIEL MOUNTAINS INCLUDING THE HIGHWAY 14 CORRIDOR (ZONE)	3/14/2023	3/14/2023
NORTHWESTERN LOS ANGELES COUNTY MOUNTAINS INCLUDING THE INTERSTATE 5 CORRIDOR (ZONE)	3/14/2023	3/14/2023
WESTERN SAN FERNANDO VALLEY (ZONE)	4/3/2023	4/3/2023
SANTA CLARITA VALLEY (ZONE)	4/3/2023	4/3/2023
SANTA SUSANA MOUNTAINS (ZONE)	10/29/2023	10/30/2023
WESTERN SAN GABRIEL MOUNTAINS INCLUDING THE HIGHWAY 14 CORRIDOR (ZONE)	10/29/2023	10/30/2023
WESTERN SANTA MONICA MOUNTAINS (ZONE)	10/29/2023	10/29/2023
NORTHWESTERN LOS ANGELES COUNTY MOUNTAINS INCLUDING THE INTERSTATE 5 CORRIDOR (ZONE)	11/7/2023	11/8/2023
WESTERN SAN GABRIEL MOUNTAINS INCLUDING THE HIGHWAY 14 CORRIDOR (ZONE)	11/8/2023	11/9/2023
NORTHWESTERN LOS ANGELES COUNTY MOUNTAINS INCLUDING THE INTERSTATE 5 CORRIDOR (ZONE)	11/19/2023	11/19/2023
WESTERN SAN GABRIEL MOUNTAINS INCLUDING THE HIGHWAY 14 CORRIDOR (ZONE)	11/19/2023	11/21/2023
WESTERN ANTELOPE VALLEY FOOTHILLS (ZONE)	11/19/2023	11/19/2023

SANTA SUSANA MOUNTAINS (ZONE)	11/19/2023	11/21/2023
SANTA CLARITA VALLEY (ZONE)	11/19/2023	11/20/2023
WESTERN SANTA MONICA MOUNTAINS (ZONE)	11/20/2023	11/21/2023
SANTA SUSANA MOUNTAINS (ZONE)	12/8/2023	12/10/2023
CATALINA AND SANTA BARBARA ISLANDS (ZONE)	1/7/2024	1/7/2024
CATALINA AND SANTA BARBARA ISLANDS (ZONE)	1/10/2024	1/11/2024
NORTHWESTERN LOS ANGELES COUNTY MOUNTAINS INCLUDING THE INTERSTATE 5 CORRIDOR (ZONE)	1/11/2024	1/11/2024
WESTERN SAN GABRIEL MOUNTAINS INCLUDING THE HIGHWAY 14 CORRIDOR (ZONE)	1/11/2024	1/11/2024
EST SAN GABRIEL MOUNTAINS (ZONE)	1/11/2024	1/11/2024
SANTA SUSANA MOUNTAINS (ZONE)	1/11/2024	1/11/2024
EST SAN GABRIEL MOUNTAINS (ZONE)	3/2/2024	3/2/2024
WESTERN SAN GABRIEL MOUNTAINS INCLUDING THE HIGHWAY 14 CORRIDOR (ZONE)	3/2/2024	3/2/2024
EST SAN GABRIEL MOUNTAINS (ZONE)	3/14/2024	3/14/2024
WESTERN SAN GABRIEL MOUNTAINS INCLUDING THE HIGHWAY 14 CORRIDOR (ZONE)	3/14/2024	3/14/2024
SANTA SUSANA MOUNTAINS (ZONE)	3/14/2024	3/14/2024
LOS ANGELES COUNTY SAN GABRIEL VALLEY (ZONE)	3/14/2024	3/14/2024
NORTHWESTERN LOS ANGELES COUNTY MOUNTAINS INCLUDING THE INTERSTATE 5 CORRIDOR (ZONE)	6/17/2024	6/17/2024
EST SAN GABRIEL MOUNTAINS (ZONE)	1/7/2025	1/8/2025
WESTERN SAN GABRIEL MOUNTAINS INCLUDING THE HIGHWAY 14 CORRIDOR (ZONE)	1/7/2025	1/10/2025
SANTA SUSANA MOUNTAINS (ZONE)	1/7/2025	1/10/2025

WESTERN SAN FERNANDO VALLEY (ZONE)	1/7/2025	1/8/2025
LOS ANGELES COUNTY SAN GABRIEL VALLEY (ZONE)	1/7/2025	1/8/2025
WESTERN SANTA MONICA MOUNTAINS (ZONE)	1/7/2025	1/7/2025
MALIBU COAST (ZONE)	1/7/2025	1/8/2025
EST SANTA MONICA MOUNTAINS (ZONE)	1/7/2025	1/7/2025
SANTA CLARITA VALLEY (ZONE)	1/7/2025	1/8/2025
NORTHWESTERN LOS ANGELES COUNTY MOUNTAINS INCLUDING THE INTERSTATE 5 CORRIDOR (ZONE)	1/7/2025	1/8/2025
EST SAN FERNANDO VALLEY (ZONE)	1/7/2025	1/8/2025
SANTA SUSANA MOUNTAINS (ZONE)	1/11/2025	1/15/2025
WESTERN SAN GABRIEL MOUNTAINS INCLUDING THE HIGHWAY 14 CORRIDOR (ZONE)	1/11/2025	1/15/2025
WESTERN SAN GABRIEL MOUNTAINS INCLUDING THE HIGHWAY 14 CORRIDOR (ZONE)	1/20/2025	1/21/2025
SANTA SUSANA MOUNTAINS (ZONE)	1/20/2025	1/20/2025
NORTHWESTERN LOS ANGELES COUNTY MOUNTAINS INCLUDING THE INTERSTATE 5 CORRIDOR (ZONE)	1/20/2025	1/20/2025
WESTERN SAN GABRIEL MOUNTAINS INCLUDING THE HIGHWAY 14 CORRIDOR (ZONE)	1/22/2025	1/23/2025
SANTA SUSANA MOUNTAINS (ZONE)	1/22/2025	1/23/2025
WESTERN SAN GABRIEL MOUNTAINS INCLUDING THE HIGHWAY 14 CORRIDOR (ZONE)	2/13/2025	2/13/2025
NORTHWESTERN LOS ANGELES COUNTY MOUNTAINS INCLUDING THE INTERSTATE 5 CORRIDOR (ZONE)	2/13/2025	2/13/2025

Within the 2020-2025 timeframe, five federal and/or state declarations were made for California's severe winter storms, straight-line winds, flooding, landslides, and mudslides within the LHHCWD service area. Notice is hereby given that, in a letter dated January 14, 2023 (DR-4683-CA), April 3, 2023 (DR-4699-CA), April 13,2024 (DR-4769-CA), (EM-

3591-CA), and (EM-3592-CA) dated March 16, 2023, the President issued a major disaster declaration under the authority of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, 42 U.S.C. 5121 et seq. (the "Stafford Act"), as follows:

> *"I have determined that the damage in certain areas of the State of California resulting from severe winter storms, straight-line winds, flooding, landslides, and mudslides beginning on [December 27, 2022, January 8, 2023, February 21, 2023, and January 31, 2024] and continuing is of sufficient severity and magnitude to warrant a major disaster declaration under the Robert T. Stafford Disaster Relief and Emergency Assistance Act, 42 U.S.C. 5121 et seq. (the "Stafford Act"). Therefore, I declare that such a major disaster exists in California…."*

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

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

4.3.5 Climate Change – Induced Drought

Probability: (25-50%) Somewhat Likely - Historical drought data for LHHCWD and the La Habra Heights region indicate at least 5 multi-year significant droughts within the last 50 years, based on California drought records. This equates to an average drought every 10 years or a 10 percent chance of a drought in any given year. Based on this data, combined with the area's Mediterranean climate, reliance on imported water from the Metropolitan Water District of Southern California, and the potential for prolonged dry periods and reduced precipitation due to climate change, LHHCWD determined that future drought occurrence within their boundaries is somewhat likely. This section evaluates all hazards affecting LHHCWD within its boundaries, as identified by the Planning Team.

Impact: *Limited*

**This section examines all the hazards affecting LHHCWD within its boundaries, which the Planning Team identified.*

General Definition: A drought is a period of below-average precipitation in a given region resulting in prolonged shortages in its water supply, surface water, or groundwater. Climatic factors such as high temperatures, high wind, and low relative humidity are often associated with drought. Drought occurs in virtually all climatic zones, varying significantly from one region to another. Droughts occur when there are extended periods of inadequate rainfall. The cycle of droughts and wet periods is often part of El Niño and La Niña weather cycles.

The severity of a drought depends on the degree of moisture deficiency, the duration, and the size and location of the affected area. It is generally difficult to pinpoint a drought's beginning and end. In California, a few dry months do not typically constitute a drought. Because the impacts of a drought accumulate slowly at first, a drought may not be recognized until it becomes well established. Even during a drought, there may be one or two months with above-average precipitation totals. These wet months do not necessarily signal the end of a drought and generally do not majorly impact moisture deficits. Droughts can persist for several years before regional climate conditions return to normal. While drought conditions can occur at any time throughout the year, the most apparent time is during the summer months.

Climate Change Probability: Climate change is expected to increase the frequency, duration, and intensity of drought conditions in Southern California. Higher temperatures accelerate evaporation rates and reduce soil moisture, resulting in longer dry periods even in years with normal rainfall totals. Warmer conditions also increase water demand among residents, vegetation, and wildfire-prone landscapes.

Reduced snowpack in the Sierra Nevada — a primary source for state water supplies — further decreases water availability for imported water agencies such as the Metropolitan Water District (MWD), upon which LHHCWD relies for a portion of its supply. As climate change intensifies, variability in precipitation is expected to increase, with longer and more severe drought cycles becoming more common.

These changes may affect LHHCWD's operations by increasing reliance on groundwater and imported water supplies, intensifying stress on pumping and storage infrastructure, and elevating fire risk due to drier vegetation and prolonged summer heat.

Measuring Droughts: There are several quantitative methods for measuring drought in the United States. The U.S. Drought Monitor is a relatively new index that combines quantitative measures with input from experts in the field.

In March 2022, California's Governor Newsom implemented an executive order (Executive Order N-7-22) to address the impacts of the drought in California. This order required urban water suppliers larger than LHHCWD to adopt more stringent water conservation efforts, including but not limited to banning irrigating "non-functional turf" and voluntarily activating a water shortage contingency planning Level 2.

Along with this executive order, and in accordance with the State Water Resources Control Board (SWRCB) and California Water Code (CWC) requirements as outlined in Sections 10632 and 10644, urban water supplies in California would have to prepare Annual Water Supply and Demand Assessments (AWSDA) and submit these assessments annually to the state to remain in compliance with water conservation efforts.

Climate Change Impacts:

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

Population – Population exposure and vulnerability to drought are unlikely to increase due to climate change.

Critical facilities — Climate change is likely to increase the exposure and vulnerability of all critical facilities.

Vulnerability and Impacts: Underserved and vulnerable populations they serve include socioeconomically disadvantaged people; people with limited English proficiency; geographically isolated or educationally disenfranchised people; people of color as well as those of ethnic and national origin minorities; women and children; individuals with disabilities and others with access and functional needs; and seniors. Those who may

live under bridges, in tents, or in makeshift housing along waterways. The socially vulnerable populations are most susceptible based on many factors, including how the people respond to financial ability to purchase supplies. Food, clothing, and safe housing may be manageable for only short periods of time and then fall into extreme poverty, with a lack of resources and the ability to navigate special needs in an emergency or to manage to obtain adequate food, housing, food, clothing, or medical treatment.

In drought conditions, vulnerable populations may not be able to find adequate, safe, potable water supplies for drinking, cooking, or hygiene needs.

The following table is a replacement cost estimate for all LHHCWD-owned critical facilities.

Table 15. Drought Severity Replacement Costs

LHHCWD / Drought D0-D4 Severity	Replacement Value
D4 (Exceptional Drought)	
LHHCWD - All Critical Assets	$15,000,000
D3 (Extreme Drought)	
LHHCWD - All Critical Assets	$3,000,000
D2 (Severe Drought)	
LHHCWD - All Critical Assets	$0
D1 (Moderate Drought)	
LHHCWD - All Critical Assets	$0
D0 (Abnormally Dry)	
LHHCWD - All Critical Assets	$0

U.S. Drought Monitor: The U.S. Drought Monitor is designed to provide the general public, media, government officials, and others with an easily understandable overview of weekly drought conditions across a county throughout the United States. The U.S. Drought Monitor is unique because it assesses multiple numeric measures of drought, including the PDSI and three other indices, as well as experts' interpretations, to create a weekly map depicting drought conditions across the United States. The U.S. Drought Monitor uses five drought intensity categories, D0 through D4, to identify areas of drought.

The maps below are taken from https://droughtmonitor.unl.edu/Maps/MapArchive.aspx and show the drought differences between November 2020 and January 2025. Note the drastic difference between the two drought maps.

Figure 8. Drought Monitor November 2020

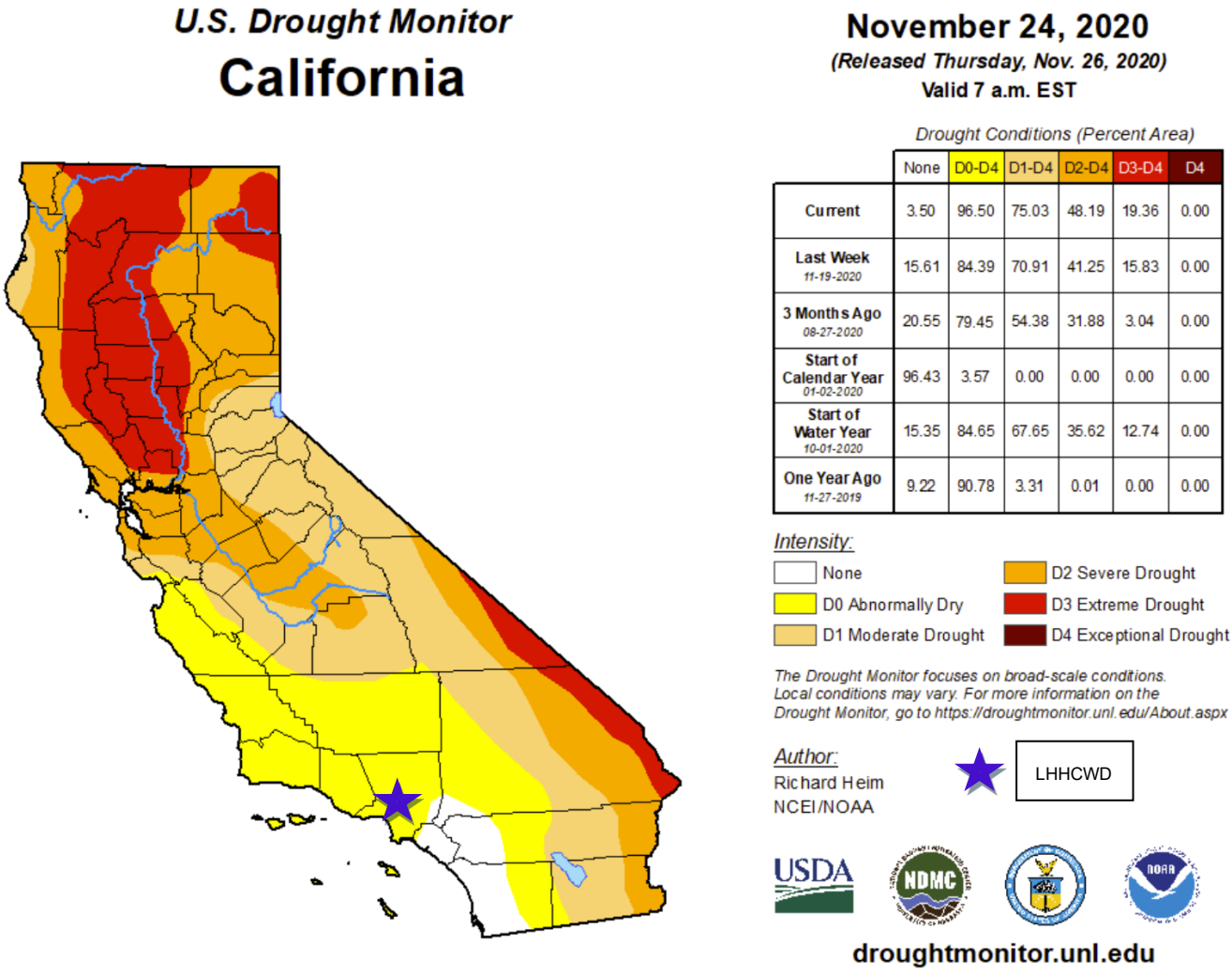
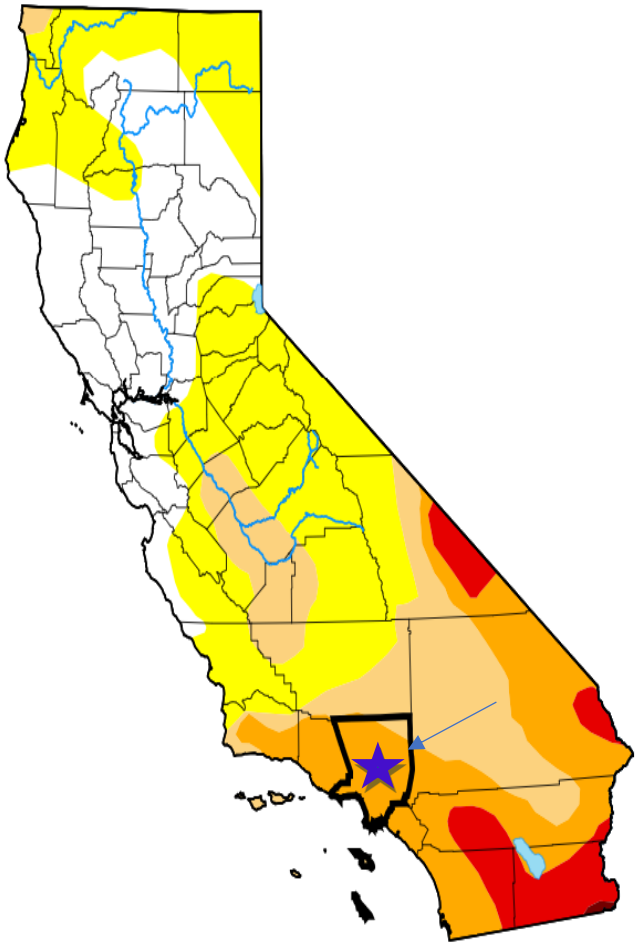


Figure 9. Drought Monitor January 2024

Los Angeles County, CA

Home / Los Angeles County, CA



Map released: Thurs. August 28, 2025

Data valid: August 26, 2025 at 8 a.m. EDT

Intensity

- None
- D0 (Abnormally Dry)
- D1 (Moderate Drought)
- D2 (Severe Drought)
- D3 (Extreme Drought)
- D4 (Exceptional Drought)
- No Data

LHHCWD

Authors

United States and Puerto Rico Author(s):

Brad Rippey, U.S. Department of Agriculture

Pacific Islands and Virgin Islands Author(s):

Tsegaye Tadesse, National Drought Mitigation Center

Table 16. U.S. Drought Monitor

D0	**Abnormally Dry**	Going into drought: short-term dryness slowing planting, growth of crops or pastures. Coming out of drought: some lingering water deficits; pastures or crops not fully recovered
D1	**Moderate Drought**	Some damage to crops, pastures; streams, reservoirs, or wells low, some water shortages developing or imminent; voluntary water-use restrictions requested
D2	**Severe Drought**	Crop or pasture losses likely; water shortages common; water restrictions imposed
D3	**Extreme Drought**	Major crop/pasture losses; widespread water shortages or restrictions
D4	**Exceptional Drought**	Exceptional and widespread crop/pasture losses; shortages of water in reservoirs, streams, and wells creating water emergencies

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

Description: Climate change can be expected to increase drought frequency and severity in the service area. Warmer temperatures cause drought conditions by reducing soil moisture. Increased evapotranspiration and reduced snowpack projected with warmer temperatures will result in reduced flows.

Figure 10. Drought History (2000-2023)

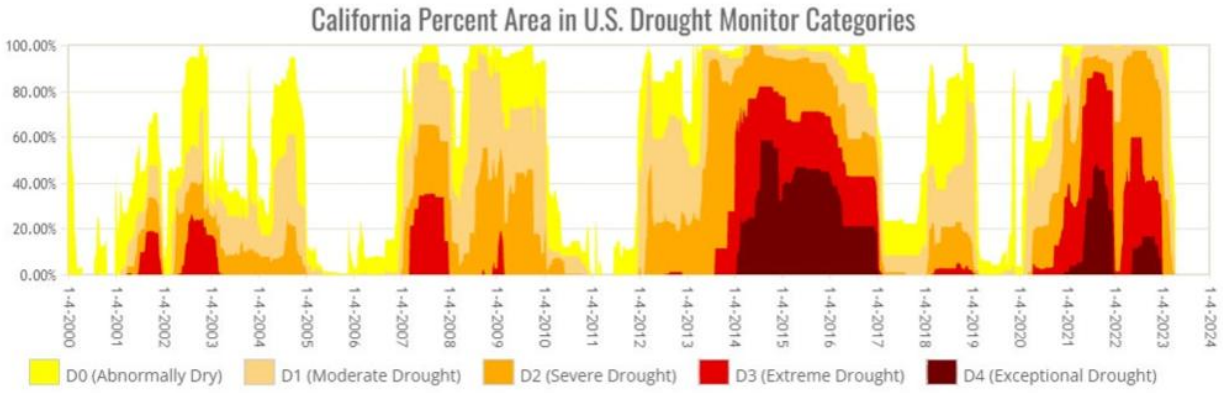


Table 17 Drought History in Southern California

Year	Drought History
1841	The drought was so bad that “a dry Sonoma was declared entirely unsuitable for agriculture.”
1864	This drought was preceded by the torrential floods of 1861-1862, showing the fluctuation in climate back in the 1800s.
1924	This drought encouraged farmers to start using irrigation more regularly because of the fluctuation in California weather; the need for consistent water availability was crucial for farmers.
1929–1934	This drought was during the infamous Dust Bowl period that ripped across the plains of the United States in the 1920s and 1930s. The Central Valley Project was started in the 1930s in response to drought.
1950s	The 1950s drought contributed to the creation of the State Water Project.
1976–1977	1977 had been the driest year in state history to date. According to the *Los Angeles Times*, “Drought in the 1970s spurred efforts at urban conservation, and the state’s Drought Emergency Water Bank came out of drought in the 1980s.”
1986–1992	California endured one of the longest droughts ever observed from late 1986 through early 1992. Drought worsened in 1988 as much of the United States also suffered from severe drought. In California, the six-year drought ended in late 1992 as a significant El Niño event in the Pacific Ocean (and the eruption

	of Mount Pinatubo in June 1991) most likely caused unusually persistent heavy rains.
2007–2009	2007–2009 saw three years of drought conditions, the 12th worst drought period in the state's history, and the first drought for which a statewide proclamation of emergency was issued. The drought of 2007–2009 also saw greatly reduced water diversions from the State Water Project. The summer of 2007 saw some of the worst wildfires in Southern California history.
2011-2017	From December 2011 to March 2017, the state of California experienced one of the worst droughts to occur in the region on record. The period between late 2011 and 2014 was the driest in California history since record-keeping began.
2020 - 2022	January and February 2020 were dry to record dry in several areas (central CA and Northern CA-NV). The past three combined water years were California's driest on record.

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

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

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

Winter 2022-23 was the wettest in California, surpassing the previous record set in 1982–83. Governor Newsom declared an official end to the drought in April 2023. All 58 counties

are listed in the Governor's severe drought impact. The winter of 2022 has had more rainfall and snow in California than the last 20 years alone.

Within the 2019 - 2024 timeframe, no federal and/or state declarations were declared for California Climate Change-induced drought within the LHHCWD service area.

Impact Statement: Water is also needed to manage structural and wildfires. A lack of, or limited, water supply presents wildfire management vulnerability. Substantial water is needed to fight wildfires, which are more frequent in dry conditions. While water for firefighting is a priority and no restrictions are in place, a lack of availability could slow this capability.

The entire planning area is equally at risk of this hazard. Most drought impacts, however, are not structural but societal in nature. A drought's impact on society, and thus the LHHCWD's service area, results from the interplay between a natural event and people's demand for water supply. LHHCWD is in charge of supplying potable water within its service area; therefore, it would be greatly impacted, both fiscally and politically, if it could not provide a reliable water supply due to drought conditions. Economically, water restrictions imposed during drought periods could result in lost revenue for LHHCWD. LHHCWD has no jurisdiction over land use, development and zoning, socially vulnerable populations, and/or land development within their service area. Water districts nationwide follow the standards set by the American Water Works Association and USEPA governing public water systems.

SECTION 5. COMMUNITY CAPABILITY ASSESSMENT

5.1 Introductions

The purpose of conducting the capability assessment is to determine LHHCWD's ability to implement a comprehensive mitigation strategy and to identify potential opportunities for establishing or enhancing specific mitigation policies, programs, or projects.

The capability assessment has two components:

1. An inventory of the existing relevant plans, ordinances, or programs already in place and
2. An analysis of LHHCWD's capacity to bring them to fruition. A capability assessment highlights the positive mitigation activities within LHHCWD and will detect the potential gaps.

5.2 Emergency Management

To help mitigate the potential impacts of disasters, LHHCWD joined CalWARN. LHHCWD has a mutual aid agreement with CalWARN that covers most water and wastewater agencies in California. As a government entity (a Special District within California Law), LHHCWD can access the Emergency Managers Mutual Aid (EMMA) and the Emergency Management Assistance Compact (EMAC) for national mutual aid. In addition, the National WARN System can be accessed through the American Water Works Association.

CalWARN holds workshops twice a year for water agency members. It has also been planning public outreach, so the public has a better understanding of hazard mitigation planning in their communities. These workshops promote mitigation and how to prevent hazards' impacts on the utility's infrastructure. CalWARN has access to utility leaders, their past experiences during emergencies, and lessons learned on what they should have done differently. Sharing ideas and experiences is key to understanding mitigation in the future. LHHCWD currently employs 10 full-time employees, and by joining CalWARN, LHHCWD has the potential to have hundreds of mutual aid water/wastewater workers at its disposal within hours of an emergency. The pressure zones, reservoirs, wells, and maintenance work done at La Habra Heights County Water District are all operated by certified operators and maintained by various certified technical disciplines. In addition, the LHHCWD agrees with other water Agencies through CalWARN to support each other during an emergency by offering labor and equipment to the incident.

The General Manager has over 22 years of experience in the water industry, and has been with LHHCWD for 21 years. Throughout his career with LHHCWD, he has been mitigating earthquake, flood, and drought impacts that face the utility.

Emergency Response Plan (ERP): An ERP outlines responsibility and how resources are deployed during and following an emergency or disaster. The primary objective of the LHMPis to guide the identification of potential emergencies, a timely and effective response, and the protection of the community's health and safety.

The ERP guides the process when an emergency occurs, including blueprinting general operations during a disaster, distributing and managing responsibilities among authorities, and identifying liability.

LHHCWD ERP was last revised in August 2021 and details how LHHCWD will respond to various emergencies and disasters. LHHCWD must be prepared to respond to a variety of threats that require emergency actions, including:

- Operational incidents, such as power failure or bacteriological contamination of water.
- Outside or inside malevolent acts, such as threatened or intentional contamination of water, intentional damage/destruction of facilities, detection of an intruder or intruder alarm, bomb threat, cyber security, or suspicious mail.
- Natural disasters like earthquakes or floods result in downed power failures.
- Communications with critical users, media outreach, and public notification process.

LHHCWD is also required to follow the Standard Emergency Management System (SEMS), the National Incident Management System (NIMS), and the Incident Command System (ICS) when responding to emergencies. Emergency Operations Center (EOC): An EOC provides a location, on or off-site, from which an agency coordinates a disaster response operation. In times of non-disasters, EOCs typically provide a centralized hub for communication and security oversight. LHHCWD’s administrative building and operations yard have the potential for two EOCs, one being the primary event center and the secondary being the corporate yard.

Emergency Management Training and Staff: Dedicated emergency management staff and regular training help prepare an agency for events and guide effective response and recovery.

LHHCWD conducts regular emergency exercises, following their emergency training plan. Through this training, the staff is trained across divisions within each District to assist with emergency response operations. Additionally, LHHCWD has a well-developed emergency notification process for critical staff.

5.3 Planning and Regulatory Capability

Planning and regulatory capability is based on implementing plans, policies, and programs that demonstrate LHHCWD's commitment to guiding and managing growth while maintaining the general welfare of the community. It includes emergency response and mitigation planning, master planning, capital planning, and enforcement of design and construction standards within the service area. Although conflicts can arise, these planning initiatives present significant opportunities to integrate hazard mitigation principles into LHHCWD's decision making process, in regards to the LHHCWD system. LHHCWD is not part of the city.

The Urban Water Management and Planning Act requires water suppliers to estimate water demands and available water supplies. These plans must also include impacts of climate change and water shortage contingency planning for dealing with shortages, including a catastrophic supply interruption. LHHCWD is not required to have an Urban Water Master Plan as LHHCWD is under 3,300 service connections. LHHCWD's has an updated Water Master Plan that was completed in 2022.

Water Shortage Contingency Plan (WSCP)

Certain elements of the WSCP are required by the California Water Code (Water Code), including five specific response actions that align with six standard water shortage levels based on LHHCWD's water supply conditions and shortages resulting from catastrophic supply interruptions; LHHCWD WSCP was last updated July 11, 2023.The WSCP is implemented through a series of ordinances requiring water use restrictions in different stages

5.4 Existing Plans

The following emergency-related plans apply as appropriate:

- CalWARN Emergency Operations Plan – Updated every 10 years
- LHHCWD's Illness Injury Prevention Plan (IIPP) – Updated annually
- LHHCWD's Water Master Plan – Updated every 5 years
- Water Shortage Contingency Plan (WSCP)– Updated every 5 years
- Los Angeles County Fire Master Plan- Updated annually
- La Habra Heights Emergency Action Plan – Updated every 5 years
- Los Angeles County Flood Master Plan – Updated annually
- Los Angeles County Hazard Mitigation Plan – Updated every 5 years
- USEPA PSPS SOP for Public Water Systems – Updated every 5 years

5.5 Mitigation Programs

LHHCWD employees have experience with past hazard mitigation and emergency planning efforts and can further strengthen their mitigation and response capabilities by participating in training opportunities offered by other agencies and regional governments.

To support emergency preparedness, continuity of operations, and employee safety, LHHCWD implements the following measures, which also contribute to the District's overall resilience and ability to maintain service during hazard events:

- **Emergency supply staging:** LHHCWD maintains emergency supplies at its corporate yard and District office to support employees during extended emergency response and recovery operations. Supplies include cots, chairs, food bars and meals-ready-to-eat (MREs), first aid kits, light sticks, batteries, blankets, personal sanitation kits, potable water, flashlights, and other essential items.
- **Facility-specific emergency guidance:** LHHCWD develops and maintains safety manuals and emergency response manuals tailored to the specific facilities where employees work. These documents provide clear procedures for hazard response, employee safety, and operational continuity during emergency events.

5.6 Fiscal Resources

The ability of LHHCWD to act is closely associated with the number of fiscal resources available to implement mitigation policies and projects. This may take the form of outside grant funding awards or District-based revenue and financing. The cost of mitigation policy and project implementation vary widely. In some cases, mitigation actions are tied primarily to staff time or administrative costs associated with the creation and monitoring of a given program. In other cases, direct expenses are linked to an actual project, such as installing backup power generators and sustainable energy resources, which can require a substantial commitment from LHHCWD and state and federal funding sources. LHHCWD has made fiscal commitments to mitigate hazards through its Capital Improvement Plan (CIP).

The following is a summary of LHHCWD's fiscal capabilities. A number of governmental funds and revenue-raising activities can be allocated for hazard mitigation activities. Included below are potential sources of discretionary general funding from local, state, and federal resources.

- New connection fees
- State and Federal grants

Through the California Department of Water Resources, local grants and/or loans are available for water conservation, groundwater management, studies, and activities to enhance local water supply quality and reliability. Project eligibility depends on the type of organization(s) applying and participating in the project, as well as the specific type of project. More than one grant or loan may be appropriate for a proposed activity. Completing the LHMP will facilitate and obtain grant funding in the future. For instance, Hazard Mitigation Grant Program (HMGP), or Flood Mitigation Assistance (FMA) grants. Grant opportunities will be reviewed each year to ensure there will be funding available for specific mitigation items.

5.7 Capabilities Assessment

A Capability Assessment examines LHHCWD capabilities to identify existing gaps or weaknesses in ongoing programs and activities that could hinder the implementation of mitigation actions or increase community hazard vulnerability. The findings of the Risk Assessment and Capability Assessment provide the foundation for developing a meaningful and achievable hazard mitigation strategy. *As part of this effort, the LHHCWD Board of Directors authorized, in July 2025, contracting with an outside firm to enhance the District's Geographic Information System (GIS) capabilities to support asset management, hazard identification, and mitigation planning.* The following actions outline key capabilities LHHCWD will consider in the Mitigation Strategy:

1. **Integrate hazard mitigation into capital planning:** Include funding for hazard mitigation actions within LHHCWD's CIP planning efforts.

2. **Coordinate capital projects and mitigation actions:** Incorporate projects identified in the CIP into the Mitigation Strategy and, conversely, integrate mitigation priorities into future capital planning efforts.

3. **Expand public outreach and education on emergency management:** Develop and implement ongoing outreach efforts to educate customers about natural hazards, their potential effects on drinking water systems, and the importance of mitigation actions in building a more resilient community.

4. **Broaden staff training and preparedness:** Build on LHHCWD employees' experience with hazard mitigation and emergency planning by participating in training offered by other agencies and regional organizations. Information and preparedness resources will continue to be supported through the LHHCWD website.

SECTION 6. MITIGATION STRATEGIES

6.1 Overview

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

Mitigation measures are categorized generally for all hazards and specifically for the five high-risk hazards that were extensively examined in the risk assessment section. These hazards include earthquakes, wildfire, landslides, windstorms, and climate change–induced drought.

6.2 Mitigation Goals, Objectives, and Projects

The process of identifying goals began with a review and validation of the FEMA Hazard Maps for LHHCWD and surrounding jurisdictions. The Planning Team evaluated the relevance and applicability of identified hazards and discussed the validity of existing goals. These discussions informed the development of updated goals and objectives for this LHMP. Based on the review of mitigation objectives and actions, the Planning Team reached consensus that the following goals should be included in the LHMP.

Overall, the primary objective is to protect lives and prevent damage to infrastructure that could disrupt water services. Global measures that apply across all hazards include:

- Continually improve the community's understanding of potential hazard impacts and the actions necessary to protect lives and critical infrastructure.
- Implement and maintain a public outreach and communication program to inform customers about hazards that may affect the drinking water system during emergencies, including water conservation measures and procedures for obtaining safe drinking water when service is disrupted.
- Provide state and local agencies with updated information on hazards, vulnerabilities, and mitigation measures affecting LHHCWD facilities and operations.

- Review and verify that LHHCWD-owned and operated infrastructure meets applicable safety standards.
- Evaluate LHHCWD facilities and infrastructure located in high-risk areas to ensure appropriate protection measures are in place to reduce potential hazard impacts.
- Identify and mitigate imminent threats to life safety and District facilities.
- Prioritize and implement mitigation actions that address LHHCWD's five high-profile hazards—earthquakes, wildfire, landslides, windstorms, and climate change–induced drought—while continuing to monitor and assess other identified hazards.

The table below shows the status of mitigation actions from the 2022 LHMP.

Table 18. 2022 Mitigation Actions

Hazard	2022 Mitigation Action	Status
Earthquake	1. Flexible pipe joints at wellheads, pump stations, and reservoirs $1.5 Million (2 Years) Operations Manager/ General Manager. HMGP, BRIC. High. 2. Seismic shut-off valves $1 Million (2 Years) Operations Manager/ General Manager. HMGP, BRIC. High. 3. Tie-down equipment $10,000 (1 Year) Operations Manager. HMGP, CIP. Medium.	1. 10A reservoir has been completed, 2024. Continued efforts for other wellheads, pump stations, reservoirs. 2. No update, continued mitigation project for 2025 HMP. 3. Ongoing, continued mitigation project for 2025 HMP.
Wildfire	1. Install Heli-Hydrant, $2.3 Million (2 years) General Manager. HMGP, BRIC. High. 2. Fire Education Programs, $20,000 (Annual) General Manager, HMGP, CIP. Medium. 3. Clear trees and brush 25 feet from all facilities, $30,000 (Annual)	1. Installed by city of La Habra Heights - completed 2023 2. Continued – occurs annually, continued mitigation project for 2025 HMP. 3. Continued – occurs annually, continued mitigation project for 2025 HMP.

	Operations Manager. HMGP, CIP. Medium. 4. Retrofit all paint and tank coating to fire-retardant, $5 Million. (3 Years) Operations Manager. HMGP, BRIC. Medium. 5. Foster better communication programs with the fire department $5,000 (Annual) General Manager. CIP. Medium. 6. Develop a refueling plan for generators, $3,000 (Semi-annual) Operations Manager. CIP. High. 7. Install generators at all booster stations, $1 million (3 Years) Medium, Operations Manager. HMGP, BRIC.	4. Continued mitigation project for 2025 HMP. 5. Ongoing, continued mitigation project for 2025 HMP. 6. Plan has been developed but will be updated to include diesel fuel tank transportation, continued mitigation project for 2025 HMP. 7. No update, continued mitigation project for 2025 HMP.
Landslides	1. Planting for soil stabilization near steep slopes $25,000 (Annual) Operations Manager. HMGP, BRIC. Medium. 2. Slope drainage systems $1 Million (3 Year) Operation Manager, General Manager. HMGP, BRIC. High.	1. Ongoing, continued mitigation project for 2025 HMP. 2. Ongoing, continued mitigation project for 2025 HMP.
Windstorms	1. Install generators at wells and booster stations $1 Million (3 years) Operation Manager. HMGP, BRIC. Medium. 2. Develop customers notification on water conservation during events $5,000 (Annual) General Manager. High. 3. Develop better communication with SCE $5,000 (Annual) General Manager. CIP. High.	1. No update, continued mitigation project for 2025 HMP. 2. Put together a Water Contingency Plan 2024. Ongoing, continued mitigation project for 2025 HMP. 3. Ongoing, continued mitigation project for 2025 HMP.
Drought	1. Drill new wells $3 Million (5 Years) General	1. No update. continued mitigation project for 2025 HMP.

	Manager. HMGP, BRIC. High. 2. Improve operational efficiency system leaks $1 Million (5 Years) Operations Manager. HMGP, BRIC, CIP. High. 3. Water conservation $25,000 (1 Year) Operations Manager. CIP. Low. 4. Increase water pumping capabilities $1.5 Million (2 Years) General Manager. BRIC, HMGP. Medium. 5. Study system interties with other water systems in the area $50,000 (1 year) General Manager. CIP, HMGP. High.	2. No update, continued mitigation project for 2025 HMP. 3. Ongoing, as needed. Continued mitigation project for 2025 HMP. 4. Maintenance updates allowing more efficient pumping. This is ongoing, continued mitigation project for 2025 HMP. 5. No updates, continued mitigation project for 2025 HMP.

6.3 Wildfire

Goal: To protect life and property in La Habra Heights County Water District in the event of a wildfire.

Description: The goal is to avoid injury, loss of life, and property damage and to maintain water flow for firefighting efforts. LHHCWD knows it is a matter of time before the hills in the service area have a major fire. The only hope is that this fire does not happen during Santa Ana wind conditions, as this condition will drive the fire down into the neighborhoods from the hills.

Mitigation Projects: Below is the project's priority, the department responsible for this action and the funding source. Further analysis will be required for each mitigation project to provide a more accurate cost estimate when ready to implement. All the actions listed for each hazard were the only actions considered by LHHCWD. As LHHCWD is a community facing economic challenges, LHHCWD and its board must adhere to a stringent budget. Consequently, LHHCWD must seek opportunities to save costs or secure grants to finance capital and mitigation initiatives. The identified projects and current cost estimates include:

- Fire Education Programs, $20,000 (Annual) General Manager, HMGP, CIP. Medium.

- Retrofit all paint and tank coating to fire-retardant, $5 Million. (3 Years) Operations Manager. HMGP. Medium.
- Foster better communication programs with the fire department $5,000 (Annual) General Manager. CIP. Medium
- Remove brush and trees from around facilities. $30,000 (Annual). High Priority. Superintendent. Operational budget.
- Replace SCADA systems communications boxes and install them into block buildings, increasing fire resiliency and security. $2.5 Million. (5 Years). High Priority. General Manager. HMGP and CIP.
- Retrofitting plant #5 to withstand wildfire Build block structure around plant 5, increasing fire resiliency and security. High Priority. (5 Years) $500,000. General Manager. HMGP and CIP.
- Reservoir 5A and 10A retrofitting SCADA communications $40,000 (5 years) High Priority. General Manager. HMGP and CIP.
- Bury communications line deeper, currently 4-5 inches need at least 18 inches deeper $250,000. (5 years) High Priority. General Manager. HMGP and CIP.
- Install generators at all booster stations, $1 million (5 Years) Medium, General Manager. HMGP and CIP.

6.4 Earthquake

Goal: To protect life and property in La Habra Heights County Water District in the event of an earthquake.

Description: The goal is to avoid injury, loss of life, and damage to property. Southern California is susceptible to earthquakes because there are many earthquake faults dissecting the state.

Mitigation Projects: Below is the project's priority, LHHCWD is responsible for this action, and the source of funding. Further analysis will be required for each mitigation project to provide a more accurate cost estimate when ready to implement. All the actions listed for each hazard were the only actions considered by LHHCWD. LHHCWD and its board are required to adhere to a stringent budget. Consequently, LHHCWD must seek opportunities to save costs or secure grants to finance capital and mitigation initiatives. The identified projects and current cost estimates include:

- Flexible pipe joints at wellheads, pump stations, and reservoirs $1.5 Million (5 Years) General Manager. HMGP. High priority.
- Seismic shut-off valves $1 Million (5 Years) General Manager. HMGP. High priority.
- Tie-down equipment $10,000 (5 Year) Operations Manager. HMGP, CIP. Medium priority.

6.5 Landslides

Goal: To protect life and property in La Habra Heights County Water District in the event of landslides.

Description: The goal is to avoid injury, loss of life, and property damage. A localized landslide of great volume is typically caused by unusually heavy rain in a semiarid area. Landslides can reach their peak volume in a matter of a few minutes and often carry large loads of mud and rock fragments.

Mitigation Projects: Below is the project's priority, the department responsible for this action, and the funding source. Further analysis will be required for each mitigation project to provide a more accurate cost estimate when ready to implement. All the actions listed for each hazard were the only actions considered by LHHCWD. As LHHCWD is a community facing economic challenges, LHHCWD and its board must adhere to a stringent budget. Consequently, LHHCWD must seek opportunities to save costs or secure grants to finance capital and mitigation initiatives. The identified projects and current cost estimates include:

- Install new valves on cross-country mainlines to mitigate landslides. Field operations, $300,000. General Manager. High priority. HMGP and CIP.
- Planting for soil stabilization near steep slopes $25,000 (Annual) Operations Manager. HMGP. Medium.
- Slope drainage systems $1 Million (5 Years) Operation Manager, General Manager. HMGP. High.

6.6 Windstorm

Goal: To protect life and property in La Habra Heights County Water District in the event of windstorms.

Description: The goal is to avoid injury, loss of life, and property damage. The Santa Ana winds are notorious in Southern California for wreaking havoc during the fall and winter months each year. The winds are known for their hot, dry weather and bring the lowest relative humidity of the year. The Santa Ana winds easily reach over 40 miles per hour with a gust of over 60 miles per hour. These winds topple trees and power lines, start wildfires, and cause havoc throughout the region. This has caused Southern California Edison and other power providers in California to cut power in regions during these wind events, which are called Public Safety Power Shutoff (PSPS) events.

Mitigation Projects: Below you will find the priority of the project, the department responsible for this action, as well as the source of funding. Further analysis will be

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

- Develop customer notification on water conservation during events $5,000 (Annual) General Manager. High.
- Develop better communication with SCE $5,000 (Annual) General Manager. CIP. High.
- Permanente on-site Emergency Generator hookups and automatic transfer panels. Mitigation of loss of power allows wells, boosters, and pumps to keep water in the system. $1 million. General Manager. High priority. CIP and HMGP
- SCADA satellite back-up communications connections. Mitigation of loss of power allows wells, boosters, and pumps to keep water in the system. General Manager. $250,000. (5 Years) High priority.

6.7 Climate Change – Induced Drought

Goal: To protect life and property in La Habra Heights County Water District in the event of a drought.

Description: The goal is to avoid injury, loss of life, and damage to property. Due to Climate Change, there are more extremes in the weather, which means the summers can be hotter, the winters colder, and periods of rain can become less wet or wetter, which causes flooding. It is expected that there will be greater fluctuations in weather patterns, including prolonged dry periods and drought hazards, which can be mitigated over the long term.

Mitigation Projects: Below is the project's priority, the department responsible for this action, and the funding source. Further analysis will be required for each mitigation project to provide a more accurate cost estimate when ready to implement. All the actions listed for each hazard were the only actions considered by LHHCWD. As LHHCWD is a community facing economic challenges, LHHCWD and its board must adhere to a stringent budget. Consequently, LHHCWD must seek opportunities to save costs or secure grants to finance capital and mitigation initiatives. The identified projects and current cost estimates include:

- Improve operational efficiency system leaks $1 Million (5 Years) Operations Manager. HMGP, CIP. High.
- Water conservation $25,000 (1 Year) Operations Manager. CIP. Low.
- Increase water pumping capabilities $1.5 Million (5 Years) General Manager. HMGP. Medium.
- Study system interties with other water systems in the area $100,000 (2 year) General Manager. CIP, HMGP. High.

- Replace aging infrastructure prone to leaks. Improving pipeline and leak surveys. $2 Million (5 Years) General Manager. HMGP and CIP. High priority.
- Drill new wells $3 Million (5 Years) General Manager. HMGP. High.

6.8 Mitigation Priorities

During the development of the risk assessment for LHHCWD, the Planning Team proposed and discussed alternative mitigation goals, objectives, and specific mitigation measures that LHHCWD should undertake to reduce the risk from the five high-risk hazards facing LHHCWD. Priorities from the 2022 LHMP have not changed for the 2025 plan. The team considered multiple factors to establish the mitigation priorities included in this plan. It assigned the highest priority rankings to those mitigation measures that met three primary criteria:

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

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

Earthquakes, wildfire, landslides, windstorm, and climate change–induced drought mitigation actions are identified and assigned a priority according to their importance, cost, funding availability, the degree to which project planning has been completed, and the anticipated time to implement the measures.

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

- High – Projects that will be the primary focus of implementation over the next five years
- Medium – Projects that may be implemented over the next five years

- Low – Projects that will not be implemented over the next five years unless conditions change (new program and funding source)

6.9 Implementation Strategy

The implementation strategy is intended to successfully mitigate the hazards identified in this plan within a reasonable time. LHHCWD is currently operating within its annual budget. LHHCWD revenues and capital improvement projects have remained a priority. LHHCWD planning team will review the Hazard Mitigation Plan each year before developing the next year's fiscal budget. The LHMP will also be reviewed by the Board of Directors for items to be included in the new fiscal budget. The LHHCWD staff will also actively explore opportunities to secure Hazard Mitigation Grants annually to mitigate the effects on the fiscal budget and provide relief to the residents. The following equation is the cost-benefit analysis equation used to ensure that the cost-benefit to LHHCWD is within FEMA guidelines. When completing a cost-benefit analysis,(shown below) with FEMA, the formula is all in electronic form but resembles the formula below.

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

Mitigation Projects Funding Source

There is currently no mitigation money in LHHCWD's budget. LHHCWD will include mitigation into the budgeting process when funding becomes available and look at what mitigation projects could be funded in future budget cycles.

Timeframe

Over the next five years, LHHCWD will incorporate mitigation into all capital improvement projects that it undertakes. The previous 2022 LHMP was incorporated in the CIP and any other relevant planning mechanisms, including the Water Master Plan, which incorporates LHMP mitigation projects.

LHHCWD will apply for mitigation grants as the opportunities become available in the State of California and the County of Los Angeles each year. LHHCWD will consider all mitigation items during the review of the Five-Year CIP and during the annual budget workshops.

SECTION 7. PLAN MAINTENANCE

7.1 Monitoring, Evaluating, and Updating the Plan

The General Manager will evaluate the LHMPannually and consider whether new hazards have emerged, community vulnerability has changed, and goals are still relevant to current conditions. This will be tracked by evaluating and recording completed mitigation actions and adding mitigation projects to the current LHMP. The LHMP will be reviewed as part of the annual budget planning each year and whenever new infrastructure updates are made within LHHCWD. The General Manager will ensure the LHMP is reviewed annually, and any items that have been mitigated will be recorded and tracked within the LHMP. At that time, staff and the Board of Directors will review funding and capital improvement replacement projects in the next fiscal year's budget. Annually, the General Manager will review funding and determine the projects to be included in the next fiscal year's CIP budget.

The General Manager will include the LHMP in all budget planning and grant planning meetings. This will allow open discussion, evaluation, and assessment of the LHMP to achieve goals, allowing the addition and removal of mitigated items. The General Manager leads a full review of the LHMP at a three-and-a-half-year interval like the initial LHMP. At this time, the planning team including the General Manager will address progress in reaching mitigation goals, assessment of new and existing hazards, using the new revised FEMA review tool, cross referencing hazards from the county, and development of new mitigation strategies and goals.

The consumers within LHHCWD will be asked to participate in the LHMP update process. There has not been any substantial development within the service area in the last 5 years

7.2 Implementation through Existing Programs

Once the State of California OES and FEMA approve the LHMP, LHHCWD will incorporate the LHMP into capital improvement replacement projects, capital replacement programs, building design, and any updates or repairs to the water distribution system. Information gathered from hazard profiles, such as the hazard maps and facility vulnerabilities will be used as a resource document and support the plans, projects, and programs that will benefit the water system and building within the service area. LHHCWD will submit a Notice of Intent to the State of California to help facilitate opportunities to obtain FEMA and state funding to mitigate hazards within the water system. The General Manager will be responsible for implementing the LHMP and working toward the LHMP-recommended goals and objectives that are met. The General

Manager will be responsible for placing the LHMP on the LHHCWD website and incorporating the LHMP into the annual budget planning meetings. The General Manager will verify that the LHMP is updated and rewritten over a 5-year cycle. LHHCWD will start the update process one and a half years before the expiration date on this document.

7.3 Continued Public Involvement

The approved LHMP will be continuously posted with contact information on the LHHCWD's Website. The General Manager is responsible for ensuring the LHMP is brought before the Board of Directors each year during Budget Planning. Public comments will be taken regarding the LHMP when the plan is updated in 2029, and projects that could be included in next year's budget will be considered. As new facilities are incorporated into LHHCWD, the LHMP will be updated to include new facilities and new hazards, if warranted. When the LHMP is rewritten and updated, the public can review it and coincide with the document's changes. It is the General Manager responsibility to ensure the LHMP is updated throughout the year and every 5 years.

The LHMPis reviewed annually by LHHCWD. The General Manager will conduct outreach with the nonprofit organizations, including community-based organizations, to represent the community's input into the updates. LHHCWD can also learn how community priorities have changed since the last update by conducting outreach to the public on construction, infrastructure improvements, and overall abilities.

Appendix A: Planning Team Meeting Matrix

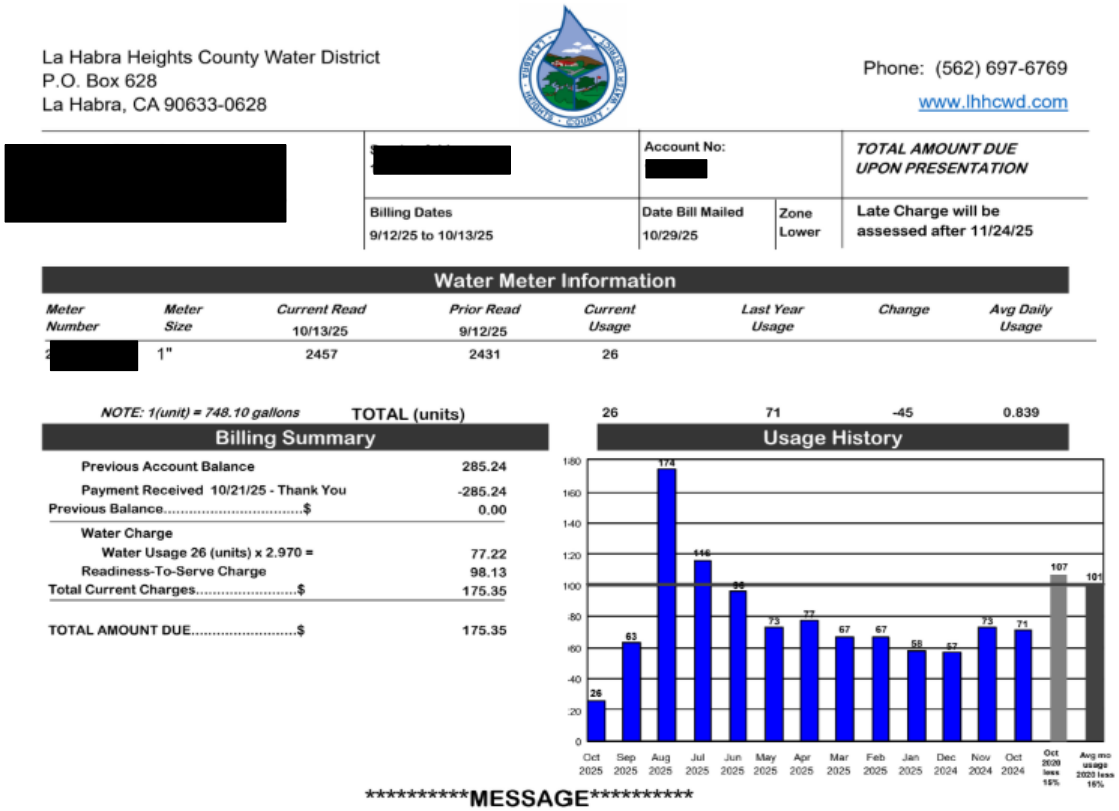
Table 19. Meeting Matrix

Meeting Matrix / Attendees	4/15/25 Kickoff Meeting (In-Person)	5/15/25 Working Session (Zoom	6/25/25 Working Session (Zoom	7/16/25 Working Session (Zoom)	8/19/25 Final Planning Meeting (In-Person)
Joe Matthews, General Manager	x	x	x	x	x
Ivan Ramirez, Superintendent	x	x	x	x	x
Karen Baroldi, Board of Directors		x	x	x	x
Gary Sturdivan	x	x	x	x	x
Deanna McMahan			x	x	x
Ryan Jorgensen	x	x	x	x	

Appendix B: Public Outreach

Figure 11. LHMP posted on LHHCWD Website

Figure 12. Customer Bill Notification about LHMP posting on Website



La Habra Heights County Water District
P.O. Box 628
La Habra, CA 90633-0628

Phone: (562) 697-6769
www.lhhcwd.com

[redacted]

Account No:	TOTAL AMOUNT DUE UPON PRESENTATION
[redacted]	

Billing Dates	Date Bill Mailed	Zone	Late Charge will be assessed after 11/24/25
9/12/25 to 10/13/25	10/29/25	Lower	

Water Meter Information

Meter Number	Meter Size	Current Read 10/13/25	Prior Read 9/12/25	Current Usage	Last Year Usage	Change	Avg Daily Usage
[redacted]	1"	2457	2431	26			
				26	71	-45	0.839

NOTE: 1(unit) = 748.10 gallons **TOTAL (units)**

Billing Summary

Previous Account Balance	285.24
Payment Received 10/21/25 - Thank You	-285.24
Previous Balance.....$	0.00
Water Charge	
Water Usage 26 (units) x 2.970 =	77.22
Readiness-To-Serve Charge	98.13
Total Current Charges.....$	175.35
TOTAL AMOUNT DUE.....$	175.35

Usage History

**********MESSAGE**********

As always, observe the due date and contact our office with any questions. To pay this bill online, visit our website at WWW.LHHCWD.COM and click on View and Pay Bill. Other payment options are listed on the back of this bill. The District is seeking input from our customers as we prepare to update our Hazard Mitigation Plan. Link to local Hazard Mitigation Plan document for public comment: https://lhhcwd.com/_pdf/LHHCWD-LHMP-20251006.pdf

Figure 13. Outreach email to local at-risk population representative

Subject: La Habra Heights County Water District seeks your help reviewing our draft Local Hazard Mitigation Plan

Hello,

My name is Joe Matthews, and I the General Manager of La Habra Heights County Water District. We are seeking help from organizations specializing in serving at risk populations within our Water District's service area, such as your facility at 102 Avocado Crest Rd.

I am reaching out to ask for your assistance reviewing our draft Local Hazard Mitigation Plan that we are in the process of revising. A Local Hazard Mitigation Plan is document designed to reduce possible effects that a natural hazard, such as an earthquake or wildfire can have on our agency and those citizens dependent on our services. We ask organizations such as yours to think about the effect that a water outage caused by a natural disaster might have on their operations when reviewing our draft Plan.

Please let me know if your agency can aid in reviewing our draft plan and making recommendations for mitigating potential water related disasters, or disasters that can affect water delivery to our residents. Any help you could give will be very appreciated.

Sincerely,

Joe Matthews
General Manager
La Habra Heights County Water District

Figure 14. Outreach email for LHMP review to local at-risk representative

Subject: RE: La Habra Heights County Water District seeks your help reviewing our draft Local Hazard Mitigation Plan

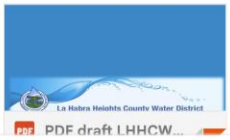
Hello David,

Thank you for your cooperation with helping to review our draft Local Hazard Mitigation Plan (LHMP). FEMA requires we revise this document every 5 years and in doing so, we reach out to people who serve at risk populations, such as yourself. FEMA requires the document contain wording to address hazards within our water district service area with potential to affect our water system or the people we serve. We have listed hazards we feel can affect our water system and other potential hazards required by FEMA. Please review the document paying attention to anything that may affect your ability to serve those residents in your care.

I have attached the draft copy for your review. We will be reviewing any comments received and possibly incorporate some that are pertinent to the mitigation planning effort. We hope to receive comments you may have by Monday, December 8, 2025. Please reach out if you feel you need more time, and again, thank you for your participation in reviewing our draft LHMP.

•••

One attachment • Scanned by Gmail ⓘ Add to Drive



Public comment collected are reported below, some comments were not included in the update as they are not relevant to this LHMP:

Comments received on 10/23/2025

P10
"The zoning is 1-acre (4,046 m2) lots with a variety of home and ranch style properties."
The properties in County islands and Whittier are not 1 acre zoning.

Changed to reflect this concern.

P12
"The city and surrounding county area are wealthy communities. LHHCWD does not serve a severely economically disadvantaged community.."
This is kind of contrary to many references to vulnerable and underserved. Also, many would not consider themselves wealthy.

The wording was changed to reflect this concern.

P17
Plans used
Why wasn't the 2020 La Habra Heights LHMP Plan considered as La Habra Heights is almost identical in location as the Water District?

This plan used the last LHHCWD LHMP, as our infrastructure varies from that of the city of La Habra Heights.

P18
"City of San Bernardino Municipal Water Department" Why was this far away agency included?
If there is some reason of relevance, a brief comment as to why would be helpful.

SBMWD was the last plan that SEMC did, that was approved by FEMA and CalOES

P19
"The Neuro Restorative care facility in La Habra Heights is an organization within the service boundaries that provide assistance for vulnerable populations. (install a period here) This organization was asked and agreed to involvement of the LHMP."

Statement was edited to reflect concerns.

P19
“The tools, resource materials, and other project-related information are maintained on a project portal on LHHCWD’s website which allows access to the information by all participants and the public..”. I look at the website regularly and have not seen this. I looked over the whole website today, October 23rd, and could find nothing.

The statement was revised to reflect website postings and public access correctly.

P20
“LHHCWD conducted their outreach through, email, phone calls and the General Manager attend face to face meetings with posting sections of the draft LHMP onto the La Habra Height County Water District website.” Check grammar, number, word choice. I never saw any of this. There was a notice on the website of the upcoming LHMP and request for things to consider, and the current posting of the draft.

Statement was edited to reflect concerns. A working draft was available for the public to review and make comments. Once comments were addressed, A final draft was posted for the public viewing only.

P20
“It is important to have a thorough understanding of these hazards without overanalyzing remote or highly unlikely hazards.” Need to include likely human induced hazards

Human induced hazards are outside the scope of a LHMP are not considered per FEMA guidelines.

P22
“In addition to the STAPLEE methodology…” …” First reference of this. What is “STAPLEE”?
Found explanation on p24, but would be better at first reference.

Statement was edited to reflect concerns.

P25
“The natural hazards considered not to affect or be a risk to LHHCWD were ranked 4, “Least Likely,” and not considered applicable to LHHCWD for mitigation.” The accompanying chart shows drought as a 4, but the following pages have drought as a serious and likely problem as well as a contributing factor to wildfire. Maybe eliminate

"climate change induced" and just use "drought" in the table on this page and bump up the likelihood to 1 or 2.

Statement was edited to reflect concerns.

P26
Droughts seem to occur every 5 years and last for several years. Droughts are certainly more likely than damaging windstorms.

We must identify all naturel hazards, rank the hazard and discuss the hazard in the document. Table 6 puts drought low, because are limited to the district and low to the public. Droughts are certainly more likely than damaging windstorms. Both windstorms and drought are both low, as neither one cause is not Critical or Catastrophic to the water system.

P26-27
Wildfire - A wildfire would definitely be consequential, but the last large fire in La Habra Heights was in 1955, and that caused no damage to water infrastructure. I think the likelihood of a wildfire is overstated, though certainly should be prepared for.

The document was prepared with the assistance from the city of La Habra Heights fire department.

P28
"Climate Change Impacts:" These impacts are related to any wildfire. They should be in the regular wildfire category. The "Climate Change Impacts" could just be a note that those impacts may increase or be slightly more likely.

The document was written following FEMA guidelines.

P29
Figure 3 Outdated Fire Map. Should use 2025 CalFire Map. Why is this outdated map even included? A significant portion of La Habra Heights has reduced hazard compared to previous map.

The fire map was provided to LHHCWD by the La Habra Heights Fire Marshall who was a member of the planning team.

P32

Earthquakes - Yes, earthquakes are highly likely, but damaging earthquakes, which should be the subject of the LHMP are not very likely. The last significant earthquake was the La Habra earthquake in 2014, magnitude 5.3. Did this cause any damage to LHHCWD facilities? A large one previous to that was the 1987 Whittier Narrows quake magnitude 5.9, which did damage some La Habra Heights homes. Was there any damage to LHHCWD facilities? If so, how much? Table 8 on page 34 should be adjusted to reflect these.

When drafting this LHMP, the planning team took all sized earthquakes into consideration, as reflected in Table 8.

P35

Figure 4 does NOT show Earthquake Hazard Severity. It shows the Landslide Hazard Zone. These are areas where, because of the steepness of the slope, are vulnerable to slide because of the earthquake motion. It would be helpful/useful to show where LHHCWD facilities are located on the map, address the specific vulnerabilities of any facilities in those areas, what measures the district took to mitigate the risk when they were constructed, and what can be done now.

Figure 4 shows the fault lines running though the agency along with the landslide information. FEMA does not have a shaking intensity map, for safety and security of LHHCWD we do not provide locations of critical infrastructure, just district boundaries.

P40

Figure 6. Landslide Map This is NOT a landslide map of LHH. Below is the State landslide map for LHH. District Facilities should be shown on the map.

Maps are made using FEMA provided hazard layers (HAZUS) so this is a landslide map within the LHHCWD boundaries. For safety and security, LHHCWD does not post locations of critical infrastructure.

Mudslides and Debris flows are NOT landslides.Maybe the more likely occurring Mudslides and Lanslides should have their own hazard assessment.

FEMA does categorize mudslides and landslides as the same when looking up disasters. We will not address this comment as it is not pertinent to our LHMP,

P44

This plan really needs to better understand and differentiate between earthquake induced landslides, landslides and mud/debris flows and be revised to reflect that.

We will not address this comment, as it is not pertinent to our LHMP.

P45

Windstorms - “This equates to a windstorm every month on average in any given year.” This section is ridiculously blown out of proportion. How often has the district had to do consequential repairs from wind, other than pick up twigs or broken branches? The effects discussed are correct, but the likelihood is much lower.

We will not address this comment, as it is not pertinent to our LHMP.

P57

Climate Change Induced Drought - The narrative mixes regular drought with climate change induced. In fact most of the discussion is about regular drought. Really, the main topic heading should be “Drought”, with climate change induced as a sub category or sub section heading.

We will not address this comment, as FEMA is now requiring a mitigation plan to include climate change induced drought.

P59

Table 15 drought severity replacement costs. What are the critical assets what would need to be replaced? Why? What could be done to mitigate that? One mitigation measure for reduced water supply could be to connect to the recycled water at Rowland Heights water district.

These are estimated costs. Mitigations are listed in Section 6. We will not address this comment, as we determined its impact as limited.

P66

What is CalWARN?

Statement was edited to reflect concerns.

P71

Mitigation - Solar panels with battery backup should be considered for the administration building, and possibly water tank roofs.

We will not address this comment, as it is outside the scope of our LHMP.

P75

"Remove brush and trees from around facilities. $30,000 (Annual). High Priority. Superintendent. Operational budget." Trees and landscaping are necessary to screen the tanks. That should be a consideration.

We will not address this comment, as it is outside the scope of our LHMP.

P75

"Replace water distribution main feeding the City of La Habra Heights Heli- Hydrant Tank $2.5 Million General Manager. HMGP and CIP. " HMGP and CIP. " This should NOT be paid for by LHHCWD. The location was chosen knowing the inadequacy of the water line. I believe the district had the city sign a document/waiver accepting that limitation. The City or County should be responsible for funding any new line.

We will not address this comment, as it is outside the scope of our LHMP.

P75

6.4 earthquakes - Should there be mitigation when installing water mains that cross earthquake faults? If so, what could that be?

Earthquake mitigations can be found in section 6.4

P76

Landslide mitigation. - Again, mixing up landslides, mudslides and debris flows. Need to fix.

We will not address this comment, as it is not pertinent to our LHMP.

P77

Climate Change – Induced Drought Again, these measures pertain to all drought circumstances, not just climate change induced. Plan should be revised to focus on

regular drought, with a subsection on additional measures, if needed, for climate change induced.

We will not address this comment, as it is not pertinent to our LHMP.

P79

Section 6.9 - The variables in the equation need to be identified! Then, if applicable, how those variables affect funding and how the district might affect them should be discussed.

We will not address this comment, as it is not pertinent to our LHMP.

_____

All mitigation regarding generators for pumps - In the past, generators were required to have liquid fuel, as hooking up to a gas line was prohibited due to AQMD or other air pollution requirements. Considering the Palisades fire, and running out of water, the State agencies should allow gas hookups, and the generators should be able to run on both liquid and natural gas fuel.

We will not address this comment, as it is outside the scope of our LHMP.

_____

The Palisades Fire fighting was severely limited due to lack of water because upper zone tanks ran dry due to outflow exceeding refilling ability. Interestingly, the Palisades upper zone has a 4 million gallon capacity. The same as the upper zone in LHHCWD. There are lessons to be learned there, which should be discussed in the LHMP. A good place would be the Wildfire section, including mitigation measures.

We will not address this comment, as it is outside the scope of our LHMP.

_____

Human induced hazards.

The plan should include real and likely human induced hazards and their mitigation including, but not limited to:

- System Hacking - happens all over. A small water district being hacked by China was just featured on 60 Minutes.
- Generator theft - a director recently prevented theft of a portable generator.
- Wire theft, copper theft. This happens daily and could cripple the system.

- Drone sourced damage, including dropping hazardous material into tank vents to contaminate the water supply.

We will not address this comment, as it is outside the scope of our LHMP.

Comments received on 11/2/2025

The Service Area Map on Page 9 does not match the map on the District website or the 2022 Master Plan.

Statement was edited to reflect concerns.

Critical facilities as listed on pages 10 & 11 should be shown on the map.

We will not address this comment, as it is not pertinent to our LHMP.

There are a number of references to loss of revenue due to a hazard related event. The District finances are set up so that the Readiness to Serve charge, and other income, such as property tax, oil income, and rental income pay for fixed costs and the Water Charges pay for the variable costs associated with water delivery. If a hazard event results in water delivery impairment, there would be a loss of revenue, but also a reduction in those related expenses. If revenue is going to be discussed in the HMP, the fixed and variable costs and their financing should also be discussed. An event that prevents water delivery to customers could result in new costs and services, such as providing bottled water, manning reservoirs to provide container filling for customers, etc. This should be discussed in the HMP.

We will not address this comment, as it is outside the scope of our LHMP.